

Male anabolic androgenic steroid-  
users: A mixed-methods study

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Subtitle: The voice of the AAS-user

Orlanda Anita Harvey

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# Male anabolic androgenic steroid-users: A mixed-methods study: The voice of the AAS-user

**Orlanda Anita Harvey**

## **Abstract**

Anabolic androgenic steroids (AAS) are increasingly used by the general population, particularly male gym users, for their muscle-building and aesthetic effects. AAS can have a detrimental impact on physical and emotional wellbeing. The motivations for use are wide ranging and include a desire for a muscular physique. There is a shortage of research exploring AAS-users' experiences, their perceptions of risks of AAS or how the complexity of motivations for use effects support needs.

The mixed-methods scoping review in this integrated thesis revealed (a) AAS-users access a range of sources to obtain information on how to inject, side-effects, risk management and types of substance; and (b) a paucity of data on the types of information and support users want.

This shaped the questions for the primary research namely to explore the experiences of recreational AAS-users and ascertain their needs and wants on information and support. A two-phase process via quantitative questionnaires and semi-structured interviews was followed. Descriptive statistical analysis was used for quantitative data and thematic analysis for the qualitative data.

This study found complex and interlinked motivations for AAS use by participants that could change over time including the use of unprescribed AAS as Testosterone Replacement Therapy. This study suggests that the internalisation of socially constructed ideal perceptions of masculinity could be a reason for using AAS and may impact on users' health seeking behaviours. Most AAS-users were seeking evidence-based information but did not seek professional support due to stigma and lack of faith in the knowledge of professionals.

It is recommended that a person-centred approach should be taken to supporting AAS-users. Professionals should explore with users their history of AAS use and their concerns, so that support can be tailored to individual needs. One-to-one

and group support should include discussions around beliefs linked to masculinity and negative self-talk. Services for AAS-users should be separated from those serving other illicit drug users.

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## Contents

Abstract.....	3
Acknowledgments.....	5
Contents.....	6
Tables.....	13
Figures .....	14
Abbreviations .....	15
<i>Chapter 1 Introduction .....</i>	<i>16</i>
1.1 Chapter overview.....	16
1.2 Definitions.....	16
1.3 The author’s research journey .....	16
1.4 Background .....	18
1.5 Philosophical worldview proposed in the study – Rationale .....	20
1.6 Outline of the thesis.....	20
<i>Chapter 2 Overview of AAS use .....</i>	<i>22</i>
2.1 Chapter overview.....	22
2.2 Risk of AAS use.....	22
2.2.1 Benefits of use.....	25
2.2.2 Risks of harm to others .....	26
2.3 Motivations to use AAS .....	28
2.3.1 Risk factors for starting use.....	30
2.4 Typologies of AAS-user.....	32
2.5 Aims and objectives .....	33
2.6 Summary.....	34
<i>Chapter 3 Literature review .....</i>	<i>35</i>
3.1 Chapter overview.....	35

<i>Chapter 3 Section 1</i> .....	35
3.2    Introduction .....	35
3.3    The search strategy .....	35
3.3.1    Inconsistencies in terminology .....	35
3.3.2    Development of the search strategy .....	37
3.4    Data extraction .....	38
3.5    Quality assessment .....	38
3.6    Literature review.....	38
<i>Chapter 3 Section 2 Research Article</i> .....	39
<i>Support for people who use Anabolic Androgenic Steroids: A Systematic Scoping Review into what they want and what they access</i> .....	39
Additional file 1 – Database Search .....	54
<i>Chapter 3 Section 3 Revision of aims and objectives</i> .....	55
3.7    Introduction .....	55
3.8    Reflections on the review .....	55
3.9    Refining the aims and objectives.....	55
<i>Chapter 4 Methodology and methods</i> .....	57
4.1    Introduction .....	57
4.2    Methodological approach and assumptions.....	57
4.2.1    Pragmatism .....	59
4.3    Methods.....	61
4.3.1    Overview of mixed-methods approach.....	61
4.4    Ethical considerations.....	63
4.4.1    Vulnerability.....	63
4.4.2    Legal issues .....	65
4.5    Development of the questionnaire.....	66
4.5.1    Questionnaire content .....	66
4.5.2    Questionnaire structure.....	68

4.5.3	Piloting the questionnaire.....	69
4.6	Distribution of the questionnaire .....	71
4.6.1	Sampling frame.....	71
4.6.2	Challenges of accessing this hard-to-reach population.....	71
4.6.3	Recruitment strategies.....	72
4.7	Design and development of interviews.....	78
4.7.1	Interview pilot.....	79
4.7.2	Interviews .....	79
4.8	Method for data coding and analysis.....	81
4.8.1	Quantitative data .....	81
4.8.2	Qualitative data.....	82
4.8.3	Data cleansing.....	86
4.8.4	Quality in mixed-methods research.....	87
4.9	Summary.....	89
<i>Chapter 5 Findings .....</i>		<i>90</i>
5.1	Overview.....	90
5.2	Introduction .....	90
5.2.1	Participants.....	90
5.3	The six themes.....	93
5.3.1	Theme one: Reasons to use AAS .....	95
5.3.2	Theme two: Effects of AAS use .....	101
5.3.3	Theme three: Risk management .....	114
5.3.4	Theme four: Perceptions on and perceptions of AAS use and society.....	124
5.3.5	Theme five: Information and support accessed .....	133
5.3.6	Theme six: Ideal support.....	144
5.4	Summary.....	145
<i>Chapter 6 Research article .....</i>		<i>146</i>
<i>Support for non-prescribed anabolic androgenic steroids users: a qualitative exploration of their needs .....</i>		<i>146</i>



<i>Chapter 7</i>	<i>Research article - submitted</i> .....	147
	<i>Title: Libido as a reason to use non-prescribed Anabolic Androgenic Steroids</i> .....	147
<i>Chapter 8</i>	<i>Discussion</i> .....	148
8.1	Overview.....	148
8.1.1	Participant demographics comparison.....	148
8.2	Identity at the heart of management of use.....	149
8.2.1	Reasons for use.....	150
8.2.2	Effects of AAS use.....	152
8.2.3	Risk management.....	161
8.2.4	Perceptions on and perceptions of AAS use and society .....	163
8.2.5	Information and support .....	166
8.3	Summary.....	171
8.4	Identity.....	172
8.4.1	Introduction .....	172
8.4.2	Identity as a concept .....	172
8.4.3	AAS-users' perception of themselves and the drug-user identity.....	175
8.4.4	Gender and identity.....	177
8.4.5	The AAS-user, masculinity and muscularity .....	182
8.4.6	Self-medication and masculinity .....	186
8.4.7	Masculine identity and testosterone replacement therapy.....	188
8.5	Life Stage Theory .....	190
8.6	Information and support .....	198
8.7	Summary identity.....	199
8.8	Female Participants Summary.....	201
8.9	Limitations and strengths .....	204
8.10	Limitations.....	204
8.10.1	Study design.....	204
8.10.2	Data collection.....	205

8.11	Strengths.....	207
8.11.1	Study design.....	207
8.12	Theory and practice .....	209
8.12.1	Typology.....	209
8.12.2	Person-centred practice.....	210
8.13	Reflections on academic evidence and policy-making.....	214
8.14	Reflections on personal experiences impacting on the researcher / research .....	216
8.15	Dissemination.....	218
8.16	Summary.....	218
<i>Chapter 9 Conclusion .....</i>		<i>219</i>
<i>Chapter 10 Recommendations.....</i>		<i>224</i>
10.1	Chapter overview.....	224
10.2	Introduction .....	224
10.3	Recommendations for practice .....	224
10.3.1	Information and support .....	224
10.3.2	Wider professional services .....	226
10.4	Recommendations for policy .....	226
10.5	Recommendations for research .....	226
<i>References.....</i>		<i>228</i>
<i>Appendix 1 Typology of AAS users.....</i>		<i>267</i>
<i>Appendix 2 Scoping review search strategy (PICO).....</i>		<i>268</i>
<i>Appendix 3 Testing of word groups for search strategy .....</i>		<i>269</i>
<i>Appendix 4 Data extraction form and example of quality review by supervisor .....</i>		<i>271</i>
<i>Appendix 5 Methodological quality appraisal tool – Quantitative studies... .....</i>		<i>276</i>
<i>Appendix 6 Appraisal of mixed-methods paper.....</i>		<i>277</i>

<i>Appendix 7</i>	<i>PROSPERO International prospective register of systematic reviews</i>	<i>278</i>
<i>Appendix 8</i>	<i>BU Ethics Checklist</i>	<i>284</i>
<i>Appendix 9</i>	<i>Social Work and AAS article</i>	<i>289</i>
<i>Appendix 10</i>	<i>Participant information sheet and research questionnaire</i>	<i>290</i>
<i>Appendix 11</i>	<i>Questionnaire design: References for options used in the questionnaire</i>	<i>299</i>
<i>Appendix 12</i>	<i>Summary of distribution contacts for questionnaire</i>	<i>300</i>
<i>Appendix 13</i>	<i>Summary of promotion and distribution channels for the questionnaire</i>	<i>302</i>
<i>Appendix 14</i>	<i>Email invitation to participate in a research project interview, Participant information and agreement forms</i>	<i>306</i>
<i>Appendix 15</i>	<i>Format and qualitative questions for one-to-one interviews</i>	<i>314</i>
<i>Appendix 16</i>	<i>Extract from transcript (two pages)</i>	<i>316</i>
<i>Appendix 17</i>	<i>Sample of development of codes and themes</i>	<i>318</i>
<i>Appendix 18</i>	<i>Data cleansing of questionnaire: Summary of actions taken</i>	<i>320</i>
<i>Appendix 19</i>	<i>Interview Summary and demographics of interviewees</i>	<i>322</i>
<i>Appendix 20</i>	<i>AAS use and the potential for addiction</i>	<i>326</i>
<i>Appendix 21</i>	<i>Benefits of using AAS – Summary of questionnaire data</i>	<i>327</i>
<i>Appendix 22</i>	<i>Questionnaire comments referencing aggressive behaviours and management</i>	<i>329</i>
<i>Appendix 23</i>	<i>Self-reported effects of using Trenbolone</i>	<i>332</i>
<i>Appendix 24</i>	<i>Erikson’s Life Stage Theory</i>	<i>333</i>
<i>Appendix 25</i>	<i>Sketches to illuminate the differing AAS use pathway</i>	<i>334</i>

Hugo's (USA/53) story (Table 1) .....	335
Asi's (USA/28) story (Table2).....	336
Don's (UK/39) story (Table 3) .....	337
Lewis's (USA/37) story (Table 4) .....	338
<i>Appendix 26 Excerpt from a forum discussion on UK needle exchange programmes</i> .....	<i>339</i>

## Tables

Table 2-1	Thesis Aims and objectives (version 1) .....	34
Table 3-1	Terminology to describe steroid use.....	36
Table 4-1	Recruitment Strategies.....	72
Table 4-2	Summary of distribution methods for questionnaire .....	73
Table 4-3	Promotion strategy .....	77
Table 4-4	Interview Summary .....	80
Table 4-5	Progression from questionnaire to interview participant (example) .....	81
Table 4-6	Thematic Analysis Coding Process .....	84
Table 5-1	Summary of Participant demographics.....	92
Table 5-2	Reasons for use .....	96
Table 5-3	Reflections on starting use.....	97
Table 5-4	Tally of side-effects listed by participants.....	106
Table 5-5	Managing unwanted emotional side-effects of AAS use.....	109
Table 5-6	Behavioural side-effects experienced coming off-cycle .....	110
Table 5-7	Effects on AAS use on wider aspects of users' lives.....	112
Table 5-8	Risks to others .....	113
Table 5-9	Risks versus benefits of use linked to quality of life .....	115
Table 5-10	Planning to use AAS.....	118
Table 5-11	Concerns over loss of identity.....	122
Table 5-12	Disassociation from other types of substance user .....	125
Table 5-13	Talking about AAS use at the gym.....	133
Table 5-14	Seeking information and support .....	134
Table 5-15	Conditions that AAS-users sought help for* .....	140
Table 5-16	Chi Square test results: Belief there is a need for emotional support .....	141
Table 5-17	Perceived limited knowledge of medical professionals.....	142
Table 5-18	Reasons for not seeking medical support .....	144
Table 8-1	Identity: participant self-descriptors.....	174
Table 8-2	Stage 5 Erikson's Life Stage negotiation.....	191

Table 8-3	Stages 6 and 7: Young and middle adulthood .....	195
Table 8-4	Female Participants.....	201
Table 0-1	(Appendix) Hashtags used on Twitter and Instagram .....	303
Table 0-2	(Appendix) Languages used for posts.....	303
Table 0-3	(Appendix) Muscle Forums .....	304

## Figures

Figure 4-1	Data capture and analysis process.....	85
Figure 5-1	Six themes and associated sub-themes .....	94
Figure 5-2	Could you stop using AAS? .....	99
Figure 5-3	Is it possible to become addicted to AAS?.....	100
Figure 5-4	Impact on quality of life.....	102
Figure 5-5	Benefits of use.....	103
Figure 5-6:	Metaphors for how it feels to use AAS.....	104
Figure 5-7	Positive feelings from using AAS .....	105
Figure 5-8	Emotional side-effects of using AAS .....	107
Figure 5-9	Emotions experienced when stopping AAS use (off-cycle).....	110
Figure 8-1	Concepts of identity at the heart of management of use.....	149
Figure 8-2	Picture of a participant (Permission granted by participant).....	163
Figure 8-3	Captain America: Actor transformation (toptenfamous, 2018) - redacted .....	179
Figure 8-4	James Bond: Muscular transformation (Wells 2015) - redacted .....	179
Figure 8-5	Incredible Hulk statue outside supplements' shop: <i>Own picture</i> ..	181
Figure 8-6	AAS use pathway .....	212
Figure 0-1	(Appendix) Flyer .....	302
Figure 0-2	(Appendix) Social media promotion .....	302
Figure 0-3	(Appendix) Screenshot of Youtube post.....	303
Figure 0-4	(Appendix) Screenshot of Reddit/forum request post.....	304
Figure 0-5	(Appendix) Screenshot of forum interaction.....	305
Figure 0-6	(Appendix) Screenshot 1 of forum interaction.....	305
Figure 0-7	(Appendix) Screenshot 2 of forum post.....	305

## Abbreviations

AAS	Anabolic Androgenic Steroids
ACMD	Advisory Council for the Misuse of Drugs
APA	American Psychological Association
APEDs	Appearance and Performance Enhancing Drugs
ASIH	Anabolic steroid-induced hypogonadism
BBV	Blood Borne Viruses
BU	Bournemouth University
CBT	Cognitive Behavioural Therapy
DSM	Diagnostic and Statistical Manual of Mental Disorders
EBP	Evidence Based Practice
ED	Eating Disorder
FB	Facebook
HGH	Human Growth Hormone
HIV	Human Immunodeficiency Virus
IPA	Interpretative phenomenological analysis
IPED	Image and Performance Enhancing Drugs
LGBTQ	Lesbian, gay, bisexual, transsexual, queer
LSW	Life Story Work
MD	Muscle Dysmorphia
NE	Needle Exchange
NSP	Needle and syringe programme
PCT	Post-cycle Therapy
PEA	Performance enhancing agent
PES	Performance Enhancing Substances
PICO	Population, Intervention, Comparison, Outcome(s)
PIEDs	Performance and Image Enhancing Drugs
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
QR	Quick response
TRT	Testosterone Replacement Therapy
UES	Use of ergogenic substances
UK	United Kingdom
USA	United States of America
WDP	Westminster Drug Project
YOLO	You only live once

# **Chapter 1 Introduction**

## **1.1 Chapter overview**

The aim of this study is to explore both individuals' experiences of using AAS (Anabolic Androgenic Steroids) and their experiences accessing information and support. This is important because in the UK the number of people using AAS is on the increase and the few support services provided are typically those provided for people with 'traditional' illicit substance use dependencies or services around harm reduction linked to spreading and acquiring blood borne viruses (BBVs).

## **1.2 Definitions**

Image and Performance Enhancing Drugs (IPED) include substances that allow longer, harder physical training, promote weight loss and build muscle (Brennan et al. 2017). IPED in this thesis refers to oral and injectable AAS and injectable ancillary drugs that are often taken in combination with AAS (e.g. human growth hormone, insulin) (Christiansen et al. 2016). AAS are one of the six human enhancement drugs used to enhance the structure and function of muscle (McVeigh et al. 2012). This study does not include using prescribed AAS. The author acknowledges that a person's use of a substance does not define them and would not use the phrase 'AAS-user' in everyday practice, instead using the phrase 'people who use non-prescribed AAS'. However, for the purposes of brevity and clarity in this thesis the phrase 'AAS-user' will be used. In the UK, policy and guidance documents use the term Needle and Syringe Programmes (NSPs), also known as Needle Exchanges (NEs), to refer to services for intravenous substance users.

## **1.3 The author's research journey**

My rationale for undertaking this study came from my curiosity about the impact of using AAS, after working with AAS-users at a NE. Anecdotal information from Poole Addiction Community Team's Harm Minimisation Lead indicated that AAS-users do not see themselves as 'stereotypical' substance users despite regular intramuscular injections of AAS, and distance themselves from them, a stance supported in the literature (e.g. Evans-Brown et al. (2012)). Some frequent AAS-



users came not just for needles, but to discuss the impact of AAS use on their moods. AAS use was not covered on the Bournemouth University (BU) Social Work Masters, and there is scant information on it in the social work literature (Harvey and Parrish 2019). However, there was a wealth of public health literature on this subject but little that addressed support needs. There could be a number of reasons for the lack of information in the social work sphere including: that it is only in recent years that AAS-users have started to access NEs, that it is not necessarily recognised as being harmful to others or that it does not impact on an individual's ability to live their daily life, for example, AAS use rarely presents as emergency services (Kanayama and Pope 2018). Furthermore, AAS use is often overlooked due to the late onset for starting use and the public perception that it is only used in professional sporting environments (Kanayama and Pope 2018).

During the 1980s people started using AAS for recreational (non-competitive) purposes (Kanayama and Pope 2018). There are both potential physical and emotional harms that can come from AAS use, and there is the potential to become dependent (Kanayama, Brower, et al. 2009). Although my interest came from being in a social work role within the area of substance misuse, in the current climate it is often frontline staff in charities or the NHS who are supporting people with the whole range of substance use problems. This led to my Social Work MA dissertation on the motivations for and risks of using AAS focussing on 'recreational use'. Moreover, the UK IPED Survey (Bates and McVeigh 2016) concluded that it would be useful to investigate ways of better engaging AAS-users with health services to gain a better understanding of this sub group of IPED users. Therefore, the focus of my primary research will be on understanding the type of support that people who use AAS would find useful, not just with the intention of adding to the social work literature but also wider substance use literature.

Generations of women have been impacted by society's views of what it is to be female (Worell 2012) including how they should look. This has led many women to diet and undergo surgery to change their appearance in order to live up to some sort of feminine ideal (Sharp et al. 2014) and in some instances such pressures have led to problems such as drive for thinness and disordered eating (Krahé and Krause 2010, Fernandez and Pritchard 2012, Hefner et al. 2014).

Women's views of themselves are heavily influenced by the portrayal of women in the media and the internalisation of body image ideals, giving them a negative perspective of their own body image (Borg and Fredriksson 2015). In recent years, boys have become exposed to the same type of 'ideal body' stereotypes (Barlett et al. 2008). There is an increase in people using AAS and users are accessing NSPs for support in many western countries (McVeigh et al. 2016, Wicks 2017). Kanayama and Pope (2018) suggest that the increase in use for recreational purposes could be influenced by the increase in the prevalence of the ideal muscle image being represented in the Media from GI Joe through to Rambo. They point out that this mesomorphic shape is a predominant representation for masculinity in social media, and this is highlighted in a qualitative study where one AAS-user stated that only strong muscular men get to play the action heroes (Smith et al. 2009).

Professionals working with people who use substances should acknowledge that service users are experts of their own situations (McCarthy and Galvani 2010) and explore with them the beliefs of their sub cultures and how their beliefs and values fit within this context to help ensure the service user is safe from harm (Teater 2014). Moreover, it is important to recognise the unique nature of people who use human enhancement drugs, "their motives for use and associated risk perceptions and behaviours" (Brennan, Van Hout, et al. 2013, p.219). Consequently, an acceptance of these perspectives suggests that any support offered to people who use AAS should take into consideration motivations for use.

## **1.4 Background**

AAS are synthetic drugs which mimic male sex hormones especially testosterone (Nutt 2012), and are typically used in six to twelve week cycles to build muscle (Philowitz 2014) and come in both oral and injectable forms. Bhasin et al. (1996) confirmed that AAS use is beneficial for muscle gain and testosterone enhances the effects of resistance training to increase muscle. The use of AAS has historical roots in enhancing performance in sports, however recently they are increasingly used by the general population (particularly male gym users) for their anabolic effects (Bojsen-Møller and Christiansen 2010, Nutt 2012). Users often take supra-physiological doses (that is a dose that is larger or more potent than would occur

naturally) to increase lean body mass, muscle size and strength (Parkinson and Evans 2006) and AAS are more often than not used in conjunction with other substances such as growth hormone and anti-inflammatory drugs (Bates and McVeigh 2016), often with the intention to enhance the effects of the steroids or mitigate its side-effects.

A meta-analysis of AAS use indicates a global lifetime prevalence of 3.3% (men: 6.4%, women: 1.6%) (Sagoe, Molde, et al. 2014). Whilst users still represent a minority of the UK substance using population, just under 61,000 16-59 year-olds had used AAS in 2017/2018 (increasing over the decade from 0.1 to 0.2 % of the national representative population surveyed); 17000 of these were 16-24yr-olds (UK Home Office 2018). Moreover, the National Crime Survey of 34,440 households (71% response rate) found the lifetime use of AAS among 16-59 years old as 0.9% (UK Home Office 2018), however, these figures are likely to be under-reported (Advisory Council on the Misuse of Drugs (ACMD) 2010). It has been suggested that this increase in use could be 'indicative of the public's appetite for a short cut' for aesthetic gain (Brennan, Van Hout, et al. 2013, p.219) or because of the availability of AAS online.

Legal factors further complicate estimating steroid use. In the UK, AAS are classified as Class C substances and supplying AAS, even via the Internet from outside the UK, sharing them or giving them away free, is unlawful and can lead to a 14-year jail sentence, which is similar in Canada. However, it is legal to possess AAS for personal use and to purchase steroids in other countries where they are legal and bring them back into the UK, but it is illegal to import steroids using postal services (Misuse of Drugs Act, 1971). In the USA steroids are classed as Schedule III controlled substances and use and supply is illegal, and non-prescribed steroid use is also illegal in countries such as Australia, France and Germany. However, AAS use is legal in other parts of the world such as Hong Kong, Egypt, Mexico. Such factors make the law around purchase and supply complex and this could also be linked to under reporting. Some suppliers and users are confused about the legality of using, purchasing and supplying steroids in the UK due to the complexity of the law (Antonopoulos and Hall 2016).

AAS use is less prevalent in the general population than in certain subpopulations (recreational sports people, athletes, injecting drug users, sexual and gender

minorities); there is also a lower prevalence among women (Sagoe and Pallesen 2018). AAS is now more likely to be used recreationally; for example a survey of 500 AAS-users found 78% (n=392) were non-competitive bodybuilders and non-athletes (Parkinson and Evans 2006). Recent studies have shown an increase in the number of AAS-users accessing NSPs (Chantal et al. 2009, McVeigh and Begley 2016) with recent figures from the north of England evidencing that in twelve out of fourteen areas, IPED use was reported by more than half of people using NSPs (Kimergård and McVeigh 2014a). The ACMD (2010) raised particular concerns for the potential negative impact on the normal physiological and behavioural development of young people and in a recent survey 13% of people using injectable IPEDs started to use in their teenage years (Begley et al. 2017).

## **1.5 Philosophical worldview proposed in the study –**

### **Rationale**

Evidence-based practice (EBP) is central to social work practice (Lishman 2015) and social work takes the perspective that the service user is at the heart of social work practice, and is therefore the expert of their substance use experiences (Galvani 2012). Social work's value base of respect for the individual's expertise (Banks 2001) contributes to the study's premise that practice could be enhanced through asking AAS-users about their experiences and motives for using (Pettersson et al. 2010). Consequently, this study takes a humanist approach, seeing the person as a unique individual rather than defining them by their substance use. The aim is that such an approach may help the identification of more person-centred strategies to support AAS-users more effectively. Taking a humanist approach to the data collection, which is congruent with the social work value of respect for the individual (Banks 2001) may help identify strategies for those working with AAS-users to support them more effectively.

## **1.6 Outline of the thesis**

This integrated thesis is divided into ten chapters, including one published paper, one accepted paper and one submitted paper. Chapter 2, an overview of AAS use. In Chapter 3 the literature review is a mixed-methods scoping review undertaken in a systematic manner. The results of the scoping review helped inform the study

design by providing data on the types of support and information AAS-users access and their views on what would constitute ideal support. As this review was published the chapter also includes an introduction that covers additional key points that were not included in the publication due to word limits. Chapter 4 outlines the methodology, the rationale for a mixed-methods approach, the overall study design, data collection methods and analysis. Chapter 5 presents the findings, which are split into three parts: a synthesis of the qualitative and quantitative findings relating to key themes identified; the qualitative findings from the interviews related to ideal support wanted and the in-depth findings from the mixed-methods study on AAS-users use in relation to the effects on libido and sex-drive. Chapter 6 presents a theme of the findings in the form of a published paper, and Chapter 7, a subset of a theme in the form of a submitted paper. Chapter 8 is split into four sections; the first two explore the themes identified under two areas: management of use and identity, more specifically section 2 discusses the notions of masculinity as part of identity and uses Erikson's development theory as a lens through which to consider AAS use. Section 3 identifies the strengths and limitations of this study and section 4 discusses reflections on the use of typologies and need for person-centred practice and the author's personal reflections on the study. Chapter 9 concludes the thesis and Chapter 10 summarises the key recommendations of this study.

## Chapter 2 Overview of AAS use

### 2.1 Chapter overview

This chapter sets the context for AAS use and gives an overview of the potential risks of AAS use. It then explores the motivations for AAS use, as identified in the literature from recent research and introduces current thinking on typologies of AAS-user. It considers the underlying factors for starting and continuing use. The chapter concludes with the aims and objectives of the study.

### 2.2 Risk of AAS use

Research over the last thirty years has demonstrated that the use of AAS can be detrimental to a person's physical and emotional wellbeing (Pope and Kanayama 2012). The short and long-term negative physical health effects include: hypogonadism, testicular atrophy (Coward et al. 2013, Kanayama et al. 2015), cardiovascular abnormalities, cardiovascular toxicity (Kasikcioglu et al. 2009, Lusetti et al. 2015, Baggish et al. 2017, Barbosa Neto et al. 2018) increased blood pressure, higher aortic stiffness, coronary disease (Hartgens et al. 2004, Rasmussen et al. 2018), cardiac arrest (Lichtenfeld et al. 2016), ruptured tendons, infertility, baldness, acne, sleep abnormalities, neurochemical abnormalities (Chyka 2003, de Souza and Hallak 2011, Jones et al. 2011), reproductive system effects (Christou et al. 2017), arterial hypertension (Solakovic et al. 2015) hepatic and renal injury, and hepatotoxicity (Kafrouni et al. 2007, Robles-Diaz et al. 2015, Bond et al. 2016, Hansma et al. 2016, Niedfeldt 2018). Pilot studies have shown that lifetime AAS use may impact on some cognitive processes and the structural features of the brain (Kaufman et al. 2015, Bjørnebekk et al. 2017, 2019, Seitz et al. 2017, Westlye et al. 2017, Hauger et al. 2019). If used in adolescence, AAS use can alter the normal pattern of brain development and neurotransmitter function and may lead to heightened vigilance in response to social encounters (Cunningham et al. 2013) and one study found that adolescents who had used AAS were more likely to have attempted suicide in the last 12 months (Ganson and Cadet 2018). AAS-users are at greater risk than non-users of psychological risks such as: rage, mania and delusions (Chyka 2003), aggressive behaviours, depression and anxiety (Piacentino et al. 2015). Other effects of AAS use include the potential to impact on pre-existing conditions such as increased

symptomology of Tourette's (Leckman and Scahill 1990) and tics (Rashid 2000). It appears linked to the development of dementia (Kaufman et al. 2019), a higher mortality rate and more hospital admissions than non-AAS-using counterparts (Horwitz et al. 2018) and injuries due to poor injection techniques (Hope et al. 2015). One study found over 99% of AAS-users surveyed injected AAS and 13% admitted to unsafe injecting practices (Parkinson and Evans 2006). Other risks can include contracting and spreading BBVs through sharing vials or engaging in risky sexual behaviours (Larance et al. 2008, Ip et al. 2016). Further risks include physical and psychological harm from combining AAS use with other licit and illicit substances (Parkinson and Evans 2006, Hope et al. 2015, Sagoe et al. 2015).

With most people who use IPEDs, some form of polypharmacy is unavoidable as AAS-users take a variety of substances to work with the AAS to enhance performance or to mitigate the side-effects (Sagoe et al. 2015, Grönbladh et al. 2016), and they frequently vary the type/brand of AAS (Bloor et al. 1998) to help ensure their body does not build up a resistance. Studies into the effects of using supra-physiological doses of AAS are challenging as it is unethical to give people such high doses as part of any trial, and testing people who use AAS is complex as they often use in combination with a range of other substance (Cheung and Grossmann 2016), including Human Growth Hormone (HGH) (Bloor et al. 1998, Parkinson and Evans 2006, van Hout and Kean 2015, Bates and McVeigh 2016, Brennan et al. 2017). Another potential risk to health comes when AAS-users end a cycle and are no longer using AAS, as many choose to enter a phase of post-cycle therapy (PCT), using a variety of substances to help with the effects of stopping use (El Osta et al. 2016, Griffiths, Henshaw, et al. 2016), which can include loss of libido and depression (Kanayama and Pope 2018). Worryingly, there is growing evidence that some AAS-users are not 'cycling' and are continuing AAS use without a break (Hanley Santos and Coomber 2017), which does not allow the body to recover and could impact on the side effects that would otherwise occur only temporarily when AAS are used.

In assessing risk around substance use, people who are diagnosed with substance dependence could potentially be considered at greatest risk of harm. The ICD-10 (World Health Organisation 2010) lists AAS as non-dependence producing substances whereas the Diagnostic and Statistical Manual of Mental Disorders

(DSM)-5 (American Psychiatric Association 2013 (APA)) categorises AAS under other substances but does not explicitly state non-dependent and instead has criteria for substance use disorders (e.g. mild anabolic steroid use disorder) (Harvey and Parrish 2019). Kanayama et al.'s (2009) analysis concluded on the basis of seven studies that 30% of AAS-users develop dependence based on DSM IV criteria and therefore it is a valid diagnostic entity. Kanayama and colleagues (2009, 2009) put forward a suggested mechanism for dependence with three pathways to dependence: body image (fear of losing muscle size), androgenic effects (loss of sexual function, fatigue, depression: negative reinforcements), and hedonic effects (classical addiction pathways may reinforce psychoactive effects such as increased aggressiveness or self-confidence).

Hildebrandt et al. (2011) highlight the challenges with diagnosis for the focus has been on dependency on AAS yet the use of polypharmacy evidences a need to seek to further understand the impact that stacking and cycling (i.e. what combination of substances are used over what length of time), different types of drugs have and whether it is possible to pinpoint a dependency on AAS or whether the dependency is on IPED use, or even something more psychological such as developing a mesomorphic body shape. One recent study found substantial evidence for AAS dependence and a 30% likely prevalence amongst AAS-users (Grönbladh et al. 2016). A recent study found there were structural brain differences with dependent AAS-users having "a significantly thinner cortex in frontal, temporal, parietal, occipital and prefrontal regions" when compared with non-dependent users (Hauger et al. 2019, p.7) and suggested more research is needed, as the impact of combined use of AAS with other illicit substances could not be ruled out. Moreover, one study found that greater social physique anxiety was associated with more severe symptoms of AAS dependence (Griffiths et al. 2018).

In addition to other supplements, AAS-users have been found to use a mix of substances such as cocaine and cannabis, and alcohol (Begley et al. 2017, Salinas et al. 2019). A number of risks come from AAS-associated polypharmacy including the associations with violent and criminal behaviour, and types of pathology, using substances in combinations may cause unknown/unintended/adverse psychological or physiological effects (Sagoe et al. 2015). In the USA, a survey



found that 50% of AAS-users bought their supplies from underground bootleg laboratories (Parkinson and Evans 2006). The UK legislation potentially puts people at risk as it may lead them to enter an unregulated black market, which includes the use of underground laboratories (Advisory Council on the Misuse of Drugs 2010, Kimergård and McVeigh 2014b), and there is evidence that the products can be of variable strength (Nutt 2012), adulterated (van Hout and Kean 2015), mislabelled (Abbate et al. 2015) or counterfeit (Coomber et al. 2014, Cho et al. 2015). AAS use often results in joining a community, often secretive (i.e. kept secret from family and friends) (Hildebrandt et al. 2006, Walker and Joubert 2011) and information is often accessed from fellow users or via websites (Larance et al. 2008), which evidence suggests is not always trustworthy or accurate (Brennan, Kanayama, et al. 2013).

### 2.2.1 Benefits of use

The main benefit from AAS use is increased strength and endurance (Larance et al. 2005). There are also psychological benefits including increased confidence and elevated mood (Vassallo and Olrich 2010, Mey et al. 2018). For many AAS-users the benefits outweighed the risk of side-effects (Alsaeed and Alabkal 2015, Kimergård 2015). Risks might be normalised within IPED communities and AAS-users may “disassociate from the potential harms” (Brennan et al. 2017). The internet is full of articles on busting the myths of steroid use by addressing each ‘lie’ from their perspective, for example, Ten Big Fat Lies about Steroids (Harris 2017) or to comments on articles such as ‘from Mr Average to Superman’ (Davidson 2008), which showcased both the benefits and ‘hellish’ side effects of use. This comment from a forum about Davidson’s article typifies how such stories are perceived by the community:

*‘he’s attention seeking. There’s no way he got ALL those side effects i.e. the neanderthal type ridge-skull! Gets his book promoted ;) Still, good results and well written. Lol (sic)’ (MuscleTalk 2008)*

Andreasson and Johansson (2016) suggested that online fora support the transformational process of learning in which the acceptance of certain types of behaviours that are out with social norms such as high risk taking behaviours and use of illicit substances is developed. This could be true of AAS-user fora (often subgroups of internet bodybuilding communities), as although risks of using IPEDs

are discussed, posts are dominated by the benefits of use (Andreasson and Johansson 2016). AAS-users exist in a culture and narrative which takes use for granted and in which AAS use represents a relatively innocuous practice for people who wished to develop muscles (Monaghan 2002).

### 2.2.2 Risks of harm to others

When considering risks of substance use, the risk of harm to others must be considered (Heanue and Lawton 2012). From a UK public health perspective, the focus on harm is through transmission of BBVs such as Hep C (Seear et al. 2015, Rowe et al. 2017) which is contrary to the evidence that suggests that this is not a high risk population when it comes to sharing of needles or vials when compared to people who inject illicit substances such as heroin (Ip et al. 2016). Moreover, the prevalence of BBV among people using AAS is not as high as among other injectors, although it is higher than the general population (Iversen et al. 2013). A study of 395 injecting IPED users found HIV prevalence was similar to that among injectors of psychoactive drugs (Hope et al. 2013) and another study found AAS-users more likely to engage in high-risk sexual behaviours and have more multiple partners than the general population (Ip et al. 2016). There are potential risks of increased aggressive behaviours particularly when associated with alcohol use (van Amsterdam et al. 2010), potential risks to children from storing substances and needles in the home (Nutt 2012), and of potential physical or psychological harm from children experiencing violent behaviour (Collis 2013).

Within the literature there is some qualitative evidence and case studies where people using AAS self-reported an increase in aggression or willingness to fight as a result of using AAS (Bahrke 2005, Skårberg et al. 2008, Bates and McVeigh 2016, Amaral and Cruz 2017, Bahri et al. 2017, Hanley Santos and Coomber 2017). Two reviews of AAS use and aggressive behaviour in humans could not find a clear conclusion that AAS causes aggression (Bahrke 2005, Tomlinson et al. 2016), but there is evidence to show that effect within other species such as rats and hamsters (Onakomaiya and Henderson 2016, Tomlinson et al. 2016). In their review, Trenton and Currier (2005) concluded that aggression was linked to AAS use but only in a small subset of users. Studies have found that AAS use could cause an increase in manic symptoms but these were confounded by personality disorder traits for antisocial, borderline and histrionic personality disorders (Pope

Jr. et al. 2000, Perry et al. 2003). A case study also linked AAS to manic symptoms, but in this case there was a pre-existing health condition (Kouvelas et al. 2007) and in a study of twins high levels of aggressiveness, hostility, anxiety and paranoid ideation in the twin who used AAS (Pagonis et al. 2006). Midgely et al. (2001) found self-reported levels of aggression amongst AAS-users, but this was more linked to irritability and feelings rather than acts of physical violence and the link to increased hostility and verbal aggression was also found by Hildebrandt et al. (2014).

In a study of 23 AAS-users and twelve non-AAS-users, AAS-users not only reported more aggressive behaviour towards others whilst on cycle but also reported specific incidents related to aggression towards their partners (Choi and Pope Jr. 1994). This gives some support to the concept of 'roid rage' (the colloquial term for aggressive behaviour caused by using high doses of AAS (Thiblin et al. 1997)) and that partners could be at risk, but the evidence is anecdotal and self-reported. One study found that adolescents who had used AAS were at greater odds of having engaged in teen dating violence (Ganson and Cadet 2018), but the lines between cause and effect with AAS use and violence are blurred (Dunn 2015, Lundholm et al. 2015). Moreover, Cheung and Grossmann (2016) suggest that the variety of information in the literature concerning the effects on AAS and mood, behaviour and cognition could be down to the dose used, the drug metabolism and pharmacokinetics. Pope Jr. and Katz (1990) offer three case studies that highlight homicide and near-homicide by men that link to their AAS use. A more recent case study considered a man who killed and dismembered his wife; he also had a complex mental health history, and it had been a controlling relationship. His alcohol-related problems were reported to have become more aggressive after starting to use AAS, and within ten weeks of starting use he killed his wife. Such rage was previously out of character (Seppänen and Eronen 2016). There have been studies that link AAS use to violent crime (Klötz et al. 2007) and reports that people use AAS in preparation for racially motivated atrocities, with such examples as: Anders Breivik and Omar Mateen (Melle 2013, Wilber 2016). There is also one case of child-sexual-abuse-related to AAS reported in the literature (Driessen et al. 1996), where a man using AAS forced a child to masturbate him and links this to the possible increase in sex drive pertaining as a result of AAS use.

Although these examples highlight possible risks the case studies are limited by their very nature.

The risks relating to harm to others from violent behaviour are still up for debate, and AAS use does not increase aggressiveness in all users. However, there is mounting evidence that a subset of users, namely people who already have violent predispositions, those with pre-existing mental health conditions and those who use other substances such as opiates or alcohol, may be more susceptible to AAS use negatively impacting on their mood.

### **2.3 Motivations to use AAS**

Understanding the motivations for using substances is essential to effective social work, with people misusing substances (Galvani 2015) and there is a need to understand the beliefs around efficacy of use and understand the allure of using AAS to build muscle (Murray et al. 2016). An interest in motivation for use may help identify ways to prevent people from starting use, ways to inform and educate people about the long-term harms and help identify those who might be susceptible and how to influence them.

The most prominent motivations are to enhance physical appearance and/or improve physical performance (Cohen et al. 2007, Begley et al. 2017, Hanley Santos and Coomber 2017). Sagoe et al.'s (2014) systematic review of qualitative literature in the English language encompassing 44 studies, from eleven western countries, found noteworthy psychosocial elements for the initial use of AAS (Sagoe, Andreassen, et al. 2014). The motivations for AAS use identified were: occupational, improved appearance, aggression, enhanced muscle or strength, personal security, psychological well-being (including boosting self-esteem or confidence) or satisfaction, sexual attraction, physiological recovery or injury prevention, overcoming depression, curiosity, trainers' approval, family influence, media influence, peer influence, use of AAS as a sport or social norm and for sporting or competitive activities (Sagoe, Andreassen, et al. 2014). However, the review does not explain what is meant by aggression being a motivator. Other studies have found additional motivations including preparation for crime, concealing concomitant substance use, becoming brave (Pettersson et al. 2010), bring in income (Boardley et al. 2014), achieve goals, build confidence (Nøkleby

and Skårderud 2013), increase sex drive, lose fat (Bates and McVeigh 2016), and an ethnographic online study of IPED users found that another motivation for use was that users could maintain a social life whilst still increasing their muscle (Underwood 2017). Petrocelli et al. (2008) interviewed thirty-seven recreational AAS-users and concluded that frustration was a motivator, as people turned to AAS when they did not achieve the desired results from exercise. Another study suggested that motivations for non-athletes to start using AAS included having reached a plateau in muscle development, frustration as others were over-taking them in size and curiosity about the efficacy of AAS (Smith et al. 2009). This raises concerns for peoples' perceptions of AAS use as a short cut to achieve a desired physique, which fits into society's current culture with the use of human enhancement drugs being "indicative of the public's appetite for a short cut" (Brennan, Van Hout, et al. 2013).

Nøkleby and Skårderud (2013) found that some people turned from the illicit drugs to steroids as part of a healthier lifestyle and a healthy body was equated with a muscular body (not healthy heart), and were looking to gain the masculine body ideal. AAS use is often seen as a tool to improve oneself, for example some people recovering from heroin dependency will take AAS as a quick fix in order to look healthy quickly (Cornford et al. 2014). Consequently, heroin use could be seen as a gateway drug for AAS use, especially as heroin users have few qualms around injecting substances.

It is worth considering that motivations may differ depending on the type of use and there is a need to assess and distinguish between performance and image based motivations (Murray et al. 2016). Those wishing to compete in sport at the highest level may be using AAS to further these goals and therefore may be more likely to be influenced by other professionals who compete. However, those using recreationally, who start using for appearance may have been more influenced by social media and cultural influences. Smith et al. (2009) suggest that professionals need to understand what motivations drive people to use AAS as a matter of urgency, as these motivations may be complex and individual; focussing on messages related to the morality of use or the health problems may not be successful when compared with the positive reinforcement users get from the

AAS-users' subcultures. Moreover, the positive reinforcement is further enhanced as often the positive results of AAS match the users' pre-use expectations.

Concerns have been raised by the UK Medicines watchdog that programmes such as 'Love Island' are influencing men to use AAS to increase their muscle size (O'Neill 2018). The social media platforms such as Instagram, where people post selfies, to get likes, as a form of social capital could become a new motivation to start using AAS (Richardson et al. 2019). If motivation for use and the user experiences is changing then this may impact on the types of information people need and want. In a study looking at media influences on the drive for muscularity in young people (undergraduates), watching television was related to an increase in the drive for muscularity in men as was reading men's health magazines (Cramblitt and Pritchard 2013).

### **2.3.1 Risk factors for starting use**

One of the considerations regarding any type of substance use that could cause harm is to consider risk factors and protective factors that may make some people more vulnerable to starting use than others (Stone et al. 2012). Early identification or prevention, so substance use does not become problematic (Galvani et al. 2014) and talking about the use would maximise the chance of identifying hidden problems. Body image concerns have already been discussed as a potential risk factor. The literature highlights a range of risk factors that could lead to a vulnerability to starting AAS use, including childhood and adolescent conduct disorder, criminal activity (including rape), bullying, truancy, cheating at exams, contact with support services, poor school adjustment (Kanayama, Brower, et al. 2009, Pope Jr. et al. 2012, Hallgren et al. 2015). Other potential factors that could be considered are that AAS use might be associated with a personality that exhibits risk-taking behaviour (van Amsterdam et al. 2010, Alsaeed and Alabkal 2015). Mental health problems are another factor for predicting AAS use, including psychological disorders such as depression (Sagoe, Andreassen, et al. 2014), as is scoring high on aggression for adolescents (Jenssen and Johannessen 2015, Sagoe et al. 2016). A range of childhood problems have been overly represented among AAS-users including: poor relationship with parents, history of mental or physical abuse, problems at school (Skårberg and Engstrom 2007). There have been associations found between body dysmorphic disorder, bulimia

and child maltreatment including child sexual abuse (Murray and Waller 2002, van Gerko et al. 2005, Didie et al. 2006). While a link between AAS use and low levels of education compared to non-users has been found (Hakansson et al. 2012, de Siqueira Nogueira et al. 2014, Melki et al. 2015), this may not be conclusive. Alsaeed and Alabkal (2015) found no significant difference in education levels between users and non-us. Bates et al. (2019) note that the relationship is complex especially since AAS-users are more likely to be in paid employment than other illicit substance users, and that education levels within AAS-using populations have been comparable or above average (Cohen et al. 2007, Bates, Tod, et al. 2019). Consequently, as there is a generally positive relationship between education, health literacy and health outcomes (Van Der Heide et al. 2013, Yamashita and Brown 2017), this researcher suggests that in the absence of direct studies on the health literacy of AAS users, AAS users are likely to (above) average levels of health literacy.

Other predictive factors for AAS use include participation in sports (Sagoe, Andreassen, et al. 2014). AAS is normally used in conjunction with an exercise regime (Skårberg et al. 2008, Hakansson et al. 2012). Users tend to exercise more than non-users (Onakomaiya and Henderson 2016) and students who exercised daily increased the odds of lifetime AAS use (Kokkevi et al. 2008). However, this is challenged by two studies, one that found AAS-users were only slightly more active gym goers than non-AAS-users (Melki et al. 2015) and another that found only a small fraction of dual users (i.e. AAS and another substance) were gym customers (Gårevik and Rane 2010). However, a recent study found that people using protein supplements were positively correlated with intention to use AAS (Parent 2016). Having low self-esteem could be considered another potential predictor as Kindlundh et al. (2001) conclude that high self-esteem is a protective factor in terms of young people being less likely to initiate AAS use. There is the possibility that having been bullied could be a risk factor as childhood bullying victimisation and MD are associated with low self-esteem (Wolke and Sapouna 2008) and one study found that AAS-users perceived that there was less likelihood of being bullied if they were more muscular (Smith et al. 2009). There was minimal information in the literature on protective factors other than high self-esteem.

Another potentially vulnerable group are gay men. A large percentage of gay men are using AAS (Seear et al. 2015) and sexual minority adolescent boys were at an increased odds to report a lifetime prevalence of AAS compared with heterosexual boys (Blashill and Safren 2014, Blashill et al. 2017). Also their motivation is more likely to be one of appearance and they are also more likely to use alongside other illicit drugs (Dillon et al. 1999). A study of 772 gay men found that 15% had used AAS and found some HIV positive men were using AAS therapeutically. A drive for muscularity in a study of 326 gay men was related positively with intention to use AAS (Brewster et al. 2017). The risks of use might be increased for gay men as they are more likely to share multiple partners than heterosexual men (Brooks et al. 2008, Rhodes et al. 2009), putting them at a higher risk of BBV and STDs. One study found that gay men were also less likely to access injecting equipment from NSPs (Larance et al. 2008), another identified sexual minorities in the UK experience health inequalities (Booker et al. 2017, Bourne et al. 2017) and a third noted they experience discrimination from health professionals (Guasp 2013).

## **2.4 Typologies of AAS-user**

Christiansen et al. (2016) developed a typology for the different types of AAS use that have come to the fore in recent years aligned to motivation, this typology consists of four types: (1) You Only Live Once (YOLO); (2) Expert; (3) Athlete and (4) Wellbeing types. These have been used to consider if certain types are more at risk due to the way they use AAS. They identify the YOLOs as a high-risk subset of users as they are most likely to initiate AAS use early. Cluster analysis of 614 users identified four clusters of users (Zahnow et al. 2018) (Appendix 1). Cluster one, had on average younger users (26.9 years), who predominantly tended to take AAS orally and report higher levels of alcohol use than other clusters. This group sourced AAS predominantly through friends and align to the YOLO typography (Zahnow et al. 2018). Cluster two characteristics included: an average age of 36, they are unlikely to use other IPEDs in conjunction with AAS, they inject, and source AAS through friends (Wellbeing Type). Cluster three (average age 32.2), used peptides and other IPEDs in conjunction with AAS, used oral and injectable AAS, used more psychoactive drugs and experienced more side effects than other clusters. They also acquired IPEDs from multiple sources (Athlete). Cluster four



(average age 30.6) do not binge drink, had less alcohol use overall and less psychoactive drugs. They acquire their AAS through multiple sources (Expert).

## **2.5 Aims and objectives**

With noted academics in the field calling for more innovative approaches to harm reduction (Glass et al. 2019) and the need to be aware of the negative impact that the narrative of harm within the public domain can cause in relation to engaging this population (Mulrooney et al. 2019), it seems timely to gain a perspective from the AAS-user. Moreover, as not only could the range of motivations for use but also AAS-users' understandings of the risks and harms of using AAS impact on the types of information and support users' access and desire, this study will seek to explore motivations for use. Understanding user experience is vital and their voices should be heard in research (Richardson et al. 2019), therefore this study will also investigate AAS-users experiences of their use, of information and support services and gain an understanding of what support they feel they need with a view to answering the question:

- How can professionals effectively support people who use AAS?

Table 2.1 outlines the aims and objectives and related research methods needed to answer this question.

Table 2-1 Thesis Aims and objectives (version 1)

Aims	Objectives	Methodology
<p>1. To gain insight into male users' perspectives of their experiences of their using AAS for predominantly recreational purposes</p>	<p>1a. To explore whether there are any generic factors/risk factors contribute to the onset of recreational AAS use.</p>	<p>Qualitative study</p>
	<p>1b. To explore with AAS-users whether they have experienced their use contributing to specific mood changes or behavioural problems.</p>	<p>Literature review &amp; Quantitative &amp; qualitative studies</p>
	<p>1c. To explore the experiences of those who use AAS from a user's perspective with particular emphasis on experiences of AAS use and managing the positive and negative effects of AAS use.</p>	<p>Qualitative Study</p>
<p>2. To illicit what AAS-users perceive as the barriers to and opportunities for accessing support services and identify effective pathways to share information on the risks associated with using AAS, especially amongst young people and recreational users.</p>	<p>To gain users' perspectives into the sharing of information on AAS and the perceived barriers and opportunities for accessing support.</p>	<p>Literature review and Qualitative study</p>
<p>3. To consider the practice implications for social work and related inter-professional teams working with services that offer support to people using AAS or to those working with people who may start or are already using AAS</p>	<p>3a. To provide recommendations on effective methods for communication to help people make educated decisions about their substance-use and choices which ultimately could reduce the number of people who are using AAS.</p>	<p>Literature review, Quantitative &amp; qualitative studies</p>
	<p>3b. To provide information for Social Workers and other professionals working with AAS-users.</p>	

## 2.6 Summary

There are a wide range of factors which have been identified for initiating and maintaining AAS use. There are also a complex range of motivations for choosing to start using AAS. AAS use comes with a wide range of associated risks, based on the user's perception that benefits outweigh risks, and potential pathways to dependence have been identified. Considering the risks, it is necessary to consider what information and support is available and also what support users want.

## **Chapter 3 Literature review**

### **3.1 Chapter overview**

This chapter provides an overview of the current literature on AAS use in relation to the information and support that AAS-users access and want. The main section of this chapter is in the form of a Scoping Review published as part of this study (Harvey et al. 2019), which includes the PRISMA diagram, inclusion and exclusion criteria and databases searched ([Section 2](#)). However, due to word limitations of the published paper there are several relevant elements relating to the review process that are addressed in this preamble. The chapter ends with a redefining of the aims and objectives of this thesis based on the findings of the literature ([Section 3](#)).

### **Chapter 3 Section 1**

#### **3.2 Introduction**

The word restrictions for the published paper did not allow for detailed information on either the research strategy or data extraction. These are included later in this section. This chapter begins by addressing a key challenge faced by the researcher when searching the literature, that of inconsistencies in the terminology.

#### **3.3 The search strategy**

##### **3.3.1 Inconsistencies in terminology**

Inconsistency of terminology was a challenge when trying to identify literature relevant to this study. This first came to light through a review of the search strategies of a number of recent literature reviews. Several recent reviews covering different aspects of AAS use (2011 to 2018) did not give details of the search terms used. Those that did focussed on a small number of key words e.g. *'anabolic steroid'*, *'performance enhancing drug'*/*"anabol\*"*, *"steroid\*,"* and *"doping"* (Sagoe, Andreassen, et al. 2014, Sagoe, Molde, et al. 2014), whereas other reviews used a narrower lens e.g. Anabolic Androgenic Steroid (Frati et al. 2015) or *'anabolic OR androgenic OR AAS'* (Christou et al. 2017). Other authors

included brand names (Brennan et al. 2017) and others a completely different set of terms e.g. ‘prohormones’, ‘designer steroids’, ‘testosterone boosters’, and ‘legal steroids’ (Rahnema et al. 2015). The terminology also differed by country, for example, Australia uses PIEDS, the UK, IPEDs. Table 3-1 highlights some of the numerous different terms (and acronyms) that could include non-prescribed use of AAS in the literature.

Table 3-1 Terminology to describe steroid use

<b>Terminology</b>	<b>Associated acronyms</b>
Appearance or image enhancing drugs or substances	APEDs
Performance or muscle enhancing drugs or substances	PEDs, PESs
Performance and image/appearance enhancing drugs\agents	IPEDs, PIEDs, PEAs
Anabolic steroids, Androgenic Anabolic Steroids, Androgenic-Anabolic Steroids	AS, AAS
Ergogenic aids/substances/drugs,	UES, EDs
Synthetic testosterone, testosterone boosters, synthetic steroids	
Muscle developing drugs or substances	
Designer drugs, prohormones	
Doping (agents)	
Black market steroid	
Non-prescription steroid use, non-medical steroid use	
Brand names e.g. Trenbolone	

Terms such as IPED (Brennan et al. 2017), PES (Karazsia et al. 2013), PIEDs (Griffiths et al. 2017) and APEDs (Nieuwoudt et al. 2015) are a ‘catch all’ to encompass all types of drugs that act on performance enhancement and can include HGH, nutritional supplements and AAS. The word ‘doping’ proves challenging as this word is normally associated with drug use in competitive sports; however, it appears to be used for studies that include recreational AAS use e.g. Sagoe and colleagues (2014, 2015) reviews. Additionally, the terms ‘drugs’ and ‘substances’ are often used interchangeably, and the terms ‘supplements’ or ‘agents’ are also widely used in the literature. The wide variation of terms used to describe this type of substance use means that searching the literature for the specifics of AAS use is fraught and could lead to confusion regarding motivations, effects and even risks of use. This could in part be due to the nature of the research as the people who use these substances do take a

range and combination of substances, which may make it a challenge for researchers to get a clear picture of used substances.

### 3.3.2 Development of the search strategy

The search strategy is briefly outlined in the following paper but again word limitations meant that some process details were not reported, so are addressed here for completeness. The search strategy followed an adapted PICO (Fineout-Overholt and Johnston 2005), as comparison was not relevant to the questions (Appendix 2). The wide variation of terms to describe AAS could have led to key studies being omitted, as the term 'IPED' is often used when covering a wider variety of substances than just steroids such as HGH and creatine. Therefore, in order to develop an effective search strategy, key words and number of word groupings were tested (Appendix 3) with expert support from Bournemouth University library staff to select articles on AAS. These terms were drawn together from the terms used in the recent reviews and publications in the UK public health arena. This was followed by an analysis of key words contained in the title, abstract and the index terms used to describe the article in order to broaden search terms. Searches of terms such as 'anabolic androgenic steroids', 'image and performance enhancing drugs' and associated acronyms (not including the brand names of specific AAS) were combined with the terms 'support' and 'information', and associated synonyms (Appendix 2). To try to minimise the risks of missing out key literature, several variations of search terms were trialled using a Boolean search strategy and checked through inverse searching to try to throw the net as wide as possible. Initially, the word 'doping' had been excluded as it is normally associated with drug use in competitive sports however, it was reincorporated on the basis of Sagoe and colleagues (2014, 2014) reviews (section 1.31). Due to the number of articles selected, articles were excluded in the search strategy using *NOT "animal\* OR mice OR rats OR "guinea pig\*" OR spectrometry OR bovine"* to exclude non-relevant topic areas. The initial literature search was carried out in July 2017 to inform the development of the questionnaire and updated in June 2018.

### **3.4 Data extraction**

The data extraction process is reported in the following paper, however, it should be noted that customised data extraction forms were designed (Appendix 4) to extract key data on information on support and advice, population, substance use, study aims, recruitment methods, methodology and demographics. To help ensure the quality and consistency of the data extraction process, the data extraction sheet was piloted and the supervisory team reviewed a proportion of articles (Chapter 3, 2).

Data extraction also posed several challenges. It was difficult to ascertain which studies included AAS-users who were using for purely recreational purposes, as bodybuilding can be done competitively but is also a term used for working out to increase muscle size. Terms such as bodybuilding were often used indiscriminately to refer to either competitive or recreational motivations. The lack of granularity when related to types of AAS-user added to the lack of clarity as, although some studies included only competitors or athletes, others used the term athletes, yet also incorporated recreational use and others did not report type of use.

### **3.5 Quality assessment**

Due to the different types of source articles, three quality assessment tools were used. The critical appraisal skills tool checklist (Public Health Resource Unit 2006) was applied to the qualitative articles. For the quantitative studies, which were a mix of methodologies, a tool was adapted from Davids and Roman (2014): Quantitative Review Methodology (Appendix 5). To assess the quality of the report, the quantitative and qualitative elements were individually assessed using the chosen assessment tools, then the criteria from the mixed-methods section of the Mixed-Methods Appraisal Tool (Pluye et al. 2011) was used, to assign an overall quality score. Only studies scoring \*\* or above were included (Appendix 6). No studies were excluded based on quality.

### **3.6 Literature review**

The next section is the scoping literature view exploring information and support accessed and wanted, and is in the form of a published paper (Harvey et al. 2019).

**Chapter 3 Section 2 Research Article**

**Support for people who use Anabolic Androgenic Steroids: A Systematic Scoping Review into what they want and what they access**

RESEARCH ARTICLE

Open Access



# Support for people who use Anabolic Androgenic Steroids: A Systematic Scoping Review into what they want and what they access

Orlanda Harvey<sup>1\*</sup>, Steve Keen<sup>1</sup>, Margarete Parrish<sup>1</sup> and Edwin van Teijlingen<sup>2</sup>

## Abstract

**Background:** Since there is a paucity of research on support for people using Anabolic Androgenic Steroids (AAS), we aimed to identify and synthesise the available evidence in this field. Gaining an understanding of the support both accessed and wanted by recreational AAS users will be of use to professionals who provide services to intravenous substance users and also to those working in the fields of public health and social care, with the aim to increase engagement of those using AAS.

**Methods:** A systematic scoping review of the literature to explore and identify the nature and scope of information and support both accessed and wanted by non-prescribed AAS users. Any support services or information designed to help people who use AAS were considered.

**Results:** We identified 23 papers and one report for review, which indicated that AAS users access a range of sources of information on: how to inject, substance effectiveness, dosages and side effects, suggesting this is the type of information users want. AAS users sought support from a range of sources including medical professionals, needle and syringe programmes, friends, dealers, and via the internet, suggesting that different sources were used dependent on the information or support sought.

**Discussion:** AAS users tended to prefer peer advice and support over that of professionals, and access information online via specialist forums, reflecting the stigma that is experienced by AAS users. These tendencies can act as barriers to accessing services provided by professionals.

**Conclusions:** Support needs to be specific and targeted towards AAS users. Sensitivity to their perceptions of their drug-use and the associated stigma of being classified in the same sub-set as other illicit drug users is relevant to facilitating successful engagement.

**Keywords:** Androgenic anabolic steroids (AAS), Image and performance enhancing drugs (IPED), Support, Harm minimisation, Advice, Information, Needle and syringe Programmes (NSPs)

\* Correspondence: [harveyo@bournemouth.ac.uk](mailto:harveyo@bournemouth.ac.uk)

<sup>1</sup>Bournemouth University, Lansdowne Campus, Royal London House, 109 Christchurch Road, Bournemouth BH1 3LT, UK

Full list of author information is available at the end of the article





## Background

In the UK, just under 54,000 16–59 year-olds reported having used Anabolic Androgenic Steroids (AAS) in 2015/2016 [1]. Although representing only a small minority of all substance users, this is probably underreported due to the illegality of supply and the use of self-reported data. A simultaneous increase in the use of needle and syringe programmes (NSPs) by people using Image and Performance Enhancing Drugs (IPED) (including AAS) has also been noted [2]. NSPs provide harm minimisation services to people who inject substances, which includes handing out injecting paraphernalia, offering advice on safe injecting and harm minimisation and sometimes screening for Blood Borne Viruses (BBVs) [3]. Since the late 1980s NSP support has become an established service for AAS users [4], in one study of 500 users [5] 99.2% reported using injectable AAS or a combination of injectable and oral substances and a recent UK survey of 684 AAS users, 85% of users injected IPED, and steroids were the most commonly used IPED [6].

AAS use is linked with negative physical health effects, such as testicular atrophy, liver toxicity, dermal scarring, cognitive problems, gynaecomastia, muscle damage, myocardial injuries, infertility [7], and BBVs [8]. AAS users are at greater risk than non-users of psychological risks such as: mania, delusions, aggressive behaviours, depression, suicide and anxiety [9–14]. Pilot studies have shown that lifetime AAS use may impact on some cognitive processes and the structural features of the brain [15–17].

Further risks include harm from using AAS in combination with illicit substances [18], self-medication [19] and becoming AAS dependent [20]. Importantly, not all AAS users will experience these. Reasons for starting use vary, the most prominent being to gain muscle/strength [21, 22] and historically this has been associated with sport. However, recently a wider range of motivations has been identified including improved appearance, aggression, personal security, psychological well-being (including boosting self-esteem or confidence) or satisfaction, sexual attraction, overcoming depression, curiosity, influence of family, peers and media [23]. People who use substances are the experts in their own use [24], therefore, given the wide range of risks, a variety of motivations (many not mutually exclusive) and the potential for people to become dependent it is important to understand what support people who use AAS wish to receive. Getting their perspectives on ideal support may lead to more effective engagement with services. Additionally, people working with substance users need knowledge of the types of support available, to make changes relevant to their needs and to reduce the risk of harm to self and others [25].

Consequently, this systematic scoping review explores the nature and scope of the information and support accessed and wanted, by investigating two questions:

- What support and information do people using non-prescriptive AAS recreationally access?
- What support and information do these recreational AAS users say they want?

## Methods

Scoping reviews can be helpful in providing one source of information for professionals to develop Practice Guidance [26]. A scoping review follows a systematic process but allows for flexibility, incorporating changes as part of the iterative process [27], and allows for the inclusion of grey literature. To ensure the process was transparent, robust and replicable, the authors followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [28]. Our protocol is registered in PROSPERO [29].

### Search strategy

The wide variation of terms to describe AAS means that searching the literature is fraught with difficulty and could lead to key studies being left out, as the term ‘IPED’ is often used when covering a wider variety of substances than just steroids such as Human Growth Hormone [30]. Variations on the acronyms included: PIED, PES, PED, APED, NMASS (non-medical Anabolic Androgenic Steroid), and terms such as ‘doping’, ‘testosterone boosters’, ‘prohormones’, ‘ergogenic aids’ ‘designer steroids’ and brand names. The first author tested key words and word groupings, drawn from recent UK Public Health literature.

In June 2018 a search was carried out in EBSCO (Table 1), searching 141 databases. Papers were found in 52 databases (see Additional file 1). Some databases proved irrelevant, but it was useful to take a multi-disciplinary approach as it was difficult to predict where the most pertinent studies might come up. Separate searches on SCOPUS, Google Scholar and reference lists of included articles were also undertaken, as electronic databases may not throw up all available literature [31].

Inclusion and exclusion criteria (Table 2) were applied initially through a title, abstract and full paper screening. Publications were limited to those in English (due to lack of resources for translation), without geographical restrictions. Irrespective of the study design, articles that met inclusion criteria were reviewed, i.e. populations such as recreational users and non-competitive AAS-using bodybuilders were eligible; there were no age or gender restrictions. The first author screened and reviewed all articles. To validate the search strategy the second author reviewed 10% of articles screened out by title and 20% screened out by abstract. The second, third and fourth authors checked 10% each of articles in the full review.

Table 1 Systematic review search strategy - search terms

Search algorithms	
	anabolic androgenic OR designer N3 steroid* OR recreat* steroid* OR anabolic steroid* OR anabolic drug* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescrip*" steroid* OR non-prescrip* steroid* OR "non-medic*" steroid* OR "non prescri*" N2 steroid* OR non-prescri* N2 steroid* OR "non medic*" N2 steroid* OR non-medic* N2 steroid* OR performance N3 enhanc* drug* or image N3 enhanc* drug* or appearance N3 enhanc* drug* or muscle N3 enhanc* drug* OR muscle N3 develop* drug* or performance N3 develop* drug* OR doping N3 steroid*
NOT	animal* OR mice OR rats OR "guinea pig*" OR spectrometry OR bovine
AND	Support or advice or help or aid or barrier* or information or guidance or intervention* or "needle exchange*" or program*

**Literature search**

Our search found several papers relating to question 1, but few relating to question 2, therefore the search strategy was revised for question 2. Scoping reviews do not necessarily have to rate the quality of the papers [27], however the authors concluded that due to the complexity of identifying participants, such a quality review was of value. Therefore, for question 1, only peer-reviewed documents were included to ensure a level of quality, and this proved fruitful when considering support accessed. However, for question 2, only nine papers gave limited information on support wanted, therefore the authors searched the references of the included articles for grey literature (non-peer reviewed) that might include qualitative data on 'ideal support'. One report that specifically sought information relating to ideal support wanted was identified [33]. Acknowledging this report was not peer reviewed, the authors felt the information

contained was of value and relevant to the second question. Figure 1 outlines the search strategy.

**Data extraction and analysis**

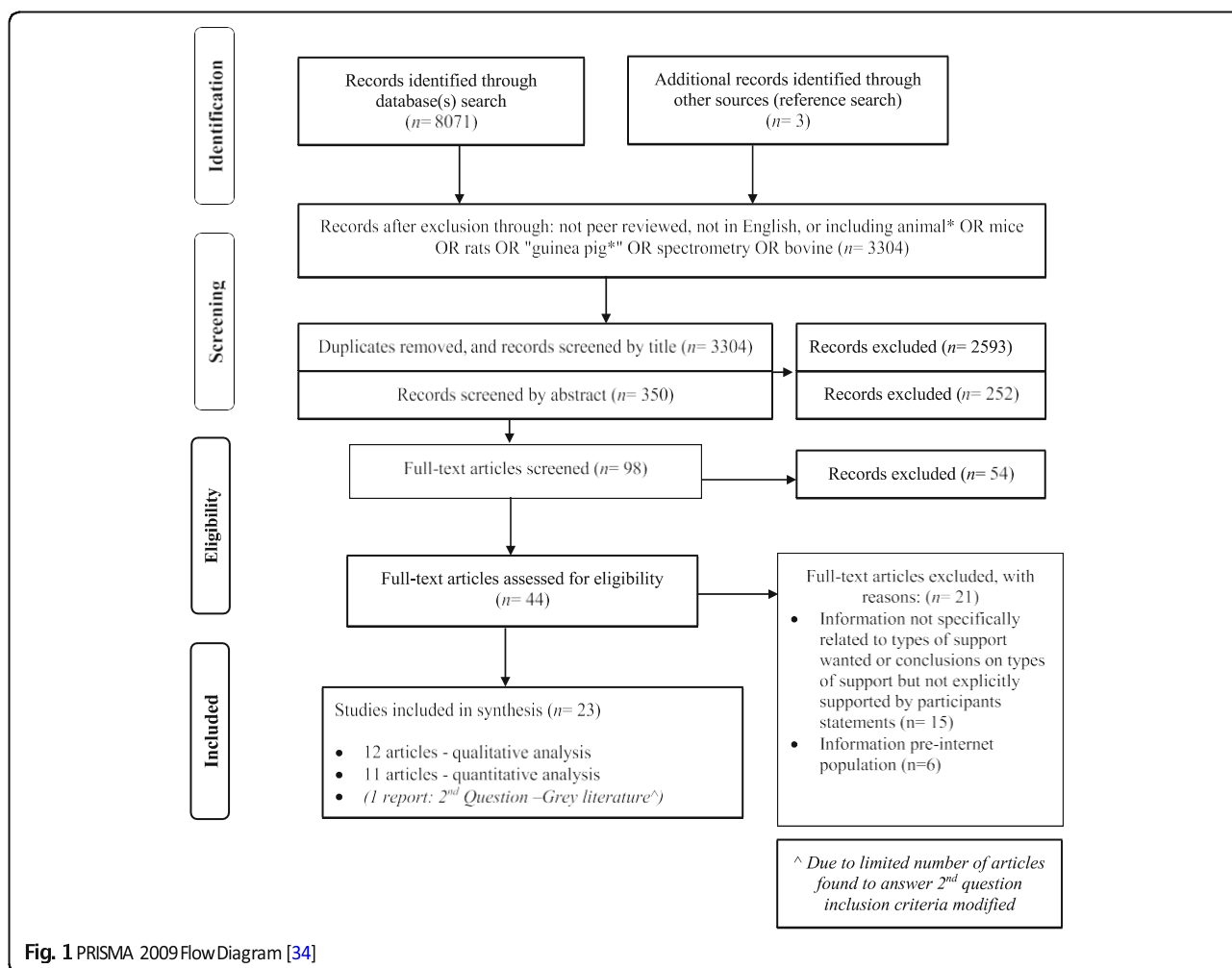
Information regarding support and advice, population, substance use, study aims, recruitment methods, methodology and demographics was extracted by the first author and 30% of data extraction forms were crossed checked by co-authors. Reviewer agreement on inclusion and exclusion criteria was 100%. Both qualitative and quantitative data were included. Due to the different types of articles, three quality assessment tools were used: The CASP Checklist [35] for qualitative articles (Table 3).

For the quantitative studies the Quantitative Review Methodology tool by Davids and Roman [46] was adapted. To assess the quality of the grey literature, the quantitative and qualitative elements were individually

Table 2 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Studies including populations such as recreational AAS users, non-competitive AAS-using bodybuilders and weightlifters and, AAS users accessing drug services.	Studies involving participants who compete professionally and any study that focuses on competitive sports/athletes or highschool athletes
Peer-Reviewed Papers <sup>^</sup>	Studies on wider drugs prevention interventions or strategies
Qualitative and Quantitative data	Studies that made passing references to participants seeking information but did not clarify the type of support or information including studies which showed an increase in people using NSPs but did not share exactly what they were using them for
Studies where participants were asked about where they access support, advice and information to help them manage their substance use and that identified the types of support and information they were seeking.	Specific medical interventions i.e. efficacy of treatments for side effects
Studies that included data collected on any support (information, advice, service or intervention) designed to support people who use IPED	Studies that focussed on prevention of AAS use and efficacy of such interventions
	Studies that referenced participants attitudes to who they trusted around information but did not specifically state the types of information or support
	Studies that were solely based on recommendations of professionals as to what support and information was needed but where the voice of the AAS user was absent
	Articles not in English
	Studies before the predominance of the internet as a source of information
	i.e. pre 2001. In 2001 the number of internet users went over 500 million worldwide [32]

<sup>^</sup> due to the limited number of articles found to answer the second question, inclusion criteria were modified to include relevant grey literature from references



assessed using the aforementioned assessment tools, then the Mixed Methods Appraisal Tool [47] was used, to assign an overall quality score. Studies scoring \*\* or above (\*\*\*) 67–100% & \*\*34–66% score) were included (Table 4) and no studies were excluded on the basis of quality.

There have been several challenges when identifying and reviewing the literature. The number of different terms that cover AAS is inconsistent (Table 1). Identifying purely recreational users was difficult due to a lack of granularity when studies consider AAS/IPED use e.g. terms such as bodybuilder, weightlifter and athlete were utilised both for competitive and recreational use. Not all studies identified whether participants used solely AAS or in combination with other IPED. Due to the heterogeneous nature of the data this review takes a narrative approach. Moreover, unless clearly stated as AAS use within the study, the generic term IPED will be used.

Analysis was mixed method as scoping reviews can incorporate numerical summaries alongside thematic analysis of qualitative data [56]. Initially tabulations were used for the quantitative data, which led to the identification of specific

categories such as BBV checks and acquisition of injecting equipment. Thematic analysis was conducted in an inductive way, each article was read to identify types of information and support and then categorised into type 1 (information or support accessed) or type 2 (information or support wanted). The research team met frequently to discuss the emerging themes, which led to the identification of three overarching themes: harm minimisation, research and information and support for health concerns. Then sub categories were identified based on the type of information or support. It was challenging to identify the type of information participants were searching for and in these instances the authors coded this data as 'seeking of general information on IPED use'.

## Results

For question 1, twenty-three papers: eleven quantitative articles (nine studies) and twelve qualitative articles (nine studies) were included as for several papers the same data set was used to explore different questions related to the use of AAS (Fig. 1). For question 2, nine studies were included and one report.

**Table 3** Summary of papers included: Qualitative studies

First author, year & reference	Country	Participants defined, (age range/mean), gender	No. of participants	Type of data #	Sources potential bias & limitations	Quality review~
Maycock (2005) [36]	Australia	Used or had used AAS and dealers, men	42 AAS users, 22 dealers	#Qualitative: Participant observation (147), interviews include longitudinal (10 over 3 years)	Purposive sampling	**
Grogan (2006) [37]	UK	Use(d) AAS, 5 men, 6 women	11	#Qualitative: interviews	Small sample	***
Skårberg (2008) [38]	Sweden	Addiction clinic patients who use(d) AAS, 4 men, 2 women	6	Qualitative interviews: case-study	Sought help for AAS use. Small sample	**
Kimergård (2014) [39]	England & Wales	AAS users and harm reduction service providers (mean = 34), men	24	Qualitative: semi-structured interviews	Bias towards those showing positive health behaviours	***
Kimergård (2014) [3]	England & Wales	Used or had used AAS, men	24	#Qualitative: semi-structured interviews	same study as above	***
Kimergård (2015) [22]	England & Wales	AAS users, men	24	#Qualitative: semi-structured interviews	same study as above	***
Van Hout (2015) [40]	UK	IPED users, men	20	#Qualitative: in-depth interviews	Privileged access recruitment^	***
Dunn (2016) [41]	Australia	Used or had used AAS, 19 men and 2 women	21	#Qualitative: semi-structured interviews	Voucher for taking part; one region (non-rural), length of interviews varied	***
Griffiths (2016) [42]	Australia	Used or had used AAS, 24 men 2 women	26	#Qualitative: semi-structured interviews	– same study as above	***
Hanley Santos (2017) [43]	UK	AAS users, 21 men 1 woman	22	Qualitative: semi-structured interviews	Bias towards those showing positive health behaviours - £10 given	***
Tighe (2017) [44]	Australia	Specialist forum users, (none), unknown	450 unique avatars	Qualitative: threads from 3 Online forums: 134 threads: 1716 posts	Australian sites yet people from other countries on forums	***
Greenway (2018) [45]	UK	AAS Users, male	8	Qualitative: interviews	Sample bias, one NSP	***

~ Quality Review: Qualitative studies: CASP Checklist for Qualitative Research [34] was used: \*\*\* 90% boxes checked as yes, evident, \*\* if equal to or greater than 70% checked. ^The authors acknowledged that one interviewer had privileged access, here that is likely to be an insider within this sub-community [49] #where practicable data analysed from studies which included dealers or professional services providers, only findings from AAS users have been included

Sample sizes for IPED-using participants ranged from six to 1955. All studies incorporated data on information or support accessed and the majority were self-reported. Ten studies featured only male AAS-using participants. In the seven studies where gender was recorded there were only twenty women, and one study of 253 men, and 59 women, did not report the gender split after participants who reported no adverse effects were excluded, leaving a mixed-gender sample of 195. One study included women but only as non AAS-users [49]. Two studies: one on an anti-doping hotline [50] and another on online forum posts [44] had incomplete demographic data and one did not record discreet visits of NSP services [51].

### Information and support sought

IPED users sought different types of information and support from a range of potentially overlapping sources: NSPs, pharmacies, doctors, sexual health clinics, other medical professionals, peers, coaches/trainers, friends,

dealers, family, the internet, specialist online fora, experienced users, steroid guides in gyms, underground books, online videos and addiction clinics (Table 5).

### Harm minimisation and advice

Ten studies evidenced IPED users obtaining injecting equipment from NSPs. However, five studies recruited from harm reduction services [19, 43, 51, 53, 54] and one had predominantly NSP clients [3, 22, 42]. This could explain the prevalence of NSPs as places to access injecting equipment. Hanley Santos and Coomber [43] noted that some reported no difficulties using NSPs, found services easy to access, anonymous, discreet and they valued the advice. However, they also reported users collecting supplies on behalf of friends who were afraid of being recognised. Elsewhere 44% of IPED users obtained needles on behalf of others and 27% acquired needles from friends [54]. In one study of 1716 internet forum posts, it was evident, although not explicitly stated, that NSPs and anti-aging clinics were

Table 4 Summary of papers included: Quantitative and mixed methods studies

First author, year & reference	Country	Participants defined, (age range/mean), gender	No. of participants	Type of data#	Sources, potential bias & limitations	Quality review~
Parkinson (2006) [5]	USA	AAS users, 494 men & 6 women	500	Quantitative: web-based questionnaire	Web-based, self-	*
Cohen (2007) [48]	US	AAS users (Non-medical), men	1955	Quantitative: web-based survey	* selected, self-report Online population	***
Larance (2008) [49]	Australia	IPED users, men	60	#Quantitative: cross-sectional structured interviews	Self-selecting sample, purposive recruitment strategies, self-reports	***
Al-Falasi (2009) [50]	UAE	AAS users (34 male) and non-AAS users (129 male & female), age range not specific	154	Quantitative: Self-administered questionnaire	Self-report, small	*
Bojsen-Møller (2010) [51]	Denmark	General public (incl AAS users), (not given for AAS queries subset), 284 men, 40 women	374	Quantitative: Anti-Doping Hotline En-quires: web and phone queries (sub-set AAS use)	* sample size, selective bias Self-selected,	*
Hope (2013) [52]	England & Wales (UK)	Injectors of IPED (NSPs), (n = 347 mean = 28 [not all gave age]), men	395	Quantitative: unlinked-anonymous cross-sectional biobehavioural survey (oral fluid sample)	* missing data for AAS users' subset NSPs as settings	***
Hope (2013) [19]	England & Wales (UK)	Injectors of IPED (NSPs), (n = 319, mean: 28 [not all gave age]), men	366	Quantitative: unlinked-anonymous cross-sectional biobehavioural survey (oral fluid sample)	same study as above	***
van Beek (2015) [53]	Australia	Injectors of IPED (NSPs), (mean = 32.6), men	103	Quantitative: Self-administered survey	Recruited from 2 public healthcare providers	***
Jacka (2017) [54]	Australia	Injectors of IPED, (median 27), men	100000 occasions	Queensland NSP Minimum dataset	NSPs as settings	***
Rowe (2017) [8]	Australia	Injectors of IPED, (mean = 28.8), men	605	Quantitative: Self-administered questionnaire	NSPs as settings	***
Zahnaw (2017) [55]	Global	AAS users, 253 men & 59 women (no exact No. after exclusion criteria applied)	195 AAS users with adverse effects	Quantitative: Sub-section of global drug survey – online	Self-nominating,	*
Dennington (2008) [34]	Australia	IPED users, 61 men, 1 woman, 7 trans, 24, key informants	69 (+ 24)	#Mixed Methods: semi-structured interviews collecting quantitative and qualitative data	* online only Report: not peer reviewed. Data sets not integrated	**

~ Quality Review: Davids and Roman's [47] Quantitative Review Methodology. Appraisal Score: \*\*\* 67–100% & \*\* 34–66% score. #where practicable data analysed from studies which included dealers or professional services providers, only findings from AAS users have been included

being used since experienced IPED users advised inexperienced users to access such services [44].

Table 5 shows that some IPED users did access HiV tests and/or vaccinations for BBVs; although take up was not high. Those who had discussed their AAS use with a doctor were more likely to have undertaken a test for Hep B or C, or HiV [8] and one study found that people screened for Hep B or C and HiV were more likely than those who did not to rate their overall experience with the doctor as good [56]. AAS users also sought advice on safer injecting.

### Research and information seeking

As Table 6 highlights IPED users' general information about IPED use was sought from a range of sources particularly internet sites and subject specific fora. Only four studies

evidenced AAS users seeking information from medical professionals [36, 49, 52, 57]. Rowe et al. [8] found that NSP staff were perceived as the most reliable source of information relating to IPED followed by nurses and doctors, however others found doctors' knowledge limited [36, 38, 58]. For more specific information around cycling and stacking (i.e. what combination of substances are used over what length of time), dealers, fellow users and online fora were utilised. Maycock and Howat [36] found that experienced users and dealers were seen as a credible source of information. This is not without risk as substances may affect individuals differently, dependent on physiological make-up and patterns of use. One study found that over 60% of AAS users reported getting incorrect information about

**Table 5** Data by type of information or support - Harm minimisation

Type of information/support	Support sought from (if given)	Article reference	
Acquisition of injecting equipment	Dealer(s)	[36, 40, 43]	
	NSPs	[19, 22, 39–41, 43, 51–54]	
	Chemist/Pharmacy	[40, 41, 43, 52, 54]	
	Doctor(s)	[39, 52, 54]	
	Friends(s)/Peer(s)/Social Network	[41, 43, 52, 54]	
	Steroid Clinic(s)	[22, 39]	
	Gym/Outreach services in Gyms	[39, 54]	
	Online/Websites	[40, 54]	
	Anti-Aging clinic(s)	[41]	
	Outreach service/Other	[22, 52]	
	Guidance on how to inject and safer injection practices	Dealer(s)/Supplier(s)	[8, 36, 40, 43]
		Friend(s)/Peer(s)/Experienced Gym mate(s)/ Other	[8, 38–40, 46, 53]
		AAS user(s)/Family	
Self-taught		[52]	
NSPs		[51]	
Online/Websites		[8, 43]	
Leaflets/Other sources		[8, 43]	
Personal trainer(s)		[8]	
Doctor(s)/Nurse(s)		[8, 52, 55]	
Hep B and Hep C		[8, 55]	
Hep B (20%), Hep C (18%)		[19]	
Hep C (64%)		[55]	
Hep B (23%), Hep C (22%)		[53]	
HiV testing~	HiV	[8, 55]	
	HiV (31%)	[53]	
	HiV (64%)	[54]	
	HiV (28%)	[19]	

Any data given about access of services that is not linked to AAS/IPED use has not been included in this table. ~Percentage of participants where given

adverse side-effects from credible sources [36] and some AAS users acknowledged that not all information from dealers was reliable [43]. Additionally, one study highlighted self-experimentation as a key method for working out the most efficacious doses [3].

### Support for health issues

Some studies referenced IPED users ensuring that they got their ‘bloods’ checked, and other tests done regularly by a medical professional (Table 7) however, not all had told their doctor about their IPED use [8, 19, 52, 58]. In some countries, IPED users were able to access prescription medicines [42, 59]. IPED users sought help from Accident and Emergency departments and NSPs and self-medicated for AAS-related health issues [19] but it is unclear which, if any information sources they accessed on how to self-treat. Help was sought from experienced users [38] often through online fora [41]. All six AAS users in Skårberg et al.’s study [38] were using an addiction clinic

to help manage their AAS use/dependency specifically to support psychological problems. Differences were found in the type of support or information sought dependent on the type of participant and type of support offered. Women were more likely to access health services than men, and older men were more likely to access these than younger men [55].

### Ideal support

Figure 2 lists the kind of support that IPED users wanted.

One study found that people who were thinking about using AAS sought out detailed information to make informed choices [36]. Requests were posted on internet fora for information on side-effects and the most effective ways to achieve results [44]. According to Dennington et al. [33] users wanted to know the optimum way to use IPED, where to acquire high quality substances, effective nutrition and exercise regimes, safer injecting techniques,



Table 6 Data by type of information or support - Research and information seeking

Type of information/support	Support sought from (if given)	Article reference
Seeking of general information on IPED use: including effectiveness, dosage, the effects, how to use, types of substances/brand	Friend(s)/Experienced user(s)/Training partners/Peers/Other user(s)/Family	[1, 2, 4, 8, 12, 13, 15, 16]
	Online forums*	[3, 8, 17]
	Underground books/Magazines	[1, 8, 13, 16, 18]
	Doctor(s)/Medical practitioner(s)/Nurse(s)	[1, 4, 12, 15]
	Gym contact(s)/Gym trainer(s)/Personal trainers	[1, 4, 12, 15, 19]
	Dealer(s)/Supplier(s)	[1-3, 11, 12, 15]
	Questions to anti-doping hotline/Online service on AAS	[20]
	Internet/Specialist websites*	[2-4, 12, 13, 15, 16, 18]
	Medical journals	[1]
	NSP(s)	[2, 4, 12, 15]
Research into cycling, stacking and types of substances	Steroid guides in gyms/Other sources	[12, 15, 18]
	Peers/Fellow users	[2, 13]
	Websites	[16]
	Dealers	[2]
	Online forums	[17]
Research into side effects and risk management	Self-experimentation	[16]
	People with 'hands-on' experience of use/ Steroid guides in gyms/ Underground books/Dedicated websites	[18]
	Questions to anti-doping hotline/Online service on adverse side-effects/ Health risks	[20]
Doping tests	Questions to anti-doping hotline/Online service on obtaining positive doping test and penalties	[20]

Any data given about access of services that is not linked to AAS/IPED use has not been included in this table. \*It could be that when AAS users refer to websites they might also mean specialist forums

safe ways to combine substances for effectiveness and when to consult a doctor. Grogan et al. [37] reported that women found much of the online information and 'steroid bibles' male-centric and wanted more information on side-effects for females.

In one study 66% of participants were willing to seek medical supervision for their AAS use [58], and 91.6% of users wished to use AAS legally under direct supervision of a knowledgeable doctor [5]. Some AAS users were frustrated by the limited health options available and were willing to buy drugs from their doctor [41]. Users expressed a desire for treatment for IPED-related physical problems, e.g. abscesses and the need for specific services such as blood screening [33, 39]. Griffiths et al. [42] found that AAS users wanted post-cycle therapy (PCT) to stay healthy, minimise harms and to prevent losing the gains acquired from use. Furthermore, a few users suggested that IPED should be legal and medically prescribed [33]. Some users wanted specialist IPED services where drugs could be tested for purity and to know how to avoid counterfeit drugs [33, 36]. The ideal support sought was focused on managing health risks [5,

41]. Moreover, participants were also specific about how that support should be delivered, wanting: 1. a place to obtain credible advice and information that was non-judgemental and balanced and 2. medical support by knowledgeable professionals.

## Discussion

In summary, it is clear a large number of AAS users seek out information and support, predominantly from online fora and from experienced AAS users. Professionals are trying to tailor support to AAS users where resources allow but few studies have explicitly asked users what type of support they need. There is potentially a large number of AAS users who have not been surveyed as they are not accessing local substance use services or choose not to complete surveys for fear of being classified as 'junkies' [60].

One key purpose of a review is to identify gaps in the literature [61] and IPED users seemed to reject the 'medical model' that doctors are the experts as they give credibility to advice from people who have used [33] stating that doctors lacked credibility as they did not

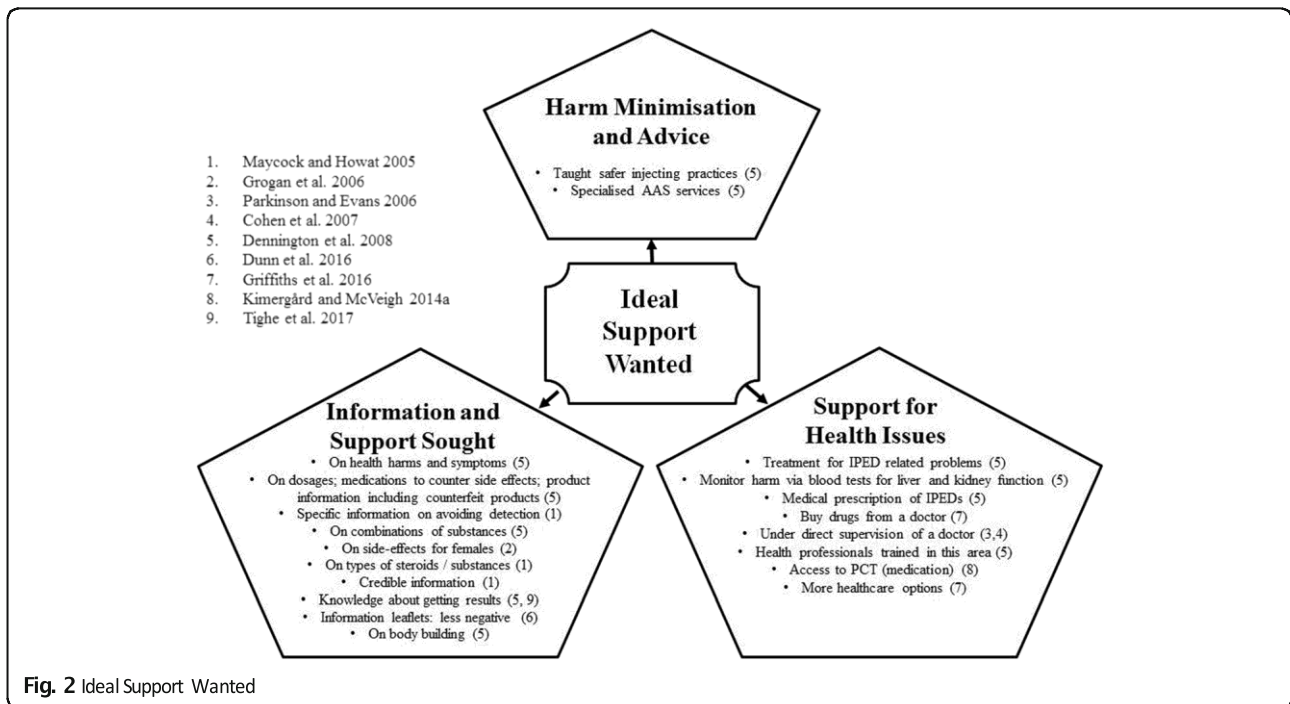
**Table 7** Data by type of information or support – Support for health issues

Type of information/support	Support sought from (if given)	Article reference	
Regular medical check-ups / Unspecified laboratory/Medical tests including blood-tests	Not stated	[21]	
	Not stated but bloodwork obtained	[22]	
	Doctor(s)	[4] [12] [9]	
	Doctors (Liver function test, ECG, Diabetes tests)	[14]	
	Steroid Clinic (service provider information)	[11]	
	Anti-aging clinics	[9]	
	Consultation on specific AAS –related health issues	Doctor	[21] [6] [5] [9]
		Doctor (includes discussion on mood)	[14]
		Doctor (for PCT advice)	[23]
		Specialised addiction clinic (psychological problems)	[13]
Sexual health clinics		[5]	
NSPs		[6] [5]	
NSPs (including <1% interventions – drug treatment referrals)		[7]	
Accident & Emergency/walk-in		[5] [6]	
Anti-aging clinics		[9]	
Self-treatment and other		[6]	
Prescribed substances relating to AAS use	Online websites/Forums	[9]	
	Not stated	[6]	

Any data given about access of services that is not linked to AAS/IPED use has not been included in this table

have personal experience [36]. This perspective is more aligned to a social care perspective with the substance user being the expert in their own use, hence the trust in experienced users. One reason given for this lack of credibility was that IPED users felt that the advice from professionals was not balanced and focused on health harms whilst ignoring the benefits [33]. Many argue for professionals to be better informed [53, 55] so as to be

able to challenge the doses in 'steroid bibles' [37]. In a society where men are affected by images of the idealised male body image [62–64], and negative messages from others, it is unsurprising that men adopt a range of strategies to become more muscular [65–67]. Many of the short-term effects of AAS use are reversible and not as life-threatening as the long-term effects and the severity of side-effects could be reduced with early access to



**Fig. 2** Ideal Support Wanted



health services [55]. Consequently, having the appropriate support in place for AAS users is vital and some recommend that peers could have a positive role in harm minimisation [68].

The literature was sparse on the support that women access and want; this was not unexpected as the majority of AAS users are male [69]. Dennington et al.'s report was the only one to include transgender people. This is a population that has not traditionally been identified within the research, but one small study found that transgender youth had 26.6 times greater odds of AAS use without a prescription than cisgender male respondents [70]. It is worth considering that this group may be using AAS as part of the transition from female to male [71], but this is not necessarily the case and therefore more research on support for women and the transgendering population would be useful, particularly aligned to support needs.

### Online information

Many users sought AAS information from the internet, but the majority of online material presents a pro-use position [72], can be incorrect or even dangerous [73] and sites may sell steroids [74], which could put users at risk and could perpetuate the impetus to use. Andreasson and Johansson [75] suggest that the online community with its openness and acceptance of AAS use is part of a culture of learning and education for novices. They believe such communities can be seen to normalise AAS use, the idea of obtaining an 'ideal masculine body' without using AAS becoming a fantasy.

### Support services

Most support from professionals has a harm minimisation focus. AAS users are already less likely than traditional injecting substance users to engage in risky injection practices [76] which could explain the low uptake for BBV tests. However, AAS use does increase sex drive [77] so this could increase sexual risk taking and may explain why HIV tests uptake was higher than BBVs. Users also sought help from sexual health clinics [53]. If, however, IPED users do not perceive this as a risk, they may not be engaging with services, and might be accessing NSPs simply because the needles are free. Three studies evidenced that guidance on injecting came from AAS dealers [8, 40, 43]. This is concerning as dealers often trivialised potential risks [37]. A good harm minimisation strategy could be for gyms to provide a safer injecting service [78] and this outreach service has been provided in some UK gyms [39]. However, gyms are often reluctant to provide anything that would suggest that their clientele may be using AAS [79]. For people who wish to access PCT there are few services available. Hence the need to reconsider PCT support

due to the perceived needs linked to mental and physical health [42].

Only two studies [38, 55] showed that AAS users seek support for potential mood changes or underlying psychological issues. Kanayama et al. [69] concluded on the basis of seven studies that 30% of illicit AAS users develop dependence based on the Diagnostic and Statistical Manual of Mental Disorders (DSM) IV criteria and therefore it is a valid diagnostic entity. The DSM 5 [80] states that some individuals with muscle dysmorphia (MD), a form of body image disturbance, use AAS. Moreover, one study found that men using AAS for image-related reasons reported higher levels of MD and eating disorder symptomology [79, 81] suggesting there is a need for more awareness raising and that people showing such symptoms should be supported through appropriate gender specific interventions [82]. No study evidenced a need for support aligned to stopping AAS use. Traditionally, UK substance misuse support services offer talking treatments, and group and one-to-one sessions for people dependent on substances, yet there was no evidence in the UK studies of AAS users accessing these services.

Previous studies have advocated that specialist steroid services, created with input from AAS users are needed [39]. There are comparatively few specialised support services for people who use AAS and those few dedicated Steroid Clinics, often publicly-funded harm reduction initiatives, are subject to the 'whims' of local funding and resourcing. It would be useful to investigate ways of engaging AAS users with health services [6]. A useful strategy could be through health professionals engaging with online fora as a mechanism for harm reduction providing the language used is that of the forum and not of health professionals [44]. This would need to include strategies to overcome the lack of trust AAS users have in professionals. This review echoes these recommendations and suggests that there is a case to consider AAS users as a different population to traditional substance users. The AAS users accessing NSPs are more likely to be those who are injecting AAS and not those who take AAS orally. People who only use oral AAS are therefore potentially an even harder to reach population who are nevertheless putting themselves at risk. Dennington et al.'s [33] report examining current users' views on the information and support provision found opposing views on types of support offered depending on the individual perspective of the user. Recent studies have identified distinct types of AAS user, each with different motivations for use [59, 83]. Differing motivations could be one reason why AAS users have differing opinions on the support offered. Consequently, offering information and support through a range of services and mediums and targeted at the different types of AAS use could be beneficial.

## Barriers to accessing support

This review did not explore why people may not access the information and support that is currently available to them. However, several studies highlighted reasons as to why AAS users chose not to access specific services. When it came to accessing NSPs, pharmacies, and doctors, AAS users spoke of a fear of stigma or embarrassment [33, 39, 41, 43, 55], and there were several other reasons given for not accessing professional services [33, 36, 37, 41, 42, 55, 58]:

- perceived lack of trust or lack of knowledge from professionals
- fear of judgemental reactions
- inability to obtain drugs wanted for PCT
- the need for private health insurance
- cost and difficulty of booking advance appointments
- not wanting to be identified as ‘drug’ users or as visiting such support services

Generally, AAS users do not see themselves as “typical” drug users [33, 43]. Consequently, a key barrier for accessing NSPs [33] was the presence of other types of substance users. Another consideration could be the link between AAS use and MD [84, 85] as research suggests that people with MD may be in denial of this as a problem [86] and may not link it to their use of AAS. A lack of recognition of an underlying psychological problem would mean AAS users would not naturally seek any type of psychological support.

Using AAS requires more preparation, research and planning than other illicit drug use, and users take a strategic approach looking to minimise harm and maximise results [58]. This could explain why AAS users justify their use as being different from other types of people who use illicit substances. Whilst many felt a stigma in attending NSPs, others felt these offered a discreet service [41]. This area of barriers to accessing services requires further investigation.

## Weaknesses and strengths

As the search was limited to English language papers, this could have excluded some studies. In studies where participants were recruited from NSPs, the authors have presumed that AAS users were accessing those services, predominantly to obtain injecting equipment. Another limitation is that data came from different countries, which influences information and support available and willingness to take part in surveys, e.g. AAS use in Australia and America is illegal, whereas in the UK, it is legal for personal use, but it is illegal to supply. A further challenge has been to identify the types of substances used within the literature and exactly what information and support is related to which substance. However, as it is likely that people who use AAS are also using these in combination with a number of other substances to either achieve their aims or mitigate side effects, it is plausible that the support and information they seek is similar. To our knowledge, this is the first scoping review on the types of support accessed, and support wanted.

## Conclusion

AAS users access a wide range of sources to obtain information on: injecting, effectiveness of substances, dosages to use, side effects, cycling and stacking, and risk management, which suggests that this is the type of information users want. AAS users seek out support from medical professionals and NSPs for health issues, blood tests, prescription substances, and equipment, suggesting these types of support are wanted by AAS users. However, AAS users do not state or potentially recognise a need for psychological support, or support to stop using. Consideration of the barriers faced by users for accessing services identified a need for services to take a non-judgmental approach and have credible knowledge around use. There is a need for AAS support to be specific and targeted, with further research required to understand their experiences around drug-use and their support needs. More research into the experiences of female and transgender AAS users and the stigma all AAS users experience would be beneficial to ensure a less ‘one size fits all’ service provision. Providers of services need to have an in-depth knowledge of benefits, harms and range of drugs available and benefits of PCT. This review echoes previous studies regarding the need to gain a deeper understanding of methods that would encourage AAS users to seek support.

Additional file : Database Search.

## Abbreviations

AAS: Anabolic Androgenic Steroids; BBVs: (Blood Borne Viruses); IPED: Image and Performance Enhancing Drugs; MD: Muscle Dysmorphia; NSP: Needle and Syringe Programmes; PCT: Post Cycle Therapy

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## Authors’ contributions

OH: Undertook the search literature, analysed the data and drafted the manuscript. SK: Independently reviewed 10 and 20% respectively of the title and abstract search results and reviewed 10% of the included articles, 30% of data extraction forms and was a major contributor in writing the manuscript. MP: Reviewed 10% of the included articles, 30% of data extraction forms and was a major contributor in writing the manuscript. EvT: Reviewed 10% of the included articles, 30% of data extraction forms and was a major contributor in writing the manuscript. All authors read, edited and approved the final manuscript.

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## Additional file 1 – Database Search

EBSCO Search of 114 databases and Scopus

54 of the databases searched (without any exclusion inclusion criteria) returned data – plus separate Scopus search: June 2018. **Total: 6384**

All Providers	No.	All Providers	No.
InfoTrac Newsstand	1,191	HeinOnline	12
Academic Search Complete	901	Library, Information Science & Technology Abstracts	10
MEDLINE Complete	699	eBook Collection (EBSCOhost)	9
Complementary Index	627	eBook Academic Collection (EBSCOhost)	9
SPORTDiscus with Full Text	508	PsycARTICLES	7
Supplemental Index	430	Communication Source	6
PsycINFO	354	British Library EThOS	6
CINAHL Complete	284	J-STAGE	5
ScienceDirect	224	Cochrane Database of Systematic Reviews	5
SocINDEX with Full Text	215	JSTOR Journals	5
Regional Business News	211	Credo Reference: Academic Core	5
Education Source	113	Hospitality & Tourism Complete	4
Business Source Complete	110	GreenFILE	3
Directory of Open Access Journals	56	Art & Architecture Complete	3
Newswires	51	Government Publishing Office Catalog	3
NewsBank	41	Communication Abstracts	2
Networked Digital Library of Theses & Dissertations	34	Bournemouth University Library Catalogue	2
LexisNexis Academic: Law Reviews	32	Informit Literature & Culture Collection	2
ERIC	31	IEEE Xplore Digital Library	2
Environment Complete	28	PsycBOOKS	1
SciELO	25	arXiv	1
Harvard Library Bibliographic Dataset	24	Informit Health Collection	1
Teacher Reference Center	21	Hoover's Company Profiles	1
SwePub	18	Alexander Street Press	1
British Library Document Supply Centre Inside Serials & Conference Proceedings	18	Digital Access to Scholarship at Harvard (DASH)	1
OpenDissertations	18		
NewsBank - Archives	12	Scopus (searched separately)	1687

## **Chapter 3 Section 3      Revision of aims and objectives**

### **3.7 Introduction**

This section reports on the reflections following the publishing of the literature review and the development of the overall study objectives as a result of the review findings.

### **3.8 Reflections on the review**

The scoping review publication was initially intended to be a Systematic Literature Review and proposed as such (Harvey et al. 2017) (Appendix 7), and the methods followed the PRISMA guidelines for such (Moher et al. 2009). However, peer review feedback was mixed; some reviewers did not question the methods, whereas others suggested the methods used were not compatible with the reporting process. Consequently, the review was reworked as a scoping review. However, to maintain rigour, it was decided to keep the quality assessment (3.5).

### **3.9 Refining the aims and objectives**

Several changes were made to the aims and objectives as a result of the literature review (3.6). Although not reported as part of the paper, exploring the literature evidenced a range of motivations for use across differing age groups and as it is possible that types of support needed may differ dependent on motivation, objective 1a was amended to reflect this (Table 3-2). Objective 1c was revised for clarity. The review highlighted that there was a range of information and support for people who use AAS, which differed across countries dependent on resources and Government policies. Few studies were found which had asked AAS-users what information and support they wanted. Consequently, a further objective was added (2b) to ascertain users' views on support and identify AAS-users' thoughts on what type of information and support they wanted. The third aim was reworded to reduce the focus on social work, as it was clear from the literature review that there was no mention of social workers amongst the professionals mentioned. The objective was also amended to be less generic as it was clear from the literature review that there were barriers to accessing support.

Table 3-2 Thesis aims and objectives

Aims*	Objectives*	Methodology
<p>1. To gain insight into male users perspectives of their use of AAS for predominantly recreational purposes</p>	<p>1a. To explore the experiences of those who use AAS from a user’s perspective with particular emphasis <b>on underlying motivations for initiation of use and motivations across the lifespan</b></p>	<p>Qualitative study</p>
	<p>1b. To explore with AAS-users whether they have experienced their use contributing to specific mood changes or behavioural problems</p>	<p>Literature Review &amp; Quantitative &amp; Qualitative study</p>
	<p>1c. <b>To explore how AAS-users manage the positive and negative effects of AAS use</b></p>	<p>Qualitative study</p>
<p>2. To establish barriers to and opportunities for accessing support services and identify effective pathways to share information on the risks associated with using AAS, especially amongst young people and recreational users</p>	<p>2a. To gain users’ perspectives into the sharing of information on AAS and the perceived barriers and opportunities for accessing support</p>	<p>Literature Review and Qualitative study</p>
	<p><b>2b. To gain users’ current views of information and support and discover what types of information and support AAS-users say they want</b></p>	<p>Quantitative &amp; Qualitative study</p>
<p>3. To consider the practice implications for <b>inter-professional teams</b> working with services that offer support to people using AAS or to those working with people who may start or are already using AAS</p>	<p><b>3a.</b> To provide recommendations on effective methods for communication to help people make educated decisions about their substance-use and choices which ultimately could reduce the harms of using AAS.</p>	<p>Literature Review, Quantitative &amp; Qualitative study</p>
	<p><b>3b. To provide recommendations for the types of information and services that AAS-users might choose to access</b></p>	<p>Quantitative &amp; Qualitative study</p>

\*(changes highlighted in bold)



## **Chapter 4 Methodology and methods**

### **4.1 Introduction**

This chapter outlines the methodological approach and assumptions underlying this study and explores the ethical considerations of researching this sub-community. It describes the methodology, research design and methods used including dissemination of the questionnaire and data collection and analysis.

### **4.2 Methodological approach and assumptions**

A methodology identifies the philosophy of the approach and describes the worldview adhered to by the researcher which guides and informs the research (Creswell 1998). When considering the methodological approaches to exploring this subject there are a variety of options, several of which were considered as potential options for this study. One option considered was Grounded Theory, developed in the 1960's (Glaser and Strauss 1967), and is a way of systematically coding emerging data which is collected with the aim of developing an inductively derived theory about a phenomenon (Corbin and Strauss 1990). This study seeks to answer specific questions relating to a sub-community and does not seek to explain this phenomenon through the development of a specific theory, a key element of Grounded Theory. In Grounded Theory it is recommended not to engage with the literature prior to the data analysis (Corbin and Strauss 2015) however, the researcher had already explored some of the literature as part of a Master's dissertation. Furthermore, as this study aimed to explore the experiences of AAS use from user perspectives in order to offer recommendations to enhance support services and one way of understanding people's current experiences through comparison with those in the literature, this necessitated an approach that included familiarisation with the literature. Therefore, a Grounded Theory approach was not suitable.

Ethnography and Interpretive Phenomenological Analysis (IPA) were both also considered. AAS-users are a hard-to-reach population (Smith et al. 2009, Ravn and Coffey 2016, Richardson and Antonopoulos 2019) and one way of exploring motivations and support sought would be to have taken an ethnographical approach. This approach is situated in the realm of social constructivism with the

researcher immersed in the real-life environment, as participant observation is integral to this approach (Reeves et al. 2008). The real-world environment for this population was likely to be hard-core muscle gyms, and it was unlikely that a female researcher (non-bodybuilder) would be welcomed and able to gain trust in such an environment and gender may also have precluded her from entering such areas as the male locker rooms. Therefore, ethnography was also not suitable.

IPA is concerned with how people experience/make meaning of an event, and make sense of their world (Smith and Osborn 2003). Although IPA would have allowed for a very detailed exploration of individual's experiences, it would not have met the study's objectives and enabled the exploration of the range of motivations as this requires a larger number of participants than would traditionally be used for such a phenomenologically based method. Moreover, IPA did not allow for the investigation of a preconceived hypothesis (due to the experiential nature of its approach), and therefore did not support an approach which sought to answer several questions in order to support the practical application of the knowledge.

Current practice in the field of support for those who use AAS is driven by public health issues around contraction of BBVs (Underwood 2019) and takes a 'one-size fits all' approach with regards to support for people who use AAS, treating AAS-users as illicit substance users. Support is often provided through NSPs or not at all (dependent on the country of residence of the user) and does not necessarily reach the desired population (McVeigh 2019). Furthermore, by its very nature, the one-size fits all approach does not consider the varied range of motivations AAS-users have for wanting to modify their appearance and using AAS to enable this. The limited specialist support that is available in a few areas of the UK has been predominantly delivered by professionals from a harm minimisation focus and not necessarily developed, or utilising an approach, based on the potentially broader needs of the AAS-users (Bates et al. 2013). This researcher does not conform to the idea that the support provided for traditional illicit substance users would necessarily work for people who choose to use AAS, as both the user group demographics and reasons to use may differ; that is, it is unclear if the motivations for use are similar across both groups. Consequently, this researcher sought to find out from the AAS-user group what types of support (if any) they

would value and how if at all, they may be linked to their motivations for, and experiences of, AAS use. The intention of this research process was to propose concrete recommendations based on the users stated needs as an outcome, and this influenced considerations of the approach utilised.

Consequently, this researcher's methodological standpoint is rooted in Pragmatism.

#### 4.2.1 Pragmatism

Pragmatism originated in the USA in the 19th century, and aims to contribute practical solutions to a problem to inform future practices (Saunders and Bristow 2015). Pragmatism uses a concrete way of viewing the world, and values both objective and subjective knowledge (James 1908) allowing both quantitative and qualitative research methods in a study. It does not adhere to metaphysical concepts such as truth and reality (Creswell and Plano Clark 2011) and pragmatists believe that the world can be interpreted in a vast range of ways and no one perspective gives a complete picture (Saunders and Bristow 2015).

A pragmatist's philosophical standpoint sees the research question as more important than the underlying paradigm of the method (Punch 2013). The focus being on using what is needed to answer the research question (Tashakkori and Teddlie 2003) with a defining process of inquiry (Morgan 2014). A pragmatic approach understands and values the epistemological differences of quantitative and qualitative data but does not see them as irreconcilable (Bishop 2015). It is a solution focused philosophy, and looks to seek an answer to a problem with a view to providing socially useful knowledge whilst not being concerned with the methods chosen, providing they are fit for purpose (Feilzer 2010, Saunders and Bristow 2015).

This research project aimed to ensure that the voice of the AAS-user is heard, specifically in relation to questions on their motivations for use and experiences of use and how these relate to the support wanted. Situated at the heart of the project is the question: what specific support do AAS-users feel they need? A variety of motivations have been identified for AAS use and a range of side-effects experienced. It could be helpful to identify if people with certain types of motivation seek certain types of support or if there is a relationship between

types of side-effects experienced and support wanted. Given the complex nature of the varied motivations driving the use of AAS across a broad demographic group, the most effective way of answering the research questions on support and motivation, was a mixed-methods approach. There is an assumption that the views of AAS-users, on a number of issues, such as whether or not AAS is dependence-inducing, could vary dependent upon demographic information such as gender, age, or their motivation for use. Again, this may impact on their perceptions of which information and support might be desired. A quantitative approach would enable the comparison of such attributes. Moreover, quantitative data collection would seek to test out AAS-user perspectives aligned to what was already stated in the literature. However, as Feilzer (2010) evidenced, quantitative data alone may lead to some answers being selected for different reasons, but provide no way of knowing what those underlying reasons are, so there was need for a deeper understanding of the individual's underlying motivations which could influence their need for support. With questions posed by social and health science researchers, the use of one type of data collection is often "inadequate to address the complexity" (Creswell 2009, p.203) of a subject. Qualitative data is a way of exploring the richness and complexity of a phenomenon (Burns and Grove 1999), which can lead to a deeper understanding. In the context of its application to this study, this approach should lead to greater insight into individuals' perceptions and experiences of AAS use and associated support services.

Research should be blended in a way that gives the optimal opportunities for achieving the research aims (Johnson and Onwuegbuzie 2004). A mixed-methods approach uses quantitative and qualitative data collection in parallel and sequentially (Tashakkori and Teddlie 2003) with each type of data collection allowing for the exploration of different aspects of phenomena (Creswell 2009), which can allow for a greater variety of divergent views (Tashakkori and Teddlie 2003). A mixed-methods approach is helpful when looking for practical implications as it can help to enhance the interpretation of the results (Bergh et al. 2017) and can help to bridge the gap between the micro and macro levels (Bryman 1995). Consequently, this study employed a mixed-method research design and aimed to collect, analyse and combine both quantitative and qualitative data. This approach aligned to this researcher's values as a social worker, bringing the voice of the AAS-user to the fore aligning to the concept that

the substance user is the expert in their own experiences of substance use (Galvani 2012).

## **4.3 Methods**

### **4.3.1 Overview of mixed-methods approach**

The three methods utilised for this study are:

1. literature review of quantitative and qualitative literature on information and support (Chapter 3);
2. quantitative and qualitative questionnaire;
3. semi-structured interview.

An analysis of the information gained from the literature review provided the basis for the development of the questionnaire. The questionnaire combined a mix of both quantitative questions, to give an overall picture of the participants, and included a range of free-text questions to give participants' freedom to share their experiences. The questionnaire provided the opportunity for participants to consent to a follow-up interview. The interview questions further explored participants' experiences of AAS use and support.

#### **4.3.1.1 Overview of the study phases**

**Phase 1:** A review of recent literature on the risks, motivations and psychosocial consequences of using AAS (Chapter 2) and a scoping literature review (Chapter 3) focussing on the information and support for AAS-users. Gaps identified helped shape the questions for the subsequent primary research.

**Phase 2:** Development and distribution of a questionnaire to seek the following information about current AAS-users' experiences on:

- reasons for use
- the physical and psychological effects of using AAS
- accessing information and support
- the type support wanted
- the risks of AAS use

The questionnaire was also the sampling frame for recruiting participants to phase 3.

**Phase 3:** Interviews with people who use AAS to further explore the motivations behind their use and gain a deeper understanding of ideal support needs.

#### 4.3.1.2 **Piloting the tools**

Pilot studies are an important part of the research design process as they can help test the adequacy of the research instruments, including: assessment of the likely success of research approaches, identification of any logistical problems and train a researcher in the data collection process. More specifically, when used with questionnaires and interviews they can assist in understanding the length of time it takes to carry out the process, identifying any ambiguous or unnecessary questions, assessing the clarity of the questions and re-wording any as necessary (van Teijlingen and Hundley 2001). Therefore, phases two and three were piloted.

#### 4.3.1.3 **Analysis**

The main analysis was focussed on the data collection from the questionnaires and interviews (quantitative analysis using SPSS and qualitative analysis using NVivo). This was an explanatory design with the qualitative data being used to explain the results of the quantitative data (Creswell 2010). It sought to identify themes, using a thematic analysis approach (Darlington and Scott 2002, Braun and Clarke 2012) that emerged from the questionnaire data and conversations with the participants.

#### 4.3.1.4 **Population**

This project entailed working with adults (18+) who are using non-prescribed AAS. The participants for Phase 2 consisted of: Self-identified AAS-users from NSPs and the public who choose to access the online questionnaire. Because of the written component, adequate English language comprehension levels were necessary. Participants for Phase 3 consisted of: Self-identified AAS-users who on completion of the questionnaire had ticked a box stating an interest in taking part in the interview phase.

There is a range of different ways to sample a population (Mason 2002) and it is important to consider whether the population sampling was convenient or random (Ryan et al. 2001). As this study aimed to research a notoriously hard-to-reach population (4.6.1), the researcher used several different sampling methods: opportunity/convenience, self-selected (Rees 2011, Patton 2013), time-location space and snowballing, which is useful in sensitive areas of research (Shaghghi et al. 2011). As the questionnaire was online, it was open to an international audience. This could be potentially limiting as geographically controlling the location of the respondents would be difficult. There could also be a cultural context and options for support and information may be impacted by location, both in terms of laws and policies on provisions of service. However, evidence suggests that the AAS using community spends a lot of its time online, in for a accessible across the world, and studies in populations across the US, Australia and Europe have shown similar motivations (Sagoe, Andreassen, et al. 2014). Consequently, it was decided not to exclude participants based on nationality, but only age and AAS use. The majority of AAS-users are men due to the motivation to increase muscle size (Kanayama, Hudson, et al. 2009) and female AAS-users are more likely to be competitive bodybuilders rather than recreational users (Ip et al. 2010). Most studies are overwhelmingly focussed on male populations; consequently, with the intention of gaining further insight from the little understood female AAS-user, this study was open to all genders to see if any women were willing to share their views, however the hypothesis was that there would be significantly fewer female respondents.

## **4.4 Ethical considerations**

Ethical approval was sought and obtained from the University (Appendix 8 BU ethical approval). There were a number of ethical considerations for this study. Key considerations were vulnerability of participants, legality of use and anonymity and confidentiality.

### **4.4.1 Vulnerability**

A seemingly simple question incorporated as part of the University Ethics application for a research project asked: 'are your participants considered vulnerable'? An important question as a label of vulnerability may have

ramifications in terms of research participation (Crabtree 2013). When exploring the experiences of adults who use un-prescribed AAS the ramifications could link to the legality and stigma around using AAS and the potential emotional harm of participating in research. This straight-forward question turned out to be more complex on reflection and in research, vulnerable individuals are those 'especially prone to harm or exploitation' (Lange et al. 2013). PhD students are expected to comply with ethical requirements of their University's ethical process and ethics committees will refer to relevant legislation for the safeguarding of vulnerable people (Crabtree 2013). However, if potentially vulnerable groups are listed simply as part of research ethics there is a risk of stereotyping (Rogers and Meek Lange 2013). Therefore, to determine if this group of users were vulnerable there was a need to consider the definitions of vulnerability within the literature and legislation. This exploration led to a published paper (Appendix 9) which concluded that AAS-users should not be automatically considered vulnerable (Harvey 2019).

The university's ethical guidance on vulnerability did not give people who use substances as an example of a vulnerable population but did explicitly list people who receive a local authority service with being vulnerable. This is in line with another legal definition as; Section 59 of the Safeguarding Vulnerable Groups Act 2006 defines adults who are the subject to regulated activity as vulnerable. It could be argued that NSPs, which are used by AAS-users, function as a service, however, using an NSP to obtain needles is not necessarily a regulated activity nor does it suggest an inability to care for oneself. As NSPs are part of a harm reduction strategy (Stimson et al. 1990, Bates et al. 2013), users don't have allocated workers, visit voluntarily and often remain anonymous, so attendance could indicate a clear capacity to manage risks. From a research perspective, people who use AAS, although at risk of harm from using AAS, are unlikely to experience an increased risk of harm from taking part in research about their experiences and taking part would not impact on their ability to access a service. Consequently, they would not be a vulnerable population on the basis of AAS use alone; however, there is always the possibility (as with any research) that some participants may be vulnerable for other unidentified reasons and consequently web links to relevant support services were added to the end of the questionnaire (Appendix 10).



#### 4.4.2 Legal issues

The legality of AAS is complex in the UK and differs across the globe (1.4). Consequently, complex ethical concerns necessarily arise when surveying and interviewing people engaged in AAS use particularly in a global context. In this study, questionnaire administration focused on western nations; while, the legal status of Anabolic steroid use differs across the world, in some countries e.g. the US, Norway, Sweden steroid use is illegal. In other countries such as the UK, use comes under drug legislation but sits in a legal grey area as a class C substance under the Misuse of Drugs Act 1971; thus they are illegal to sell or deal unless they are prescribed by a doctor for medical reasons, but it is not against the law to buy the drug as long as it is for personal use. In other countries e.g. Canada and Spain, use is prohibited but not punishable and in others e.g. Slovakia, the local law only states that giving steroids to minors (under 18) is criminal offense, but it is not legal to buy AAS without prescription. Consequently, it is possible that the differing legal status of AAS use in differing countries may have impacted both on participants willingness to undertake a survey albeit anonymous, their perceptions of use and access to support.

The BU Ethics Committee raised the legality issue of disclosure and requested reassurance that questions would not be asked around purchase and supply of the AAS as this could lead to an issue of whether criminal activity needed to be reported. Hence sources of AAS were not asked. Due to the complexity around the legality of AAS use, and that use can be stigmatised (Sagoe 2015), AAS-users' anonymity was protected through the use of pseudonyms and anonymous questionnaires. This was crucial as researchers must be vigilant when dealing with substances users' confidentiality (Tirone et al. 2014) and AAS-users are often concerned about confidentiality (Cohen et al. 2007). For the interviews a range of communications channels were offered to allow participants to choose whether to protect their identity from being made available to others without explicit knowledge and consent.

Several services were happy to support the study; only requiring confirmation of the approval by the BU Ethics Committee, others required a confirmation from their Local Authority but no additional paperwork, e.g. Bournemouth and Poole Local Councils. However, three UK charities wanted more detailed ethics

submissions, so three additional ethical applications were made to Turning Point, Change Grow Live and the Westminster Drug Project (WDP). The researcher also approached services based overseas in high income nations who advertised support services online. Again, many of the services contacted agreed to support needing only the confirmation of BU Ethics approval, however two organisations: ACON (NSW Australian LGBT Charity) and Ottawa Public Health required additional paperwork to be submitted.

## **4.5 Development of the questionnaire**

### **4.5.1 Questionnaire content**

The questionnaire included a range of questions; including demographic data, AAS use patterns, positive and negative effects, support services used, sources of information sought and user's views on the support wanted (Appendix 10). The questionnaire was informed by the literature review (Chapter 3), conversations with local NSP staff who worked with AAS-users, a conversation with an academic who had designed questionnaires for this population (Prof. J McVeigh) and a recent study (Ager 2015). The design strategy was to develop questions aligned to the motivations for use, effects of use and support required as identified in the literature (individual question references in Appendix 11) and to see if AAS-users had experienced these. However, there was a potential limitation with this strategy. Advice received from Prof. McVeigh, suggested the need to be wary that people may attribute their health conditions to AAS use, if suggestions are given an attribution that it is not possible to verify. This was difficult to overcome, as part of the basis for the questionnaire was to ascertain if findings that had been identified across the literature matched the current users' experiences; so, the limitation was noted and considered as part of the analysis. However, Oppenheim (1966) recommends starting with open questions to avoid unintended influencing of the participants. Therefore, free-text options were included to give participants the opportunity to share their subjective experiences. Furthermore, the question on harms was redesigned as an open question, and the open question on behavioural changes was re-positioned prior to the quantitative questions with the intent of lessening this effect. Oppenheim (1966) also suggests that richness of the data can be lost with open questions when clarifying answers as part of the

data analysis, but they do give respondents freedom to respond, be spontaneous and use their own language. This freedom to respond is important for exploring the experiences of AAS-users, particularly in relation to their experiences of seeking support. Therefore, despite the challenges this added to the analysis, the need to understand individual user experiences, framed in the context of their world perspective and language, was considered to be of more importance. Closed questions, although less nuanced in their approach give more concrete data (Oppenheim 1966), so several were incorporated such as recreational or competitive user as they could be directly compared to such questions as type of support wanted or views on dependency. Two questions were taken from a previous study (Ager 2015); one on how to define user type (with an aim to add consistency of terminology/category) and one adapted from a question on 'the impact that AAS use has had on quality of life'. A question on 'risk of AAS use to others' was also included as a potential negative unintended consequence of use could be risk to others, a concept which has not been explored in-depth in the literature (Harvey and Parrish 2019).

#### 4.5.1.1 **Gender and sexuality**

When designing questionnaires, researchers need to think more widely about how they ask questions on gender and sexuality (Eisenberg et al. 2017) and this was considered as AAS use is found within both homosexual and heterosexual communities (Ip et al. 2015, 2017). For this questionnaire, views were sought from a nurse practitioner from a local lesbian, gay, bisexual, transsexual, queer (LGBTQ) sexual health clinic and a LGBTQ researcher on how to phrase questions on gender and sexuality. This led to the inclusion of a self-describe question on gender and a two-option question on sexual orientation with a self-describe option, as this is a more empowering and inclusive practice (Stonewall 2016). The use of 'self-describe' also added to the clarity of the question for the participant, as not everyone is familiar with the new definitions around gender and this is considered a less oppressive approach as labelling people can also be disempowering (Eisenberg et al. 2017).

#### 4.5.1.2 **Anonymity**

Anonymity for this type of questionnaire is an important consideration as people may not agree to participate if there is a chance this may be violated (Shaghghi et al. 2011). Therefore, to help with participants' confidence, questions at the end of the questionnaire that requested contact information in case the participant wished for a summary of the study were optional, and the use of anonymity was clearly stated in the introduction to the questionnaire.

#### 4.5.2 **Questionnaire structure**

##### 4.5.2.1 **Length**

Consideration was given to the length of the questionnaire, as people are more likely to complete questionnaires of a shorter length (Rolstad et al. 2011, Markstedt and Vernersdotter 2013). However, Markstedt and Vernersdotter (2013) found it impossible to separate the impact of content from length; therefore, the decision on the length of this questionnaire was based on the objectives of the study.

##### 4.5.2.2 **Question order**

The ordering of questions in web-based questionnaires is important, as precedent questions can affect how people consider subsequent questions (Fan and Yan 2010). The item placement was based on guidelines by Siniscalco et al. (2005). Items of major interest to the participant such as questions about how they use AAS were placed early on, as completing topic-related questions may encourage participants to be more open about more generic personal questions (Regmi et al. 2017). Questions on behaviour and demographic questions were placed towards the end as behavioural change could be a sensitive subject with AAS-users, due to the perceptions relating to 'roid rage', and sensitive questions can provoke resentment or influence responses to other questions (Siniscalco et al. 2005). A further reason for placing demographic questions at the end is that they can seem boring to the reader and cause the reader to disengage (Stone 1993). Similar topics were grouped together; funnelling (broader questions leading to more

specific ones) was used within the topics and section titles incorporated. The participant introduction sheet at the start of the questionnaire included the purpose of the study, confidentiality and importance of the study to the intended participants (Siniscalco et al. 2005) (Appendix 10). The questionnaire structure was designed so that key questions on support were placed in the middle of the questionnaire, aiming to reduce the number of non-answers from questionnaire fatigue.

#### 4.5.2.3 **Mandatory questions**

An advantage of a web-based questionnaire is that it can be designed so that participants have to give an answer before moving on and consideration was given to including such mandatory questions. However, mandating questions can put up a barrier with the respondent, particularly when dealing with a sensitive subject, and may lead the participant to leave the questionnaire (Stieger et al. 2007). Denying choice also goes against this researcher's values, so the majority of questions were optional, bar those about consent and use of steroids (the eligibility questions), and those on support, where a lack of data would limit the potential of the questionnaire to address the primary study question.

#### 4.5.3 **Piloting the questionnaire**

The draft questionnaire was critiqued through supervision, by an NSP Harm Minimisation Team leader, and a number of professionals who had knowledge of AAS-users, social work, statistics and visual questionnaire design. This scrutiny proved invaluable. The questionnaire was revised on the basis of the feedback gained, as expert reviews can identify question problems, which could impact on the gathering of meaningful quality data (Olson 2010) and visual presentation can strengthen response rates (Dillman 2007). The feedback from testing the questionnaire prior to the pilot elicited the need for the design style to be aesthetically pleasing, the answer format to be consistent, the use of language to be less academic, less formal and more concise. There was some specific feedback around the question format including discussion on use of 'other' and using 'please describe' over 'please explain'. This led to changes in layout to improve usability and flow, fixing errors in the online questionnaire design, changing words

to simplify language, improve clarity and ensure the questionnaire was pitched correctly. Advice from a mental health practitioner led to the removal of clinical terms when describing psychological effects and this critique also identified that the researcher had missed a potential support group. The BU Ethics Committee suggested minor amendments to the participant information sheet to highlight any risks to the participant in taking part, how long any data would be held and a change in contact information but did not ask for any amendments to the questionnaire (Appendix 8 BU ethical approval).

It is vital to pilot the questionnaire as a whole as this can help identify if questions are understandable (Oppenheim 1966, Stone 1993, Kelley et al. 2003). Originally, the idea had been to run a pilot with service users from a local NE, however, the service was re-commissioned, and the key gatekeeper had left the organisation. The gatekeeper had built up strong relationships with service users and the researcher had been relying on this relationship for the recruitment of pilot participants. Consequently, there was no possibility, in the short-term, of gaining access to pilot participants through the NE; therefore, it was necessary to explore other options. A colleague put the researcher in touch with a contact who was a martial artist and fitness expert, who in turn shared the paper-based version of the questionnaire with a few people they knew who used AAS. This influenced the potential demographic of the AAS-users but did mean that the sample would not be contaminated. Consequently, the questionnaire was piloted with a group of 3 current users and 1 ex-user: all male, white, British. An unintended consequence of piloting in this way meant that the pilot included an ex-user (who had not used for a number of years). This turned out to be particularly useful as they were willing to meet with the researcher and discuss their thoughts on ways to distribute the questionnaire. Piloting questionnaires does not guarantee that every potential flaw will be identified. An initial analysis of the data collected via the pilot questionnaire did not show any problems with the format or structure of the questions. The participants did not appear to have difficulty answering the questions and when the data was added into the online version (using the Bristol Online Questionnaire Tool), all the information transferred correctly, and the data exported accurately. The questionnaires were all completed and no amendments were made to the questionnaire as a result.

## **4.6 Distribution of the questionnaire**

### **4.6.1 Sampling frame**

With the need to seek out a different population than the one initially intended (4.5.3), it became clear that it would be impossible to construct a sampling frame as there is no pre-existing records of AAS users. Moreover, constructing a sampling frame from for example online fore and gyms is not feasible as there is no way of knowing who takes AAS for recreational use compared to use for competitive sports. This meant utilising non-probability sampling methods (Fielding et al. 2012).

### **4.6.2 Challenges of accessing this hard-to-reach population**

AAS-users are acknowledged as a hard-to-reach population (Smith et al. 2009). Moreover, the differing legal status across the world (1.4 and 4.4.2), and the fact that this community have experienced stigma (Maycock and Howat 2005, Yu et al. 2015) makes them more likely to be secretive about use (Thorlton et al. 2012, Settanni et al. 2018). Settanni et al. (2018) suggest in times of data privacy infractions, that people might be put off participating in online surveys around steroid use for fear of being outed. The literature review evidenced that NSPs and gyms were key recruitment targets however more recent studies, had used online forums. Consequently, this researcher pursued a range of approaches in an attempt to reach populations that do not use NSPs or necessarily train in hard-core gyms. The internet can be a valuable resource for recruiting participants, particularly those from hard-to reach populations (Rodham and Gavin 2006) and as the questionnaire asked for personal information, the anonymity of cyberspace could help encourage people to participate (Rodham and Gavin 2006). Therefore, a large part of the questionnaire distribution was done online to attract as diverse a sub-population as possible. AAS use has been linked to the idea of masculinity within Western cultures (Kanayama et al. 2012), therefore some targeting of western high income countries via social media and online muscle fora was part of the questionnaire distribution. Although targeted at people who use AAS, it is acknowledged that this is still an opportunistic sampling method.

### 4.6.3 Recruitment strategies

There is a range of different ways to sample a population (Mason 2002) and it is important to consider whether the population sampling was convenient or random (Ryan et al. 2001). As this study aimed to research a notoriously hard-to-reach population, the researcher used several different non-random sampling methods: opportunity, self-selected (Rees 2011, Patton 2013), time-location space and snowballing, which is useful in sensitive areas of research (Shaghghi et al. 2011). Here the term snowballing refers to the method of having a gatekeeper share the questionnaire within the community (Biernacki and Waldorf 1981).

Table 4-1 Recruitment Strategies

Strategy	Description	Strengths	Limitations
<b>Opportunity</b>	Uses the knowledge of the researcher to identify potential participants (Jupp 2006)	Useful for hard to reach populations such as drug users (Goode 1999) and allows the researcher to define who and where to study (Jupp 2006) e.g. focussing on non-NHS services	Perceived from a positive perspective as weak data as it is unlikely to produce a representative sample of the population (Jupp 2006)
<b>Self-selected</b>	Participants self-select as to whether or not undertake the survey e.g. via web-based questionnaire (Lavrakas 2008)	Useful to reach secretive populations such as drug-users (Lavrakas 2008)	Introduces self-selection bias which limits the data being generalisable to the whole population (Lavrakas 2008).
<b>Time-location space</b>	Identifiable locations which the intended population frequent (Karon and Wejnert 2014) e.g. NSPs (Hope et al. 2013), muscle gyms and AAS-user forums online	Useful for data collection from hard-to-reach populations (Karon and Wejnert 2014)	Can be difficult to validate. There is a bias towards those who attend venues, leaves out those who do not attend (Raymond et al. 2007).
<b>Snowballing</b>	The method of having a gatekeeper share the questionnaire within the community (Biernacki and Waldorf 1981). Used when desired sample characteristic is rare (Fielding et al. 2012).	Useful to access participant characteristics are rare and when there are sensitivities involved. (Shaghghi et al. 2011).	Snowballing can lead to a more homogenous set of participants (Zahnw et al. 2018) as it relies on referrals from initial respondents to their network (Fielding et al. 2012).



The intention was that by using a variety of media to get the questionnaire out into the community that it would reach someone who would share it amongst their peers, although it would be difficult to know if this had happened. As snowballing can lead to a more homogenous set of participants (Table 4-1), therefore in an attempt to reduce this homogeneity the researcher also targeted a variety of services (NSPs, muscle gyms, supplement shops), online fora, personal social networks and used social media. The summary of distribution methods is at Table 4-2.

Table 4-2 Summary of distribution methods for questionnaire

Distribution Channel	Type of Medium
UK NSPs and substance Use service providers (non-NHS)	Request to share paper-based questionnaire, display a poster and/or promote online questionnaire link.
Overseas substance use services: Canada, Australia, America, Ireland, Jersey	Request to promote/share online questionnaire link.
Work colleagues	Request to put up posters and share questionnaire link.
Pro-muscle gyms	Request to display a poster or promote questionnaire link
Friends	Request to put up posters and share questionnaire link.
Local health food shops & other businesses e.g. library, cafes	Request to display flyers
Twitter	Pinned tweet and direct tweets to people who used the hashtag #steroids and substance use services.
Online muscle and bodybuilding fora	Contacted administrators to ask to create a post with questionnaire link
LinkedIn contacts	Request to promote/share online questionnaire link.
Facebook (FB)	Post of online questionnaire link and request to share in selected relevant groups
Instagram	Post and promoted link alongside pictures of AAS relevant material, used relevant hashtags
Reddit webpage	Posted questionnaire link
YouTube	Video presentation with link to questionnaire: <a href="https://www.youtube.com/watch?v=iOsX1us3-O8">https://www.youtube.com/watch?v=iOsX1us3-O8</a>
Appendices 12 and 13 give examples of above channels and methods	

As the questionnaire was online, it was open to an international audience. This could be potentially limiting as geographically controlling the location of the respondents would be difficult. There could also be a cultural context and options for support and information may be impacted by location, both in terms of laws and policies on provisions of service. However, evidence suggests that the AAS using community spends a lot of its time online, in fora accessible across the world, and studies in populations across the US, Australia and Europe have shown

similar motivations (Sagoe, Andreassen, et al. 2014). Consequently, it was decided not to exclude participants based on nationality, but only age and AAS use.

#### 4.6.3.1 **Non-internet distribution routes**

##### 4.6.3.1.1 ***UK NSPs and substance use service providers (non-NHS)***

Facility-based targeting, that is recruiting participants from services they access (Shaghghi et al. 2011), was used, approaching professionals working with AAS-users. It was a challenge to identify UK services as they are run by many different types of agencies. The FRANK website has 157 pages of possible support services (FRANK 2018), therefore this information was hand-searched to identify NSPs and a list of potential support services created. Websites for these services were then researched for contact information. Not having NHS ethics meant that the questionnaire could not be shared with any service run by, or commissioned by, the NHS. Depending on the contact details available, services were emailed or telephoned to ask if they would share the following with service users: a paper-based version of the questionnaire or a business card or a poster with the online link and quick response (QR) code for easy phone scanning. Services were also provided with a project brief. In total 76 services were contacted and 26 agreed to share the questionnaire in some format i.e. handing out business cards, displaying posters, sharing paper-versions, listing the study on their website or promoting via social media.

One reason for targeting such services, is that previous studies have sought participants via this method and there has been an increase in recent years in AAS-users accessing NSPs (ACMD 2010). Additionally, two gatekeepers, one within the AAS using community and one professional felt their personal/professional relationship with the AAS-users was key to getting them to engage with the questionnaire. One of the issues with handing out questionnaires via an official service provider is the power imbalance in relationships with service users. This was a potential concern, when considering distribution via NSPs, however the questionnaire was anonymous and service users were not being asked to complete it as part of the service provided. Three service providers invited the researcher to their organisation, either to talk to them or their frontline staff

about AAS use. This opportunity was taken up, as Clark (2011) argues, it can sometimes be hard to gain the cooperation of gatekeepers and often offering benefits in return, such as staff training, can help to build the relationship as the organisation will see a clear benefit to partaking in the research. Another example where an organisation wanted clear benefits was WDP, a charity who hold a number of NSP contracts, who asked to promote the study and link to the University on their website. Moreover, in an attempt to encourage organisations to take part, they were offered a summary of the research findings. Further NSPs were found via an academic who had sought participants via NSPs in the past. They were also an advocate for the researcher to join a Google group of people working in the area of AAS use and allowed the researcher to use their name in the emails, with the hope that a personal connection would improve the likelihood of a response. Often from NSPs the likelihood of the response was heightened if the person working in the NSP had a particular interest in supporting people who used AAS. A full list of services that agreed to share the questionnaire is in Appendix 12.

#### 4.6.3.1.2 ***Overseas substance use services***

To find services overseas (in this instance {due to translation issues} focussing on English-speaking countries: USA, Canada, Ireland, Australia and New Zealand that may potentially support AAS-users), a similar approach was taken to that in the UK, initially seeking out a central website that listed substance use services with NSPs. This did not prove as fruitful as the UK search, with only four organisations agreeing to share the questionnaire (Appendix 12).

#### 4.6.3.1.3 ***Local businesses***

The researcher visited the two local shops selling supplements and both agreed to display business card flyers. Posters were also put up around the BU and in the local town library (appendix 13).

#### 4.6.3.1.4 ***Pro-muscle gyms***

The researcher undertook a Google search of phrases such as: 'hard-core' 'power' and 'muscle' gym to identify potential gyms to target. They reviewed the websites

and contacted a number of UK gyms that focussed on strength and conditioning to request if they would share the link. Several friends asked gyms to put up posters in their local areas.

#### 4.6.3.1.5 ***Online distribution***

There is a need to understand this sub-group in a wide range of situations and not just limited to those who access NSPs (Hope et al. 2015). Therefore, part of the distribution strategy was to seek other avenues such as online and personal contacts. Due to the immediacy and transient nature of social media, the distribution was an ongoing process and steps were taken to re-share the questionnaire over a range of social media fora for the period that the questionnaire was open. A summary (to maintain confidentiality) of online distribution and engagement is in Appendix 12 and a snapshot of the social media communication and impressions is in Appendix 13.

#### 4.6.3.1.6 ***Use of personal social networks and wider social media channels***

Users often keep their AAS use secret with the exception of within their own sub-culture networks; therefore, it was difficult to know who within this researcher's social network had contact with people who used AAS. Consequently, working on the assumption that even if they did not know someone personally they might share the questionnaire link via their social media, the researcher's LinkedIn (a professional networking site) and FB contacts were direct messaged to ask if they would share the questionnaire link on their social networks. This met with a mixed response. The link was also posted on the researcher's own FB feed and LinkedIn profile.

#### 4.6.3.1.7 ***Twitter, Instagram, Youtube, Reddit***

The researcher developed the following strategy to promote the questionnaire via Twitter (Table 4-3).

Table 4-3 Promotion strategy

Pinned a tweet of the questionnaire link to her own Twitter profile, and regularly tweeted AAS related material using hashtags
Searched for terms such as 'steroids' and 'roids' to find people on Twitter who were interested in AAS and then directly tweet to ask them to retweet the questionnaire.
Targeted the following relevant individuals and organisations to ask them to share the post: <ul style="list-style-type: none"> <li>○ Substance use agencies, charities and academics in related fields,</li> <li>○ People who promoted bodybuilding,</li> <li>○ Celebrities with a significant number of followers (only one person of any celebrity status retweeted – an engineering academic: @markmiodownik,</li> <li>○ Her Twitter followers with a large followership</li> </ul>
Tweeted the questionnaire link using a number of hashtags relevant to the topic in English and in other languages focussed on western countries (e.g. #muscle).
Utilised a range of specialist interest hashtags to increase to recognition (e.g. #ripped).
Translated the phrase 'Anabolic Androgenic Steroids' into a number of different languages using Google translate (due to lack of resources), searched for that on Twitter and then directly tweeted people who had used the phrase in their feeds asking them to share the post.

The researcher was advised by an NSP worker to use Instagram. Therefore, the researcher set up an account and promoted the questionnaire by regularly adding relevant IPED related stories to the feed, using hashtags to draw people to the posts.

The researcher created a video on AAS use and harm reduction, which included information about the questionnaire and posted this on a specially created channel on YouTube. Additionally, the researcher regularly searched for the most recent posts on YouTube about AAS and where possible shared the questionnaire link in the comment sections. The questionnaire was posted online on Reddit under the PhD academic study forum, in line with Reddit's guidelines.

#### 4.6.3.1.8 **Online fora and Facebook groups**

The researcher contacted moderators (also known as Forum Admin) of online muscle fora to ask for permission to post (Appendix 13) as this is in line with ethical research practice (Rodham and Gavin 2006). This is a variation of time-location space sampling, which looks at targeting people from a population at a place or time where they might gather (Shaghghi et al. 2011). Previous studies

have used special interest online discussion fora to seek participants as often these spaces have whole discussion boards devoted to questions on AAS. Initially, the fora mentioned in previous research were targeted on basis of recommendations from the literature e.g. UK-muscle and MesoRX.com (Papangelis et al. 2016). A Google search was undertaken to seek out other pro-muscle fora. One of the concerns about using fora is that there is potentially a negative attitude towards researchers, perceiving them as opportunistic outsiders, treating AAS-users in the same way as street drug users and invading their safe space (Papangelis et al. 2016). Therefore, seeking permission from moderators was important to help ensure that privacy was not invaded, and the post was framed as a request focussing on seeking opinions and getting the voice heard. Several FB groups relating to AAS use (found via a search of the term steroids within FB) were directly messaged. Two FB groups (Testosterone and Anabolic Steroid Harm Reduction) agreed to share the post within their closed group and allowed the researcher to join the groups.

#### **4.7 Design and development of interviews**

Interviewing is a useful method for gaining an understanding of an individual's current or past experiences (Darlington and Scott 2002) and this was why the researcher chose to use follow-up interviews to collect qualitative data. This was backed up by advice from two different professionals: 1. an experienced NSP worker who shared that his service users liked to tell their stories; and 2. an academic who investigated Muscle Dysmorphia (MD) and had found this approach allowed people to open up more. A wide range of methods for undertaking the interview was offered to the participants. This included traditional methods as face-to-face and telephone interviews as in today's digital age telephones should not be considered a lesser option to face to face interviews (Sturges and Hanrahan 2004, Holt 2010). As it is possible to be able to engage in real-time conversations via the internet (Rodham and Gavin 2006), mediums as Messenger, FB, Skype, and WhatsApp, which includes 'live' real-time typing, audio and video were also offered. Moreover, by offering a choice of method the researcher was hopeful that this would encourage people to participate as it allowed them control over the level of anonymity i.e. total anonymity by using tools such as a FB chat where they use a pseudonym and typed answers or a

phone call, which are more anonymous tools than video via Skype or face-to-face interviews as they cannot be seen.

#### **4.7.1 Interview pilot**

Prior to the first interview, a pilot interview was carried out with a current AAS-user recruited through an academic contact. The pilot participant completed the questionnaire and gave feedback on the interview process. The interviewee was surprised that the researcher did not ask a question regarding the details of all the types and doses of the drugs taken. This was discussed and agreement was reached that although this is interesting, due to the research question and time limitations it was decided not to include these. The feedback from the interviewee was that the Skype format had worked and that the interview style was relaxed. No changes were made to the structure of the interview based on the pilot. Undertaking a pilot interview allowed the researcher to practice and hone their interviewing skills, and this was vital as interviewer skill may affect data accuracy when collecting self-report data (Del Boca and Noll 2000).

#### **4.7.2 Interviews**

The researcher contacted all those who agreed to be interviewed in the questionnaire, and those still willing to participate were emailed an invitation to take part (Appendix 14). The interviews all had a standard opening which could be adapted to meet the medium by which the interview was taking place. The interviews were semi-structured, asking specific questions about participant's experiences of using AAS aligned to three areas drawn from the objectives (3.9) and consisted of nine main questions (Appendix 15) with follow-up questions based on the interviewees' answers. The interview schedule included a specific question on why the participants decided to start using AAS was included as when considering why someone may wish to use AAS to achieve such goals as change appearance, become stronger or build confidence it is worth considering if there are underlying motivations for wanting these changes. All interviews were conducted by the current researcher and audio-recorded without interruption. Permission for recording was gained with participants providing consent either by signing in person, using an e-signature or confirming on tape at the start of the audio-recording. All data were obtained confidentially, interviewees were also

given the option to maintain a level of anonymity for interviews, and some participants chose to share their identity with the researcher e.g. personal email and 'video' chat or face to face interview, however some chose to retain a level of anonymity by using impersonal web-based email addresses, pseudonyms and live chat or purely audio conversations (Table 4-4). The interviews lasted between 45 min and 1 hour 50 minutes.

Table 4-4 Interview Summary

Participant No *from Questionnaire	Country	Method Chosen	Transcript Actions**	Supervisor check
P1	UK	Skype video call	A B (Y)	
1	UK	In person	A	ST
3	UK	Telephone	A	EVT
5	UK	Telephone	A B (Y) C	
31	UK	Telephone	A	
36	UK	In person	A	MiP
45	UK	Telephone	A	EvT
75	UK	Skype video call	A	
77	UK	What's App typed chat (Synchronous)	A	
100	UK	Google Hangouts call	A	
119	UK	Skype video call	A	MIP
129	UK	In person	A	
133	UK	Skype call	A	
Participant No	Country	Method Chosen	Transcript Actions	Supervisor check
28	USA	What's App call	A B (Y)	
32	USA	Skype video call	A	
46	USA	Skype video call	A B (Y)	EvT
49	Denmark	FB Messenger call	A B (Y)	ST
54	USA	What's App call	A	
88	USA	Google Hangouts call	A B (Y)	
91	Belgium	FB Messenger typed chat (Synchronous)	A B (Y)	
93	Canada	Skype call	A	ST
115	Hong Kong	Skype video call	A B (Y) C	
120	USA	Skype call	A B (Y) C	MiP

\* used to maintain confidentiality \*\* **Transcript Actions:** A: sent offer email to read B: received Y/N reply and sent if said yes to review, C: received comments

The interviews were transcribed by the researcher as the process of transcribing can yield important insights (Lapadat and Lindsay 1999) (example transcript in Appendix 16). Two rounds of transcription were done, first the entire interview was transcribed, including all ums, repetitions and pauses, as what to include can



help to make sense or clarify the text (Oliver et al. 2005) and then re-listened to, to identify any mistakes, or to clarify, where possible, inaudible text. As much as possible was transcribed, however different regional/international accents and interference in recordings meant that some parts of the audio were inaudible, signified by XX in transcript. Participants were offered the opportunity to review their transcripts and have a copy of their transcript if they desired. Nine of the participants asked to review the transcripts (Table 4-4), no revisions were requested and if they added information then these transcripts were the ones coded in the analysis phase. An example of how the progression from questionnaire to interview participant process is at **Error! Reference source not found.**

Table 4-5 Progression from questionnaire to interview participant (example)

<b>Example of progression from questionnaire to interview participant</b>
<p>Don checked yes to being interviewed in response to the questionnaire. Consequently, I contacted Don and asked if he still wished to be interviewed and if so, which method would he prefer? When he agreed I sent the time and method for interview and a copy of the participant information and agreement forms (Appendix 14). I read his questionnaire, made a few notes in prep for interview. I then undertook a Skype interview, which including taking a few field notes.</p> <p>Post interview, I typed up the transcript and contacted Don to see if he wished to review the transcript (Appendix 19), and he chose not to. I then re-read the transcript, checked back against the questionnaire, and analysed the transcript for themes. Don’s transcript was also one which my supervisor coded separately to ensure quality.</p>

## **4.8 Method for data coding and analysis**

### **4.8.1 Quantitative data**

The quantitative data from the questionnaires was exported from the Bristol Online System (4.5.3) and imported into SPSS for analysis. SPSS allows for transparency in the analysis process whilst providing a clear audit trail. Data cleaning was used to edit the raw research data to identify and clear out any data points that could hamper the accuracy of the results (4.8.3). Descriptive analysis was undertaken to summarize the data and find patterns and inferential analysis to identify any potential multiple relationships between variables specifically

looking factors that might influence or indicate types of support desired. Tests to identify if the data is parametric or nonparametric were used to ascertain which tests need to be used for the inferential analysis. As it had been decided not to mandate any questions (4.5.2.3) it was assumed that some people may have chosen not to answer a number of questions, therefore the data analysis would not be a whole case analysis but the findings would be presented with the 'n' given when there was missing data.

For clarity, percentages given in the text have been recorded to the nearest whole number. Due to the types of data collected, and the small sample size, in order to have confidence in the statistical findings the data will be reported against one of three criteria:

- \*\*\* If Significance is  $<.001$
- \*\* If Significance is  $<.01$
- If Significance is  $>.05$

#### 4.8.2 Qualitative data

Thematic analysis was the chosen method to analyse and interpret the qualitative data. It is an iterative process that is “a method for systematically identifying, organising, and offering insight into patterns of meaning (themes) across a data set” (Braun and Clarke 2012, p.57). This type of analysis involves the coding of data to attach units of meaning to segments of text. It is useful as a tool as it is not welded to any particular epistemological position or theoretical framework (Braun and Clarke 2006) and can be used “across a wide range of epistemologies and research questions” (Nowell et al. 2017, p.2). Thematic analysis does not seek to look for unique items within individual data sets but to identify and make sense of collective experiences or meanings (Braun and Clarke 2012) relating to participants' lived experiences (Clarke and Braun 2017). This lends itself to the specific research questions around both experiences of AAS use and ideas about the support wanted.

As these were semi-structured interviews, coding was both deductive and inductive, as the participants' often added information pertinent to other questions at different times and shared their own thoughts and ideas around AAS use in general. Therefore, the categories used for the questions: Reasons for

starting use, support and information accessed and wanted were used to code deductively, and other data was coded inductively.

Braun and Clarke's (2006) six steps to thematic analysis were followed. NVivo was chosen as the tool for managing the data as it allows for transparency in the coding process, allowing the researcher to manage the coding through its iterations with a clear audit trail and partially address researcher bias through rigour:

- Initial coding: descriptive: participant-led which are captured as self-defined nodes.
- Secondary coding: the researcher's knowledge is brought to bare and includes the merging and renaming of codes to address the research questions and the identification of themes
- Tertiary coding: includes further distilling of the data, interpretation of data, addition of theories from the literature and the conceptual mapping of categories

Table 4-6 summarises the coding process.

Table 4-6 Thematic Analysis Coding Process

	<b>Six Steps</b>	<b>Adapted from Braun and Clarke (2006)</b>	<b>Researcher actions</b> <b>Samples in Appendices 16,17</b>
1	Familiarising yourself with your data	Familiarisation with data. Researcher is fully immersed and actively engaged in data by first transcribing the interactions and then re-reading transcripts and/or listening to recordings. Initial ideas noted down. This step provides the foundation for the subsequent analysis	Transcribed 21 out of 23 interviews. two interviews were conducted via live chat (and therefore already typed). Once transcribed, re-read all transcripts in their entirety and initial notes written on transcripts
2	Generating initial codes	Once familiar with the data, identify preliminary codes, which are the features of the data that appear interesting and meaningful. These codes are more numerous and specific than themes but provide an indication of the context of the conversation	Each transcript was read and coded manually using coloured highlighters: initial groups were identified relating to questions. On further reading other grouping emerged such as othering, media perceptions. The groups formed an initial coding framework
3	Searching for themes	The start of the interpretive analysis of the collated codes. Relevant data extracts are sorted (combined or split) according to overarching themes. The researcher's thought process should allude to the relationship between codes, subthemes, and themes	Initial coding framework was entered into NVivo software A secondary coding framework was developed, subdividing some of the groups that had been initially identified. Each transcript was recorded against this framework. This process ensured that the transcripts that had been coded first were given equal weighting and helped ensure data was not missed
4	Reviewing themes	A deeper review of identified themes follows, questioning whether to combine, refine, separate, or discard initial themes. Data within themes should cohere together meaningfully, while there should be clear and identifiable distinctions between themes. Themes checked in relation to the coded extracts (phase 1), and then for overall data set (phase 2)	Qualitative data from the questionnaires was coded against the identified coding framework at this point. Stages three, four and five were iterative with constant rechecking against the original transcripts to ensure that meaning was not lost or distorted
5	Defining and naming themes	'Refining and defining' themes and potential subthemes within data. The researcher needs to provide theme names and clear working definitions that capture the essence of each theme. At this point, a unified story of the data needs to emerge from the themes	Further iterations of coding were undertaken to refine themes due to complexity and interconnectivity of data. Some themes were subsumed into others and some were discarded due to limited supportive. Themes and sub-themes were names/labelled
6	Producing the report	Transformation of analysis into an interpretable piece of writing by using extract examples that relate to themes, research questions and literature	Six overarching themes were identified (Figure 5-1)

Themes can “provide a framework for organising and reporting the researcher’s analytic observations”(Clarke and Braun 2017, p.297). The interview data was analysed in the first instance and a coding framework developed in line with the objectives of the study. Reliability in coding is critical when conducting analysis (De Wever et al. 2006). Three of the interviews were coded independently by one of the supervisory team. Another member of the supervisory team then used the secondary coding framework to code three different transcripts to quality assure the analysis as such independent coding and collaboration can help to maintain the quality and rigour of the analysis (Morrow 2005), no changes were made as a result of this. The qualitative data from the questionnaires was then incorporated into the data set (Figure 4-1) and was coded deductively using the coding framework developed at stage three (Table 4-6) and inductively if data was found that did not fit any already identified themes to create a fuller picture as thematic analysis allows for large amounts of data from multiple participants to be synthesized to create a meaning (Boyatzis 1998).

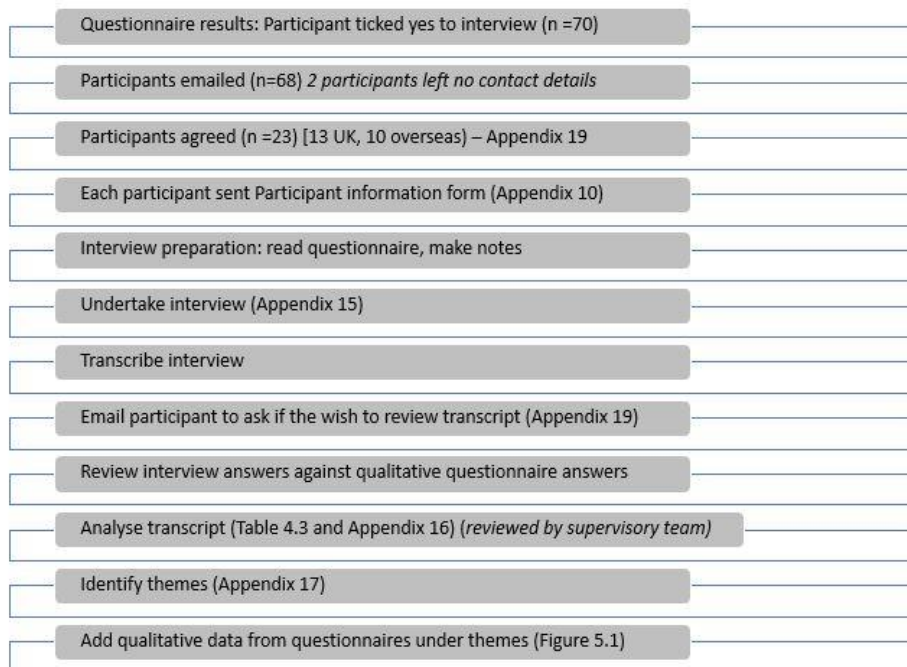


Figure 4-1 Data capture and analysis process

### 4.8.3 Data cleansing

In order to effectively carry out statistical analysis on the quantitative data from the questionnaires a small amount of data cleansing was required. The data set was cleansed, re-categorised and recoded e.g. redefining USA, US and America under one heading, amalgamating Europeans under one category and where necessary amending erroneous entries in some of the demographic data. The decision to re-categorise items such as ethnicity, sexual orientation, education and employment status was done in discussion with the supervisory team, as one way to show reliability is through being transparent about how data is summarised or re-categorised (Dey 1993). The process used is summarised in Appendix 18.

#### 4.8.3.1 Participant IDs

To ensure the voice of the AAS-user is at the fore, verbatim quotations are used to illustrate participant views and ensure authenticity. Consequently, the grammar or spelling of the written qualitative data nor the colloquialisms or phraseology of the transcriptions has not been amended. Some participants have English as a second language so some quotations may be grammatically incorrect to native English speakers and due to the number of errors, these have also not been noted with [sic] (with the exception of the publications). In line with the researcher's values, each participant was given a unique pseudonym. For clarity quotations will be identified as follows:

- Quote from questionnaire: Questionnaire participant only (pseudonym/country of residence/age) for example: (Barak/Greece/44 [q]).
- Quote from questionnaire: Questionnaire and Interview participant (pseudonym/country of residence/age [Q])
- Quote from 'typed chat' interview: Questionnaire and Interview participant (pseudonym/country of residence/age [TI])
- Quote from 'transcribed' interview: Questionnaire and Interview participant (pseudonym/country of residence/age [CI])

#### **4.8.4 Quality in mixed-methods research**

In mixed-methods research, sequential designs can aid in maintaining the integrity of the separate methods and help to ensure quality as method specific criteria can be used (Bishop 2015) and the rules for controlling validity should be followed (Steven 2012). Validity and reliability are central to the quality of both quantitative and qualitative research (Golfasni 2003), but qualitative research may not use these particular themes. A number of measures have been taken in this study to try to ensure the academic rigour and to address the issues of reliability and validity throughout the data collection and reporting process.

##### **4.8.4.1 Quality in the quantitative elements of the study**

For the quantitative analysis a measure of reliability was through the transparent redefining of the categories (Appendix 17). Internet questionnaires provide a validated method for collecting self-reported data on drug use (Pealer and Weiler 2003, McCabe 2004) and are consistent with other data collection methods (Crawford et al. 2005). Face validity considers how sensible the questionnaire appears to be and is also an important measure (Bruce et al. 2018). Therefore, to address this, a range of professionals from different specialisms reviewed the questionnaire (4.5) with a view to pointing out any errors or anomalies. Content validity, how the questions are representative of the construct being measured (Ryan et al. 2001) is important in the construction of questionnaires. In this study, the questionnaire was reviewed by a professional in the field with knowledge of the participant group and piloted with AAS-users (4.5.3) to help ensure the content was relevant. Moreover, pilot participants were asked to explicitly comment on the questionnaire design. Some questions were taken from other questionnaires (Appendix 11), and data used for selected questions was taken from papers included in the literature review (Harvey et al. 2019) (3.6) in an attempt to address the issue of criterion and construct validity, that is whether the questions used actually measure what is sought to be measured and the extent to which measure relate outcomes (Ryan et al. 2001). This was further addressed through the piloting of the data (4.3.1.2).

#### 4.8.4.2 Quality in the qualitative elements of the study

When it comes to quality assessment of qualitative research, there is a view that the role of the researcher and how the data is gathered is vital and that quality criteria such as validity and reliability originating from quantitative research need not be established (Pope and Mays 2006). However, there are specific criteria that can be applied to qualitative research: credibility, transferability, consistency and confirmability (Lincoln and Guba 1985). Consistency requires that there is a clear pathway between findings and the source and confirmability that there is a clear audit trail for this (Ryan et al. 2001). This transparency of coding is maintained through use of NVivo (4.8), as demonstrated through Appendices 16 and 17, and the findings make use of quotations to illustrate the themes identified. For the qualitative data, a way of helping to ensure reliability is to attempt to correct for mistakes in categorisation such as overlooking or mis-assigning codes (Dey 1993) and therefore the number of transcripts were reviewed by supervision and using NVivo to search key words and phrases in the texts.

Triangulation is a way of helping to add validity and credibility to qualitative research data (Pope and Mays 2006), and mixed-methods should increase validity of findings (Mckim 2017). Consequently, the use of both questionnaires, with free-text answers and semi-structured interviews, a form of sequential triangulation, should help to ensure a level of validity. NVivo has helped to ensure that the data was analysed in a systematic and rigorous way (4.8) which is crucial to avoid flawed research (Ryan et al. 2001). Another way to help ensure quality within qualitative research is for their researcher to actively reflect on the methodology and their inherent influences (Mason 2002), as it is impossible (if not undesirable) for a researcher to remain truly objective (Ryan et al. 2001). This researcher has therefore undertaken reflective practice in two ways, first through active discussions within supervision, and secondly as part of the thesis narrative (9.13). In addition, having more than one researcher analysing the data set can also reduce subjectivity (Ryan et al. 2001), due to resource limitations it was not possible for the supervisory team to take on the task of coding the whole data set but a proportion was also coded by others (detailed in methods in Chapter 6) in order to ensure a level of quality.



## **4.9 Summary**

A mixed-methods approach was used in this study. Ethical approval was sought and permission granted. Questionnaire and interview questions were developed and piloted and consideration was given to key ethical issues, and emphasis put on maintaining the confidentiality and anonymity of participants. A communication strategy was developed for the dissemination of the questionnaire and data from these informed the interviews. Thematic analysis was the chosen method for analysis of the qualitative data. The findings will be presented in the next chapter.

## **Chapter 5 Findings**

### **5.1 Overview**

This chapter reports the key quantitative and qualitative findings from the questionnaires and interviews that contributed to the six themes. The qualitative data builds on and illuminates the quantitative information gathered in the questionnaires, as quantitative and qualitative data should be integrated for mixed-methods findings (Bryman et al. 2008). The findings have been synthesised into six themes with associated sub-themes. This chapter set out the demographic data and the findings from five of the six themes. Chapter 6 is in the form of a published paper (Harvey et al. 2020) and covers the sixth theme. Chapter 7 is a submitted paper that explores one of the sub-themes in detail. The findings have been laid out in this way as one aim of the study was to bring the voice of the AAS-user to the fore and ensure that their experiences were captured and reported in the literature.

### **5.2 Introduction**

The first section of findings outlines the study population and a description of AAS use patterns. The second section then details the findings aligned to the five emergent themes.

#### **5.2.1 Participants**

The questionnaire was accessed by 133 people (summary table of demographics in Appendix 19). As the piloting of the paper-based questionnaire led to no changes to the online questionnaire, three of the four participants' data was added to the data set = 136 participants. The fourth pilot participant was excluded as he had not been using AAS within the six-month period prior to completing the questionnaire. One person was excluded from the data set as they had not answered any questions. Two further participants were excluded as they were both female, and although they had been eligible to take part in the study it was decided that due to the low number of female respondents and the fact that neither volunteered to be interviewed to exclude them. Knowledge of female AAS use is limited within the literature, and although it would not be viable to include

the data from the two women who completed the questionnaire within the analysis of the wider data set to ensure that the voices of these female participants are not lost, as short summary is provided at the end of the discussion (8.8) as it is important to recognise the power of the researcher in the research and to ensure that potentially marginalised groups are not disempowered e.g. made invisible by excluding data as we have a duty of care to those who participate in research (Edwards and Brannelly 2017).

Three participants self-described their sexual orientation as bi-curious, demi-sexual and pansexual, two of whom also cited their gender as male and so were incorporated into the data set. One, defined their gender as gender-fluid, not male, however he was also included in the data set as it was clear from his qualitative answers that he was biologically male, and this was confirmed in the Skype video interview (Appendix 25 Sketches to illuminate the differing AAS use pathway).

Of those who were contacted to be interviewed, twenty-two people responded in the affirmative. Interviews were undertaken, either in person, via Skype or online synchronous chat (Table 4-4). All 70 participants checked Yes, to the being happy to undertake an interview and Of these the 68 who gave contact details were emailed, 23 replied. As no changes were made to interview questions as a result of the pilot, the pilot interview data was incorporated into final analysis. In total 133 participants (23 interviewed) were included in the data analysis from the questionnaires and interviews.

Whole case analysis could not be completed on the data as there were a few questions across the data set that had missing data, but no systematic missing of questions. This resulted from having only a limited number of mandated questions in the questionnaire (4.5.2.3). The sample was not so large that the number of people who did not answer a specific question reduced the power of the statistics. When visualising the data (using histograms and boxplots) it failed to meet the assumption of normality which was confirmed by a Shapiro-Wilk test ( $p < .05$ ). As the data was skewed non-parametric tests were used (Smalheiser 2017).

### 5.2.1.1 Participant demographics

A summary of participant demographics is in Table 5-1.

Table 5-1 Summary of Participant demographics

Demographics	Percentage	n=*	Participant information: AAS use	Percentage	n=*
<b>Age</b>	Mean: 35.7 Median: 34 Range: 18-65 SD: 10.9	130	<b>Age started using AAS</b>	Mean: 27.3 Median: 25 Range: 14-57 SD: 9.1	130
<b>Employment status</b>		129	<b>Inject AAS</b>		131
Employed	85.2	110	Yes	97.7	128
Unemployed, student, retired, Other	14.7	19	No	2.2	3
<b>Gender</b>		130	<b>AAS use pattern</b>		133
Male	99.2	129	Cycling	39.8	53
Other (Gender-fluid)	0.77	1	Continuous	57.8	77
<b>Ethnicity</b>		133	Other	2.2	3
White	78.9	105	<b>Number of years using AAS</b>	Mean 7.2 Range: <1-30	132
Other	21.1	28	<b>Has your quality of life improved since using AAS?</b>		128
<b>Level of education</b>		132	Yes – improved	74.2	95
Primary or secondary	20.4	27	No – stayed the same	20.31	26
College or university	79.5	105	No – got worse	5.4	7
<b>Sexual orientation</b>		133	<b>Take part in competitive sports</b>		132
Heterosexual	90.9	121	Yes	21.9	29
Other	9	12	No	78	103
<b>Country of residence</b>		133	<b>Use of HGH</b>		133
UK	43.6	58	Yes	21.8	29
USA/Canada	25.5	34	No	36.8	49
Europe	25.5	34	Considering	41.3	55
Other	5.2	7			

\* The only mandated question was 'are you 18 years or over', therefore n is given for each statistic as some people chose not to answer every question.

The mean age was 36 years. All 133 participants included were male, 121 selected heterosexual, eight gay and four 'other'. When asked to self-describe their gender, 129 used the word male or associated synonyms, and one described themselves as gender-fluid. The majority (44% N=58) lived in the UK, 26% (N= 34) from USA and Canada, 26% (N=34) from Europe (including one British person who

resided in Spain), five from Australia, one from the Philippines and one from Hong Kong (a French national). A more detailed summary of the demographics of interviewees is provided in Appendix 19 as it is their perspective that forms the basis of insights into experiences of use.

#### 5.2.1.2 AAS Use

The median average age for starting AAS use reported was 25 (mean 27). The data set contained two modes (ages 21 and 23, each with 10 people starting use) with one person reported as starting at 14 years of age and one person at 57 years of age. Years using ranged from 0-30, with a mean range of 7, (median 4, mode 1). The majority of participants (98%; n=128) injected AAS. Forty percent followed an AAS cycling pattern of use, while 58% of participants favoured a continuous use pattern, a number of those who used continually describing a 'blast-and-cruise' pattern in which use is continuous but with changes between high and low doses (Sagoe et al. 2015).

### 5.3 The six themes

From the analysis of the data the researcher identified six overarching themes and associated sub-themes related to Management of Use and Identity that covered a range of aspects of users' experiences (Figure 5-1). A key for the qualitative data source of the quotations is at 4.8.3.1.

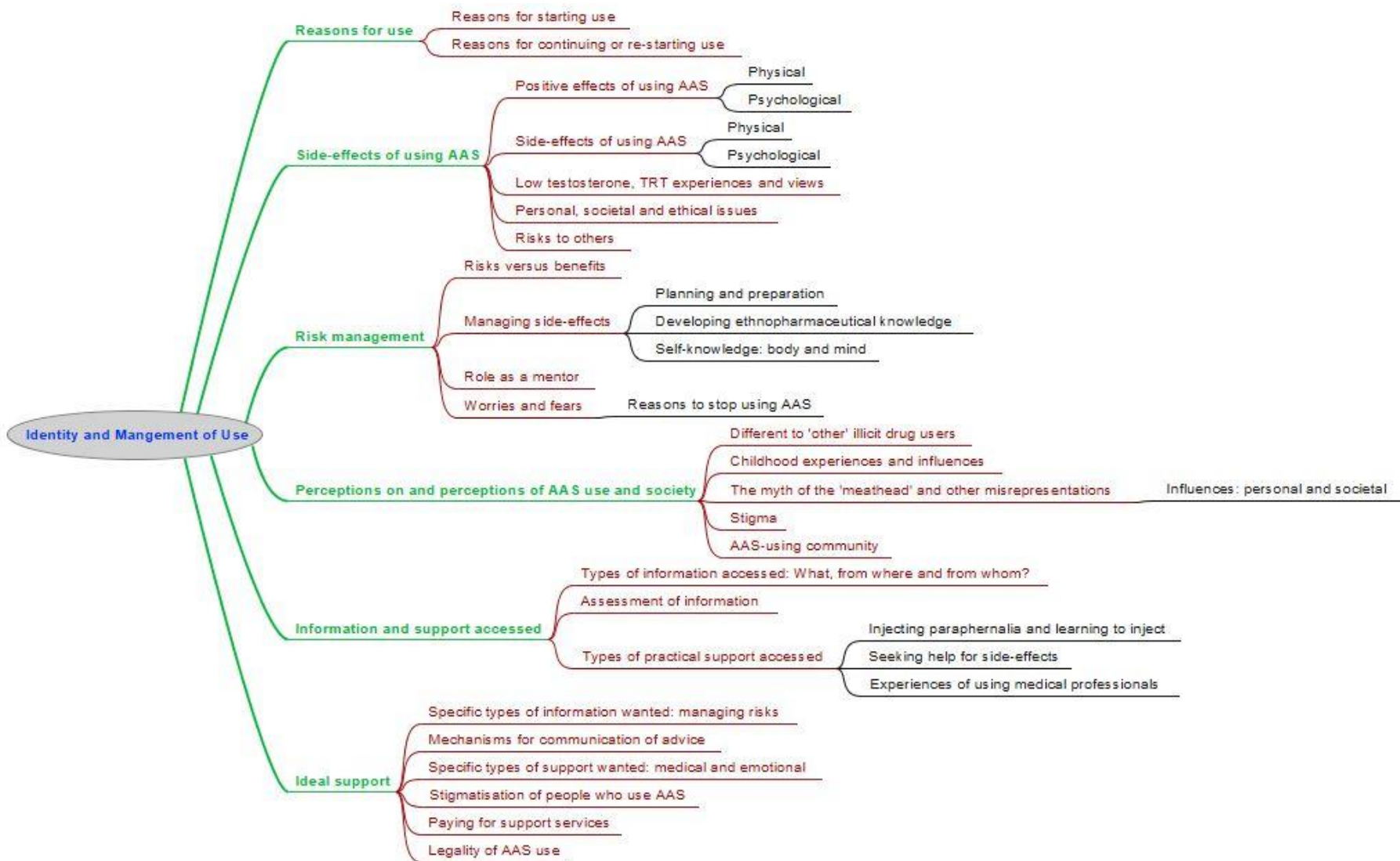


Figure 5-1 Six themes and associated sub-themes

### 5.3.1 Theme one: Reasons to use AAS

**'that bigger, faster, stronger mentality' (Lee/USA/43 [TI])**

The first theme that emerged from the data was 'reasons to use AAS' with two sub-themes:

- I. Reasons for starting use
- II. Reasons for continuing or re-starting use

Participants were asked to select all their reasons for using AAS, a summary of motivations is provided in Table 5-2. Notably, the third most selected was the 'positive results I have achieved from using AAS' which aligns to reasons for continuing use. The fourth most selected was not a physical, concrete reason but an emotional reason: 'become happier'. It is also worthy of note that family influences, coach recommendations and increased aggression were selected by less than 1% of cases. Just under one third of participants, gave overcoming depression as a reason and interestingly, over one third selected options on increased sex drive and/or sexual attractiveness.

The data do not indicate which of the reasons (Table 5-2) were for starting use and which explained continued use, but the number of cases suggests the complexity of motivations for using AAS.

Table 5-2 Reasons for use

Top reasons for using AAS	N	Percent of cases	Percent
Enhance my muscles or strength	116	12.1	87.9
Improve my appearance	98	10.2	74.2
Positive results I achieved from using AAS	76	7.9	57.6
Become happier	70	7.3	53
Improve fitness	66	6.9	50
Increase my confidence	60	6.2	45.5
Increase my sex drive	51	5.3	38.6
Improve endurance or stamina	49	5.1	37.1
Additional reasons for using AAS	N	Percent of cases	
Increase my sexual attractiveness	45	4-5	
Lose weight	44		
Prevent injury	40		
Positive results that others achieved who used AAS	39		
Overcome depression	28	2-3	
Curiosity	25		
For competition	22		
Frustration: I've not achieved the desired results from exercise	21		
<i>Other</i>	21	1-2	
For personal security	16		
Impress my friends	13		
My friends use AAS	12		
Become brave	10	Less than 1	
Increase my aggression	9		
For my Job	8		
Recommended by my coach/trainer	5		
An elite sports person, I respect uses AAS	5		
Help me stop being bullied	4		
A celebrity, I respect uses AAS	4		
A family member uses AAS	4		
My partner uses AAS	1		

There were some exceptions as in the qualifying data collected 'under other reasons'; participants self-reported other reasons for starting non-prescribed AAS use linked to a number of health-related conditions including: preventing HIV wasting, recovery from a car accident, auto immune disease, chronic illness and unusually one participant reported managing mental health conditions:

*'Using 150+ mg test EW helps me to better keep my Asperger and ADHD in check' (Ansgar/Denmark/33 [q])*



Another unique motivation involved one participant who had only sought out non-prescribed AAS on one occasion and did not have any motivations related to building muscle but was self-medicating for the symptoms of low testosterone. He turned to accessing AAS illegally when he ran out of his prescription testosterone replacement therapy (TRT) medication. This was a one-off, and it was unclear if he would return to this as an option if future prescriptions changed:

*'...because they was giving me a prescription of so many vials, I think like it was 10 vials, and that was supposed to last me 14 days, every 2 weeks, you take a vial a week, well I was cutting it down to every 10 days... when I went to get the prescription... they said no it is not due yet, but I was out of vials ...that was when I went to black market and picked it up because I couldn't get any more on prescription.'* (Han/UK/42 [TI])

### 5.3.1.1 Reflections on starting use

The interviews allowed participants to consider the impact that starting use had on them. Several participants shared regrets related to starting use, of which four types were identified, illustrated in Table 5-3.

Table 5-3 Reflections on starting use

Type of regret	Reflections on starting use
Lack of knowledge on initiation of use	<i>'It's actually quite remarkable how ignorant people are comes to doing things like this to your body a bit like i was when i when i first started.'</i> (Peter/UK/24 [TI])
Regret starting use early, but no regrets about using AAS per se	<i>'I started taking too early... If I know if I know what, if I had started with my knowledge which I have now then I would wait. I would wait probably until 21.'</i> (Lev/Canada/32 [TI])  <i>'I was a kid so, ...in retrospect, dumping that kind of hormone into an already hormonal body. It kind of messed up my, my mental state ...it kind of exacerbated all your natural teenage angst and issues at the time... I knew the, the changes in me weren't just all me, they couldn't have been because I was taking out quite quite large doses at that time.'</i> (Lewis/USA/37 [TI])
Detrimental effects on psychological development	<i>'I do regret sometimes starting using it cause I know it's, some of my behaviour completely changed for permanence'</i> (Lawrie/UK/27 [TI])
Regret about starting to use	<i>'If I could go back in time, I wouldn't have started that young. I can even say i maybe wouldn't do it at all.'</i> (Tomaz/Belgium/40 [CI])  <i>'I have regreted the use of AAS/PEDs, for two reasons: The health issues and the impact on my social relationships (family, marriage, friends, work)'</i> (Barak/Greece/44 [q])

### 5.3.1.2 Reasons to continue or re-start use

From these findings, reasons for use were complex, with people selecting multiple options, and further information from the interviews showed that participants would give initial reasons for starting use and then unintended/unknown consequences of use also then became seen as desirable and added to or superseded initial motivations. One participant describes how he felt, and how he then became “addicted” as a result:

*‘An injury led me to more seriously get involved, serious motor vehicle accident, no lost limbs just large lacerations and abrasions everywhere. Started to help heal better and faster. Decided to continue use after initially planned 8-12wk cycle due to effect and/or psychological addiction’ (Niall/Canada/25 [q])*

This study set out to only recruit those people who used AAS recreationally; however, it became clear that competitive use and recreational use were often intertwined. Some participants motivations for use started out as competitive i.e. to help them succeed in a specific sport (i.e. to build muscle and strength); others started out to enhance their image and then became involved in the bodybuilding culture while, others who had started for competitive reasons, continued use even after stopping competing for aesthetic or health reasons:

*‘After 42 years became impossible train hard, stay lean and have a decent libido -)’ (Matteo/Italy/47 [q])*

The positive experiences of using AAS, led them either to continue their use, or even re-start their use, often in a more measured way, with motivations being less about gaining muscle and more to combat the effects of ageing and maintaining their wellbeing, although some still did cycle. The anti-ageing element was often seen as a way to combat falling testosterone levels and referred to as a form of TRT. The concept of self-medication with AAS as a form of TRT is developed further in Chapter 7. Anti-ageing was one of several motivations that were more explicitly referenced in the interviews, the others being: self-medication (TRT) to overcome genetics and self-medication for other medical conditions.

Yet, for one participant, continued use was more than self-medication; it was part of a healthy lifestyle:

*'I decided to stay on test year round and introduce other compounds periodically, the 'cruise/blast' because I used to party a lot and do party drugs and was a daily drinker, being on gear motivates me for a more healthy lifestyle, I have been clean off of all 'drugs' for a year now and I love my life' (Fred/USA/26 [q])*

Fred is using AAS but does not see his use as 'drug use', as he might other recreational or 'party' drugs. Others also talked about their use in this way:

*'I wouldn't classify myself...as a steroid user really, I wouldn't anymore, because I now see it more as like a health aspect, self-medication and health, that's it really' (Robert/Spain/34)*

Moreover, qualitative answers to the question: "Why couldn't you stop using?" provide reasons for continuing use as illustrated by the following [T1]g:

- *'I will get depressed again, i've tried once before' (Erik/Sweden/35 [q])*
- *'It has a strong effect on my confidence and well being' (Jerrick/Denmark/35 [q])*
- *'Since the age of 37, I have used continuously as a method of avoiding withdrawal/post use experience' (Isaac/UK/42 [T1])*

This is a recognition or acknowledgement that they would find it hard to stop using AAS, and it could be argued that this is the language of dependency.

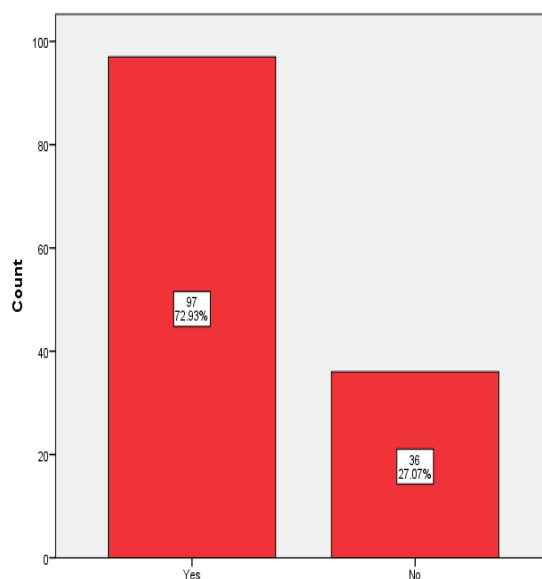


Figure 5-2 Could you stop using AAS?

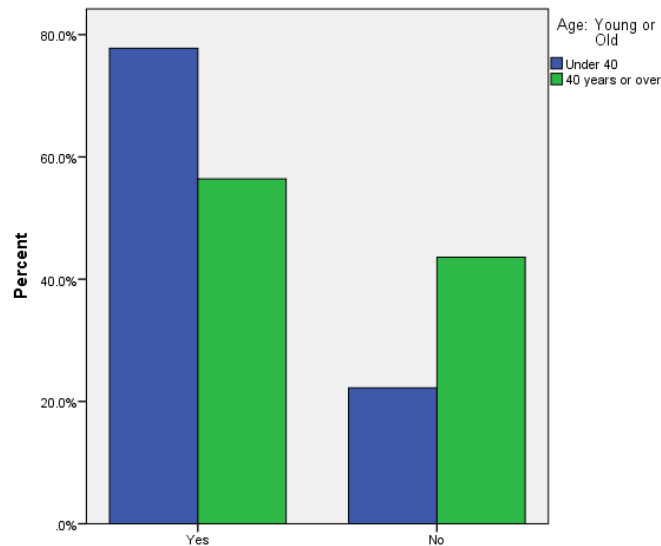


Figure 5-3 Is it possible to become addicted to AAS?

In the questionnaire 70% of participants felt that it was possible to become addicted to AAS use (Figure 5-3) and 27% of participants thought that they could not stop using AAS (Figure 5-2). More than two-thirds of the younger participants felt it was possible to stop using compared to users over the age of 40 (Just over ½) and a Chi Square test of independence was conducted between 'Age (over or under 40 years old)' and 'belief it is possible to become addicted'. All expected cell frequencies were greater than 5. There was a statistically significant association between Age (over or under 40 years old) and 'belief it is possible to become addicted',  $X^2 (1) = \text{Pearson Chi Square } 6.072, p = 0.014$ . The association was small/medium (Cohen 1988), Cramers V = .217 (small/medium). Moreover, a Mann-Whitney U test was run to determine if there were differences in 'the number of years using AAS' between 'could you stop using AAS' (yes [n=96], no [n=36]). Distributions of the number of years using for 'could you stop using AAS' were not similar, as assessed by visual inspection. The number of years using AAS was statistically different between Yes (mean rank = 59.43) (median = 3) and No (mean rank = 85.35) (median = 76),  $U = 1049.5, z = -3.491, p = 0.000 (***)$ , using an exact sampling distribution for U (Dinneen and Blakesley 1973). This evidences that the longer AAS use continues, the less likely the user is to consider stopping possible.

In the interviews, continued use was rarely articulated in terms of dependence or addiction but more often as self-medication.

However, some participants did talk about the addictive nature of the positive effects of use and wanting to avoid the terrible feelings experienced when they stop using:

*'To go back to the topic of addiction when you try to get clean because you are getting to the point to get clean can you start feeling like shit you realise actually that, then life is not as beautiful as you think can you again need to feel like a normal human and stuff like that, that's the biggest, I think addictive point, do you go back to you and to get the feeling again and stuff like that.'* (Lawrie/UK/27 [T1])

One participant drew a connection between how he felt after an AAS injection and how this meant he was most likely dependent on AAS:

*'The reason why I would categorise this as dependency is within half an hour of taking that injection, I immediately feel better. Now the shortest acting ester and the blend I am currently using takes around 18 hours to get into your system before it clears your body completely of the ester so there is no way it is having an effect on me within half an hour but I do start to feel better half an hour after taking that... It's like a functional addict who takes the of whiskey in the morning before going to work because he can then think straight, and it gets him back to normal. That's ...what it feels like to me, I don't see it as being a particular problem'* (Isaac/UK/42 [T1])

The point Isaac raised about dependency on AAS as an adaptive coping strategy was also referenced by another participant:

*'...it's a little bit of an adaptive coping with the idea of the loss of status and the invisibility that comes with ageing as a gay man'. (Hugo/USA/53 [T1])*

Further examples of views on “addiction” are included in Appendix 20 as it could be important for professionals to understand how users explain the psychological drivers to continue to use AAS.

### 5.3.2 Theme two: Effects of AAS use

***“...you feel pretty much like a superhero, if you know what you are doing a course. It is definitely addicted on that stage” (Lawrie/UK/27 [T1])***

The second theme to emerge was ‘effects of AAS use’. This consisted of five sub-themes of which the first three align to personal impact, the fourth to wider social

impacts of use and the fifth considers risks to someone else from someone using AAS:

- I. Positive effects of using AAS
  - a. Physical
  - b. Psychological
- II. Side-effects of using AAS
  - a. Physical
  - b. Psychological
- III. Low testosterone, TRT experiences and views
- IV. Personal, societal and ethical issues
- V. Risks to others

Participants were asked to self-describe the benefits of AAS use and the positive and unwanted effects, as well as to select from lists relating to the types of positive and psychological or behavioural effects which were drawn from the current AAS literature. All effects were chosen by at least one participant. There was, however, a marked difference in the total number of responses given between the positive and negative ones, with 768 responses for the positive effects and 143 for the side-effects. It should be noted that this is self-report data and the power of suggestion may have impacted on the responses. Moreover, although participants may have felt these effects, they may not have resulted from AAS use.

One key finding from this study was that the overwhelming majority of participants (74%) stated that their quality of life had improved since using AAS (Figure 5-4), which comes from a combination of positive physical and emotional effects of using AAS.

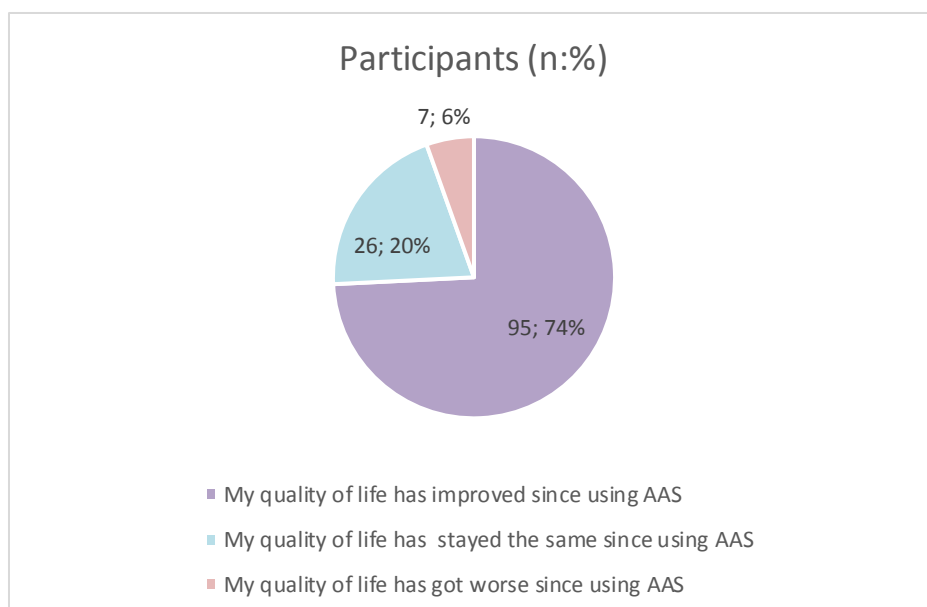


Figure 5-4 Impact on quality of life

The positive effects are reported in two sections: physical and psychological.

### 5.3.2.1 The positive effects of using AAS: Physical

The most referenced physical benefit was strength and power (n =44), followed by muscle building (n=42), which aligned to the main motivations for use. A summary of benefits is listed in a tally in Figure 5-5 which is a way of quantifying qualitative data (Krippendorff 1980) aligned to symptoms experienced. In order to ensure the experiences of the AAS-user are not overshadowed, and to highlight the range and complexity of the benefits of use a more detailed summary is in Appendix 21.

Over and above the body transformation, specific perceived health benefits were identified, such as faster injury recovery, stabilising wasting syndrome and boosting the immune system.

Moreover, the interviewees also illuminated the complexity and interconnectivity of a range of motivations e.g.

*'I think it stabilised the wasting syndrome. It gave me some energy, it made me look more muscular with the workouts. And so, there was a medical benefit and there was a cosmetic benefit and what's not to like.'*  
(Hugo/USA/53 [TI])

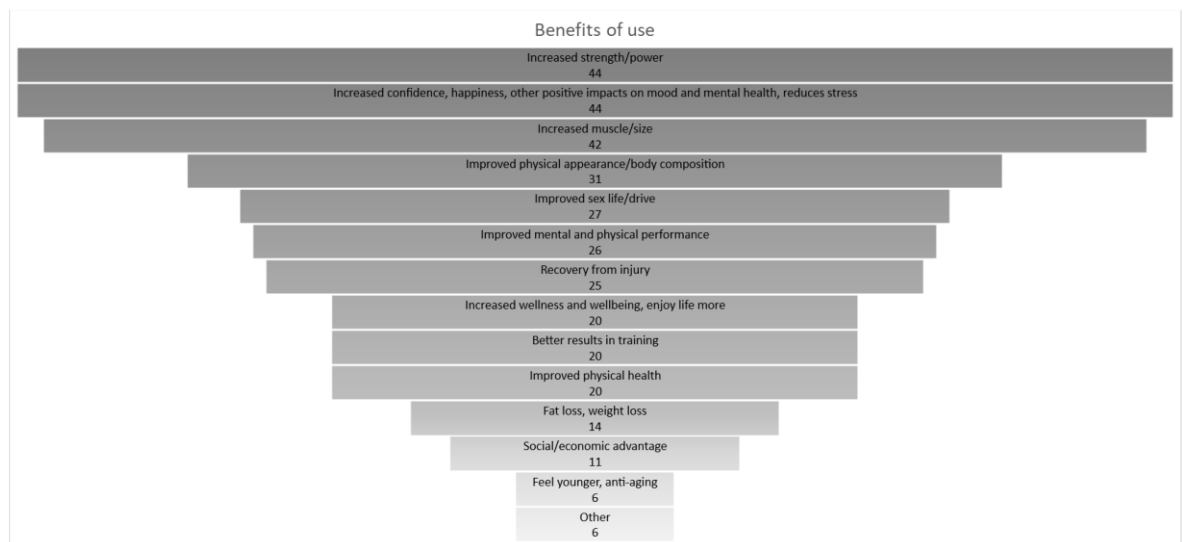


Figure 5-5 Benefits of use





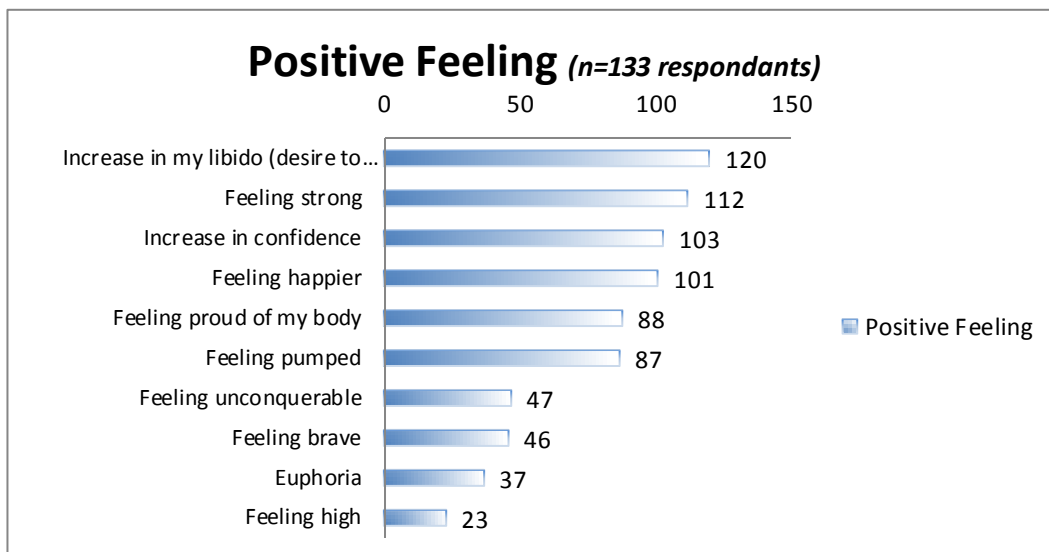


Figure 5-7 Positive feelings from using AAS

Benefits were often aligned to the motivations for use, but when asked directly about the positives aspects of using AAS, participants mentioned the combination of effects, feelings of wellness, spoke in hyperbole (Figure 5-6), and described it as rejuvenating e.g.

*'...like a rejuvenating fountain of youth type thing' (Lewis/USA/37 [TI])*

There was a clear narrative aligned to the positive psychological impact of using AAS. The range of positive emotions noted included feeling younger, increased confidence, self-esteem, increased happiness, better moods, increased assertiveness, feeling more grounded, more mentally stable, more optimistic, calmer, more gregarious, better able to cope with stress and an increased overall sense of wellbeing. Several participants noted not just improved mood, but also the alleviation of depression and one went as far as to describe it as helping him regain his own personality; Del explains that it impacted his whole life:

*'It's given me a lot more confidence in talking to people. In the past, I was kind of always covering myself up not really wanting to talk to anyone, but it has kind of opened me up a bit and, I feel a lot more outgoing. ...I haven't had a personality transplant I am still the same person but it's like I am slowly changing and becoming more like the person I want to be...It means I don't have to worry about taking my shirt off at the beach, that was a big problem for me. I can have photos taken of me at any time, in the past I used to delete all the photos of myself, erm, I don't feel embarrassed when I am eating food, because when you are a fat person eating food, people think ah you shouldn't be eating that, you're fat.'*  
(Del/UK/35 [TI])

However, not everyone felt the same:

*'The psychological mumbo jumbo is a big load of bullshit. I don't feel any different at all when on steroids or off. Sometime of just go off the steroids cold turkey when I feel that I don't have time to put in the hours in the gym and I still don't feel any different - sure I loose some musculomass but that's it. My mind couldn't care less.'* (Rasmus/Sweden/35 [q])

### 5.3.2.3 Side-effects of using AAS: Physical

Among participants 84% (n=112) listed one or more physical or psychological side-effects that they had experienced and only 12 said they had not received any. As the side-effects question was free-text, and some people listed one side-effect whereas others several the results have been summarised in frequency table (Table 5-4). It is noteworthy that the side-effects predominantly focussed on physical health issues.

Table 5-4 Tally of side-effects listed by participants

Issue	N*	Issue	N
Skin problems e.g. acne	47	Problems with liver	5
Increased blood pressure	24	Cholesterol problems	4
Mood changes	24	Erectile problems	4
Gynecomastia	20	Effectd appetite	4
Sweating	15	Hormonal imbalance	3
Problems with sleep	14	Problems with kidneys	3
Hair loss	10	Increased libido	3
Water retention	10	Muscle and joint pain	3
Reduced libido	9	Injection-related pain /injuries	3
Testicular problems	8	Digestive issues	2
Increased red blood cell count	7	Dyslipidaemia	2
Cardiac problems	7	Injuries	2
Body hair	6	Body odour	2

*\*Number of participants who wrote this side-effect in the questionnaire*

Some participants reported that they experienced few side-effects or saw them as little more than an inconvenience e.g. sweating more, whilst others downplayed the severity:

*'The blood pressure and your balls shrink a little bit, so does not really matter.'* (Andrew/UK/25 [TI])

And often the focus was not on the side-effects but on how to manage them:

*‘Whilst on my cruise dose nothing, no side-effects, the only inconvenience is the jab itself. When I blast it can be ...all sorts really, but I have sort of found what works for me, and generally the only side-effects that now are not very controllable are the spots...Most things you can dial out with other drugs or dosages’ (Robert/Spain/34)*

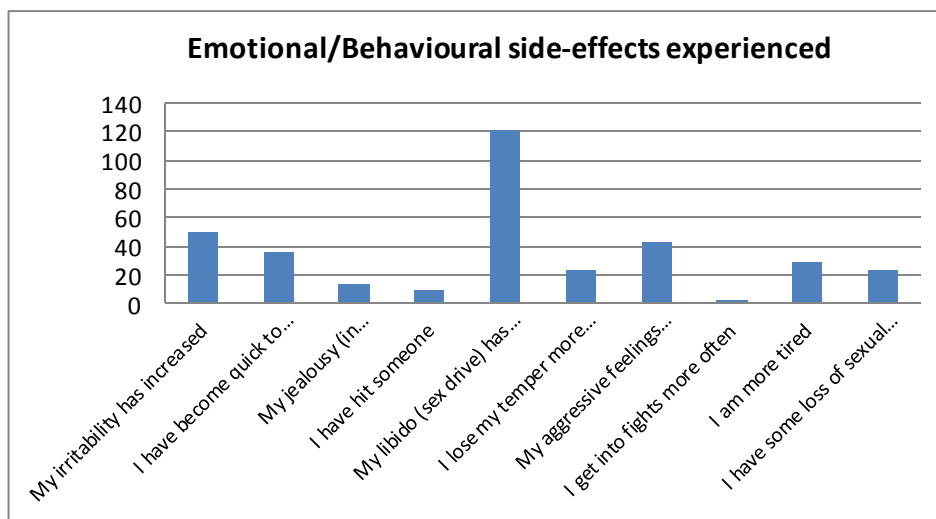


Figure 5-8 Emotional side-effects of using AAS

#### 5.3.2.4 Side-effects of using AAS: Psychological

A variety of emotional side-effects were noted (appendices 22, 23, Figure 5-8, Table 5-6). Among participants 45% reported experiencing mood swings as a result of using AAS and 55% said that they had experienced behavioural changes directly linked to their AAS use. Figure 5-8 details the quantitative responses of participants to a list of side-effects (drawn from the literature).

AAS-related feelings of aggression (noted in 2.2), remain a contested concept in the literature. Among participants 49% (n=65) acknowledged having experienced negative emotions aligned to becoming more irritated, aggressive, angry, or violent, although 83% of participants stated that they had not acted on any feelings of aggression from using AAS. Of the 17% who reported having had aggressive side-effects, examples included: getting into more fights, using it in sports or at the gym, snapping or shouting at someone, getting into an argument, FB hacking, road rage. A full list of quotations on the effects relating to AAS use

that referred to some type of irritable or aggressive behaviour and management are detailed in Appendix 22. One specific brand (Trenbolone) was noted for unwanted side-effects, particularly related to aggression, and due to the impact of the side-effects of this specific compound, these have been recorded in Appendix 23.

#### 5.3.2.4.1 *Self- Management of emotional side-effects*

A key finding from this study was the focus on self-management of emotional side-effects. Several of the participants, who talked about increased irritability as a side-effect, were clear that this was something that could be managed by using techniques. The categorization of data can “contribute to identifying-meaning-in-context” (Dey 1993, p.266), consequently the strategies used to manage emotional side-effects have been categorised by technique (Table 5-5).

However, this ability to self-manage mood changes was not so easy for everyone:

*‘...more tendency to get angry for stupid reasons,...mentally, i say to myself that it is due to the use that i feel irritated or less patient but sometimes it is not easy to put that feeling beside you’  
(Tomaz/Belgium/40 [CI])*

And, not everyone felt that AAS caused aggression and one participant, Rasmus, who did not believe in psychological effects of AAS use, was adamant that ‘roid rage’ was a myth:

*‘This is bullshit, pure and simple. But always since a was a little kid 6 years old or so I got cranky if I'm hungry - yeah I'm still human. Mood swings are propaganda that's never been proven and I've been around this shit for years and I have never seen mood swings aka ‘roid rage’, that's just the bad publicity that the newspapers / media keeps feeding us.’  
(Rasmus/35/Sweden [q])*

Aggressiveness was not the only psychological side-effect and one participant talked about how particular compounds exacerbated existing mental health issues and that they could not be avoided:

*‘If I feel sweaty that night, I throw on an extra fan, the nightmares, there is nothing I can do about the nightmares ...those just suck...I ...already have some mental health issues, ...and I already suffer from night terrors. Um. So that that exacerbates like, night terrors. ...some of the nightmares from Tren are just, they're very lucid.’ (Lewis/USA/37 [TI])*

Table 5-5 Managing unwanted emotional side-effects of AAS use

Management technique	Anger and other emotional side-effects
Self-awareness: Avoidance of certain substances	<i>'some of the steroids I tried earlier on did affect my patience and things that normally I could have just gone with, you know, it would have kept me up all night seething about it and turned into an argument when I saw them next, so I stay away well from those ones.'</i> (Milton/UK/40 [Q])
Self-awareness – manage feelings	<i>'I get irritated alot easier but it's not a problem. I just think about why do i get these feelings and how can i avoid Them'</i> (Aron/Sweden/27 [q])
	<i>'I am quite self-aware you see I meditate every day. So I notice things about myself very, very easily. So, I'll notice that my patience is a little bit more thin.'</i> (Peter/UK/24 [TI])
	<i>'Being mindful of temper helps control it'</i> (Todd/Australia/34 [q])
	<i>'I understand completely that the anger i can feel doesn't focus on something that happened... meaning, it's not that SOMETHING happened and made me angry, i can get angry while looking on a movie, so when this does happen i just remain cool until it goes away. If that happens while i am on a conversation i just ask them for a minute to calm down and get back to the conversation when that feeling goes away.'</i> (Costa/Greece/32 [q])
Support from others	<i>'Had a fight with my girlfriend. I was about to slap her when i understood what i was about to do and said to myself 'immediately calm the fuck down. you are not THAT type of a faggot person. Apologized and asked her a minute to calm down myself before we continue the argument.'</i> (Costa/Greece/32 [q])
	<i>'With difficulty, sharing with my partner who made me aware of how i was being'</i> (Iain/UK/31 [q])
Used other substances	<i>'I've always told my partner if you ever feel it's affecting my mood or aggression, or if I'm treating you any different, just let me know, and I'll stop'</i> (Paul/USA/29 [TI])
	<i>'get in to argument with my partner over stupid little things with time and yeras this become easily contoble drinking lots of melisa and other herbal tea to help with my mood swings.'</i> (Zack/Canada/ UK/32 [q])
Meditation	<i>'Meditation. Learning to not speak, situations can't escalate if you don't allow yourself to open your mouth.'</i> (Niall/Canada/25 [q])
	<i>'I meditate and reflect on my frustration.'</i> (Will/USA/50 [q])
	<i>'am quite self-aware you see I meditate every day. So I notice things about myself very, very easily. So I'll notice that my patience is a little bit more thin. I'll I notice that I'm more decisive'</i> (Peter/UK/24 [TI])

Participants reported a range of effects when stopping AAS use or changing to a low dose including losing muscle gain, feeling lethargic, lacking energy, sexual dysfunction (physical and psychological), loss of libido and anxiety.

Participants selected those emotions (if any) they had when they stopped using AAS (Figure 5-9); low mood was the most frequently reported, followed by a reduction in confidence. Only seven people experienced relief.

As these are self-reports, they are based on the participants' views in relation to the link to their AAS use, so it is worth considering that in some cases the negative psychological responses may have other causes entirely.

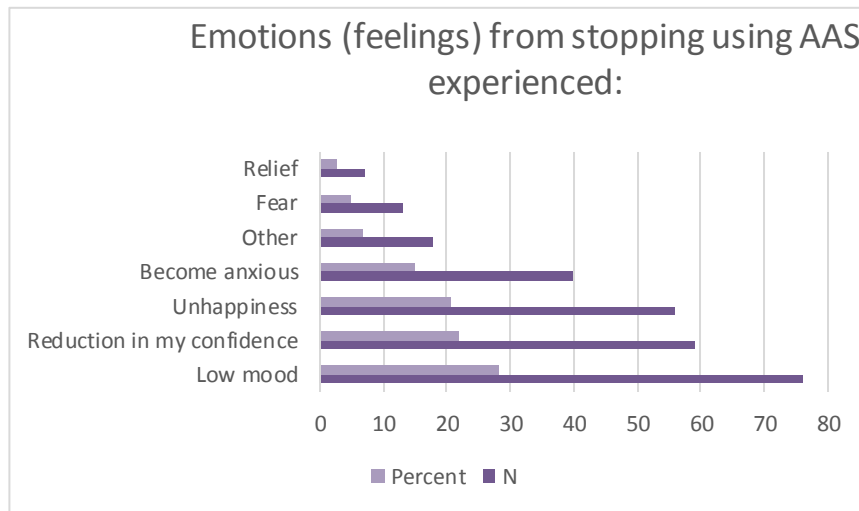


Figure 5-9 Emotions experienced when stopping AAS use (off-cycle)

Some participants self-described the feelings and these contained a wealth of negative emotional experiences (examples in Table 5-6).

Table 5-6 Behavioural side-effects experienced coming off-cycle

<i>'Not so good points, The downhill after a big cycle' (Tomaz/Belgium/40 [CI])</i>
<i>'It was just I feel like I feel like nothing really, ...I feel like shit. I really I didn't wanna do nothing really I don't want to do any training that's all I didn't fancy any woman nothing like it was like below zero trust me' (Lawrie/UK/27 [TI])</i>
<i>'...worthlessness' (Alec/USA/38 [q])</i>
<i>'lack of confidence and motivation to diet' (Scott/UK/34 [q])</i>
<i>'I get panic attacks when going from AAS to starting my own production back up' (Doug/Canada/52 [q])</i>
<i>'If I don't actually take like a aromatase inhibitor my oestrogen does seem to get high and I do seem to experience a fair amount of anxiety because of that.' (Powel/UK/34 [TI])</i>

Anxiety was experienced by 40 participants and several linked the anxiety experienced to specific Post-Cycle Therapy (PCT) substances:

*'I implemented is PCT protocol... and I noticed that the clomid, had an effect on me actually made me feel quite anxious and it made me feel quite depressed.'* (Peter/UK/24 [TI])

For one participant coming off cycle was something that needed to be prepared for as there was an expectation that they would feel bad:

*'...this is my first time ever do a 16-week cycle but the reason I'm doing this is because I can't go into post cycle therapy right now because I got some stuff I gotta take care of for the next few months. And when I do go into post cycle therapy, it's a rough month... you start feeling really bad, like you just have no energy, you feel lethargic, you feel weak.'*  
(Joel/USA/34 [TI])

For some there was a strong desire to want to start the next cycle:

*'I seem to be more confident in my appearance on cycle, so when I come off I tend to count the days to when I can get back on, anxiously'*  
(Saul/USA/40 [q])

For others the experience was so bad psychologically, they chose not to stop using:

*'PCT is horrible to go through, and that will have an effect psychologically, and um, it is just something that it is just a pointless exercise'*  
(Robert/Spain/34 [TI])

For a few, increased libido was considered both a positive and negative and again participants explained their coping mechanisms e.g.

*'Increased libido managed by more sex with wife, not a negative but a positive though.'* (Ray/New Zealand/39 [q])

#### 5.3.2.4.2 **Low testosterone, TRT experiences and views**

Another concept that emerged related to the participants' thoughts and feelings around low testosterone and testosterone replacement therapy (TRT). This is explored in-depth in Chapter 7.

#### 5.3.2.5 **Personal, societal and ethical issues**

Interestingly, the side-effects of use reported also concerned things other than benefits and health harms. Three participants reported financial cost and a few participants felt the changes had a profound and positive effect on different aspects of their lives (Table 5-7), highlighting the individuality of the experiences.

Table 5-7 Effects on AAS use on wider aspects of users' lives

<b>Impact on different areas of life</b>	<b>Quotation</b>
Relationships	<i>'My wife agrees that the last year, since using steroids, has been a very happy and peaceful year of our marriage. This is a positive experience' (Mitch/USA/XX [q])</i>
Social capital	<i>'It's that gay, middle aged men's invisibility ...I mean, a Bentley or a Rolls Royce will do it too but ...muscularity will sometimes give you back something that aging has taken away ...with the idea of the loss of status and the invisibility that comes with aging as a gay man.'</i> (Hugo/USA/53 [TI])
Economic Benefits	<i>'I think what looks like permanent muscle from useage will play a part in helping me move my salary up faster in the future to'</i> (Niall/Canada/25 [q])

However, there were also specific personal, social and ethical costs that participants saw as negative side-effects, including: the cost of buying the products e.g. *'along with my bank account'* (Troy/USA/28), *'societal stigma'* (John/USA/22) and *'Legal risk'* (Hugo/USA/53) linked to law violation and possible incarceration (dependent on the legal status of AAS use in any given country). There was also the personal cost of feeling a need to use steroids to achieve the results they wanted:

*'Am I embarrassed that I feel that I have to take steroids to get to where I want to be? Yes, it's definitely a knock to my confidence'* (Joel/USA/34 [TI])

Another cost was the negative impact on relationships with others which was linked to emotional changes:

*'I know then that can have a negative, on my relationship even with my missus or even with you know everyone really around me, but to be honest after so many years using it I can manage much more the negative outcomes, aggression and the rest of it.'* (Lawrie/UK/27 [TI])

And from the need to keep their use secret:

*'lying to my wife because she thinks I am not taking it right now, that is another thing, which is bad and I have to admit to that I don't feel comfortable with that ...I need to get this sorted so it is not on my soul driving me insane every day (laughs).'* (Lev/Canada/32 [TI])



### 5.3.2.6 Risks to others

The questionnaire asked participants whether their AAS use put anyone else at risk. Only 18 participants replied ‘yes’ and even fewer qualified their answers. From the small number of responses there were two types of risks identified which are reported in Table 5-8. The risks identified were predominantly those to their families linked to inability to provide due to ill health, early death, or imprisonment and aggressive behaviours.

Table 5-8 Risks to others

Risks to Others	Quotation
<b>Risk to family / relationships</b>	<i>‘Only legal issues because it’s illegal to use it in the country I live in. I Can potentially put my family in risk if I go to jail, loose my job etc.’ (Elvin/Sweden/39 [q])</i>
	<i>‘If I did experience health complications as a result of AAS use it would negatively impact my son, mother and ex-wife’ (Isaac/UK/42 [Q])</i>
	<i>‘Dying early and not being able to provide for my family’ (Max/Canada/26 [q])</i>
	<i>‘My relationship with my spouse.’ (Hank/USA/53 [q])</i>
	<i>‘Family as I don’t want to pass away to young. Agression and violence behavior only if some want harm my family or put my person in danger... I know that I have very calm personality but deep inside of something happened is like a ticking bomb’ (Lev/Canada/32 [TI])</i>
	<i>more aggressive, and would suck for my kids if i died (Viggo/Sweden/34 [q])</i>
	<i>Primarily, legal. Secondly, if any of the previous issues mentioned lead to a decline in health it may lead to a financial or relationship problem which I would categorise as risk. (Asi/USA/28 [Q])</i>
<b>Risks to wider network/public or as an influencer</b>	<i>‘Increased aggression can result in responses inappropriate to the stimulus / trigger, leading to strained relationships or even criminal acts.’ (Don/UK/39 [Q])</i>
	<i>‘If I have a heart attack driving a car. Otherwise no.’ (Rod/Australia/39 [q])</i>
	<i>‘Perhaps because i was a role model for the youth and boys tend to follow the steps of their mentor’ (Barak/Greece/44 [q])</i>
	<i>‘People knowing that I take them seems to make them more likely to take them’ (Dale/USA/30 [q])</i>

There were those that felt there were no risks to others and one participant, the same person who felt there were no emotional side-effects, stated that the question itself was irrelevant:

*‘If I eat a candybar, does that put others at risks? If I weigh 60kg or 100kg, does that put others at risk? This question is stupid. If I was a drug addict on heroin, it would put other people at risk but I can’t really see how the levels of my testosterone low or high could put others at risk.’ (Rasmus/Sweden/35 [q])*

### 5.3.3 Theme three: Risk management

*'...it's a calculated risk if you do it responsibly' (Johan/Hong Kong/36 [TI])*

Participants talked about a variety of strategies and/or considerations that they used to manage all aspects of their use, and also to support others. Four sub-themes were identified:

- I. Risks versus benefits
- II. Managing side-effects
  - a. Planning and preparation
  - b. Developing ethnopharmacological knowledge
  - c. Self-knowledge: body and mind
- III. Role as a mentor
- IV. Worries and fears
  - a. Reasons to stop using AAS

#### 5.3.3.1 Risks versus benefits

The first sub-theme was the notion of giving consideration to the perceived risks of use when compared with the perceived gains. Many participants appeared to have a clear understanding of the potential risks of using AAS, weighing up the risks versus the benefits as part of the decision-making process to use. They acknowledged some of these openly and talked in-depth about how they managed them. Participants felt they took calculated risks and that they were potentially healthier than other people (non-users). For many the positives outweighed the negatives, with improvement on quality of life playing a key role in the decision-making process and justification to use. However, some were aware they might be biased and that they might not be being honest with themselves (examples in Table 5-9).

However, the impact was not the same for everyone and for Don, although, he saw physical improvements, he did not feel the same psychological improvements:

*'I don't, I guess you call it a vague positive, I was kind of living under this delusion that the things were getting better and I was progressing, and as the weights went up, you know my self-esteem was going magically go up as well.'* (Don/UK/39 [TI])

Table 5-9 Risks versus benefits of use linked to quality of life

<p><i>'...when I first started taking the drugs... my quality of life was that... far down the pan it didn't really matter because even if I'd shorn five years of my life this might have given me another 10-15 of actual years rather than shit years lying about and not feeling good about myself' (Powel/UK/34 [TI])</i></p>
<p><i>'I am obviously going to be biased because I have had so far err pretty good experiences with it... I am also fully aware that there are certain risks involved long term and that... ultimately it may...not adding years to my life expectancy... I think it is like with everything in life err if you are reasonable about it and do it in moderation most things probably won't kill you... if I was to come off and err you know what levels it could recover to I am not willing to make that change to the quality of my life err and that is the reason why I would never stop therapeutic use.' (Alvin/UK/36 [TI])</i></p>
<p><i>'I weigh up the pros and cons almost like a retrospective cognitive dissonance. I justify my use by asserting to myself I wouldn't be able to do what I do without it - sometimes I blatantly lie to myself because I have no evidence that I couldn't function adequately without my TRT dose this mitigates the negative feelings of using and injuries caused by using' (Isaac/UK/42 [Q])</i></p>

### 5.3.3.2 Managing side-effects

One thing that helped participants to justify the benefits outweighing risks, was that they felt they could mitigate for side-effects. Most participants were clear that they could manage side-effects using ancillary compounds:

*'...after 30 years of use I'm not worried about hormone use causing risks. I think generally speaking they are overstated or can be overcome with ancillaries.' (Nick/50/USA [q])*

Some participants managed risks, but were aware that there were some things which could not be mitigated for and needed to be put up with or were simply a cause for future concern:

- *'...honestly, I just suck it up... just deal with it, I mean what else can I do.' (Lewis/USA/37 [TI])*
- *'I get quite anxious ...if I'm on a cycle this can get really bad and last for hours, making me feel sick and worry deeply about something I can't explain... Just relax and ride it out. I'm quite head strong, however I can imagine that if I suffered badly with this, the AAS would make it unbearable. Which again, is why I can be confident in my choice to take them. I might have bad days, but they're pretty minor in reality. It's never been so bad that I've had to cut a cycle short' (Clinton/UK/20 [CI])*
- *'Most of the risks are preventable with responsible use and ancillary drugs, but my concern is heart problems which you cannot do anything to prevent' (Del/UK/35 [TI])*

For many, the key to doing this successfully was being able to assess the impact on the body. Knowledge of baseline levels for their own bloods, monitoring health metrics and getting regular tests was something that people felt was a way to minimise harm and this set them apart from other users:

*'Blood work it's one of those if you are going to you know put this in your body you should know what else is happening within your body. and I know for a fact that some users do not do that, especially ones that is sort of the GymBros that you see' (Asi/USA/28 [TI])*

One of the more concerning methods that participants used to help manage the side-effects was phlebotomy. However, access to bloodletting was not easy, and depended on location, as one participant explained:

*'I'm gonna have to go and try and give blood and stuff like that and then that's another problem if you tell someone that you take steroids and try and give blood they will refuse you to give blood so you are immediately running a massive RBC heart attack issue' (Powel/UK/34 [TI])*

One of the elements of using safely was around the dosage taken and some participants noted the importance of moderation. Several participants were clear that they considered the amount of AAS when compared to other users, describing their usage as 'moderate' (Johan/Hong Kong/36 [TI]) and (Asi/USA/28 [TI]) 'normal hormone replacement doses' (Powel/UK/34 [TI]). An example of the comparison being:

*'...they take crazy doses, crazy doses, grams a week, not milligrams anymore, you know the big 10ml vials, I know of kids going through one of those in a fortnight.' (Milton/UK/40 [TI])*

The use of low doses was seen as a way to mitigate the harms and linked to the idea of being different from 'other' irresponsible users:

*'I feel like my use is, has been very on the low side compared to a lot of people... I respond very well to low doses of things so and my body has always been pretty much in line. So, I feel like in the long term now that I'm past that heavy type of use it's going to be fine.' (Lee/USA/43 [TI])*

As already noted, many participants experienced negative experiences off cycle and one tool for managing the side-effects is to undertake PCT, where a range of substances are taken to help rebalance the body's natural testosterone production. The participants had differing opinions on the use of PCT or whether

you should take AAS for a number of weeks at a time and then undergo PCT, or whether you should take continuous low doses and, if desired increase the dose for short periods to achieve specific short-term goals (blast-and-cruise). Some had started out using PCT but had switched to continuous low-level use after using AAS for a while. Many felt returning to a 'therapeutic testosterone dose' was the healthier choice, as this led to less muscle loss and did not impact negatively on mood or libido.

To investigate if there was a link between age and use patterns a Kruskal-Wallis H test was conducted between 'use in 8-12 week cycles, with PCT' (n= 37), 'continual low level use, topping up as desired' (n= 63) and 'other' (n= 30) AAS use pattern groups. Distributions of age scores were similar for all groups, as assessed by the visual inspection of a boxplot. Median age scores were statically different between groups,  $X^2(3) = 6.560$ ,  $p = .038$ . Pairwise comparisons were performed using multiple Mann-Whitney tests with a Bonferroni correction for multiple comparisons. Statistical significance was accepted at the  $p < 0.0166667$  level. This post hoc analysis revealed statistically significant differences in age scores between 'use in 8-12 week cycles with PCT' (mean rank = 40.85) and 'continual low level use, topping up as required' (mean rank = 56.17) ( $p = .011$ ) (\*\*). AAS use pattern, but not any other group combination. Those who were older were more likely to have chosen or changed to 'continual low-level use'. The reasons for such choices were explored in the interviews, and explanations often related to not wanting to experience the emotional side-effects for example:

*'I will stay on for the rest of my life, for me therefore it is the right decision, and I, it is a roller coaster if you are cycling... there is no other way to describe it really and it's just something I didn't want to continue doing. I would probably sooner stop than continue cycling.'*  
(Robert/Spain/34 [TI])

There were several methods that participants used for effective risk management. The first of these was to put in the required groundwork before starting use. The second was to continue to develop a detailed knowledge of IPEDs and the third, alongside knowing about all the substances and their general effects, was knowledge of their own physical and psychological selves.

### 5.3.3.3 Planning and preparation

Participants of all ages reflected that they had often taken time (sometimes months or even years) before making the decision to start using and had often done significant research. This study time allowed them to justify starting use, manage risk and also reduce fear (examples in Table 5-10).

Table 5-10 Planning to use AAS

<i>'I read a lots before using I'm talking like easily 2 or 3 years before using' (Johan/Hong Kong/36 [TI])</i>
<i>'I considered that there were potential health benefits, but I had done almost 2 years of research on the safe use of them before I took them' (Clinton/UK/20 [CI])</i>
<i>'I spent over 2 years researching, talking and investigating what I wanted to do.'</i> <i>(Vincent/UK/32 [q])</i>
<i>'So, I was scared at first, but it took me about two years of reading and Googling stuff and trying to find out as much information as I could' (Joel/USA/34 [TI])</i>

### 5.3.3.4 Developing ethnopharmacological knowledge

A large number of the interviewees exhibited extensive ethnopharmacological knowledge when discussing their experiences of AAS use and how to use safely. They educated themselves on the short and long-term harms of the different types of substances and how to mitigate for unwanted side-effects. They read scientific papers, talked with experienced users and experimented on their own bodies:

*'I would go home and... pour page after page over the internet and articles. I mean, I was a biology major in college. So, I was very fascinated with the body and the way it worked and what I was doing what was happening inside of me. Just how things were interacting like myostatin'*  
*(Paul/USA/29 [TI])*

Participants talked about how their knowledge meant that they were better able to maximise the benefits on cycle and retain the benefits of using when off cycle. It was clear that this in-depth knowledge and focus on research was one of the things that users felt not only set them apart from other types of substance user, but also from irresponsible AAS-users who were not knowledgeable about long-term harms.

### 5.3.3.5 Self-knowledge: Body and mind

Many participants considered self-knowledge as key to managing side-effects and an important part of responsible use:

*'Knowing yourself and how you react in different situations will counter any issues' (Ansgar/Denmark/33 [q])*

Some AAS-users undertook a lot of self-experimentation in order to achieve the optimal result aligned to their motivations, for example, to maintain a base level of sexual function or to gain muscle and strength. This led to a level of body (kinaesthetic) self-awareness, which in turn allowed them to make decisions about which substances they should use. Participants stated they had an awareness of the hormonal changes within their body and the effects this had on their mood:

*'...two hormones that will make a man especially depressed are low levels of testosterone and low levels of thyroid hormone. And my thyroid hormone was fine but I would say that just from knowing my own body, that my testosterone levels were low ... I'd tell you I can feel my hormone levels drop, but whether I can feel my hormone levels drop or not I don't know because ... If I do not keep to my routine for injecting every two weeks ... I start to get feelings that, things are starting to go wrong here I do not feel as good as I should be' (Isaac/UK/42 [TI])*

Some kept meticulous records to help the development of this self-knowledge:

*'I log absolutely everything, with progress, weights, and any sort of comments, like the way I was feeling, side-effects, things like that so at least I could always go back and ... know ahh that this particular drug did this.' (Robert/Spain/34 [TI])*

Many felt this self-awareness of the body was vital as each person's reactions would be different and that through planning and trial and error they learned from mistakes and could apply this learning to maximise effect whilst minimising unwanted side-effects:

*'You can make a plan, an initial plan by going by other people suggest, but you have to try it for yourself and be ready to make the adjustments' (Del/UK/35 [TI])*

For some AAS-users there was a perception that AAS use was a serious business, and there was a need for personal responsibility for those who chose to use AAS:

*'...use is down to a personal choice, you have to realise if you are able to handle all the negative side-effects, some people just shouldn't use period. TRT has been one of the most impactful decisions I have made, as long as you keep doses reasonable get bloodwork done to monitor what's going on in the inside and be able to control aggression, then I am all for AAS use' (Saul/USA/40 [q])*

#### 5.3.3.6 Responsible use

Most participants' decisions to use AAS required careful thought and evidence-based knowledge in order to be done properly. The phrase 'responsible use' was widely used by participants as a way to minimise risk:

*'...if you want to do this thing, then you need to make sure that you take ownership of it and that you do it properly' (Peter/UK/24 [TI])*

Although some users talked of carefully planning their use, others acknowledged that their initial use had been under-researched and irresponsible, and some felt young people today were not necessarily using wisely. This was a major concern. Many participants acknowledged an increased risk of harm for adolescents and suggested that AAS use required a level of maturity e.g.

*'...these young kids in high school or what, they just don't have the mentality or their body is going to be shut down at an early age, ...I guess mature enough to do enough research, ... make a proper decision of how it's going to affect your body.' (Lee/USA/43 [TI])*

Moreover, they also showed concern for young people using without proper support:

*'Kids should not be taken this shit... They shouldn't be messing with a hormonal system that is already out of whack from stuff like puberty... not only is it a nightmare for their bodies, I think it's potentially a nightmare for their mental health and if they don't have mental health issues, just all those extra hormones messing with them and messing with their endocrine system, I have a feeling that it could exacerbate or cause ...issues for them. So, I would love to see youth intervention but truthful youth intervention... I would like to see intervention based on truth and knowledge as opposed to scare tactics' (Lewis/USA/37 [TI])*

#### 5.3.3.7 Role as a mentor

One element of risk management was not self-management but supporting others to manage risks. Seven interviewees expressed the belief that their



experiences enabled them to advise and support other AAS-users, seeing this as a positive aspect of their own use, a duty and potentially adding to their status. This was expressed in subtly different ways, often with a harm reduction message or word of caution:

*'I'll never recommend it to somebody that is something I won't do. That's a personal decision. But if somebody is committed to doing it, I feel it's my duty to be able to sit down and talk with them about how they're going to go about doing it, so they don't mess themselves up. (Lewis/USA/37 [TI])*

#### 5.3.3.8 Worries and fears

When considering risks of use some participants spoke of personal concerns around their AAS use and considered what might make them consider stopping use. Leading on from knowledge of self, some participants, when reflecting on their use, openly acknowledged specific worries and fears about the consequences of their AAS use. Some specific side-effects concerned them more than others including short-term health risks such as acne and long-term risks such as permanent baldness, but these were very individual.

For some these fears were not enough to cause them to stop using:

*'I worry slightly about infertility and baldness, but I don't get so worried that I'm willing to stop using them. There's no guarantee I'll suffer' (Clinton/UK/20 [CI])*

Again, there was a notion to manage risks and for one person, infertility was such an important concern that he had taken precautions:

*'I've banked viable sperm samples at a cryogenic facility so that children can be a possibility in the future.' (Asi/USA/28 [Q])*

A worry around the dangers of using fake or poor-quality substances also emerged:

*'I've had the bejesus scared out of me, you know, with HIV, literally the threat of death from a medical condition. I'm loath to get near anything that threatens my life medically, ... I'm buying... anabolic steroids from someone, I don't know, online ...and I know that there's a risk there, I don't know that what I use is, is effective necessarily, I don't know that it's pure.' (Hugo/USA/53 [TI])*

Again, some users had ways to mitigate getting such poor-quality substances:

*'There's a website that you donate to that, anonymously. That buys drugs from certain popular places and tests them. Then posts the tests, so I go there, and I order from the people that they, they test the most.'*  
(Joel/USA/34 [TI])

There were fears around the potential to become dependent,

*'Becoming dependant of injectable testosterone' (Sander/The Netherlands/21 [q]).*

Perhaps the biggest concern was premature death. This often related to media stories that had linked AAS use to sudden death, for example, people like Dallas Carver, Rich Piana and Lyle Alzado, but were still not enough of a concern to cause individuals to stop use:

*'...he died, they posted it online, you'll find it as soon as you put in Dallas McCarver autopsy, every single organ was something like 3 times the size it was meant to be, err, and that just kinda scares you a little bit.'*  
(Andrew/UK/25 [TI])

Yet conversely, there were also concerns not focussed on the physical harms of using but on what would happen if they were forced to stop. These worries included the possible loss of self-identity, as illustrated by the examples in Table 5-11.

Table 5-11 Concerns over loss of identity

<i>'A potential risk that if the ever supply dried up ...I could find myself in serious psychological trouble ...that is the one thing that worries me about it.'</i> (Isaac/UK/42 [TI])
<i>'At this point I've been steadily on them for so long including big doses on and off that I am a little afraid that I won't feel like the man I do now.'</i> (Lewis/USA/37 [TI])
<i>'Do I want to be on testosterone for the rest of my life I don't think so. I don't like the idea of it only because I'm afraid of not being able to get it like what you know what if I'm 60 and I got to just I don't know... I don't like the idea of having to be on it forever but ...they say that... once you started you're going to be on it forever.'</i> (Joel/USA/34 [TI])

#### 5.3.3.8.1 **Reasons to stop using**

The majority of participants (73%)(Figure 5-2) thought that they could stop using AAS. Some already had periods in their life where they had stopped using. Reasons for this included: entering a relationship and the partner not being supportive; wanting children; being in prison; an injury; mental health problems,

no longer able to access a supply. All but three interview participants who had stopped for a period had already reinitiated use. One person was seriously considering starting again and another was hoping to find a way to access a new supply. The third acknowledged that he had recently achieved his goal (which had been curiosity) so had decided to stop. However, he was clear from the beginning, that this was purely an experiment. Nonetheless, he had run a couple of extra cycles than originally planned, again attesting to the potential allure of the effects of using:

*'I did like the results so maybe my, my perception did change slightly, ...I probably stayed on it longer than I originally anticipated because of that... I always set out for it to be an experiment, ...it's made it easier for me to come off them because I had set out, I had a plan set out to do what I was going to do' (Harry/UK/52 [T1])*

Despite, nearly three quarters of questionnaire participants stating they could stop using AAS, from the interviews it was clear that few participants were considering stopping use. Some of the participants did talk about circumstances that would lead them to stop using AAS, which included: no longer wanting to gain mass; starting a family; serious health concerns; and worries about the impact on those close to them. Some participants could see themselves stopping the blast-and-cruise cycles but were unable to envisage a future without TRT. The long-term health effects and pressure from hiding the use from his wife, had one participant already planning to stop using within the next few months; however, the discussion about the plan was punctuated with phrases that meant that this would be a challenging commitment:

*'It will be difficult for a while, ...other people survive without it and I used to ...I'm just worrying too, ...not to be in a queue for a liver transplantation in the next few years, ...so I think that's a good reason to believe it is possible to survive without it, so yes ...to be honest I had a friend which they didn't wake up in the morning. ...he wasn't looking as good as he wanted to for his competition so increased dosage...his heart just popped out overnight and his wife woke up next to him and he was dead he was 36, he looked amazing' (Lawrie/UK/27 [T1])*

#### 5.3.4 Theme four: Perceptions on and perceptions of AAS use and society

*'an image of a steroid user, ...like public consciousness, ...everyone thinks that it's this ...gym monkey that has nothing really important to say and no thoughts of their own and all they want to do is get bigger, stronger.'*  
(Alvin/UK/36 [TI])

The benefit of using open questions was that it allowed questionnaire participants to comment on different aspects of their experiences and use and some referenced how society impacted on their use. Semi-structured interviews allowed for a deeper exploration through a wider discussion of this issue. This can be helpful as people are influenced by society and also the groups within which they socialise. This theme brings together participants' thoughts on their own sub-culture on AAS use, how they view other illicit drug users, how AAS use is seen by society in general and how they felt this impacted on them in relation to stereotypes and stigma. It is sub-divided into the following five sub-themes:

- 1) Different to 'other' illicit drug users
- 2) Childhood experiences and influences
- 3) The myth of the 'meathead' and other misrepresentations
  - a. Influences: personal and societal
- 4) Stigma
- 5) AAS-using community

##### 5.3.4.1 Different to 'other' illicit drug users

When it came to discussing drug use in social contexts many participants were clear to disassociate themselves from people who used other illicit drugs and this disassociation was represented in a variety of ways:

- Indignation when professional services treated them in the same way as heroin users, as they did not see AAS as impairing them in the same way or putting anyone else at risk.
- Being clear (within the UK) that they were not using harmful Class A drugs.
- Using disparaging language for people who use other substances 'junkie', 'crack addict' and associating them with anti-social behaviours.
- Willingness to pay for services such as needles.

- Differing legal status of AAS use globally.

Table 5-12 gives examples of how these views were expressed.

Table 5-12 Disassociation from other types of substance user

<i>'...it is not addictive in the sense that you are trying to feed your habit like you were a crack addict, who robs from old grannies for example so it is not really seen as an issue is it' (Andrew/UK/25 [TI])</i>
<i>'...like, listen if you are willing to go and spend £200 a quid on a 10 week cycle, to make yourself look better, stop going and sitting with junkies and go and pay £10 to have you know, to buy it yourself' (Robert/Spain/34 [TI])</i>
<i>'We shouldn't be looked upon as drug addicts, these are legal in most of the world and there is no possible way to become addicted.' (Kian/Sweden/22 [q])</i>

Participants were clear as to how they were different from other types of illicit drug users. They argued that AAS use was not unhealthy as evidenced through the non-drinking/smoking references and saw their ethnopharmacological knowledge, planned use and independence as a way of distancing themselves. This 'othering' was not just from other recreational drug users, but interviewees also described how their use was different compared to other types of AAS-user who were less knowledgeable and less prepared:

*'I still think there's so many people just so ignorant and they just don't know about the long-term repercussions.'* (Peter/UK/24 [TI])

Participants described such users as being '*unwise*', '*in a rush*', using irresponsibly, taking overly large doses, lacking planning and often referred to them as '*uneducated*' and careless. There was derogatory language used about those who were using unwisely or unsafely and used such terms as '*morons*' and '*idiots*' to set themselves apart. Participants suggested that it was this 'type' of AAS-user, one who used extremely high doses, without any planning that fuelled the 'roid-*rage*' and '*steroids will kill you*' media myths. Several people made it clear that there was a personal responsibility for managing any mood changes and were disapproving of those who did not do this. One example of how AAS-users outlined their differences to other types of AAS-users was when talking about behaviour change and in particular, aggressive behaviour. As previously noted, (Appendix 22, 23), there was an acknowledgement that AAS use did impact on mood, and many evidenced that it made them more irritable or more assertive. However, they also expressed the idea that if you already had an aggressive

personality then AAS use might enhance that assertion was made by more than one participant. Furthermore, there was also the suggestion that people might use AAS use as an excuse for their behaviour:

*'I have seen people where they have just turned into an absolute idiot on them, erm but I think a lot of that is personality wise, just like you would with alcohol, there is always that one kind of person you go out with who turns into an absolute dick when they have had a drink. It is just the same with steroids' (Andrew/UK/25 [TI])*

There was indignation that this side-effect of AAS use was being seized on and misrepresented in the media and participants used emotive words such as 'evilness' and 'demonisation', to describe how the media depicts the use of steroids. They accused the media of 'scaremongering', putting out 'false information' and focussing on the pervasive myth that steroid use could turn someone into a 'monster'. More than one participant related the myth of AAS use causing and leading to atrocities:

*'Chris Benoit<sup>1</sup>, ...killed his kids, killed his wife and then killed himself, the first thing the media said is but he was on steroids. Now I'm sorry there's not a hormone on this fuckin' planet that will cause you to murder your loved ones, if you're going to do something sick and twisted like that, that's already in you, that your soul is already dark, there's nothing that can push you, like no amount of testosterone or even freakin' Tren can push you into such a state.' (Lewis/USA/37 [TI])*

#### 5.3.4.2 Childhood experiences and influences

This study did not seek to find any quantifiable links between childhood history and AAS use but did seek to explore underlying motivations for starting and continuing use. Some participants shared their thoughts about what might have set them on the path from a young age, and several interviewees described adverse childhood experiences including having been homeless, having been imprisoned, parents with mental health problems, having a controlling father,

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<sup>1</sup> This refers to the case of World wrestling champion Chris Benoit, a known steroid user, who killed his wife and 7-year-old son and hung himself at his home gym (Sutton and Morehouse 2007).

having suffered abuse. They linked their desire to change their body shape to these experiences e.g.

*'I had a terrible childhood. I was homeless, you know I was 14. So, I was 19, I moved to Texas, my mom lived in Texas and I didn't talk to her for about three years and at that was pretty hard for me. I went to jail for like 11 months which, that really changed my life for the better... I have this problem like I get hooked on things... and I think it's the over compensation for having my bad parents, like I go to the gym... I'm an addict there, I am a workaholic. ...I don't want to fail and my parents, I just don't want to be like them... So, do I think that affects my steroid use and to try to get bigger and bigger and bigger. Yes, I think it does.'*  
(Joel/USA/34 [TI])

Two other participants talked about childhood histories of depression, and although there is a complexity of issues surrounding initiation of their use, one was introduced to testosterone injections by his father and the other initially as a way to self-medicate for gynecomastia but found it also alleviated his depression:

*'...I was put on antidepressants at a very young age and it, to an extent almost delayed puberty and had just negative side-effects such as, I had teen prepubescent gynecomastia and that was actually how I first began researches. I was looking at ways to treat it and ...I discovered the other side of anabolic steroids.'* (Paul/USA/29 [TI])

*'...as a teenager I was always depressed and weak and would sleep all day, had no drive, no confidence, sex life was terrible I started taking oral steroids only and all those symptoms above became way worse. My father introduced me to testosterone injections and that's when my life changed for the better.'* (Max/Canada/26 [q])

Some participants did not mention any history of trauma but did talk about how adolescent experiences were linked to the decision to start using AAS.

A motivation to train stemmed from an internalisation or desire to achieve a mesomorphic ideal, with the hope that they would feel less inferior and prevent them from being bullied or judged because of their shape, whether that be too fat or too skinny, for example:

- *'When I was around 17/18 ...I had an inferiority complex of how I looked... I was like a really skinny guy and I wanted to be as far away from that guy as possible and my life only started to improve when I started going to the gym'*  
(Peter/UK/24 [TI])

- *'I first went to the gym when I was 14 years old. The reason I started is because I was obese and didn't feel comfortable how I looked. You know what kids can be like, they say it how it is' (Clinton/UK/20 [CI])*
- *'When I was 19 and I was 68 kilos ...I was proper skinny, so I did want to look like a man really, feel more comfortable' (Lawrie/UK/27 [TI])*

It is notable here, that Lawrie saw being muscular as linked to his masculine identity.

Others went into deeper explanations of their motivations and the complexities of use, often motivations overlapped and were connected to a person's beliefs (e.g. what they felt women wanted), values (e.g. social currency in their community) and identity (e.g. not wanting to be seen as a fat person). For participants working in the fitness industry there was a feeling that it helped with credibility; yet this was not the whole picture. Here Peter explains how important he felt it was to his occupation but also to his identity and was influenced by childhood experiences:

*'I wanted to increase my strength I wanted to look better a lot of it was from a professional standpoint as well...the rest of the personal trainers are like jacked and ripped and like, if that gives me credibility... I viewed steroids as a ... sort of hack ...my way to improvement... I... had a lot of anger issues when I was younger ...I had an inferiority complex of how I looked, because I was so skinny ...and started improving myself the person, I was like a really skinny guy and I wanted to be as far away from that guy as possible and my life only started to improve when I started going to the gym, ...I want to get as much out of my training as possible. I know how far I've come already ...it is like I'd already gone through a psychological like transformation of who identified myself was but I felt like I needed a physical transformation ...to reflect how different I felt about myself internally. (Peter/UK/24 [TI])*

#### 5.3.4.3 The myth of the 'meathead' and misrepresentation

The second sub-theme addresses how users felt there was a misrepresentation of AAS-users and use within western society. People who used AAS felt there was a stereotypical image of an AAS-user that did not depict reality. Stories such as the one noted by Lewis about Crispin Benoit were cited as evidence of this misrepresentation, and users argue people who were reported as having 'roid rage' or dropping dead from use was not the whole truth, which was often more complex, with a range of contributing factors.



AAS-users were confident that AAS use was more prevalent than the statistics reported, was used by ordinary people including professionals, and was potentially becoming normalised within certain professions: e.g.

*'Most military guys do, most cops do, most firemen do ...what I learned, especially on Facebook, is that it is much more pervasive than people admit. ...the steroid user next door.'* (Hugo/USA/53 [TI])

It was not just the 'roid rage' concept that users felt was overplayed, but also that there was a general overreaction and hysteria surrounding AAS use. Many noted a conflict between scientific fact and perceived societal truths about all AAS-users being overly muscular 'meatheads' who get 'roid rage'. They felt that those outside the community over-exaggerated the negative effects of using AAS. This idea that the public are misinformed was a concept that was shared by participants from a number of countries and many felt this led to an emotional and unrealistic reaction to the use of AAS. Some felt this over-exaggeration and hysteria, created an environment where AAS use was kept secret to avoid judgement and wanted reassurance that research did not portray AAS-users in a negative light. They felt society's perceptions had wider implications for research:

*'You will find the consensus among any experienced steroid users is that the general opinion about their dangers is grossly exaggerated... Like many others I was hesitant to even participate in this survey because more often than not what we say is taken out of context to paint a sensationalist and alarmist picture of steroid use as though there is an "epidemic" and the hospital morgues were full of steroid users which couldn't be further from the truth and the vast majority of us live perfectly normal lives on which steroids have little to no effect'* (Conan/UK/28 [q])

One person gave an alternative perspective suggesting that the stigma in society was reducing and use was becoming more socially accepted even outside of sport. They saw the change resulting from a desire for men to have a certain aesthetic:

*'I think more so 20 years ago than now I think the social aspect of it now it's very acceptable in a lot of groups and specially not even just for competing... It is okay for guys to do it, to look good at the pool, you know.'* (Lee/USA/43 [TI])

This concept of using AAS for purely aesthetic reasons was a reoccurring idea and users raised concerns about the pressure on young men to need to look a certain way.

#### 5.3.4.3.1 *Influences: personal and societal*

As part of the discussions around society's perceptions of users, participants reflected on their own influences and their perceptions of the influences of media stereotypes and masculinity tropes. Some interviewees talked about how they had been influenced by society's perception of masculinity to want to change their shape:

*'...it's not a bad thing I think to have ideals, but so I grew up you know with like Predator, Terminator, Commando, all these movies so I always was looking for an ideal male body' (Johan/Hong Kong/36 [T1])*

One pinpointed a male role model closer to home:

*'My father had a friend who was a bodybuilder. I saw him once with his torso naked and I thought 'I also want to look like that'. I was 8 or 9 back then but I never forgot the impression it gave me and at 17 I started to train myself. It was like a moment I knew immediately what I wanted to do when I will be old enough' (Tomaz/Belgium/40 [C1])*

The idea that young people could be influenced by the media and role models was not an uncommon one. Some felt that social media was normalising and encouraging use with the promotion of the idea of the ideal muscular physique via film, reality TV shows, and online 'influencers':

*'...movie stars like Dwayne Johnson and whatnot, that is seen as he looks great while they wanna to aspire to be like that but they don't realise how much stuff he is taking, or well they do and that is why they end up taking, it is so normalised, that is just that he looks super cool and big and muscly and people want to look like that don't they' (Andrew/UK/25 [T1])*

Some users felt that the new selfie culture had started a trend for people to use AAS purely for the aesthetics to gain the admiration of others and be more sexually attractive:

*'A lot of these guys are posting their big old flex muscles on Instagram and all that ...a couple of them will show me oh, look how many girls are following me... I think a big part of it is cosmetic and sexual appeal... with social media it's whoever's more appealing, whoever's bigger, whoever's got the bigger biceps whoever can video themselves on Snapchat lifting the most weight' (Lewis/USA/37 [T1])*

There were also other references to the fact that a mesomorphic body shape was something that would make them more attractive to women and men, as illustrated by the following quotations:

*'A lot of women are attracted to that so I think when you are single and you want to look good at the pool or at the lake... that definitely has an impact on your thoughts, on what you want to look like' (Lee/USA/43 [TI])*

*'Gay men fetishise muscularity ...it's not universal, but it's darn close to it... I get more attention from 24-year olds now than when I was 24. I think because they're fetishizing the grey hair and the muscularity ...so there is a social prestige to it' (Hugo/USA/53 [TI])*

These, alongside the ease of availability of the substances via the internet, were part of the reason why use was on the increase.

#### 5.3.4.4 **Stigma**

Some felt the public perception of AAS use impacted on how their partners, friends and family judged them, and this led them to keep their AAS use secret:

*'I haven't dealt with any stigma because I haven't, I'm not open about it... It is 100% the perception of others, I am afraid of what my family and my friends would think of me if they knew what I was doing' (Joel/USA/34 [TI])*

For others this wealth of misinformation meant a need to explain their use and one participant reported that after such an explanation, people close to them were less judgemental:

*'The only people that would actually know for sure are people that I want to know and respect and take the time to actually understand it, and listen ...take my current girlfriend for example, her initial reaction was just like anybody's, ...like you are a junkie...but once I persuaded her to stop googling, ...and actually listen to me, we didn't really have any more problems' (Robert/Spain/34 [TI])*

When it came to talking to professionals there were the same fears and concerns. Some were open about their use whereas a number of participants lied to medical professional about it, due to such concerns as the potential impact on insurance or that everything would be blamed on the AAS use. Again, when it came to accessing professional support participants felt that they were different from and

should be treated differently to people who used other types of illicit substances. One participant gave an example of a fellow AAS-user who had applied for a mortgage and the insurance was very high, as a doctor's report had labelled him as an injecting drug user and therefore high risk. He reported that they were indignant:

*'I am not an injecting drug user in the way that you understand what an injecting drug user is. The bank's response was, it doesn't matter, you put a needle in and that puts you in the high-risk category for XYZ so obviously, after that he went into the gym and told everyone about it and the next minute everyone was like right don't go to the doctor.'*  
(Isaac/UK/42 [T1])

Isaac shared this story as he felt it summed up not only the reason why there was a lack of faith in the medical profession but also how the medical profession was adding to the stigmatisation of AAS-users. Such stories can spread within the community and these can potentially impact on someone else's decision to seek help. Several participants did not disclose their AAS use for fear of it being added to their medical records, and as such could lead to the medical professionals not being able to support them effectively.

Some AAS-users felt that the stigma associated with AAS use was unfair and made comparisons to how society views people who drink alcohol, smoke or even use Botox, particularly in relation to how professionals perceived them when it came to accessing support. They felt that harm caused by using AAS were comparable to or less harmful than those caused by smoking or drinking alcohol, and expressed the opinion that relatively speaking their own lifestyles were healthier than that of the average person:

*'There is usually no such stigma with people who smoke or drink excessive amounts of alcohol even though all evidence shows those are actually much more of a public health risk than anabolic steroids'. (Jake/UK/29 [q])*

#### 5.3.4.4.1 **AAS-using community**

There was one sub-section of society where understandably participants did not feel such stigma. Participants talked about a global AAS-using community, with its own language and culture. This was a community that was visible both in certain types of hard-core gyms and within online fora. In the online fora, AAS use was

discussed openly, with threads devoted to planning and using AAS. However, it was clear that even within gyms where AAS use was taking place, the participants were not consistent about the openness of discussion around this, as shown by the examples in Table 5-13.

Table 5-13 Talking about AAS use at the gym

<i>'...you've got this sort of taboo unspoken elephant in the room always whenever you are in that sort of gym culture' (Robert/Spain/34 [TI])</i>
<i>'...most gyms have people that use. It is not really a talked about thing not so much unless you are in kinda that atmosphere where you're in kinda a nitty gritty body building gym' (Andrew/UK/25 [TI])</i>
<i>'I don't discuss steroid usage with people on the gym I keep it clean unless I know for sure that it's someone that I trust and is also a AAS-user. It's taboo to discuss it on the gym in my contry.' (Rasmus/Sweden/35 [q])</i>
<i>'I won't just talk to some random guy that comes up and starts talking to me about steroids but to a certain degree, I try to be as open as possible and that all revolves around the whole idea of the harm reduction.' (Lewis/USA/37 [TI])</i>

When it came to people outside the AAS-using community there were differing opinions on whether AAS was something to be kept secret; some feeling that you should be open and honest about use, while others feeling that the stigma and perceptions of others was something they had no wish to experience, and so maintaining secrecy was better. For those that were more open, there was a sense that there needed to be a level of trust built up before the subject was discussed.

### 5.3.5 Theme five: Information and support accessed

#### ***'They are never going to know what the bros know' (Harry/UK/52 [TI])***

There were three sub-themes identified under the theme of information and support accessed:

- 1) Types of information accessed: What, from where and from whom?
- 2) Assessment of information
- 3) Types of practical support accessed
  - a. Injecting paraphernalia and learning to inject
  - b. Seeking help for side-effects
  - c. Experiences of using medical professionals

### 5.3.5.1 Types of Information: What, from where, from whom?

The first of the sub-themes brought together all aspects around information seeking. A wide range of options of different information sources were included in the questionnaire (identified from the literature review Chapter 3) for participants to identify if there were differences as to where participants would seek out information dependent on the type of information they were looking for. The data was re-categorised and recoded for the advice categories to assist in the analysis. *(The categories were: professional support (NEs, pharmacy, medical professionals), support from peers (including gym colleagues, friends, suppliers, work colleagues, family) and the internet (including websites, fora and online videos). If participants had selected one or more of the groups in each category, they were coded Yes).* Table 5-14 summarises the top three sources for advice and support by category. The results showed that in relation to seeking support and advice the internet (AAS use fora) was the highest category in each case.

Table 5-14 Seeking information and support

Question	Top 3 Answers	N	Percent	Percent of cases
<b>Who do you discuss your AAS use with</b>	AAS-user fora	71	18.2	55.5
	AAS-users	70	17.9	54.7
	Friends	64	16.4	50.0
<b>Where do you get advice concerning cycling and stacking</b>	AAS-user fora	90	30.4	69.2
	AAS-users	62	20.9	47.7
	Other	35	11.8	26.9
<b>Concerning the risks of AAS use</b>	AAS-user fora	84	24.2	63.2
	AAS-users	60	17.3	45.1
	Other	39	11.2	29.3
<b>Concerning the most effective types of AAS to use</b>	AAS-user fora	94	26.3	71.2
	AAS-users	70	19.6	53.0
	Other	38	10.6	28.8

The interview participants talked about a variety of types of information including information on what drugs to use, dosages, injection locations, time on/off cycles, stacks, ancillaries, side-effects, long term studies, detrimental side-effects and TRT. As with the quantitative data the focus was centred on accessing information from the specialised fora and experienced users. It should be noted that the highest recourse for accessing professional advice was when seeking information on risks.

The interviews evidenced that some felt the internet had changed things when it came to accessing information:

*'...it's gone from books, and to talking to people and just trial and error to ...you can get online and look up anything or you can go to chat room or you can go to a forum, you can go to people who actually will talk about it in the open... It was more secretive then, so you had to sneak around, ...instead of a nudey magazine you had a steroid handbook underneath the bed' (Milton/UK/40 [T1])*

Yet this was not true for everyone and books were still used:

*'...if it is something, I was never really sure of or hadn't been studied I'd probably going to look in someone that's half credible, someone like Llewellyn.' (Powel/UK/34 [T1])*

For one person, however it was not AAS information but information about TRT that mattered, as this was felt to be more reliable:

*'Internet, but not steroid information but testosterone replacement information, which is a lot more medical a lot better, standard of knowledge.' (Del/UK/35 [T1])*

Moreover, a number of the participants referenced a FB group 'Testosterone'<sup>2</sup>, run by a medical professional, as somewhere/someone they trusted. Overall 37 participants used Youtube or other videos to help ascertain the most effective type of AAS to use. Others were accessing vlogs and podcasts online from experienced users. Those people involved in sports often relied on information from coaches. Two people (both Australian) mentioned harm reduction websites and only one person (Canadian) a Government online resource. However, there was scepticism about the value of UK Government supported websites and this bears out the quantitative data where these were the least preferred sources of information and support:

*'Government support or social support, or whatever if you look at a particular website, i.e. TalktoFrank which is supposedly the Government website, you get crap you know you just get drivel, it doesn't actually help anybody, so if there was a government support, it would probably be rubbish' (Robert/Spain/34 [T1])*

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<sup>2</sup>Testosterone is a group focused on the Androgen Receptor and all that it entails, including cycling, PCT, and more.

### 5.3.5.2 Assessment of information

With the aim of seeking to understand how participants chose which information to pay attention to, participants were asked about who they trusted to give them advice. Overall, 47% trusted the internet, 37% trusted their peers and 16% trusted professionals. The interviews gave the opportunity to explore this concept of trust in more depth. Similarly, in the interviews, the predominant sources of trusted information came from evidence-based research, medical experts who also were knowledgeable of AAS, AAS-user fora, books such as the Anabolics' Handbook (Llewellyn 2017) and peers/experienced users. The interviews highlighted that the sources people trusted differed by individual.

Some participants made the point that not all information accessed online was trustworthy and found it difficult to know which advice to follow, yet still did not access other sources:

*'Websites are where I get all my information from... It's hard to understand what's good and what's bad advice. That's, that's the scary thing because there's a lot, lot of bad advice out there.'* (Joel/USA/34 [TI])

Whereas, others were clear that books and experienced users were more reliable:

*'I started on fora online like most people, however quickly realised that the info on there was bogus so I bought a book called 'Anabolics' by an author named William Llewellyn... I knew that I couldn't really trust online sources as I seemed to see a lot of information which was blatantly made up. I instead went to people around me who took them, amongst them were a few professional bodybuilders'* (Clinton/UK/20 [CI])

The interviews evidenced a perceived need to be wary of any source that also supplied AAS. Consistency of the information; a consensus amongst different sources, was important as a method to evaluate the quality of the information. Evidenced-based information was felt to be particularly useful and, credibility given to those who cited research studies. Participants took pride in developing their own knowledge:

*'I make an effort to understand how the drugs work and therefore read scientific studies related to the endocrine system in medical journals.'* (Del/UK/35 [TI])



Some felt the academic journals did not cover everything as they could only go so far ethically with research, so broscience (a combination of the words brother and science, and relates to user-generated knowledge passed on within the community (Bilgri 2018)) had a place:

*'...because they've used it and they've combined these things, they know what works, whereas science is not allowed to do that' (Harry/UK/52 [T1])*

*'There's a lot of baloney information on there but there's also a lot of good information from guys ...who just have a lot of experience with this stuff. There is a lot of what I call folk knowledge and, and ... some of it's ...very legitimate knowledge of just cause and effect experiences.' (Hugo/USA/53 [T1])*

However, although positive about broscience in the main, Hugo felt that it was the policies that led to reliance on this:

*'By having the policies that we do that are not patient friendly, that are based in hysteria and not based in science we're leaving the entire community of anabolic steroid users largely in the dark. they're relying on what they got 'broscience', Yo bro. You know we're relying more on folk knowledge than on medical knowledge' (Hugo/USA/53 [T1])*

It was acknowledged that, years of using AAS had led some to develop an in-depth knowledge of use and there was a clear 'older and wiser' narrative from some participants. Peter sums up the journey many of the interviewees described regarding how they assessed information and how their assessments improved over time and with experience you were able to recognise less credible information:

*'I am quite wise to that now whereas before it was like oh wow he's a fuckin' massive I'd better listen to him and now ...it's like a bit of a bullshit sense... I am very selective with who I get my information from and I'll make that decision on who I think is credible and based on you know are they referencing studies, have they got sort of testimonials of people that they've worked with, are they like an authority in that area, if somebody's name keeps flagging up between other sort of evidence based people then ...the chances are that that person's got credibility as well and I'll consume their content I'll listen to podcasts, read their articles. Look at what they're referencing and then I'll formulate my own opinion on what I think is true or not.' (Peter/UK/24 [T1])*

The idea that the largest guys would also be the most knowledgeable was the method used by the one participant who was seeking help for side-effects of an

orchidectomy, so had no interest in bodybuilding or the gym, yet still felt that the gym was the best place to get information:

*'I went to the biggest guy in the gym...rather than the doctors went straight to the gym and picked this guy and I said I got this trouble. What is this stuff? Cos' I didn't know nothing about it. and he sat me down and went through it and all the rest of it and that is where I found out most of the information' (Han/UK/42 [T1])*

There was an awareness from one participant that they might be paying attention to information that supported their use:

*'I tend to justify my own bad behaviour by being selective in the information that I look at' (Isaac/UK/42 [T1])*

### 5.3.5.3 **Types of practical support accessed**

This sub-theme covered three different aspects of support, one concerning injecting AAS, one seeking help for the side-effects of use and one on the experiences of accessing medical support.

#### 5.3.5.3.1 ***Acquisition of injecting paraphernalia and learning how to inject***

Only a minority of participants sought needles from friends, family or doctors, and 33% sought equipment from pharmacies; 49% purchased needles online and only 12% from a NE. Within these categories it is possible that when participants selected pharmacy, they might have meant online pharmacy. One website (Exchange Supplies 2019) was mentioned as a source and this website was interesting as it has been purposefully set up to support people who use AAS. If AAS-users choose to inject AAS, they have to learn how to inject the substances into the muscle. To get a broader picture of how participants were learning how to inject the data was re-categorised, recoded and amalgamated for the 'who taught you to inject' category to assist in the analysis. The categories were: professional support (NEs, medical professionals), support from peers (Including friends, family, coach) and self-taught (including websites, forum and online videos, books). If participants had selected 1 or more of the groups in each category, there were coded Yes. After recoding only 9% of participants had used professional support, 25% friends or peers and 66% of participants had taught themselves to inject by using the internet, or books. However, as this self-taught

option was selected by 77% of cases this suggests that people who sought advice from friends or professionals also did their own research. Some participants talked about their experiences of learning to inject and in line with the questionnaire results, some asked friends and peers to help and some referenced websites that had step by step instructions or videos, specialist fora and talked about having practised:

*'...by myself and online, the very very first time (laughs) I used a vitamin B12 because I didn't want to waste drugs ...I didn't know that the needle I bought was a straw (laughs,) so I almost stabbed myself, but yep no, well a little bit on the Fora, a little bit on the internet and just experimenting with myself but to be honest it's nothing, it's really easy.'* (Johan/Hong Kong/36 [TI])

In some countries it is possible to acquire needles freely from NSPs:

*'I used needle exchanges and stuff which I found surprisingly easy to, ...you just walk in the chemist, tell them which pack you want and away you go'* (Harry/UK/52 [TI])

However, although one participant was positive in the interview about using the NSP to gain needles, his answer to the questionnaire showed there was still room for improvement:

*'In terms of benzodiazepine and steroid addiction, yes but the staff at the local needle exchange who arranged blood tests knew too little about AAS and ancillary drugs. Some of their advice was plain wrong'* (Don/UK/39 [Q])

Some participants were clear this was not really an option for them, as they felt they would be judged and seen in the same light as class A drug users. Some also evidenced a sense of pride and were clear they did not need handouts:

*'I went to the needle exchange and they basically told me that we are going to give you 1 set of needles so that you have to come back every week ...and you're sorta waiting in a queue combined with sorta heroin users. ...it is judgmental for me to say that it is like you categorising me in the same sort of category as these people who are using Class A drugs which you know quite evidently are really impairing them, and then you are punishing me by saying like you want me to come back every single week for the needles like that's just pointless.'* (Peter/UK/24 [TI])

*'I actually prefer not to go and get free needles from there because, of kinda, you look like a drug addict, and I can afford needles'* (Del/UK/35 [TI])

### 5.3.5.3.2 *Seeking help for side-effects*

Participants self-reported a range of side-effects experienced (Table 5-4). Despite 116 participants reporting side-effects only 46 participants said they had sought help for side-effects. This could be because others had not experienced side-effects, did not consider side-effects severe, or they had not sought help from professionals but may have sought advice from peers and/or self-medicated. Participants were asked to note which problems they had specifically sought help for (Table 5-15).

Table 5-15 Conditions that AAS-users sought help for\*

ED	Antibiotics
Diabetes type2, probably from the GH	Kidney numbers
Acne (n=4)	Low blood sugar
Pec rupture	Needed to donate blood
Gyno (n=7)	High prolactin
Lower jaw problem	Cycle advice and harm reduction
Blood pressure (n=5)	Lowering haematocrit
Enlarged prostate	Knee pain
Raised liver enzymes (alt over 300; fertility)	Advice - nothing serious
High haemoglobin	Infection in site of injecting
'Hypertension, arrythmia, polycytemia, dislipidemia, abdominal pain'	Blood work at end of 1 year experiment to assess recovery
Suppressed testosterone	Benzodiazepine dependence
P.C.T	

\*n given if more than 1 respondent

Further statistical analysis using the Mann-Whitney U test was undertaken to explore if the number of years using and age made as difference to whether people would seek help for side-effects. There was no significant difference found in relation to age, however, there were differences in the '*number of years using AAS*' and '*whether people said they would seek help for side-effects*' (Yes (n =46)/No (n=86)). Distributions of the number of years using AAS for people saying yes/no to seeking help were similar, as assessed by visual inspection. The number of years using AAS was statistically different between Yes (Mdn = 6) (Mean rank = 79.09) and No (Mdn = 3) (Mean Rank 85.53),  $U = 1399$ ,  $z = -7.784$ ,  $p = .005$  (\*\*\*) , using an exact sampling distribution for U (Dinneen and Blakesley 1973).

Therefore, length of time using AAS was a factor in whether or not participants sought support, those who had been using longer being more likely to seek help for side-effects. Those AAS-users who had been using AAS for a longer time (Mdn

6) were more likely to seek support than those who had been using for a median of 3 years. This is not an unexpected finding as the longer AAS is used the more likely someone is to experience potentially more harmful side-effects.

Side-effects of using AAS are not limited to just the physical there can also be emotional side-effects. When it came to beliefs around whether there should be support for such emotional side-effects 71% (n=95) of participants answer yes. Yet, notably not one of the questionnaire participants put down counselling as a type of support accessed related to their AAS use. Two interview participants talked about accessing counselling support (talking therapies) related to their use. One had experienced a range of therapies to support his mental health and had not found them overly helpful. The other described how it was useful and gave him a tool for managing his emotions. Further statistical analysis was therefore undertaken to determine if there was a link between belief for a need for emotional support and a person's own experiences. A Chi Square test of independence was conducted between '*belief there is a need for emotional support*', and '*have you experienced behavioural changes*' and between '*belief there is a need for emotional support*', and '*have you experienced mood swings*'. In both cases all expected cell frequencies were greater than 5 and, in both tests, there was a statistically significant association (small/medium) between the two parameters (Table 5-16). When considering emotional support needs, there was a small association between those who had experienced behavioural changes and/or mood swings and the perceived need for emotional support.

Table 5-16 Chi Square test results: Belief there is a need for emotional support

Parameter	Yes/No parameter	Sig Y/N	Chi Square	Cramer V (strength – effect size)
<b>Belief there is a need for emotional support</b>	Experience Behavioural Changes	.008	7.100	.233 (small/medium)
	Experience Mood Swings	.002	9.866	.272 (small/medium)

Dependency could also be a factor in people's willingness to access support. Only 26 people (21%) selected yes when asked if they would consider seeking professional support to help them stop using AAS. A Chi Square test of independence was conducted between could you stop using AAS and '*would you seek professional support to stop*'. All expected cell frequencies were greater than

5. There was a statistically significant association between ‘*could you stop using AAS*’, and ‘*would you seek professional support to stop*’,  $X^2(1) = \text{Pearson Chi Square } 7.699, p = .006$ . There was a positive association (Cohen 1988) Cramers V = .249 (small/medium) with those who stated they could not stop using AAS is they chose being more willing to seek professional support to stop.

### 5.3.5.3.3 *Experiences of using medical professionals*

The quantitative study showed that people did seek help from medical professionals regardless of their geographical location but there was a range of responses in terms of how helpful this was. Participants received information around harm reduction, and received advice on substances to redress gynecomastia, lower haemocrit, reduce side-effects, lower blood pressure and obtain blood panel tests. Not everyone had a positive experience and two key concepts dominated the discussion on access to medical support:

- 1) Doctors being judgemental
- 2) Doctors lack of knowledge around AAS.

Table 5-17 Perceived limited knowledge of medical professionals

<i>‘...more educated than lots of actual doctors because we are dealing with stuff that is that is not really studied everything in-depth in medical school, that is normal because so many stuff they have to cover’ (Johan/Hong Kong/36 [TI])</i>
<i>‘Judged me, got angry, told me to just come off and levels would just come back. I did and they never came back’ (Max/Canada/26 [q])</i>
<i>‘I have had general discussions with GPs on AAS use, their knowledge is questionable’ (Isaac/UK/42 [TI])</i>
<i>‘...so he put me on a trial of testosterone gel, um which er, wasn’t completely successful cos the doctors have a very poor understanding of male endocrinology’ (Del/UK/35 [TI])</i>
<i>‘Knowledge among doctors i Sweden is rock bottom about this stuff’(Elvin/Sweden/39 [q])</i>

AAS-users felt that often they knew more about the compounds and effects than the medical professionals due to the specialised nature of the topic (Table 5-17).

How participants felt about the support they received often depended on the opinion/open-mindedness of the professional i.e. whether they took a preventative or harm reduction approach. Some found those professionals who, whilst not necessarily condoning use, did offer support, more helpful:

*'...some of them will be hysterical, and say, 'No, no, no, you know, I'm not talking about this. If you if you say that you do this, I'm not talking about it. I can't have anything to do with this... They'll get hysterical that way. But the more progressive doctors will be like, 'all right, look, dude, I know you're doing this, let's talk about how to do it safely' (Hugo/USA/53 [TI])*

One person talked about the GP prescribing a pill for his depression but not really understanding the core of the problem which led to self-research and self-medication:

*'I was expecting a little bit more support and maybe get sent someone that could help me with how I felt rather than get a prescription for a pill... the anxiety/ depression symptoms definitely eased of course but it affected my everyday life ...I became quite apathetic, I have lost any interest in er, like I had a completely lost sex drive... was not happy while I was on the drug I was just sort of stable, you know, ...tried speaking to the doctor ...I got told was don't worry about it the loss of the sex drive and symptoms like this would go away after a while... eventually stopping that all together but I still didn't feel great after coming off of them, and I think this was why I started looking into erm, therapeutic use of testosterone as a means of treating depression' (Alvin/UK/36 [TI])*

Many participants referenced that medical professionals would insist that they stop using, and they felt this was counterproductive:

*'...like the person I met who tells me go cold turkey and ...just deal with it. I'm like okay that's not for I want to hear from the doctor who actually is an endocrinologist.' (Lev/Canada/32 [TI])*

These negative personal experiences were often shared within the community, causing some users to seek help but not be honest about their use and therefore may not have been given the necessary support. Overall, many participants said they were unlikely to seek any professional medical help, giving a variety of reasons that are summarised in (Table 5-18).

Over and above the negative impressions and experiences users had of medical professionals, a lack of acknowledgement of the benefits of AAS use was also something that impacted on the credibility of professionals:

*'I live in the United States and they refuse to even admit that steroids will put on muscle mass' (Paul/USA/29 [TI])*

There is a wide range of specific types of information and support that AAS-users accessed. Interestingly, the predominant UK Public Health harm reduction

discourse focuses on the risk of BBVs and need for testing, but few participants accessed this type of support.

Table 5-18 Reasons for not seeking medical support

Reasons for not seeking medical support	Quotations
<b>Avoid Stigma</b>	<ul style="list-style-type: none"> <li>• <i>'...becasue i dont want to tell i used AAS so i dont get 'right' help' (Viggo/Sweden/34 [q])</i></li> <li>• <i>'...if I wanted to I probably wouldn't anyway, I wouldn't want it going on my medical record... in case one day I wanted to apply for life insurance or something, that's going to make things a lot harder for me. ...Because they won't want to go anywhere near me if they think I am taking steroids or have in the past'. (Del/UK/35 [TI])</i></li> </ul>
<b>Lack of trust in medical professionals</b>	<ul style="list-style-type: none"> <li>• <i>'Never felt the need. I self-medicate. I dont trust most medical professionals to know what to do.' (Brad/USA/26 [q])</i></li> </ul>
<b>Negative stories from others -do not want to be told to stop</b>	<ul style="list-style-type: none"> <li>• <i>'...it's just something I've heard about. Anyone I know that has seeked professional advice has been told to stop their usage immediatly. We all know that what we do can damage us, but we're not going to stop' (Clinton/UK/20 [CI])</i></li> <li>• <i>'...the experiences my sort of friends and team mates have had, with healthcare professionals ...I am trying to think if they have been entirely, yes they have been entirely negative... I feel like going to a healthcare professional with anything you know would be a last resort.' (Alvin/UK/36 [TI])</i></li> </ul>
<b>Blame everything on AAS use</b>	<ul style="list-style-type: none"> <li>• <i>'...literally go in with a sore foot, is it cos you have taken steroids? (really) you know what I mean, literally, I get a cold it's cos you take too many steroids' (Powel/UK/34 [TI])</i></li> <li>• <i>'...if you go to the doctor for anything they are going to say, they might say ok, well, that is probably to do with the steroids and they will brush things aside and not take you seriously.' (Del/UK/35 [TI])</i></li> </ul>
<b>Because they can do it themselves</b>	<ul style="list-style-type: none"> <li>• <i>'...never had any issues i couldnt handle my self' (Jerrick/Denmark/35 [q])</i></li> <li>• <i>'...the resources are out there and it seems much easier, and hassle free than actually going to see the doctor.' (Alvin/UK/36 [TI])</i></li> </ul>
<b>Because the problem was unfixable</b>	<ul style="list-style-type: none"> <li>• <i>'I waited for too long and the gyno effects were permanent already' (Costa/Greece/32 [q])</i></li> </ul>

There was a clear narrative around the need for the medical profession to not judge or stigmatise people who use AAS, as this proved to be a barrier to accessing support, as did the perceived lack of knowledge of such professionals.

### 5.3.6 Theme six: Ideal support

This section has reported on five of the six themes. A key objective of the study (3.9) was to understand what users say they want, as compared to their thoughts on information and support already provided, as the literature review identified



this as a key gap in knowledge. The following publication (Harvey et al. 2020), based on the findings of this study explores theme six: ideal support.

There was a further sub-theme on participants continuing to use AAS linked to wanting to maintain their libido and this brings something new to the discussion around motivation for use. This sub-theme is explored in part three of this chapter and takes the form of a submitted paper.

## **5.4 Summary**

This chapter has detailed the findings from five of the six themes:

1. Reasons to use AAS
2. Side-effects of AAS use
3. Risk management
4. Perceptions of and perceptions on AAS use and society
5. Information and support accessed

It has described the data aligned to these themes under a number of sub themes (Figure 5-1).

The following two chapters report two further findings. Chapter 6 considers the theme of 'ideal support' and takes the form of a published paper. Chapter 7 explores the sub-theme of 'impact on libido' and takes the form of a submitted paper.

Chapter 8 uses the concepts of management of use and identity to explore the themes from the findings in more depth. Moreover, it considers the strengths and limitations of the study and includes reflection on theory and personal reflections on the thesis.

## Chapter 6 Research article

**Harvey, O., Parrish, M., Van Teijlingen, E. and Trenoweth, S., 2020. Support for non-prescribed Anabolic Androgenic Steroids users: A qualitative exploration of their needs. *Drugs: Education, Prevention and Policy***

See: <https://eprints.bournemouth.ac.uk/33216/>

**Chapter 7 Research article - *submitted***

**Harvey, O., Parrish, M., Van Teijlingen, E. and Trenoweth, S., 2020.  
Libido as a reason to use non-prescribed Anabolic Androgenic  
Steroids. *Drugs: Education, Prevention and Policy***

## Chapter 8 Discussion

### 8.1 Overview

This chapter is divided into four sections and discusses the two overarching themes from the findings in this thesis:

(1) management of use;

(2) identity.

(3) the limitations and strengths of the study.

(4) The theoretical reflections on the findings linked to practice, suggesting a person-centred approach via a Pathway model for exploring a user's life experiences.

The chapter concludes with researcher's personal reflections on undertaking this study.

The first section begins with a comparison of the participants' demographics compared with recent studies on this population and an introduction to the concepts of identity and management of use. It then explores six themes aligned to the concept of management of use, with a comparison and contrast of the literature with particular attention paid to addressing objectives 1b and c, 2a and b, 3a and b (3.9).

#### 8.1.1 Participant demographics comparison

It is useful to compare and contrast the demographics of participants with those in recent studies to situate this study in its context. This study found a mean age of 35. This is slightly older than recent studies of 684 UK participants (mean age: 32) (Begley et al. 2017), 180 patients who visited a specialist AAS clinic in the Netherlands (mean age: 34) (Smit and de Ronde 2018), and 232 Norwegian AAS-users (mean age: 31) (Havnes et al. 2019). The mean for number of years using (7.2 years) was greater than the four years found by Smit and Ronde (2018) but less than the 10.2 years found by Havnes and colleagues (2019). 91% of participants who self-identified as heterosexual is comparable with 95% found by Begley and colleagues (2017). Comparisons of ethnicity are difficult as this study

was globally distributed however, the finding of 79% white is consistent with Begley and colleagues (2017), (80% white British). The employment status of 85% was slightly higher than recent studies: 67% (Smit and de Ronde 2018), 50% (Havnes et al. 2019) and 78% (Begley et al. 2017).

## 8.2 Identity at the heart of management of use

Further synthesis of the themes (Figure 5-1) identified two overarching, interconnected concepts: 'management of use' and 'identity'. Identity appeared to be at the heart, as information and support seeking behaviours were linked to risk management strategies and motivation to use both of which were influenced by an individual's identity (Figure 9-1).



Figure 8-1 Concepts of identity at the heart of management of use

Identity underpinned many participants' decisions to use (5.3.4.2.1, 9.4.5) and in turn this impacted on how they managed that use. The effects of using also influenced decisions over the choice of an AAS use regime, as well as consideration for continuing or stopping use. When it came to identity, positive effects could reinforce different identities, side-effects of stopping use could adversely affect it and this researcher argues that masculine identity could also impact help-seeking behaviours (9.4.6, 9.4.7). Responsible use was an important part of identity as an "AAS-user" for many (5.3.3.2), as was an identity as a mentor (5.3.3.7); advising novice users on harm reduction strategies. Mitigation of risk played a key role in managing use including consideration of risks versus benefits, developing ethnopharmacological knowledge, self-experimentation and seeking

evidence-based knowledge (5.3.3.2). Their perceptions of how society viewed AAS impacted on choices about management of use both in information trusted and services accessed.

This section explores the most noteworthy elements of the six themes (Figure 5-1) related to management of use as identifying support needed was a key objective of this study (3.9). To avoid duplication if a point has been covered (5.3.6, Chapter 6 and 7), these are signposted. The following section will then discuss how identity is central to this management of use.

### **8.2.1 Reasons for use**

The first theme focused on reasons for using AAS and although underlying motivations will be explored more fully in the next section, it is worth noting here that this study found complex and intertwined motivations for use, which aligned with current evidence (Kimergård 2015, Bates and McVeigh 2016, Begley et al. 2017, Richardson and Antonopoulos 2019) (Table 5-2). An anticipated finding was that for many the main motivation was to increase muscle and strength, mirroring current literature (Sagoe, Andreassen, et al. 2014, Murray et al. 2016, Begley et al. 2017). However, one of the reported motivations for using AAS was slightly higher than expected as other studies have found that increased sex drive or sexual function were not highly rated reasons for use (Ip et al. 2011) (5.3.6). The reasons for use influenced how AAS use is managed, including: planning, types of substances used, dose sizes and preparation. These differed based on individual goals, for example, if using AAS as a form of TRT; users talked of taking a continual low dose with few ancillary substances compared to those competing (5.3.3.2) where often AAS was used in cycles and supra-physiological doses. This influenced the type of information and support accessed and wanted for example, participants using for TRT wanted acknowledgement of the negative effects of low testosterone and access to specialised medical support, whereas those on cycles wanted more research into Post Cycle Therapy (PCT), and PCT advice. Moreover, in this study, some participant's motivation changed over time which could lead to changes in risks; consequently, support needs to match with the differing needs.

### 8.2.1.1 Justifications for use and continuing use

This study found many long-term AAS-users who despite experiencing negative effects, planned to continue using. Justifications of use such as: side-effects were minimal and manageable (5.3.3.2), perceptions they engaged in healthy behaviour i.e. not drinking and smoking, that unlike other types of illicit substance they did not seek to rob people to fund their use, that it does not hurt others and that people do not 'drop dead' from it, mirrored those in the literature (Boardley et al. 2014). Such arguments are, of course, valid from the participant's point of view but tend to discount that use can be physically and emotionally harmful. Boardley and colleagues (2014) argue that this substance use has become normalised, a routine part of the culture and as such users do not have to consciously or morally disengage from using.

This study found that users felt their quality of life had improved through use, with users happier, more confident and stating that their new lifestyle helped alleviate previous problems such as obesity, body image perception and depression, which is similar to other studies (Petrocelli et al. 2008, Smith et al. 2009, Davies et al. 2011, Walker and Joubert 2011, Kimergård 2015, Joubert and Melliush 2016). Feelings associated with using AAS, could reinforce or motivate continued use (Smith et al. 2009), as could positive feedback from others. If use produces positive side-effects such as greater strength and increased confidence; as found in this study and others (Walker and Joubert 2011, Ip et al. 2017), then this could reinforce the benefits of use and strengthen their resolve to continue their chosen usage. A study of nine AAS-users (aged 18-24) found a potential change of motivation when the initial external motivation of wanting to be more muscular led to an internal motivation of body image concerns (Harris et al. 2016). This study also had a number of participants using as a result of low testosterone and AAS-users may return to use to alleviate the potential feelings of dysphoria and as a result, loss of libido, lack of energy and possible onset of depression that could come with having ASIH (Kanayama and Pope 2018).

Studies have considered use via the lens of Bandura's theory of moral thought (that is, a self-regulatory process) and action (Boardley and Grix 2014, Boardley et al. 2014) and identified that six of the eight social mechanisms to allow for immorality were present amongst AAS-users discourse, including advantageous

comparison, often comparing use to more 'harmful' activities such as heavy drinking or smoking (5.3.4.3). Another comparison found in this study was that of 'responsible use' in comparison with less sensible AAS-users (5.3.3.6). This study found examples aligned to social mechanisms similar to those suggested by Boardley and Grix (2014), such as, moral justification: use allows them to advise others (5.3.3.7), and distortion of the consequences: it might not affect me, or believing harms are over-exaggerated (5.3.4.2).

Users in this study saw potential negative social effects from use, for example in some countries AAS use put them on the wrong side of the law. Breaking the law is not necessarily immoral (Boardley and Grix 2014), and the use was medication and not a 'criminal act' (5.3.4.1). Justification of use, aligned to moral disengagement is the diffusion of responsibility (Boardley and Grix 2014). Within this study some participants did appear to displace responsibility, arguing use was normal within the body-building world, or in certain gym cultures, but many did not, arguing their use was personal choice. Moral justification suggests a need to justify something that is immoral and although it is helpful to understand potential mechanisms for reinforcing use, particularly in countries where AAS is banned for personal use, such arguments also feed into the narrative that AAS use is in some way immoral and could lead to professionals internalising such judgements. This author argues that rather than being judgemental of AAS-users, professionals should see users as exercising free will and making rational choices (Keane 2003).

## **8.2.2 Effects of AAS use**

The effects experienced impacted the management of use in a number of ways. Participants changed what and how they used to enhance positive effects or to mitigate side-effects, and it was often concerns over long-term side-effects that led some to consider stopping use.

### **8.2.2.1 Positive effects**

This study highlighted a plethora of positive effects from using AAS which reflects previous studies (Rowe et al. 2016, Mey et al. 2018). Users were keen to promote the positive physical effects of use and decry the fact that many medical



professionals refuse to acknowledge these (5.3.5.3.3). Positive experiences linked to increased libido informed people's decisions to re-start using or continue using but with different doses and substances (Chapter 7). The positive effects of AAS use were seen as ways of justifying use and the difference in the cases reported (768 positives, 148 negatives) emphasises the weighting on the positive effects. Moreover, the third most selected motivation for use was 'positive results achieved from using AAS'. A key finding from this study was the narrative around the positive benefits that users experienced, that many of these were not purely concerned with the physical gains, such as muscle size but instead centred on wellbeing, such as being happy or improved self-esteem, which have been linked to motivation in other studies (Greenway and Price 2018). Moreover, the hyperbolic words and metaphors used to describe feelings when using, for example, '*pumped*', '*euphoric*' (Figure 5-6) add to the positive emotional feelings and such descriptors have been found in other qualitative studies (Smith and Stewart 2012). The importance of the positive emotional effects was also evidenced by the number of participants that answered 'improved' when linking to quality of life improvements. The questionnaire did not allow for reasons to be given for this; however, from the interviews often the improvements in quality of life were aligned to psychological benefits, such as improved confidence and being more decisive. This is important as it gives insight into a potential positive reinforcement for use of AAS from such effects.

It is vital to understand that users experience pleasure from using AAS (Mulrooney et al. 2019) and this study goes one step further in highlighting the perceived positive impact experienced by AAS-users on their wellbeing and mental health, as some participants stated that the improvement in quality of life was such that they would not wish to return to their old life. Arguably, the prevention-focussed perspective from the medical profession, experienced by many participants (5.3.5.3.3) could be because from a medical perspective the potentially physical harms seem to take precedent over psychological benefits. Certainly, physical harms are often more easily identified and assessed, when compared to the more subjective emotional benefits. Further research into the specific improvements in quality of life would be beneficial as this may shed light on further support options. It also adds strength to the argument that in order to

gain credibility, professionals must acknowledge the benefits of use (Fomiatti et al. 2019).

#### 8.2.2.2 Physical side-effects

There is little contention within the academic literature, or amongst this study's participants that using AAS does not come without risk. However, that is not true of all AAS-users as one study found that over 50% of users thought AAS were not harmful to health if used correctly (Alsaeed and Alabkal 2015), and another that 61% had no knowledge of the sexual problems arising from it (Bahri et al. 2017). The perceptions of harm could be dependent on age, culture or risk perception. This study found that participants had experienced a wide range of side-effects (5.3.2) mirroring those already noted in the literature (Nieschlag and Vorona 2015, Smit and de Ronde 2018) and included potentially less severe and reversible side-effects such as acne, gynecomastia and mood swings to more long-term ones such as ASIH. These side-effects did not necessarily lead interviewees to discontinue use, and previous studies have shown similar themes, for example one study found over 90% of AAS-users planned to continue use despite side-effects (Ip et al. 2011). Furthermore, Karavolos et al. (2015) concluded that one reason for the increase in AAS use, was that AAS was considered safe to use (within the online community) and that the side-effects were manageable, although they gave no evidence for this directly. In this study side-effects differed between participants, which matches previous studies (Richardson and Antonopoulos 2019), and users believed that AAS use impacted different individuals differently, not a necessarily irrational perspective bearing in mind the individual and complex AAS use patterns. Many participants were unconcerned about the short-term side-effects of use and felt they were over-exaggerated. Some participants talked down the impact of side-effects and felt that they might be lucky and not experience the more serious effects of long-term AAS use (5.3.2.3). This dissociation and reduction of harm is noted in other studies (Walker and Joubert 2011). However, this lack of concern is not necessarily minimising harms as one recent study of 180 AAS-users found no critical health issues from side-effects (Smit and de Ronde 2018) and in this study some reported not experiencing any side-effects. However, it may also depend on users' perceptions, for example, a large US study of adolescent males found that AAS use was

perceived as less risky or harmful when considered easily obtained, if close friends used AAS, or if they self-reported low levels of self-esteem, depression or risk-taking behaviours (Denham 2009).

This study matches others in that it shows that AAS-users often self-treat side-effects (Bates and McVeigh 2016, Smit and de Ronde 2018). In this study, of the 35% of participants who sought specific help for side-effects only 54% (n=25) went to see a medical specialist and others have raised concerns that many do not seek medical support (Begley et al. 2017). This self-medication for side-effects is concerning as the vast majority of AAS-users are not health professionals and more often, as with previous studies (3.6 (Harvey et al. 2019), this study found users relying on advice from the internet and more experienced AAS-using peers. Many users in this study perceived the academic evidence to be unreliable and did not match their own frames of reference. This perception could be due to lack of resources, legality, or lack of ethicality when it comes to academic research on the combinations of substances used and their effects (Smit and de Ronde 2018). Therefore, users put their faith in information from longer-term users. The finding that the longer people have been using AAS the more likely they were to seek help for side-effects (5.3.5.3.2) warrants further investigation and suggests that those more experienced although may be more likely to do their own research and self-medicate, they may also be experiencing more severe side-effects due to long-term use and hence seek support. Self-medication may be effective when it comes to reducing risk/harm from short-term side-effects but may not be so reliable when it comes to the more serious harms that come with long-term use. There appears to be a change in use as user's age, and in this study, it was older users who were more likely to be engaged in continuous low-level use. This suggests a change in or different motivation from younger users such as maintaining a body aesthetic or self-medicating for low testosterone levels. This could be important as this study found that the longer people have been using AAS the less likely they are to believe that they could stop using it (5.3.1.3). This could suggest that long-term use could increase the likelihood of developing a dependency which puts people at increased risk of experiencing physical harms (2.2). Therefore, support needs may change as people age. Academics argue for more research into the long-term effects of using AAS and there is a need for clinical trials to ascertain the risks of sustained AAS use (Kanayama and Pope

2018, Smit and de Ronde 2018). This study adds more evidence to support both these areas of research.

### 8.2.2.3 **Psychological side-effects**

This study's participants experienced a range of negative psychological effects (5.3.2.4) with seven people stating their quality of life had worsened. In a study of 74 AAS-users, Griffiths et al. (2018) found a range of psychological side-effects including: impulsivity, sleeplessness, irritability, aggressiveness, relationship difficulties, fatigue, and paranoia. This study found all these side-effects except for paranoia. Other studies have also noted that individual negative experiences do differ and that some experience strong negative emotional reactions (Richardson and Antonopoulos 2019). The emotional side-effects, in this study, fell into two predominant types: 1. an increase in irritability when on cycle (often this was substance-related) and 2. anxiety when coming off-cycle. As with the physical side-effects many participants felt it was their responsibility to manage psychological side-effects.

#### 8.2.2.3.1 ***Aggressive behaviours***

This study found a range of side-effects linked to irritable behaviours and psychological side-effects including aggression (Appendix 22, 23), which is consistent with other studies (Trenton and Currier 2005, Beaver et al. 2008, Jensen and Johannessen 2015, Lundholm et al. 2015, Piacentino et al. 2015, Bates and McVeigh 2016, Begley et al. 2017). However, the results, as with previous studies (Petrocelli et al. 2008, Dunn 2015), are inconclusive as the data are self-reported and there is no additional objective evidence to suggest the behaviours are causal. However, many users noted aggression as a side-effect and commented that one specific brand '*Trenbolone*' caused the most notable increases in aggressive behaviours (Appendices 22, 23) and worryingly, one study found Trenbolone was one of the two most frequently used substances (Smit and de Ronde 2018). Moreover, a Norwegian advice service that was also open to next of kin found that, although there was no suggestion that they felt at risk, next of kin did report noticing behavioural side-effects of use including loss of empathy,

anxiety, depression and aggression (Havnes et al. 2019), which matches those found in this study (5.3.2.4).

The findings showed that some users felt such ideas as 'roid rage' were palpably untrue, or at least not the whole truth (5.3.2.4, 5.3.4.2 ) and many AAS fora articles challenge this perception (Fordham 2014). Other studies have shown that users believed that the public has a distorted view of the side-effects (Cohen et al. 2007) and feel stigmatised because media depictions often focus on stories of 'roid rage' (Maycock and Howat 2005, Griffiths, Murray, and Mond 2016). The myth, that AAS use causes rage, is embedded within our western cultural psyche, grounded in such cultural icons as the 'Incredible Hulk', a hyper-muscular superhero with a catch phrase 'you won't like me when I am angry' (Fein 2007) and perpetuated in the way AAS use is portrayed in the media with such headlines as: 'My boyfriend did this to me in 'roid rage attack'' (Watkins 2015) and reports as:

*'Anabolics addict Raoul Moat shot his ex-girlfriend Samantha Stobbart, her new partner Chris Brown and blinded PC David Rathband... Moat, 37, described his anger saying: "It's like the Hulk. It takes over and it's more than anger and it happens when I'm hurt.'* (Myall and O'Boyle 2014)

An investigation into the correlation between AAS use and aggression (and anxiety), considered the two pathways that are thought to be involved in AAS-induced behavioural disorders and could not identify the molecular mechanisms underlying the behavioural alterations following AAS abuse (Bertozzi et al. 2017). This is an example where the authors, to emphasise their points, conclude there is a need for research as AAS-users can harm others (Bertozzi et al. 2017). There is scant evidence in the literature for harm to others with the exception of few studies that are not conclusive as to causation (Choi and Pope Jr. 1994, Driessen et al. 1996, Seppänen and Eronen 2016).

This study asked specific questions about users' thoughts on whether use put others at risk and found few felt that their use put others physically at risk, but there were other risks such as if they become seriously ill as a side-effect of use. One possible explanation for this lack of perceived risks to others could come from the wide range of risk management strategies grounded in self-awareness used to self-regulate aggressive feelings. We all have different measures of the

what constitutes an aggressive feeling and in a sporting context a level of 'aggression' is often seen as desirable although nine participants in this study gave 'increase my aggression' as a reason to use AAS. It is possible that when talking about self-regulation of aggression this was not related to AAS use but related to their perceived natural levels of aggression. However, Jenssen and Johannessen (2015) found both AAS users and contemplators have higher levels of aggression compared non-AAS users and they suggest that AAS use could be indicative of an aggressive personality profile (Jenssen and Johannessen 2015). Regardless of whether AAS-use can increase aggression or if people who use AAS are likely to have more aggressive personalities, it is possible that the above-average educational levels of participants in this study led to a higher level of self-awareness related to aggressive tendencies and therefore decided to take action to mitigate these.

A key finding was the concept of taking responsibility for managing emotional side-effects (5.3.3.2, 5.3.3.5, 5.3.3.6) and such effects did not absolve users of responsibility for their behaviour (Fomiatti et al. 2019). While this could link to a desire for being in control, a concept found in traditional views of masculinity (McManiman 2001) which is explored in 9.4.4, it is also related to management of use.

A variety of self-regulation tactics were found:

- Self-awareness - avoidance of certain substances
- Self-awareness – management feelings
- Use of other substances (which have calming effects)
- Meditation
- Support from others

The use of such tactics that included meditation and emotional regulation was an unexpected finding, and has not been extensively covered in the literature but is important, in that such technique and tactics could be something that could be incorporated into many harm reduction advice and skills such as meditation could be offered by services. Moreover, it is something that could be considered when looking at service options that include peer support.

#### 8.2.2.4 Continuous use versus PCT

This study found that 58% of the participants preferred continual use of AAS (Table 5-1); either through continued low-level use, or a blast-and-cruise cycle compared to the more traditional cycling. Yet previous studies have noted that the most typical way to use AAS is in cycles (Rowe et al. 2016, Begley et al. 2017, Smit and de Ronde 2018). Normally, PCT is used to help hormone recovery after having used supra-physiological amounts of AAS (Griffiths, Henshaw, et al. 2016), however, as yet there have been no published empirical quantitative studies investigating this phenomenon (Griffiths 2019). There was much discussion about the efficacy of PCT during interviews and similar to other studies (Griffiths, Henshaw, et al. 2016), those advocating PCT wanted access to PCT to help them recover. However, several participants had started out doing PCT, but now felt it was healthier to continue use but using lower doses of testosterone. For many, the reason given for this was not related to physical health, or appearance (i.e. fear of losing muscle,) but psychological health, as for some, dropping to low-level use meant not having to experience side-effects like anxiety and low libido (5.3.2.4.2). Another study found a number of adverse factors motivated the continuation of use which included concerns over muscle and strength loss, decreased physical ability, decreased attractiveness and loss of respect (Cohen et al. 2007) but notably did not include loss of libido or anxiety. However, anxiety can be a side-effect of lowered testosterone levels or ASIH (Berglund et al. 2011, Kanayama and Pope 2018). There is a challenge in understanding risks for those who have decided on continued low-level use, whether to avoid PCT side-effects or as a form of self-prescribed TRT. When used as self-medication for low testosterone AAS-users do not see it as harmful, but rather beneficial, with the received wisdom being that average testosterone levels used by medical professionals are unfair and too generic (5.3.5.3.3, 5.3.2.4.2). Studies have shown benefits of TRT as a treatment for low testosterone (Akerman et al. 2017, Moon and Park 2019) (Chapter 7). It could be difficult to challenge this perception as the efficacy of using PCT has not yet been verified (Smit and de Ronde 2018) and there is debate as to the risks versus benefits and efficacy of TRT (Bassil et al. 2009, Bain 2010, Huo et al. 2016). Consequently, medical professionals may err on the side of caution as they do not have confirmation of efficacy and using a continual low dose goes against expert advice in the literature as regular long

breaks between cycles can help to reduce the side-effects (Rowe et al. 2016). However, AAS-users trust the experiences of peers and their own experimental experiences. This researcher agrees with others, that access to PCT is a possible harm reduction tool (Griffiths, Henshaw, et al. 2016) and should therefore be part of any specialist support service.

#### 8.2.2.5 AAS use dependency

Post-cycle emotional impacts may further act to strengthen dependence mechanisms (Griffiths and Murray 2018). There are three proposed dependence routes to AAS: anabolic, hedonistic and androgenic, and in turn the androgenic dependence route is related to three negative reinforcement mechanisms: loss of libido, fatigue and other hypogonadal symptoms and depression (Kanayama et al. 2010). Some participants felt that they would be on TRT for the remainder of their lives and spoke of their anxiety if this was not available (5.3.1.2, Chapter 7). This could in part be explained by the quantitative findings which showed many users felt AAS had a positive impact on their quality of life (Figure 5-4). There also seemed to be a positive reinforcement as some experienced increases in both their libido and sexual function when using AAS. The treatments for the first two mechanisms are medication and for the third (depression) anti-depressants are suggested and electroconvulsive therapy (Kanayama et al. 2010). Interestingly, this study found that participants felt testosterone injections to be more effective than prescribed anti-depressants (Chapter 7).

This study shows that the information needs of many participants focussed on safe use and medical support to mitigate side-effects or combat 'perceived' low testosterone levels, which could link to the age and motivations of this study population. Moreover, this study found a high percentage of people on a low-level continual dose of testosterone, going against NSP's guidance (5.3.3.2). NSP advice is clear about the need for PCT and that no cycle should be longer than 6-weeks (oral) or 12-weeks (injecting) (Campbell and Preston 2017). As this advice is contrary to some user's beliefs and could cause some to reject such services, as they do not identify as AAS-users and are self-medicating for TRT, this would only reinforce that thinking. Consequently, services need to consider if the types of messages they use are potential barriers to people accessing support.



### 8.2.2.6 Support for emotional side-effects

When considering emotional support needs, there was a small association between those who had experienced behavioural changes and/or mood swings and the perceived need for emotional support (5.3.6, Table 5-16). This finding would seem self-explanatory, as those who were experiencing difficulties managing behavioural changes are more likely to suggest there is a need for support. Practical support is an important part of harm reduction and in the UK, advice on how people might achieve physical gains through dieting and exercise regimes is often provided by NSPs (Campbell and Preston 2017), yet arguably little is offered to help with the psychological side-effects, and this may be because people are reluctant to ask for such help, or acknowledge they might want it. Moreover, experiencing mental health problems was the most desirous reason for stopping AAS use (Havnes et al. 2019), so this is an area where more support might need to be sensitively offered. From this researcher's perspective, regardless of the cause, if AAS-users are experiencing negative emotional responses, these should not be ignored as this may increase the likelihood of dependence. Consequently, there is a need for services to consider how they might offer to support people who experience emotional side-effects.

### 8.2.3 Risk management

In line with previous studies (Cohen et al. 2007) this study found high educational levels amongst the cohort, which could suggest a reasonable level of health literacy (2.3.1), i.e. an individual's ability to make sound health decisions in the context of everyday life (Kickbusch 2008). Moreover participants seemed to be well-informed about the risks of use, as reported elsewhere (Dermota et al. 2013). However, just because participants are health literate and have a good knowledge of risks, that does not necessarily mean that their behaviour is without harm as Jacka et al. (2017, 2020) note they may consider themselves well informed but are using internet sources, which could provide potentially misleading or inaccurate information. It is also important to note the potential for confirmation bias within this population as demonstrated by Meppelink et al. (2019), which found that when searching the internet for health information people perceived the belief-confirming resources as more useful, credible and convincing than information

that was inconsistent with their beliefs. As this population makes use of AAS-using fora online, which help to build a community of beliefs around AAS use, this could impact on health-seeking behaviours as a dominant theme (5.3.5.3.3, 8.2.2.1) is the lack of knowledge of medical professionals.

Participants were often clear about the harms, had strategies for managing side-effects, and were focused on balancing risks. Arguably, AAS-users are not disassociating from harms but are undertaking a risk/benefit analysis and concluding that there are greater personal risks to them in not using. To manage risks effectively users developed a strong understanding of how their own body worked and the impact of the substances on the body (5.3.3.5), which ties in with previous studies (Monaghan 2002, Brennan et al. 2019). Participants used a range of medications to mitigate for side-effects (5.3.3.2) and this is consistent with other studies (Ip et al. 2019). Development of ethnopharmacological knowledge can be seen as both a positive and negative. It evidences that this population treats their use seriously and is focussed on risk management and harm reduction, and could be seen as an empowerment strategy (Brennan et al. 2019). However, it could be also seen as a way of justifying how they are responsible and different from other types of drug users.

The distrust of medical professionals could be another reason for self-medication. This lack of trust was evidenced through participants' personal experiences and stories from other users in which doctors took a prevention stance, condemned all AAS use and were not as knowledgeable as AAS-users (5.3.5.3.3). This lack of faith in the knowledge base of the medical profession has been widely reported (Pope Jr. et al. 2004, Dunn et al. 2016, Havnes et al. 2019), and numerous academics have noted that not only is the medical profession anti-AAS use (Yu et al. 2015) but it also doesn't recognise the efficacy of steroids (Griffiths, Murray, Mitchison, et al. 2016), which causes users to question the harms noted by medical professionals (Kimergård 2015). However, professionals use evidence-based advice and there are challenges with effective research in this field, as it is predominantly low-level evidence such as observational studies and case reports that form the basis of knowledge of side-effects (Smit and de Ronde 2018). Consequently, it is not surprising that, in line with other studies (Kimergård 2015),

this study found advice from other users being perceived as more reliable (Table 5-14).

## 8.2.4 Perceptions on and perceptions of AAS use and society

### 8.2.4.1 Stigma

This study found actual and perceived stigma attached to using reported by AAS-users (5.3.4.3) which echoes previous studies (Hanley Santos and Coomber 2017, Richardson et al. 2019). One reason for this may be linked to appearance norms as one study that specifically asked people for their views on steroid users showed non-users often found the associated focus on body-image fake and distasteful (Ravn and Coffey 2016). Yet, It was clear from the face-to-face and Skype interviews that many of those interviewed did not meet the stereotypical hyper-muscular form as depicted in the media, although they were more defined than perhaps what would be seen as 'average' see Figure 9-2



Figure 8-2 Picture of a participant (Permission granted by participant)

The narrative surrounding AAS which amplifies side-effects and exacerbates and misconstrues aggressive behaviours may mean that people who use are less likely to speak out. In this study, participants did not necessarily comprehend why activities such as smoking and alcohol consumption which have long-term health risks, seemingly carry less stigma, particularly as these can put others 'passively' at risk. AAS-users also perceived that they face more judgement than people undergoing other body modifications (5.3.4.3) such as Botox and breast

enhancement, with Society seeing these as medically, socially and even morally more acceptable. This contrast between cosmetic enhancers for aesthetic enhancement such as Botox being perceived as positive and AAS use as negative, is something which has been previously noted in the literature (Mulrooney et al. 2019). Such body modifications are still predominately the realm of women and arguably it is more acceptable for women to care about how they look and as a consequence may experience less stigma when they use chemicals for appearance enhancement.

The desire not to be identified with injecting drug users may reflect why many users are reluctant to access shared services. It may not just be stigma that is a barrier but also fear of consequences. If a key motivation was 'for my job' (Table 5-2), this then might impact on support, for instance in the UK personal AAS use is not illegal but for certain professions e.g. police or military, it could have career-ending consequences, therefore such people are less likely to seek any help through 'official' channels for fear of it being recorded on medical records This could also impact everyday life as one user talked of stories where AAS use recorded on medical records impacted a peer's mortgage insurance (5.3.2.5, 5.3.5.1, 5.3.4.3). Therefore, this may in part explain why they turn to advice from peer networks. A range of elements potentially create stigma, including a culmination of media 'roid rage' stories, economic/social impact of undertaking perceived risky behaviours, perceptions of people who use of non-prescribed drugs and/or lack of empathy for the reasons behind use e.g. fed by the notion that these men want to be unnaturally muscular.

Whatever the reason for the stigma it is potentially harmful, as this stereotypical portrayal could negatively impact professionals as they too, could be influenced by cultural and social perceptions and consequently be judgemental.

Participants expressed concerns about whether this researcher would describe them in ways that they considered 'stereotypical' (5.3.4.2). Judgements about perceptions of substance use are often unconsciously informed by the society in which we live, and even researchers can be non-empathetic in their views; for example one book on forbidden drugs, covering use of AAS, suggested that the harmful side-effects, within which they include grandiose delusions, psychosis and reference court cases linking use to the defence of rape, are "a tremendous price

to pay for a heartbeat of extra pace, a few more ounces on the squat-thrust, or an admiring glance on the bench” (Robson 2005, p.154). This feels judgemental and oversimplifies what is fundamentally a more complex matter. Moreover, a recent editorial was dismissive of AAS-users suggesting use may be lethal and that users are deluding themselves (Smit and de Ronde 2018). This may be the case for some but not all, yet Smit and de Ronde (2018) group all AAS-users together. Such messages could colour the views and judgements of the reader (whether professionals or AAS-users) and partially explain why AAS-users often mistrust not just the public but also professional or academic discourse. As users often read academic literature (Underwood 2019), there is a need for a balanced perspective when addressing such issues in the literature. The prevention approach often forms part of the narrative on AAS use in the academic literature, particularly from a medical perspective. This will inform medical professionals’ advice and guidance and may also explain why there is such a strong perception amongst AAS-users that medical professionals will just say stop using (5.3.5.3.3, Chapter 6). However, there is a less judgemental perspective in the more harm reduction focused academic literature, but these often suggest less orthodox approaches, which appear resource intensive and may be unpalatable to governments and are often ignored. One of the participants was clear that the prevailing drugs policies of:

*‘...the ‘alls’, all drugs are all bad, all the time, for all people, in all circumstances.’ (Hugo/USA/53 [TI])*

was an unhelpful narrative and whilst the prevention narrative focuses on all the side-effects of substance use for performance enhancement, there is a disconnect with people’s reality which harms the credibility of those promoting such policies (Mey et al. 2018). This narrative sees everyone who uses illicit (or those misusing licit substances e.g. alcohol, drugs) in the same light. In line with other studies (Monaghan 2002, Simmonds and Coomber 2009, Smith et al. 2009), this study found that AAS-users were keen to distance themselves from this narrative, using it as a reason for not using NSPs as they are accessed by other substance users. Keeping use secret through fear of judgement could influence health-seeking behaviours leading people either to lie to medical professionals or not seek help when needed. Further discussion on stigma and how it aligns to identity are discussed in 8.4.3.

## 8.2.5 Information and support

This study confirms current knowledge (Chapter 3) around the reliance placed by users on the internet and fellow users for advice and support for AAS use (Chapter 6). The majority of the findings on the themes of support accessed and wanted are reported in (Chapter 6), however, due to word limitations the findings on trusted information sources are discussed here alongside more detailed discussions on peer support, government-led services and targeted support.

### 8.2.5.1 Trusted information

Although there were some small differences in percentages concerning the specific type of advice sought, the top two categories remained the same across each type of advice: AAS-users and AAS-user fora (Table 5-14). This finding that people were more likely to trust information on specialist fora and experienced users is in keeping with previous research where concerns have been raised about the reliance that AAS-users put on 'broscience' and taking advice from the AAS-using community over professionals (Grogan et al. 2006, Kimergård and McVeigh 2014a, Hanley Santos and Coomber 2017). Participants in this study noted that such information often came from people they trusted and who had experience of use, however some noted this was not without risks, as there was a lot of incorrect information shared online. This is true as fora are often created for the marketing and selling of steroids (Antonopoulos and Hall 2016) and the information is often pro-use (Karavolos et al. 2015). Personal lack of knowledge about a subject is not necessarily important if the source is deemed trustworthy (Marsh and Yang 2018), the authors citing this as an example of why advertisers use celebrity endorsements. In this sub-community arguably, there are bodybuilders who have attained celebrity status (Bilgrei 2018) and as such are deemed trustworthy. However, others felt some celebrities were unreliable (5.3.4.3) and added to the stigma. Evidence suggests that people are more likely to believe something is true if multiple people are saying it (Komoroski and Rickert 1992, Marsh and Yang 2018) and many participants, aware of the misinformation online looked for agreement from a number of sources including academic studies and books to help work out whether a source was credible which could help to increase reliability (Chapter 6). Communicating the health concerns around AAS

use is complex. A simple message about the immorality of using AAS or that it can cause physical health harms is unlikely to impact on the behaviours of many AAS-users in part due the reinforcement they receive from using within the AAS using subculture (Smith et al. 2009). Consequently, there is a need for a wide range of different communication channels around using AAS. This study identifies a range of communication mechanisms that could be useful (Chapter 6).

#### 8.2.5.2 Peersupport

McVeigh and colleagues (2012) argued for better communication of information from credible sources through social media, so that users have access to sources other than those with vested interests. Based on the findings of this study, the inclusion of academic references in information offered via government-led services might carry more weight. Bearing in mind that this study (Chapter 3) along with numerous others has found that advice is sought and even preferred when it comes from experienced users it is not surprising that many academics including this researcher, advocate for public health initiatives to utilise more innovative methods of dissemination via peer networks, and be involved in co-production of harm reduction messages and materials (Bardick et al. 2008, Griffiths, Henshaw, et al. 2016, Papangelis et al. 2016, Bates, Tod, et al. 2019, Glass et al. 2019, Mulrooney et al. 2019, Salinas et al. 2019).

It is not just for dissemination of information where peer support could be an option. The desire that experienced users have for sharing advice and their experiences responsibly (5.3.3.7) could potentially be leveraged, as they appear to have a high-level of influence. Moreover, although there are concerns around advice from other users, peer support has been something that has been advocated and found to be beneficial in other drug using populations (Toseland and Hacker 1985, Powell and Perron 2010, Kelch 2014, Treloar et al. 2015, Brown et al. 2019). Such sessions could be run by experienced users. While, this approach differs from many other peer-led groups in substance use, where peers have ceased using, such groups could nonetheless take their model from skills-based sessions and cover subjects such as making the most from training. It would also seem plausible that supporting emotional side-effects is another area where experienced peers may be able to offer a valuable service by sharing self-

management techniques (Table 5-5). However, this is not without its challenges such as ensuring that the advice given is evidence-based, does not promote risky use and includes discussions on harm reduction. Justifiably, some professionals worry that reliance on these experienced users could do more harm than good, when they as professionals are more qualified to provide support (Richardson et al. 2019) and normalisation of AAS use within a culture could cause AAS-users to disassociate from potential harms (Brennan et al. 2017), therefore, whilst advocating for peer support, there is a need to ensure that such support is well-managed and as 'unbiased' as possible.

### 8.2.5.3 Using government provided services

One barrier to providing effective support for AAS-users is identifying what support people are willing to access. As already discussed in 4.6.1, this population is considered hard-to-reach (Smith et al. 2009), with secondary distribution of needles common, as 154 participants reported collecting equipment for other IPED users (estimated at 639 other people) (Glass et al. 2019). In this study, 98% (128/131) of participants injected AAS (Table 5-1); a larger percentage than found in other mixed populations e.g. 85% in Begley and colleagues' (2017) study. However, consistent with previous studies (Brennan et al. 2019) injection was predominantly self-directed and self-experimentation was used (5.3.3.4). NSPs may not be accessed by many IPED users including those utilising oral steroids (Glass et al. 2019, van de Ven et al. 2019), however, only five participants in this study used just oral steroids (Table 5-1). This study found that accessing NSPs for any type of support was limited with just under half of 15/34 UK participants accessing needles from NSPs (less for all other types of information/support) with only 20/133 participants in total, however some of this will be due to lack of access to NSPs in some countries. A key reason given by participants not wanting to access advice from NSPs was stigma as participants did not want to be seen as users of other illicit substances such as heroin. Ironically, other recreational drug users also felt the stigma of the 'junkie' identity (5.3.4.1) and often saw treatment services as reinforcing this identity (Radcliffe and Stevens 2008). Therefore, arguably, NSPs that also serve other drug-using populations might not be the right medium for support.



It is noteworthy that a Norwegian service found sexual problems as the most commonly reported concern (Havnes et al. 2019) and calls to an anti-doping hotline highlighted which side-effects potential AAS-users would be prepared to live with and those they would not, finding a potential reason for not using AAS was if they might experience problems with genitalia (Christiansen and Bojsen-Møller 2012). This was also a large concern for participants in this study (Chapter 7). It is clear there is a need to continue to advocate for a wide range of support services for AAS-users. A model of ideal support is discussed more fully in Chapter 6. Moreover, taking into consideration that several participants spoke of having to convince their partners about their use (5.3.4.3), it would be beneficial for services to include confidential information and advice services for families and friends. There is evidence that free, bespoke, voluntary AAS services are effective as one evaluation of a Norwegian AAS information service for AAS-users and next of kin found that 98% of users and 100% of the next of kin, found the information useful (Havnes et al. 2019).

There is a need to consider how to engage with the AAS using community outside of NSPs (van de Ven et al. 2019) and, as noted the results show that NSPs are currently not reaching many of this population. Other studies suggest support services could be better placed alongside GP surgeries, linked to pharmacies, be a stand-alone service, or attached to gyms (Kimergård and McVeigh 2014a) which could increase access and may reduce stigma. The benefits of outreach through gyms has been evidenced in other studies (Salinas et al. 2019) and one participant in this study noted that sharps bins in the gym were useful (Chapter 6). This seems to be a basic harm reduction activity, yet it is understandable that gyms may not offer such services for fear of bad publicity and public disapproval. It is important to acknowledge the resource pressures on government and local authorities which could lead one to question whether people who use AAS should be a priority for support services. So, perhaps the answer is not a publicly funded solution; perhaps it is a regulated private sector service. However, intervention is necessary due to level of harms (Bates, Tod, et al. 2019). Consequently, taking a pragmatic approach, it may be helpful to consider how support provisions could be resourced.

#### 8.2.5.4 Targeted support

Overall, this thesis supports other research into the need for an individual approach to support and care based on assessment of risk, behaviour, health and lifestyle (Zahnow et al. 2018). However, this does not mean that certain populations should not be targeted with specific information and support and this study's findings point to several key areas for such targeted advice. Firstly, there is potentially a need to target preventative interventions at older users, providing other options to support them address their reasons for wanting to start or restart use for anti-ageing reasons (5.3.1.3). Secondly, Sagoe et al. (2014) recommend focussed interventions on people with a range of vulnerabilities and those in certain professions such as doormen, male sex workers and sportspeople. This study showed that it might be useful to add another occupation to the list: personal trainer (5.3.1), as they are potentially influencing others. There is a higher prevalence of HIV amongst people who inject IPEDs (Hope et al. 2013), and two participants started use after AAS was offered as a treatment for counteracting the wasting effects that comes with the disease (5.3.1). Therefore, consideration should be given to discussing this issue with people who are prescribed AAS to combat HIV wasting.

Many participants maintained that after weighing up the pros and cons, the risks of harms from use were not as detrimental as the short and long-term side-effects of stopping use (5.3.3.1). Timing for intervention is crucial and one beneficial point to support someone to consider stopping use might be at such a juncture as having an adverse outcome as a result of AAS use (Bates, Tod, et al. 2019). Perhaps harm reduction initiatives should aim to support people through PCT, but also consider different harm reduction methods for those who are using a continual low-level dose, which could include referral to medical specialists, and an exploration with the participants for their reasons as to why they have adopted this strategy. Moreover, finding ways to address the emotional impacts experienced coming off-cycle, and techniques to help users manage the low mood might reduce harm. This would be particularly useful for those who have mixed feelings concerning their continued use yet are unable to envisage a time when

they would not be using AAS (9.2.2.5). Although these emotions experienced do not affect all participants, it suggests there is a greater need for emotional support around AAS use. However, it is unclear from the qualitative data what form this should take and what barriers might be in place, therefore a further qualitative study is required.

### **8.3 Summary**

This section has shown that although there is a range of physical and psychological side-effects of AAS use, users often feel that the benefits of using outweighs the risks. This study showed that participants who started use for the physical benefits continued due to the perceived impact on their positive wellbeing. This is important when considering advice and support provision. It has shown that AAS-users often have researched their use and have clear strategies for managing the risks. When it came to negative psychological effects, although these emotions did not affect all participants, it suggests a greater need for emotional support around AAS use. It has evidenced that society's perceptions of AAS creates stigma and impacts on help-seeking behaviours. It has highlighted a need to change the narrative from prevention to intervention and support, for professionals to be non-judgemental and advice to be evidence-based. It has considered the need for targeted support, explored the use of peer support and need for support for families. The following section will consider underlying motivations for AAS use across the life span through the lens of identity.

## 8.4 Identity

### 8.4.1 Introduction

This section explores the second of the two concepts: identity. Findings suggests that identity could influence reasons for use and this section uses role theory, in particular theories of masculinity to consider underlying motivations for starting, continuing or re-starting use. The findings showed that for some participants, motivations for use change over time (5.3.1.3), consequently it seeks to apply Erikson's Life Stage Theory (Erikson and Erikson 1997) to illuminate how identity can impact across the lifespan and how this may impact motivations for use.

### 8.4.2 Identity as a concept

The findings indicate that the lens of identity could be one way of viewing the reasons and underlying motivations for AAS use. Erikson (1968) defines identity in adolescence as:

*"The wholeness to be achieved at this stage I have called a sense of identity...Individually speaking, identity included, but is more than, the sum of the successive identifications of those earlier years when the child wanted to be, and often was forced to become, like the people he depended on."* (Erikson 1968, p.87)

Erikson's definition of identity is psychosocial and multi-dimensional (Schwartz 2001) and in his prologue to Identity, Youth and Crisis (Erikson 1968) suggests that identity covers a multitude of aspects which includes: 'a unity of personal and cultural identity', an always changing and developing process, 'a psychohistorical perspective', tied to work and 'cooperation with others', 'manufactured identity', 'sexual identity confusion' and is 'always changing and developing'. Erikson's concept of identity is subjective, comprises of both the conscious and unconscious, and represents an individual's "psychosocial stimulus value" himself and others within their community (Waterman 1988, p.187). It is this definition of identity, with its multi-faceted components, aligned to the values for both oneself and significant others that this researcher is using when considering the impact of identity on AAS use. This definition incorporates both unconscious and conscious

elements of identity, and the idea that an individual's social and cultural contexts will impact on an individual's identity formation (Schachter 2005).

Identity can provide a structure for an individual to understand who they are, provide them with meaning and goals, a sense of free will and control and a sense of future coherency between values and beliefs (Adams and Marshall 1996). Individuals need to feel significant, which on a personal level concerns self-agency, but on a group level concerns belonging, with social settings potentially influencing the identity formation process (Adams and Marshall 1996). People can have multiple dimensions to their identity (Jones and McEwen 2000) including professional, gender, ethnic, religious, sexual orientation, socioeconomic status, age, ability (Tatum 2000, Stonewall 2016, Morgan 2017) as well as an incalculable range of identities from subcultures including 'athlete' (Gustafsson et al. 2018), 'bodybuilder' (Phoenix 2010) 'drug-user' (Rødner 2005) and 'AAS-user' (Ravn and Coffey 2016).

Identity is often aligned to the roles we play (Biddle 2013). Role theory, developed in the 1930's by sociologists such as Ralph Linton and George Mead, considers an individual in the context of the expectations and norms of society e.g. what is the traditional role of the father (Biddle 2013), with some roles being due to innate circumstances such as what it is 'to be male', and others attained such as 'bodybuilder'. Role theory proposes that behaviour can relate to socially defined positions or expectations (Biddle 1986). This can help to understand the concept of the person-in-environment which can be linked to status or the place that people have in social settings (Parrish 2014). Consequently, motivations for AAS use could link to a desire to meet the expectations of a role. A number of motivations for use could link to a participant's identities, for example gender (e.g. look masculine), occupation (e.g. personal trainer) or competitor (e.g. bodybuilder). The participants described themselves in a variety of socially constructed roles including father, hetero/homosexual male, bodybuilder, powerlifter, husband, personal trainer. Some even spoke about these specifically in relation to their use:

*'It may sound strange but sometimes i feel obligated to continue because that is how i identify myself. How people know me... Sometimes i think we trapped ourselves'. (Tomaz/Belgium/40 [CI])*

For some users, identities were clearly in evidence in their answers to a free -text question on sexual orientation, either choosing to write about how they saw themselves Table 8-1, rather than define themselves by their sexual orientation or using specific language to reinforce their masculine identity.

Table 8-1 Identity: participant self-descriptors

<i>'Confident man in his prime' (Jay/Sweden/27 [q])</i>
<i>'Happy healthy husband and father of three'. (Ivar/Sweden/42 [q])</i>
<i>'Entrepreneurial, dedicated, quizzical, ambitious and pursuer of truth and education'. (Karl/USA/25 [q])</i>
<i>'Married gay male, 53 years old, HIV+ 22 years' (Hank/USA/53 [q])</i>
<i>'Software engineer, intelligent, psychology grad' (Niall/Canada/25 [q])</i>
<i>'Tall dark handsome' (Kris/USA/25 [q])</i>
<i>'I'm a fucking man' (Troy/USA/28 [q])</i>
<i>'I have a penis' (Adrian/UK/29 [q])</i>

The internationalisation of an athletic-ideal plays a prominent role in the prediction of muscularity-orientated behaviour (Hoffmann and Warschburger 2019) and AAS was traditionally the realm of athletes (Evans-Brown and McVeigh 2008). Being seen as a bodybuilder or athlete can be a part of an identity but may not give the whole picture. In the interviews, reflecting on the underlying reasons for wanting to build muscle, participants' motivations to change their physique included: achieving sporting goals, overcoming genetic limitations, attaining the physique that women wanted, as a response to having contracted HIV, and self-medication for TRT. Moreover, for some there were motivations linked to self-identity, e.g. how Hugo saw himself and wanted to be viewed by others as a Gay man (Table 5-7), which relates to the Eriksonian concept of identity being tied to value of self and others within the social context.

Regardless of the initial motivations, use itself has a number of additional benefits that could help to reinforce or increase AAS use and in this study although libido was not selected as a common motivator it was the most selected benefit of use (5.3.2), and TRT was the main reason for use for some participants. There were a number of other positive emotional drivers, with over half the participants (53%) selecting 'become happier' as a motivator. This begs the question "how do they define happiness?" It could be that seeing results aligned to their goal made them happier. Almost three quarters (74%) felt that using AAS had improved the quality of their life. This impact on all aspects of life has been noted in other studies; for

example, Latham et al. (2019) found that the “bigger stronger” narrative enhanced aspects of AAS-users’ normal lives. If one is using it to rediscover one’s youth and one’s libido returns, then it may genuinely improve the user’s quality of life. However, if there are potentially deeper psychological reasons linked to an identity crisis or a sense of inadequacy then use may be merely palliative.

#### **8.4.3 AAS-users’ perception of themselves and the drug-user identity**

One facet of identity is tied to the social and cultural context and cooperation with others (Erikson 1968), which can come from being part of a group, as people have a social need to have a sense of belonging to others, and to feel connected (Adams and Marshall 1996). Participants talked of a global AAS-using community (5.3.44). Belonging to such a group potentially means adhering to certain cultural norms and beliefs. This study showed certain similarities in views within the AAS sub-community regarding responsible use (5.3.3.6), seeking to develop an ethnopharmacological knowledge (5.3.3.4) and a distrust of medical professions (5.3.5.3.3).

AAS-users were keen to disassociate themselves from ‘traditional drug-users’, often labelling them as ‘junkies’ (5.3.4.1) and used reasons such as planning their use and maintaining healthy lifestyles. This is consistent with previous studies (Smith et al. 2009, Dunn et al. 2014). This distinction between AAS-users and recreational drug users centres on the purpose of the drugs used, attitudes towards drug use and social and cultural environments of the users (Smith et al. 2009), and all these points were referenced throughout the interviews. Identity may, in part, explain why many AAS-users were keen not to be seen in the same light as people who take illicit drugs, as the negative connotations linked to those groups was a world away from how they saw themselves, in the context of managing risk, taking responsibility and that they saw their use as ‘healthy’ (5.3.1.3), which is in line with other studies (Bloor et al. 1998). The image of ‘drug addict’ did not align with their own self-image and some participants argued, as do some experts (Monaghan 2002), that as they are different from other drug users (5.3.4) they should be treated differently.

As an identity, ‘drug-users’ can be viewed differently dependent on culture and sub-groups people operate within and some parts of society might see this label

as linked to hedonistic behaviours, whereas others might see dissolute or delinquent behaviours. This showed that participants associated some types of illicit drug-use with criminal behaviour (5.3.4.3), having themselves bought into a more stereotypical view of people who use drugs such as heroin. Moreover, some AAS-users spoke about other AAS-users in a non-complimentary manner for using irresponsibly or abusing AAS, suggesting such people gave AAS use a bad name and used labels such as 'roid heads' to distance themselves from such users. Brennan et al. (2019) note that self-education on all aspects of use was something expected by the AAS-using forum members prior to starting use and suggest that this type of lay expertise was seen by the group as empowering. This mirrors previous studies where AAS-users 'use' substances but do not 'abuse' them (Monaghan 2002). Furthermore, the differentiation between 'use' and 'abuse', is a way for users to differentiate themselves from other steroid users, with abuse being perceived as indiscriminate, continuous, over-use, or even unplanned use (Bloor et al. 1998). However, in this study, participants no longer saw users who used continuously in this light. The differentiation was more subtle; continuous use of supra-physiological amounts was considered irresponsible, but dropping to a low-level dose, rather than instigating PCT was not.

The concept of stigma aligned to managing risk has been explored (8.2.4), however when considering aspects of identity, it is also worth noting its relationship to stigma. There could be an element here of self-stigma, that people internalise society's views of an activity and therefore experience negative consequences (Corrigan and Rao 2012) such as a lack of willingness to seek support. There is another consideration around accessing information that also aligns to identity, that of prestige bias. Prestige bias occurs when people use indirect cues from people who are deemed successful within a group or culture (Henrich and Gil-White 2001). This can be seen clearly in Peter's quote (5.3.5.2) where he is clear that he seeks information from those who have achieved a level of authority and credibility around the subject matter and even looks for credible testimonials. Identity is relevant here as it is important for Peter to be seen as someone who himself is not irresponsible or lacking in knowledge aligned to his AAS use, i.e. he sees himself as responsible AAS-user.



This AAS-using identity was one that also changed with the change in motivations for use over time, with some using moving from supra-physiological doses or from 'blasting and cruising' to continuous low-level doses of just testosterone (5.3.3.2). This could be informed by a revision of their identity i.e. from identifying themselves as an AAS-user, to someone who is self-medicating for low testosterone and this was articulated by several interviewees (Chapter 7). Identity as part of the AAS-using sub-culture, internalising cultural beliefs may lead them to distrust medical professionals and therefore less likely to access professional support.

#### 8.4.4 Gender and identity

One driver for AAS use was changing body shape, the desire to have a mesomorphic physique (mesomorphic based on WH Sheldon's classification of body types (Kent 2007)), that is 'a muscular look'. Participants in this study reflected benefits to changing shape and that becoming muscular increased their confidence, made them more attractive to women or other men and one person referenced gaining '*more masculine looking facial features*' (Mike/USA/23 [q]). Erikson proposed that sex-roles have an impact on identity formation (Erikson 1968) and men who have internalised the more traditional attitudes around masculinity want to be more muscular (McCreary et al. 2005, Frederick et al. 2017). We are influenced by our culture, background, how we see ourselves, how we see the world and our place in it, and can internalise such narratives (Franchina and Coco 2018). Furthermore, Christiansen (2019) suggests that men gain muscle because physical transformation can change their relationship within in their social sphere. Consequently, professionals need to appreciate such contextual factors, as the cultural and social processes that impact on physique-changing behaviours, in order to develop more effective interventions for AAS-users (Smith et al. 2009).

The phrase hegemonic masculinity was coined by Connell (1987), and is commonly used to refer to the dominant masculine ideals of a culture at a given time (Brown 2016). The participants are from western countries, with cultures in which the physical ideal of masculinity is embodied by mesomorphic body shape which arguably originated with the idea of the Greek warrior heroes (Kanayama et al. 2012). In a traditional masculine construct, western society views men as

having to be invulnerable, emotionally and physically strong (Trenoweth and Lynch 2008) and show stereotypical male characteristics such as “control, independence, aggression, competitiveness and strength” (McManiman 2001, p.260). The internalisation of the traditional male gender role can play a part in men’s desire for an ideal body (Gattario et al. 2015); seeing the gaining of muscularity as a gain in masculinity (McCreary et al. 2005). There was a range of underlying motivations found concerning people’s desire to modify their physical appearance i.e. attain a mesomorphic physique in order to look manly:

*‘...I was proper skinny, so I did want to look like a man really, feel more comfortable’ (Lawrie/UK/27[TI])*

One theory of masculinity, the concept of masculine contingency (Burkley et al. 2016), considers the implications of “men staking their self-worth on their sense of masculinity” (Isacco and Wade 2017, p.6). This theory suggests that men whose self-worth is contingent on a personal sense of masculinity feel increased self-esteem as a response to positive feedback about their masculinity (Burkley et al. 2016) which could in part explain why some participants noted an increase in quality of life, as they felt better about themselves when embodying the muscular ideal. In this study AAS-users raised the idea that current use was driven by social media and the prevalence of an ideal male body image; some even admitting that they themselves were influenced when younger by film stars (5.3.4). From the 1980’s there was an increase in the number of overtly muscular male action heroes in films, e.g. Arnold Schwarzenegger, who admitted to using AAS (Muscle Monster 2015). Since then, muscle-bound heroes have become a prominent narrative within western, popular culture e.g. Thor, a superhero God (Roblou 2012). Such portrayals of masculinity link attractiveness to unrealistic levels of muscularity (Murnen and Karazsia 2017) and participants spoke of AAS making them feel godlike (Figure 5-6). Worryingly, it is not just Gods who are portrayed in this way, Captain America features a story of a man, who through chemical enhancement becomes a superhero (*Captain America: the first avenger* 2011)

(Figure 8-3).

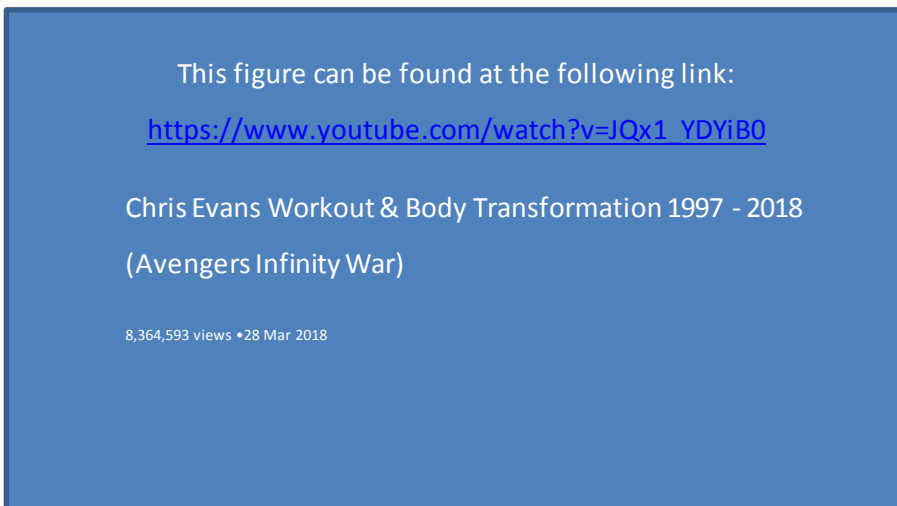


Figure 8-3 Captain America: Actor transformation (toptenfamous, 2018)

The change in film star physique is perhaps best exemplified by James Bond's transformation over the decades (Figure 8-4 (Wells 2015)). Identifying with such hero figures could mean that some viewers may internalise certain beliefs about

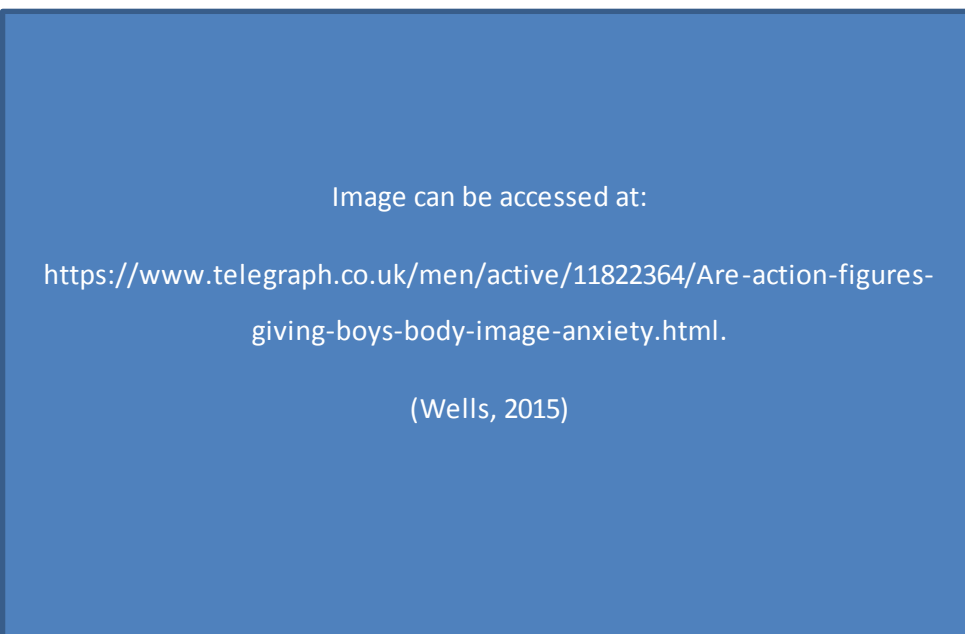


Figure 8-4 James Bond: Muscular transformation

In identifying places to share leaflets seeking volunteers for this study, the researcher visited local shops selling supplements in Bournemouth and the influence of superheroes was evident (**Error! Reference source not found.**).

Although the Eriksonian identity theory was developed before the rise of social media, its emphasis on the social context could be seen as very relevant, when considering identity aligned to masculinity.

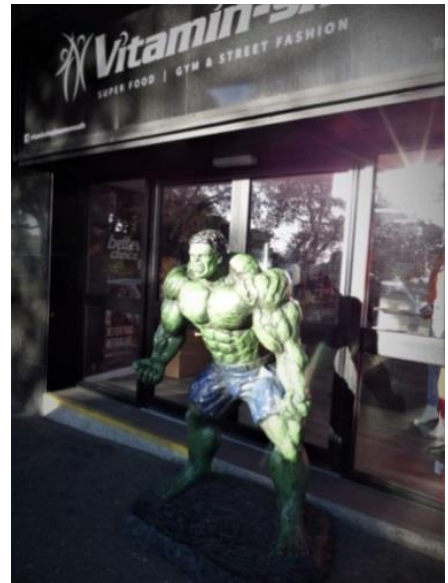


Figure 8-5 Incredible Hulk statue outside supplements' shop: *Own picture*

The advent of the internet and social media has given people 24-hour access to such images literally in the palm of their hand. There has been a proliferation of transformation stories (using AAS) such as: the transformation of Zyzz<sup>3</sup> an ectomorphic teenager into a mesomorph (Peter 2013, Underwood 2017), who, even after his death, features in a blog entitled "Gods Never Die" (bluesurpee478 2016), living acolytes such as Jon Skywalker (Skywalker 2017, Greatest Physiques 2018) and media reports of TV reality stars using AAS (Turner 2017). Such people could provide role-models for those aspiring to attain a similar physique or level of fame. Social media posts actively target men, promoting articles on body transformation tools e.g. Jussim's (2017) article entitled 'How 11 actors transformed into shredded movie superheroes and villains'. This takes the mesomorphic ideal out of the realm of film fantasy to the real world, potentially making it appear both desirable and attainable. Furthermore, often online images are digitally enhanced (CREDOS 2014) and therefore not attainable, and this concern was noted by some participants when commenting on risks for young people.

These concerns are not unreasonable as Social Learning Theory suggests people learn from those around us, behaviour can be acquired through imitation of role-models' attitudes and patterns of behaviour (Baer and Bandura 1963). The theory proposes that patterns learned can be maintained and strengthened by direct reinforcement (Baer and Bandura 1963). Today, it is not just in the world of film where the mesomorphic body image is celebrated. Computer games have hyper-mesomorphic characters (Matthews et al. 2016) and playing such characters has been shown to impact on increased dissatisfaction with an individual's body image, as men equate masculinity to muscularity (Sylvia et al. 2014). Behaviour can be reinforced by positive affirmation, whether this is from how we see ourselves or how others see us. The internet has allowed for a wider audience via the rise of such platforms as Instagram and FB where people share stories and images of their body development. Richardson, Dixon and Kean (2019) perceive

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<sup>3</sup> Real Name: Aziz Serheyevich Shavershian (Body-builder, personal trainer and model)

that the documenting of body transformations online is only going to become more prevalent, suggesting that this will see an increase in appearance-driven motivations as people gain social capital from visible virtual admiration received via social media platforms.

If gaining muscle leads to positive feedback from peers, such positive affirmation could serve as an affirmation of the strategies they are using. Tatum (2000, p.10) notes that 'the parts of our identity that do capture our attention are those that other people notice, and that reflect back to us.' Some participants cited feedback from peers and positive results as reasons to use (Table 5-2), and previous authors have suggested that feelings of invincibility (Figure 5-6) and peer feedback could lead to dependent use (Smith et al. 2009). McNeill and Firman's study (2014) also found that the AAS-users' friends also had a part to play in what is perceived as the ideal body shape for a man. Young people have a high-level of heightened social sensitivity (Somerville 2013) and this can mean that they may undertake risky behaviours, even health risks (Blakemore 2018) in order to avoid being excluded or even bullied by peers (5.3.1.2). Considering the pervasiveness of the hyper-muscular image in western culture, one area for further research would be to examine factors that may encourage or reinforce use e.g. positive effects such as social admiration, increased confidence and the subsequent psychological positives on self-esteem, confidence and quality of life as one possible explanation for dependence comes from reinforcement through social conditioning.

#### **8.4.5 The AAS-user, masculinity and muscularity**

An association has been found between AAS use and distorted body self-image (Pipet et al. 2014). Concerns about muscularity may bring an individual to the threshold of using AAS (Kanayama, Brower, et al. 2009) which raises misgivings about the positive messages on social media highlighting the benefits of steroid use. Some men might conclude that this is an effective and safe way to change their shape as some AAS-users share images of their 'ripped' physiques (Richardson et al. 2019). Some participants in this study chose being attractive as a motivation to use and some selected being perceived as attractive as a positive benefit of use (Figure 5-5, Figure 5-7) linking to other studies which found

attracting attention from girls as a reason for use (Smith et al. 2009, McNeill and Firman 2014).

Pressure from mass media can make men feel inadequate about their bodies (Barlett et al. 2008, de Vries et al. 2016). Underlying motivations found in this study included concerns about being under or overweight (5.3.1.2) and negative body talk amongst men focussed on fat and having a muscular physique which indirectly effected not only how they viewed their bodies but also their expectations of using AAS (Velkoff et al. 2018). Velkoff and colleagues (2018) suggested that finding ways to reduce such negative body talk could help to mitigate unhealthy behaviours around exercising and eating, potentially reducing negative body talk could also mitigate initiation of AAS use. If so, interventions should not focus on substance use, but instead start from a young age and challenge stereotypes of masculinity. If the 'ideal male' body was not associated with a muscular frame, this alone may reduce the risk of people using AAS.

Men who have internalised a muscular ideal of masculinity, but who are not naturally mesomorphic, may look to build muscle to feel more masculine (Murnen and Karazsia 2017). AAS-user's masculine identities are influenced by the stereotypical presentation of men as muscular in the media and their own father's physical appearance (Smith et al. 2009). Moreover, AAS-user constructs of masculinity are linked to muscularity, working hard, not giving up, being physically strong, and looking like a man (Walker and Joubert 2011). Reasons for men desiring to be more muscular include: to feel stronger, sexier, more confident, more attractive to women, healthier, to be better able to defend themselves, be better at sports, to be better able to intimidate other males, to feel more masculine (Frederick et al. 2007). This connects masculinity to feeling confident, and increasing confidence was something that was a motivator for over a third of participants in this study (5.3.1). Furthermore, Fomiatti and colleagues (2019) argue that exogenous testosterone is perceived to enhance masculine traits such as confidence.

For those who have internalised this hegemonic perspective of masculinity, AAS could be a way of achieving congruence between their beliefs on the ideal male physique and their own physique. Buchbinder (2010) argued that ideas of masculinity are formed in the patriarchal narrative of gender, and whilst it has

privileged men, it has nevertheless subjected them to certain pressures. Amongst these pressures, as discussed, is a need to look a specific way and one study found that when men felt their masculinity was threatened they were more likely to create avatars with more defined muscles (Lee-Won et al. 2017). Gender norms can impact on men's physical and mental health as men with a higher conformity to masculine norms were likely to have greater muscle dissatisfaction and muscularity-oriented disordered eating (Griffiths et al. 2015) and people who have muscle dysmorphia (MD) are more likely to use AAS (Pope et al. 2005, Murray et al. 2016). An in-depth study related to motivations showed those users with a focus on appearance had greater Eating Disorder (ED) and MD symptomology, when relating to drive for size, weight and shape, and concluded that AAS-users who experience physical appearance concerns are at greater risk of physical dysfunction (Griffiths et al. 2018). However, another study found that the use of AAS was not precipitated by ideal body image but actually fuelled the development of body image problems (Harris et al. 2016). It is clear that cause and effect are complex, as potentially MD could be a precursor to AAS use but also AAS use in and of itself can cause a preoccupation with body image that can then develop into MD. This raises the concern that MD could reinforce the need to continue to use. (Rohman 2009).

Within a western patriarchal culture to be tough and strong is masculine whereas softness and weakness are more normally associated feminine characteristics (Aro. 2016). As previously noted there are other attributes that align to hegemonic masculinity including being in control, independence and being intellectually, physically and emotionally strong (Moynihan 1998, O'Neil et al. 2017, Oliffe et al. 2019). This highlights a potential vulnerability as in this study, the side-effects experienced on stopping use such as anxiety, becoming more emotional, with one participant referring to this as 'feeling like girl' (Andrew/UK/25), or loss of libido were deemed less masculine. To avoid such unbearable side-effects some continued use e.g.

*'I've been, been steadily on them for so long, including big doses on and off that I am a little afraid that I won't feel like the man I do now.'*  
(Lewis/USA/37[TI])

Lewis, like several other participants now appears to have a psychological dependency on AAS (5.3.3.8). This is not hard to fathom as "the body plays a



control role in men's self-esteem" (Mishkind et al. 1986, p.556) and psychological issues such as under confidence or low self-esteem may potentially suggest a vulnerability at odds with the masculine characteristics of being strong.

This targeting of 'set' definitions of masculinity is concerning as they are potentially unrealistic; the harms of subjecting women to such images are well-documented (Grabe et al. 2008) and IPED use can be seen as a way for men to self-transform as part of this 'makeover culture' (Latham et al. 2019). Welchman (2000) suggested that the disintegrative forces of the modern world produce a threat to identity, leading to a loss of belonging and continuity. Potentially, the broadening of gender descriptors, the acceptance of non-binary definitions of gender and the rise of female equality might be seen as disintegrative in relation to the traditional idea of masculinity and hence the reassertion of the ideal man being stronger and more muscular has in part led to rise of the superman trope. Whilst there is a preoccupation in society with looking good, winning and the mesomorph aesthetic, substances like AAS potentially offer a solution of sorts (Rashid 2000), making the connection between some people's over-emphasis on the link between physical appearance and self-worth. Smith et al. (2009) suggest that the route to using AAS can be traced back to a person developing their identity for what it is to be 'male', suggesting that mesomorphic body shaped-men are seen as more successful and therefore aspirational, and a consequence of such social narratives is that young men want to develop their bodies. This in turn puts them in environments where IPEDs use is normalised and normalisation of use in such a cultures can be a reason for someone to justify use (Smith et al. 2009). Moreover, this internalisation of masculinity norms may explain why aggressiveness was not perceived as a concern when it came to side-effects (5.3.2.4, Appendix 23), as anger is considered an acceptable emotion for men to express. However, this was also something that men should be able to control, another defining male characteristic, and in this study, men talked about their strategies for this (Table 5-5, Appendix 22, 23). Considering the pervasiveness of the hyper-muscular image in western culture, one area for further research would be to examine factors that may encourage or reinforce use e.g. positive effects such as social admiration, increased confidence and the subsequent psychological positives on self-esteem, confidence and quality of life as one possible

explanation for dependence comes from reinforcement through social conditioning.

#### 8.4.6 Self-medication and masculinity

As hegemonic masculinity encourages a belief in invulnerability, men who have internalised this concept may have a lesser concern regarding risk, and may be reluctant to seek help (Gannon et al. 2004). Self-medication feeds into the aforementioned stereotypical male behaviours around maintaining control and independence. When considering research into men's help-seeking behaviours, men are less likely to seek help if they see their problem as aligned to their identity, if it is perceived as non-normative and if their social groups promote a culture of self-reliance (Addis and Mahalik 2003). When considering AAS-users in this context it is feasible to see why some might seek to fix their concerns about their libido and low mood through self-medication. However, the self-medication hypothesis can be another way of self-rationalising drug use, where substances are used to control a range of negative feelings (Khantzian 1997). In a recent review for effective interventions for the prevention of AAS use, Bates et al. (2019) found that the interventions were often educational and based on the concept that people make rational decisions, but the authors argue that when it comes to health and behaviour people often do not make rational decisions. Arguably, one person's rational could be another person's irrational and when it comes to weighing up the benefits and costs of AAS use, if a user is doing it for reasons aligned to his masculine identity, and perceives that the results have increased their happiness, social status or other benefits then perhaps benefits do perceivably outweigh costs. It might be beneficial for AAS use interventions to include exploration of values and cognitive behavioural therapy (CBT) techniques to explore and reevaluate internalised masculine schemas (Brady et al. 2019); this could be a useful strategy providing care is taken to ensure that such a strategy does not do more harm than good and people are supported as the masculine schema could be an integral part of their identity.

Traditionally, emotional problems are treated through anti-depressants, yet this study evidenced that men felt low doses of testosterone were more effective than anti-depressants (Chapter 7). Another standard treatment is talking therapies, yet this study showed that few participants felt they needed this (Table 5-16), and

some interviewees suggested there was a need but did it in the context that it might be helpful to others. Furthermore, other studies have found that men attempting to achieve the ideal body do not seek counselling (Bardick et al. 2008) including for depression (Christiansen and Bojsen-Møller 2012). This study has shown that a key issue for many AAS-users' is the actual or perceived effects of having low testosterone levels linked to physical and mental wellbeing and other studies have shown that participants saw testosterone as amplifying their masculinity (Fomiatti et al. 2019). Developing a deeper understanding of the wellbeing issues of AAS-users could help to create more effective support systems (Moore et al. 2019). Social policy has been mainly informed by the medical approach (MacGregor 1999), yet arguably, this approach does not always consider the person as a whole and does not always take into account the wider issues faced by users.

Masculinity is associated with control yet depression and anxiety can leave men feeling out of control (Wyllie et al. 2012); studies have found poorer wellbeing in males exhibiting elevated muscularity-oriented concerns and behaviours (Eik-Nes et al. 2018) and they advocate for health professionals to screen for 'drive for muscularity' on routine assessments, which seems to be a very resource-intensive response. The concept that such muscularity-orientated concerns lead to poor wellbeing is notable as some participants saw AAS use as a positive medication to help improve their wellbeing and studies have found men attempting to attain a mesomorphic physique affected by a range of mental health problems (Bardick et al. 2008). This adds to the argument that when it comes to men's wellbeing there is a need "to support and encourage coping and help-seeking behaviours amongst 'at risk' men, for example, young men who have strong hegemonic orientation towards masculinity" and suggest a need for awareness by mental health nurses (Trenoweth and Lynch 2008, p.14). Building on this, there is potentially a need for earlier recognition of the potential risk and that this awareness raising be broadened to include social workers, teachers and anyone working with young men, who are in a position to signpost to relevant support services.

Traditionally, men have been seen as having "a cavalier attitude" to bodily health and avoid or delay seeking help (Wyllie et al. 2012). This view of men not seemingly being interested in their health is now being challenged. Oliffe et al.

(2019) found wellbeing as a masculine value and noted this was at odds with traditional views which suggested men took health risks and that appearing well now contributes to masculine capital. Masculinity is associated with a reluctance to engage with medical professionals (Wang et al. 2013) and therefore, historically just getting men to engage with health services could be problematic. When focussing on health-related masculine values men saw looking good as a valuable off-shoot of enhancing their wellbeing (Oliffe et al. 2019). If it is the case that men are increasingly interested in health-related issues and wellbeing, this would be a useful angle to use in supporting men aligned to harm reduction strategies.

A strong masculine identity could influence why participants did not want to access NSPs even for needles, stating that they had enough money to buy them, and were indignant at the thought of needing a handout (Chapter 7). This desire to pay for support (Chapter 6, Theme 5) speaks of the importance of self-esteem and potentially identity, the idea that a man should not rely on others and that financial independence is linked to being an adult (Ricci 2019). Their apparent willingness to pay for support was seen as a way of taking personal responsibility, something they felt differentiated them from other substance users. Moreover, offering bespoke support, may not be so controversial if services came with a fee, as this study has found that AAS-users are already paying for certain support services. However, it could appear morally wrong to separate them in some way from other service users of substance use services, but if doing so means that many are more likely to access harm reduction services it is worth consideration. Costs associated with use need not just be for injecting paraphernalia but could also include substances to mitigate side-effects and support to manage emotional side-effects. With all the pressures on health services, particularly in countries like the UK, where such services are free at the point of access, there is often not enough funding for these people who are most vulnerable. Therefore, there is a moral case for the public purse not to fund support services for those people who use AAS as a recreational choice and that those who can afford to pay for support should do so.

#### **8.4.7 Masculine identity and testosterone replacement therapy**

Evidence suggests that there are differences in age groups as to the type of body image men prefer: younger males wanting a lean muscular body and older men

focussing on health and lifespan concerns (McNeill and Firman 2014). Could this be true for people who use AAS to change their body shape? In this study, some of the older participants were focussed on being lean and maintaining their muscular physique, suggesting that the perception of appearance norms for middle-aged men is changing. The superheroes and action heroes in the movies are not necessarily played by young men but by (hyper) muscular middle-aged actors such as Daniel Craig, who first starred as James Bond aged 38 Figure 9-4 and most recently in Spectre aged 47. In this study, a prevailing motivation for older men continuing use was wanting to maintain libido (Chapter 7) and side-effects of ASIH can include depression, loss of libido and erectile dysfunction (Pope Jr. et al. 2015). Sexuality, sexual prowess and sexual appetite are essential aspects of the construction of masculinity (Trenoweth and Lynch 2008, Marcos et al. 2015), and a loss of libido can impact on a man's notion of his masculinity (Chambers et al. 2017). For some there was a desire to overcome the loss of virility they experienced; seeing a healthy sex life as more important than concerns over long-term health. As well as restoring blood testosterone to normal levels, TRT may result in other benefits including: improved sexual desire and erectile function, improve energy and mood, reduced total body fat, increased lean body mass, mass, bone mineral density and muscle strength (Moon and Park 2019) and recent evidence has shown that it can have an anti-depressant effect via directly promoting neuroplasticity (Walther et al. 2019). As this and other studies (Underwood 2019) have shown, AAS-users frequently seek out information from scientific articles, and as previously discussed there are many articles on TRT as a medication for hypogonadism (Kanayama et al. 2007, Bain 2010, Pope Jr. et al. 2015, Moon and Park 2019) as well as websites extolling the benefits of TRT and a number of high profile (in some cases AAS-using) influencers online (Broccardo 2018). Add to this that substances are seen to be a masculine way of coping and that men are more likely to self-medicate with drugs to manage depression and other unwanted emotions (Wyllie et al. 2012) it follows that TRT is seen as a beneficial solution both for libido problems and to maintain a lean physique.

Sex is often a taboo subject and men are often reluctant to discuss such problems (Addis and Mahalik 2003), which makes it imperative that these should be tackled by professionals. Consequently, information relating to impact on libido and

sexual health should be integral to any support and information service. For one participant another justification for use, linked to the notion of masculinity was their idea around environmental changes which have the potential to weaken masculine characteristics:

*'As man of 40yrs old a smaller dose is a big immune boost and this stops the negative effects of the extremely oestrogenic environment we now live in' (Milton/UK/40[TI])*

Although the concept of the oestrogenic environment is beyond the scope of this discussion, there is current research in this area, including papers discussing the impact of oestrogens from the environment affecting men's fertility (Akingbemi and Hardy 2001) which is widely reported in the media (Gannon et al. 2004). Given this population's familiarity with scientific literature, such concerns may further influence their AAS use.

## **8.5 Life Stage Theory**

Masculine identity is only one range of theories that could be applied to AAS use. Other theories include socioecological frameworks (Bates, Tod, et al. 2019), moral justification (Boardley and Grix 2014), planned behaviour (Enaker 2014), psychosocial processes, self-medication, objectification and cognitive dissonance models as well as theories of deviance and psychological dependence. All these theories have a place in explaining the motivations and social context for using AAS, however, none of them necessarily focus on the individual's through-life experience. One of the findings from this study was that participants who had used for a period of years, had changed how they used as they matured, and described the reasons for their use as having evolved, for example, from supra-physiological doses to a low continual dose of testosterone (5.3.3.2). Moreover, some younger participants talked about how they saw their future usage and some envisaged a change (5.3.3.8).

One way in which to consider a person's life choices and decisions is to view them in the context of the whole life cycle, understanding that:

*"to be human is to be on a journey. We live forward from the past; how we are in any moment which needs to be understood in the context of a before and a next" (Todres et al. 2009, p.72).*

Especially as:

*“Integrating one’s past, present, and future into a cohesive, unified sense of self is a complex task that begins in adolescence and continues for a lifetime” (Tatum 2000, p.10).*

Progression through life-stages and exposure to masculinity and muscularity norms could play an important part in AAS use across a lifespan (Bates, Tod, et al. 2019). Erikson’s theory of life-stages (Erikson and Erikson 1997) considered the psychosocial perspective to the whole life of the person and suggests that a person’s ideas are best understood in relation to their life and social context (Welchman 2000). Erikson’s psychosocial development theory is a staged model that considers eight development stages (driven by physical and sexual growth) of a human aligned to their lifespan (Appendix 24). Erikson believed that each stage consisted of a balance between the syntonic (positive) and dystonic (negative) elements, and saw the negotiation of this as a challenge that all individuals must undertake in order to transition successfully to the next developmental stage (Parrish 2014). If for some reason a person does not successfully negotiate a stage, then this can potentially impact on the development of the individual; example at Table 8-2 (Erikson and Erikson 1997). The model can be used to explore the behavioural development of individuals. It is useful to note that each stage is not clear cut, that the stages overlap, and Erikson did not stipulate fixed ages but did give possible ranges.

Table 8-2 Stage 5 Erikson's Life Stage negotiation

Life-stage	Psychosocial Crisis	Radius of Significant Relations	Basic Strengths	Core-pathology Basic Antipathies	Outcome
5 Adolescence (12 to 20 years)	Identity vs. Role Confusion	Peer groups and Outgroups. Models of leadership	Fidelity	Repudiation	Teens need to develop a sense of self, values, aspirations and personal identity. Success leads to an ability to stay true to yourself while failure leads to role confusion and a weak sense of self.

In this study, the mean age for starting use was 27 (range 14-57), which is slightly older than other studies; for example, mean age: 20-24 years old (Begley et al. 2017), median first use of AAS: 23 (Smit and de Ronde 2018) and mean age 22 years (Kanayama and Pope 2018), but is in keeping with other studies in that only a small percentage started use in their adolescent years (Sagoe, Andreassen, et al. 2014). Kanayama and Pope (2018) ascribe initiation as more likely when a person is in their twenties as AAS-users have moved away from parental and teacher controls and support, so use may go undetected and/or they are less like to receive approbation. Many young people use a range of illicit substances, which some keep secret from their parents, but others use more openly. At this life-stage parental influence is usually not as key as that of peer groups, particularly around risk (Harris 1995, Somerville 2013, Knoll et al. 2015, Blakemore 2018). Therefore, it is less likely that parental knowledge would impact on the decisions about substance use, and more likely that peers and role models are more influential.

Motivations for use are varied and complex, with identity underpinning some aspects of use and the different life-stages impacting changes in reasons for use or risk management. Considering the age ranges of the participants for when they started use, participants fell predominantly within three life-stages (stages 5-7). When using Erikson's Life Stage Theory to consider AAS use the motivations behind starting use are worth exploring. Stage 5: Identity versus Role Confusion Table 8-2, starts at the onset of puberty and goes through to young adulthood. This predominantly adolescent stage is driven by a desire to understand oneself in relation to the rest of the world, to find an identity, seeking a role that leads to a successful path for future life (Erikson and Erikson 1997). It is the struggle between the need to stand out and the need to belong, it can lead to experimentation and often individuals seek role-models. Successful negotiation of this stage comes through a reintegrated sense of self.

It is here that role theory in relation to what it is to be male, and social learning theory (i.e., how I see role models around me behaving), are both relevant. Erikson identified that this stage could lead to individuals being influenced by certain peer groups to undertake certain behaviours as a way of expressing their identity (Parrish 2014). This searching for a sense of an identity could be seen as



both a group and an individual journey for it is at this life stage individuals are looking to find a sense of belonging and a sense of their own individuality. Understanding this innate role of 'what it is to be a man' could cause a conflict when it comes to negotiating this stage successfully among males who are not 'masculine' as defined by society's norms. As previously discussed, for some i.e. those who have internalised a hegemonic perspective of masculinity, this could drive a desire to attain a physique that is deemed to be manly to meet the expectations of the male role. If someone has internalised the stereotypical masculine mesomorphic image, the attainment of such attributes could lead to greater social and self-acceptance. Moreover, once involved in the sub-culture ideas on masculine identity could be reinforced by others within the AAS-using community as one study found that long-term AAS-users more strongly endorsed conventional male roles when compared to non-AAS-users (Kanayama et al. 2006).

During stage 5, Erikson (1994, p.156) wrote:

*"It is of great relevance to the young individual's identity formation that he be responded to and be given function and status as a person whose gradual growth and transformation make sense to those who begin to make sense to him"*

Although Erikson was writing well before the impact of social media, arguably this searching for a sense of self is even more pronounced now that it is carried out in a virtual world, a world of selfies, where people are seeking instant approval and gratification (Gabriel 2014, Bleeker et al. 2016, Sung et al. 2016). Having a physique that does not match that of an ideal male could lead to a crisis in confidence and self-esteem. AAS use could be a way to help negotiate this 'crisis'. This is not to suggest that use is ego-dystonic, but is perhaps a way to become ego-syntonic. When suggesting that a desire to achieve the perfect body aesthetic and physicality could lead men into a culture which then reinforces this desire, it is useful to consider agency. It may be that during stage 5 an individual had formed their sense of identity around a masculine trope but was not able to commit fully to that vision until they had the financial and social capital to access the resources needed. This relates back to the point made by Kanayama and Pope (2018) that it is only once in their twenties that individuals are no longer within parental influence and may have financial autonomy. Furthermore, several AAS-

users talked about starting AAS use when they reached a plateau, when they had achieved the most from exercising and believed their genetics was holding them back (5.3.1).

For some an image change may mean successful negotiation and potentially, as part of the prevalent makeover culture, it is not a disordered relationship with masculinity norms but one that allows transformation to current desired norms (Latham et al. 2019). However, for others, it may not be so clear cut and there may be other underlying issues, for example:

*'I noticed that there was something different about me from a very very young age... I am going to transform myself into this huge guy, this huge physique and that will magically fix all psychological problems... but I clung on to that belief, so so, sincerely ...I was driven completely by an inadequacy on myself...thinking I was a failure as a man, that didn't live up to society's expectations of being a male... that was the driving force behind the whole thing. Which is kind of sad really when you think about it ...there is so much of an internal battle going on with me right now with regards to the steroid use because, it's revisiting the past, and all the old things come up, you know, this hyper-masculinised version of yourself, this feminine version of yourself...there is still an inadequacy, and it's this feeling that I have to somehow, up my game, somehow I have to be more masculine' (Don/UK/39 [T1])*

This raises the question about congruency, if by looking more masculine one becomes more like what they want to be then it may be beneficial for their wellbeing, but if one is in a conflict between what they think society believes they should be and who they really are then maybe not. Fanaticism is a maladaptation for identity versus role confusion, and arguably, in Don's case (Appendix 25) his AAS use could be an extreme behaviour or reaction to goal attainment. What is evident is that Don is using AAS to try to fix an identity which is possibly incongruent with who he is (in the questionnaire, he self-described himself as gender-fluid), an identity based on his internalisation of others' views of masculinity. However, for some, even if they are using AAS to help them to realise that goal, as it is congruent with their own world view then use may be less psychologically problematic and aid the successful negotiation of this stage. Moreover, it may explain why some users in this study stopped for a period and then returned to use in later life (5.3.1.3), which has been found in Havnes and colleagues' (2019) study with no explanation as to why. Arguably, one explanation

could be that having used it successfully to resolve a problem once, it is not necessarily illogical to do it again, as illustrated by the following quotation:

*'...muscularity will sometimes give you back something that ageing has taken away. And, you know, and so it becomes a coping. Is it an adaptive coping, or a maladaptive coping? It depends on who you ask, but it's... a little bit of an adaptive coping with the idea of the loss of status and the invisibility that comes with aging as a gay man' (Hugo/USA/53 [TI])*

Hugo and Don's experiences, viewed through Erikson's development model, provide an example of how AAS use for one person has led to a potentially successful negotiation of a stage whereas for another it has led to a crisis.

Describing AAS use in terms of adaptive and maladaptive use, although potentially a subjective value judgement, could be helpful as several participants talked about being comfortable with their use, and carefully managed perceived risk (5.3.3.2). Two interview participants who were clearly conflicted about their use had noteworthy adverse childhood experiences (5.3.1.2) and adverse childhood experiences including: poor relationship with parents, history of mental or physical abuse, problems at school, have been overly represented to AAS use (Skårberg and Engstrom 2007). It could be that they had not successfully negotiated a previous life-stage and as such found it more difficult to negotiate subsequent stages. This can result in individuals experiencing problems such as impulsivity, psychosomatic conditions, or a sense of inadequacy (Côté and Levine 1987). Not all men will be affected in the same way by stereotypical images of masculinity and there is a need to consider why the muscular portrayals of men in the media resonate with some men more than others, inducing them to use AAS (Bates, Tod, et al. 2019). There might be something in the life histories of these men that makes them more vulnerable to such stereotypes as adverse childhood experiences are risk factors for girls developing body image disorders (Vartanian et al. 2018). Consequently, more research into this vulnerability would be beneficial.

Table 8-3 Stages 6 and 7: Young and middle adulthood

Life-stage	Psychosocial crisis	Radius of significant relations	Basic strengths	Core-pathology: basic antipathies	Outcome
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<b>6</b> <b>Young adulthood (20 to 40 years)</b>	Intimacy vs. Isolation	Partners in friendship, sex, competition, cooperation	Love	Exclusivity	Young adults need to form intimate, loving relationships with other people. Success leads to strong relationships, while failure results in loneliness and isolation.
<b>7</b> <b>Middle adulthood (40 to 65 years)*</b>	Generativity vs. Stagnation	Divided labour and shared household	Care	Rejectivity	Adults need to create or nurture things that will outlast them, often by having children or creating a positive change that benefits other people. Success leads to feelings of usefulness and accomplishment, while failure results in shallow involvement in the world.

(Erikson and Erikson 1997) *\*age range varies and other scholars have it as young as 34* (O'Neil 2015)

Stage 6 (Table 8-3) covers young adulthood and in Eriksonian theory, this is when people form intimate relationships, which may lead to having a family. The findings show that some participants were concerned about this, which led one to have his sperm cryogenically frozen, whereas another stopped using for a time in order to start a family (5.3.3). The concepts of protectiveness and a need to fulfil the traditional masculine role of provider (O'Neil 2015) are part of the masculine stereotype, and some participants, when asked about risks to others, echoed this as they saw risks to others, not from behavioural change, but as a result of them becoming seriously ill as a result of their use and as a consequence not being able to provide for their families (5.3.2.6, 5.3.3.8). The role of a man traditionally centres on taking on the economic responsibility of the family, which could be internalised as "I am less of a man if I cannot take care of my family" (O'Neil 2015, p.100). This may explain why some participants saw this not just as a risk of use but also raised it as a concern. There are key transition points in a person's life where they enter new spheres of influence, and decision-making could be impacted by time and experience (Bates, Tod, et al. 2019). Arguably, as well as more concrete changes such as embarking on a new career, the developmental stages could impact on how decisions are made, and these too should be recognised, for example AAS use to counteract the effects of low testosterone levels either as a result of ASIH or resulting from the natural ageing process (Chapter 7). At stage 6 there is often a relaxing of gender role standards and a need to maintain intimacy (O'Neil 2015). It could be that the desire to maintain

their libido is part of their negotiation of this stage linked to intimacy and is congruent with underlying motivations if aligned to a strong masculine identity. Or, if men with an identity aligned to hegemonic masculinity are seeing muscular middle-age male role-models as the ideal and norm, it is feasible they have a desire to maintain their muscular physique. This could lead to a continuation of the adaptive coping used to negotiate stage 5 successfully, and self-medication, in the form of TRT, is used to help maintain their masculine identity and the successful negotiation of stages 6 or 7 (Table 8-3).

Some participants were of an age described by Erikson as 'Middle Adulthood' (Stage 7). Stage 7 entails the concept of generativity versus stagnation, and successful negotiation of this stage includes feelings of usefulness and accomplishment and creating a positive change that benefits other people (Slater 2003). It encompasses a wide age span and successful completion of this stage is linked to sense of feeling useful and having achieved something. Erikson also suggested that this stage was about having created something that might outlast a person or benefitted others in a positive way, and there were examples of this from participants. For seven interviewees one of the roles that they appear to have taken on as a result of using AAS over a number of years was that of 'experienced peer', someone others turned to for advice and this was something they relished (5.3.3.7).

One talked with pride about sharing knowledge through having written a book on AAS and another saw taking part in this study as a way of 'giving back' to society. It is worth noting that in this study it was the more experienced and mature participants who were more focussed on mentoring the younger generation of users, and who raised concerns about people, particularly youngsters, who did not use responsibly and were influenced by social media (5.3.4.2.1). Andreasson and Johansson (2016) also noted this 'teacher' role taken on by experienced users on fora, who based their advice on personal experiences. The passing on of wisdom and advice to inexperienced users serves a valuable social need, and could be part of a moral justification of use (Boardley and Grix 2014). Viewed through the lens of Erikson's Life Stage Theory this desire to mentor and pass on their wisdom could fuel a sense of accomplishment and aid the successful negotiation of this stage.

There are those who would argue that Erikson's work was set in the context of his own type, as its roots are in Freudian psychology and so is outdated, conservative and outmoded (Côté and Levine 1987). It has also been critiqued as being reductionist (Amini and Jafari 2012) and male-centric (although this is less likely to impact on this study's population). However, unlike previous models it does not focus totally on biological determinism but emphasises the importance of socio-cultural factors, although, it must be acknowledged that social norms change over time. Further criticisms of Erikson's model focus on its linear staged process, yet Erikson does not suggest that once a life-stage has been negotiated, that it could not be revisited and renegotiated at a later stage in life. Moreover, the age-bands outlined by Erikson should not be seen as set in stone, as socio-cultural changes and individuals' experiences could impact on the development stages. Consequently, when considering the psychosocial nature of something such as recreational AAS use, such a model is useful as it acknowledges the complexity of identity as a concept, is influenced by how someone judges themselves and measures up to the perceived judgements of others (Erikson 1994), and considers the person across their whole lifespan.

## **8.6 Information and support**

Considering use through a life-stage journey can be a way to look at and identify types of support needed. For example Bates and colleagues (2019) note that the movement of young people from school into different environments exposes them to different societal pressures and they may encounter factors that influence their decisions, leading them to argue that interventions may need to consider this transitional phase. In this study, several participants shared regret around starting use too young (5.3.1.1) and some raised concerns over the increase in use by young people (5.3.3.7, 5.3.3.8). A small, but arguably still important number of participants stated bullying as a reason for use (Table 5-2) and some interviewees talked about experiencing bullying as adolescents (5.3.1.2), which mirrors other studies (Davies et al. 2011, Walker and Joubert 2011). Although the desire to become more muscular may be acted upon when in adolescence or later, when a young adult is grappling with identity in relation to finding a partner or self-agency, it may be that the desire to become muscular is laid down much earlier. Studies show that children's toys may contribute to

cultural expectations around body image, and that an increase in muscularity in action toys reflects the 'ideal' masculine look for Western cultures (Pope Jr et al. 1999). Action figures have become hyper-muscular in recent years, and chest size has increased considerably from the 34" chest of the first action man dolls (Baghurst et al. 2006). There is a possibility that this is impacting preadolescents' views of an ideal body shape for men leading to a sense of inadequacy around their physique (Baghurst et al. 2006) and muscularity orientated body dissatisfaction has been found in boys as young as six (McLean et al. 2018). Moreover, adolescent preoccupation with muscles and body image and body checking behaviour are factors for predicting AAS use (Walker et al. 2009, Kanayama et al. 2012, Sagoe, Andreassen, et al. 2014, Jenssen and Johannessen 2015). This suggests a need for professionals when working with young people to share positive messages around gender norms and challenge stereotypical constructs.

Here, evidence shows another key transition, occurring in middle age a change in use from supra-physiological doses to continuous low doses. Each person's journey is unique and although categorisation into types can help particularly in determining policies and types of services support provision, when it comes to supporting users on an individual basis then a pathway approach may be more useful. Moreover, as noted adaptive use is a potentially controversial concept, yet professionals should still consider what it means for that person if they believe that their quality of life has improved due to AAS use as use maybe ego-syntonic if congruent with their expectations. It is likely that prevention messages would not be congruent with such beliefs and, are therefore likely to be ignored.

## **8.7 Summary identity**

This section has discussed the findings in relation to the aims and objectives of the research (3.9) showing how motivations for AAS use can be viewed through the lens of identity and particularly masculinity. It evidenced that the impact of social media images of ideal masculinity could impact on a person motivation to use AAS and that when the desire to become more muscular leads people to use potentially harmful substances to facilitate this, then it is important for professionals working in this field to understand the drivers and implications. It highlighted that the emotional aspect of AAS use, for some, goes deeper than just

the physical benefits and helps them attain and maintain a physique and sense of wellbeing that is linked to their identity as a man. Consideration was given to using Erikson's Life Stage Theory as a way of helping to understand and explain motivations and changes in use over the lifespan. It concluded that understanding AAS use across the lifespan was relevant when considering AAS-users' information and support needs. The next section explores the limitations and strengths of the study and the researcher's reflections.



## 8.8 Female Participants Summary

Our knowledge of female AAS use is limited (1.4, 5.2.1) so to ensure that the voices of my two female participants are not lost, the following is a short summary of the findings and discussion of two participants who identified as female. Table 8-4 gives an overview of some of the differences between two reasonably similar female AAS users; both were employed, had college degrees (or higher), and both took part in competitive sports

Table 8-4 Female Participants

Demographics**			AAS Use	
<b>Ages</b>	40	31	<b>Inject AAS (n=)</b>	
<b>Number of years using AAS</b>	1	4	Yes	1
<b>Ethnicity (n=)</b>			No	1
White	1		<b>Has your quality of life improved since using AAS? (n=)</b>	
Other	1		No – stayed the same	2
<b>Sexual orientation (n=)</b>			<b>AAS use pattern (n=)</b>	
Heterosexual	1		Cycling*	2
Other (pansexual)	1			
<b>Country of residence (n=)</b>				
Australia	1			
UK	1			

\*Cycling i.e. using AAS for periods of about 6-12 weeks and then taking a break (Kicman 2008)

\*\* as there are only two participants where relevant individual data is included

As the thesis focus on masculine identity a short discussion on comparison with other studies looking at female AAS users will be included here. As previously noted (para 4.3.14) the majority of AAS users are men due to the motivation to increase muscle size (Kanayama, Brower, et al. 2009) with research indicating a global prevalence rate for males of 6.4%, and for females, 1.6% (Sagoe 2015). In a study of 12 female AAS-users, female AAS users were more likely to take part in competitive sports (Ip et al. 2010, Börjesson et al. 2016). In this study, both females exercised for 3 hours a day, with one female participate describing herself as a competitive athlete and the other a competitive bodybuilder. Both participants used AAS in cycles, one injecting and the other not but only one used

PCT. When it came to motivation for use, both women were motivated by: enhancing muscles and strength, for competition and improving endurance and stamina which is similar to other female studies (Korkia et al. 1996, Ip et al. 2010). However, the older participant also listed a number of other motivations: increase confidence, improve appearance, lose weight, increase aggression, overcome depression, increase sexual attractiveness, impress my friends and curiosity. The women also had different influences to start using, with one stating a close friend influenced her, whereas the other cited it was both a personal choice and influenced by her coach.

AAS can affect men and women differently (Onakomaiya and Henderson 2016), which is consistent with this study as the side-effects noted by one participant were: darkened body hair and a swollen clitoris, although interestingly the participant noted that she was not sure if the latter issue was something she was unhappy about. These physical side-effects are similar to those found in other studies (Ip et al. 2010, Börjesson et al. 2016). However, similar to the men in this study one participant experienced depression and unhappiness when coming off cycle, whereas other experienced no effects when off-cycle but described feeling increased irritability, and jealousy whilst using AAS. When it came to asking if there was a need for emotional support for people using AAS, one participant suggested maybe and the other yes, in the form of counselling. Interestingly, it was the participants who had said yes to 'experiencing' emotional side-effects such as increased ability whilst on-cycle who felt counselling would be useful, not the participant who experienced low mood when coming off-cycle, nor did this participant use PCT. Both participants selected their quality of life had stayed the same, and both reported feeling strong as a positive effect of use, in addition one reported increased libido as a positive effect and the other increased feelings of confidence and happiness and being proud of her body. Positive physical effects for one participant included better mood, better sleep and increased aggression, whereas for the other it was around increased in strength, muscle and recovery. Both were clear that it was possible to become addicted to AAS use, but that they felt they could stop at any time.

Both participants indicated an awareness of some of the risks of using AASS and did not believe their use put others at risk. When it came to support for using

again there was small differences. Both women accessed AAS forums for advice, but one woman also accessed information from websites selling AAS, but only trusted the forums, whereas the other had a wider set of sources including friends, AAS users, Government information websites and Needle Exchange leaflets, but only trusted friends. Moreover, she regularly obtained bloodwork and had discussed her use with both a GP, who was helpful and gave non-judgemental support and the NE. It is impossible to compare female's advice seeking behaviour with the men's in general, however these two participants actions, align with the men in this study. The support wanted by the two participants was more explanation of health risks, which aligns to previous studies (Grogan et al. 2006) and also non-judgemental doctors that will monitors health markers, which was also wanted by the men in this study.

Interviews with eight female weightlifters found that six were influenced by their boyfriends to take AAS and reported troublesome family history of substance use (Börjesson et al. 2016). Moreover, a web-based survey of 1519 people who used strength training, found twelve female AAS users and when compared with female non-users, female AAS users were more likely to have qualified for substance dependence disorder, have been diagnosed with a psychiatric illness, and have a history of sexual and physical abuse (Ip et al. 2010). As women experience negative physical effects from using AAS, these studies could suggest that women, other than competitive female bodybuilders, who have mental health issues or with AAS using male partners may be vulnerable to starting AAS use. However, with such a small number of self-selected female AAS users in these studies, it is not viable to apply these results to a wider population. Due to the potential risks for starting use, and the fact that AAS use effects males and females (Onakomaiya and Henderson 2016) differently there is a need for more research into female AAS use.

## **8.9 Limitations and strengths**

This section outlines the limitations and strengths of the study.

### **8.10 Limitations**

#### **8.10.1 Study design**

There were several limitations to using a mixed-methods approach. An anonymous questionnaire did not allow for some of the qualitative answers to be explored in more depth, unless the participant volunteered for an interview. The amount of qualitative data obtained led to challenges in making sense of all the data and required a structured and targeted approach to the analysis. This meant that some elements may have been overlooked due to researcher unconscious bias (Wheeler 2015, Buetow 2019). As this study was a cross-sectional study by design, this meant it was not appropriate for assessing associations, and consequently causal relationships between the variables cannot be established properly. For the quantitative data the converse was also a challenge, the low numbers meant that it was hard to obtain any solid statistical inferences from the data, however, Bonferroni's adjustment (Sedgwick 2014) was applied to give some rigour to the quantitative analysis.

##### **8.10.1.1 Questionnaire design**

Further limitations could be that this study utilised a self-administered questionnaire with no other confirmation method used to document AAS use among study participants. Many studies on AAS use occasionally had unclear questions which potentially gave limitations to the validity of some findings (Sagoe and Pallesen 2018). This study incorporated questions on influencers regarding use, and information and support but did not take into consideration that one person may have two roles for example doctor and peer, or people who said self-taught (for injecting) yet also ticked different types of information sources they accessed. This did not impact the validity of the findings but did make for less statistical analysis. Moreover, one question covering several options

asked participants to identify to which element they were referring, and several participants added comments but did not annotate which answer they were referring to, which complicated the analysis. For future studies a key learning is the need to run a larger pilot as this may highlight such flaws.

#### 8.10.1.2 **Sampling frame**

As it is a secretive population, and use is illegal in many countries (1.4, 4.4.2) and although there are global prevalence figures for the numbers of AAS users, it is acknowledged that these are likely to be underestimated (1.4). One potential effect from not having a defined sampling frame (4.6.1) is that there is no guarantee participants are a representative sample of AAS users. All participants who answered the questionnaire online and did not complete a paper-based version of the survey (with the exception of the three pilot participants) it is possible there is bias around the income and educational status as participants needed to have internet access and be able to complete a relatively complex questionnaire. Moreover, each of the techniques used to collect the data have limitations which are outlined at Table 4-1 Recruitment Strategies Table 4-1 and could have impacted on the data collected e.g. that a number of participants accessed the survey via link in a closed FB group on low Testosterone may account for the number of participants who used continuous low testosterone doses rather than being on cycles.

#### 8.10.2 **Data collection**

One of the challenges of using online data collection is that people could choose to access the questionnaire more than once and without potentially breaching a participant's anonymity it is not possible to prevent this, however, the length of the questionnaire was likely to dissuade many from completing it twice.

It is important to establish age in a questionnaire (Rodham and Gavin 2006) and this was crucial as ethical approval had only been gained for participants over eighteen. As this was an anonymous, self-reported study, there was a reliance on the integrity of the participant. With a web-based questionnaire there is the possibility of hoax responses (Ip et al. 2010). Consequently, there was the possibility for false data, including age, to be entered. However, participants were

also asked to give length of time using and age starting use, so it was hoped these might reduce the likelihood of false data and allowed for cross-checking. There is a wider limitation from self-reported data as questions about socially disapproved of behaviours relating to drug use may lead to inaccurate data (Harrison 1995). It is possible that participants have under-reported the severity of side-effects because of shame or fear, or from concerns that reports might increase the attention from authorities into steroid use. There are examples of such comments on fora related to not using NSPs or admitting to AAS use for fear of increasing Government statistics or that it might change the legal situation in the UK (Appendix 26). There is also the potential that people willing to talk about their experiences are more likely to be pro-use.

Use of online questionnaires meant that it was difficult to control how widely the survey was distributed; therefore, no bar on access dependent on geographical location was imposed. This could be a limitation as attitudes to AAS use may differ dependent on the legislation and support services in specific countries, which means findings should not necessarily be generalised. Moreover, the majority of participants in this study resided in countries where use was predominantly illegal without prescription which could have impacted the results as discussed in (4.4.2).

Another limitation, was not having NHS ethics, which meant only non-NHS services could be accessed, however, the time needed to get ethics for each provider was prohibitive and a key aim of this study was to recruit people away from the well-used recruitment methods such as NSPs. Using Instagram was a challenge as it was difficult to decide which posts to use to encourage engagement of AAS-users but not to promote AAS use. Furthermore, a lot of time and effort was spent distributing the questionnaire through a variety of media channels and sources. Consequently, it may be helpful for future research, to know which channels produced the most results. Therefore, another key learning for future studies would be to include a question on where participants saw the questionnaire link, to identify the most useful mediums for dissemination of similar questionnaires.

### 8.10.2.1 Interviews

It was notable that the audio-only interviews (e.g. FB chat) were more challenging, as unlike Skype there were no visual communication cues. This may have led to the researcher missing a communication nuance with incongruences between body language and spoken word. It was also harder to build a rapport though the typed forms of real-time interview and this lack of rapport could have adversely impacted on the participants' openness.

## 8.11 Strengths

### 8.11.1 Study design

There were several benefits of using a mixed-methods approach. First and foremost, the use of a literature review (Chapter 3) was helpful in the development of the questionnaire, including identifying specific terminology to use (3.3). Inclusion of demographic questions enabled comparison with other studies, which adds to the strength of the findings. Including free-text questions allowed for a bigger pool of qualitative data than would normally be used for a purely qualitative study and these also helped inform the semi-structured interview questions. Having all interviewees complete the questionnaire, allowed the researcher to ask follow-up questions for clarification. Another benefit was the ability to re-interrogate the quantitative data, based on some of the themes drawn out from the interviews, which targeted the data analysis. The quantitative data gave an insight into the specifics of the person's experience and their AAS use, and the qualitative data allowed for a deeper exploration and richer understanding of the experiences of the user. Another key strength of the study design was running two pilots (4.3.1.2, 4.5.3, 4.7.1).

#### 8.11.1.1 Questionnaire design

A key strength of the questionnaire was that the design was influenced and reviewed by a wide range of professionals (4.5.3). One way to measure internal consistency in a questionnaire is if the participants answer questions in a logical way (Ryan et al. 2001) and this was a strength as there were few spurious

answers, and those that were there, were often more humorous than spurious (Table 8-1).

#### 8.11.1.2 **Data collection**

One strength of collecting data online is that it can reduce errors due to the lack of transferring written data on to a computer (Regmi et al. 2017). Another benefit of posting online is that it has a wide reach and can easily be shared. A lack of geographical boundaries was a strength as it can highlight similarities, such as effects of use which are unlikely to differ per location. One of the recruitment methods was via a closed FB group which focussed on the issues of having low testosterone. This was a fortuitous referral chain (Biernacki and Waldorf 1981), as the credibility of the administrator meant that people trusted him, and so were happy to participate. However, due to the nature of the group, those participants talked about the impact of low testosterone. This is a strength as it highlighted the needs of a group of AAS-users for whom this is an issue, however, this is not applicable to the whole AAS-using community

##### 8.11.1.2.1 **Interviews**

Another strength was the range of interview methods available to participants allowing them different levels of anonymity (4.7.2). As the data is often taken out of context when reported there is the potential for it to be misinterpreted, and misinterpretation can also occur if the researcher is not part of the same community as the participants (Ryan et al. 2001). However, as the interviews were semi-structured the researcher was able to ask participants to clarify any points that were unclear, which reduced the possibility of misinterpretation. Moreover, online tools also instantly allowed the participants to share pertinent website links as exemplars of where they sought information and support. As already noted in (4.8.24.8.2) there are four components to assess qualitative data, one of which is credibility (Lincoln and Guba 1985). Credibility was something that will be a challenge to identify prior to the publication of results, however, semi-structured interviews did allow for points raised by the early interviewees to be followed up in later interviews, to see if views were consistent, and this was often the case. An



additional strength was that participants were offered, and some accepted, the opportunity to review their transcript and amend as desired.

## **8.12 Theory and practice**

Reflection is an active and purposeful process of exploration (Gray 2007); it can bridge the gap between research and practice (Renganathan 2009), help to reduce the risk of research being oppressive and ensure that the researcher's holistic experiences are acknowledged (Ruch 2002). Reflective practice can also facilitate a deeper understanding of situations, lead to new discoveries (Gray 2007) and help to reduce unconscious bias (Buetow 2019). This section shares theoretical reflections on the findings linked to practice. From the outset, this study has taken a broad psychosocial perspective to AAS use and considers the use of typologies of AAS-users in the context of the humanisation of care (Todres et al. 2009). It suggests that using a pathway model as a support intervention could provide a greater understanding of a person in the context of their use to help identify beneficial services. The section also includes some of the researcher's personal reflections on undertaking this study, noting how reflective practice influenced elements of the discussion. Finally, it outlines the ways in which the data from this study has been disseminated.

### **8.12.1 Typology**

One way to help professionals understand users' differing concerns is to consider different 'types' of user. Dawson (2001) defined four distinct 'types' of AAS-user and more recently two further more sophisticated typologies have been developed (Christiansen et al. 2016, Zahnow et al. 2018) (2.4 and Appendix 1). Zahnow and colleagues (2018) identified a typical pattern of use and associated risk behaviours. This study found some participants fitted the types; however, for others it was not so clear cut, and some did not fit. For example, in the typologies, only the expert type is given credit for accessing scientific articles, but this study found this was also true for others, who might more easily fit within the wellbeing category. Moreover, some users seemed to have transitioned from one type to another and there seemed to be no 'box' for users with concerns around virility, or who had TRT as a motivation, although potentially 'rejuvenating' might fit, which could also place them in the wellbeing box. Another example was of one

participant, with an extensive ethnopharmacological knowledge, who used AAS to improve his wellbeing, yet also admitted an 'image-related' aspect to his use, thus seeming to straddle two or three types e.g. Hugo (Appendix 25).

There are pros and cons to trying to create such models. An ideal typography cannot describe all the possible approaches to AAS use (Christiansen et al. 2016) and Zahnnow et al. (2018) noted similarities and differences between theirs and Christiansen and colleagues' (2016) typologies and suggested that although typologies are useful for policy-makers, due to the heterogeneous nature of AAS use, there is a need for individualised care. Typologies can help professionals to offer the right type of support and emphasise that AAS-users are not one homogenous group, thereby enabling professionals to provide targeted support to subgroup(s). However, there is a need to ensure that assumptions are not based on limited information or that everyone falls neatly into a 'box'. Even within clearly defined typologies there may be differences in the types of support needed. Arguably, typologies impose a 'sort of identity' on the AAS-user. In trying to simplify the complexity, there is the possibility that one label is replaced with another. The benefits of the most recent typologies is that they are based predominantly on characteristics of use, could help to simplify the complexity for professionals and do help to move away from a 'one-size-fits-all' mentality, which could lead to better identification of avenues for support. However, there is still a risk that they may lead professionals to make assumptions and could be harmful if used as diagnostic tools. There is a consensus within the literature that it is becoming more challenging to identify a typology of user (Salinas et al. 2019). Existing AAS typologies do not necessarily consider underlying motivations, people fall between groups and move groups, and do not necessarily focus on understanding the person in the context of their use. Consequently, it is important that at the professional outreach/support level, the focus remains on the individual.

### **8.12.2 Person-centred practice**

The concept of the humanisation of care is made up of a number of components, one of which, 'personal journey' (Todres et al. 2009), has already been used to justify why Life Stage Theory can be a useful way to consider AAS use (9.11.2.1.1). There is another component: 'uniqueness/homogenisation' which suggests that

humans have a unique self which “can never be reduced to a list of general attributes and characteristics” (Todres et al. 2009, p.71). In recent years the humanisation of care has been incorporated into training for healthcare professionals (Fasanelli et al. 2017, Walker et al. 2017) and a similar philosophy is at the heart of social work, that of person-centred practice. Person-centred practice has its roots in the work of Carl Rogers (Rogers 2003, 2004) and focuses on the importance of non-judgemental, authentic and empathetic professionals who treat each person as an individual (Payne 1997). Although not explicitly termed ‘person-centred practice’, other academics have suggested taking an individual perspective. For example, Richardson & Antonopoulos (2019) suggest a need to obtain and understand users' perceptions of AAS and unwanted experiences of use, alongside understanding how the cultural dynamics in the AAS-using sub-community affect someone’s involvement in AAS use. Havnes and colleagues (2019) emphasise a need for individual support focussing on psychosocial factors due to the heterogeneous nature of this population and this is echoed by others, who also note the importance of exploring underlying motivations, risk behaviours and health and lifestyle (Smith et al. 2009, Boardley et al. 2014, Griffiths et al. 2018, Zahnow et al. 2018, Bates, Tod, et al. 2019).

Although Roger’s work focused on their current situation, rather than a client’s history of problems, it is arguable that a person’s uniqueness comes from their personal experiences and their world view (Simmel 2007). Our world views are dependent on a wealth of influences over our lifespan, and each person will interpret their experiences differently and use these to construct their own reality. To understand someone’s decision to use requires an understanding of motivations for use and of how they make sense of the world. For example, as argued in 9.4.5, their internalised beliefs on masculinity may impact on suggested avenues of support as motivations identified are not clear cut. In this study motivations were complex and linked to a sense of identity and psychological wellbeing. Therefore, there is a need to consider the individual within the social context, not applying a label(s) which can disempower and detract from exploring beneath the presenting issue (Dominelli 2002) but instead view the person in the context of their history, identity, current circumstances, social context and personal motivations.

Taking a person-centred approach to AAS use could help to:

- Evidence how use changes over the lifespan;
- Explore underlying drivers and current reasons for use;
- Understand the user in the context of their use;
- Consider the impact of any adverse childhood experiences;
- Identify potentially risky behaviours and ways to mitigate risk;
- Recommend information and support based on individual needs.

#### 8.12.2.1 The AAS-user pathway

This study shows that motivations for using AAS can change over the lifespan and that some reasons to continue to use can come from deep-rooted beliefs around what it is to be masculine (9.4.5), or from learnt behaviours around effective ways to solve problems (Chapter 7). Bates and colleagues (2019) suggest a socioecological framework for considering AAS use and this study used Eriksonian theory to illuminate the changes across the lifespan and suggests a pathway tool (Figure 9-6) to explore use across the lifespan, which could be a way to encompass all the aspects that would feature within such a framework.

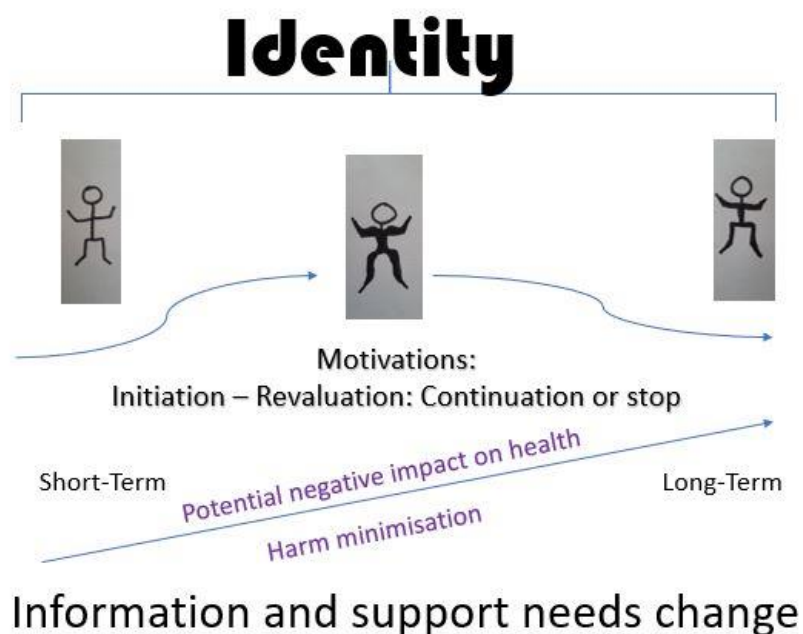


Figure 8-6 AAS use pathway

Moreover, such a tool is explicit in highlighting the potential for the risk of harms to increase with long-term use.

In this study the route into use was individual and personal. For example, two people who start with a motivation to start training to gain muscle owing to negative experiences from being skinny, will not necessarily follow the same pathway of use; while, one user may go it alone and stay focussed on attaining a lean, muscular physique, then may be influenced to continue using by the effects on libido, another user might become involved with the subculture and start down a competitive bodybuilding route. This could lead them to take different decisions about how they manage their use. In this study, the choice to use PCT or a 'blast-and-cruise' strategy was one example of differences in use management (5.3.3), which could lead to different side-effects. Taking a person-centred approach would help to ensure that the most relevant support options are considered.

#### 8.12.2.1.1 *Life Story Work*

The importance of different aspects of our identity matters at different points over our lifespan (Tatum 2000), and a potential method for approaching this could be using a form of Life Story Work (LSW), which is used in a range of healthcare settings including substance use (Etherington 2006, McKeown et al. 2006). AAS-users may have multiple identities (9.4.3) and LSW is a biographical technique that asks people to share their life histories and can help reflection around the negotiation of sense of self and identity (Etherington 2006, Ryan and Walker 2007). LSW can also help professionals uncover previously unidentified psychosocial needs, define individual support needs and improve relationships between professionals and service users (McKeown et al. 2006). It is a way of understanding life experience, and although there is no agreed methodology for LSW, using a form of LSW to structure conversations with AAS-users could be a way of exploring their AAS use pathway (Figure 9-6). Talking to a person about why they chose to start using, being curious about their current motivations, getting users to reflect on their life history, identity and exploring thoughts on future use could help users open up about individual motivations and worries and fears, potentially leading to better identified support services.

When suggesting any tool for use within practice, examples can be helpful to illustrate how the tool might work. Consequently, Appendix 25 offers four sketches of participants' life stories generated in the data collection process of this study. A sketch is a brief outline or description to give essential facts or prominent features without giving details (Simpson and Weiner 1989). As each pathway is unique the sketches are summaries and extracts from single interviews are a way to maintain the voice of the user and authenticity of individual stories and illuminate AAS use across the lifespan. The four sketches (Appendix 25) show how, taking this approach, professionals can ensure the support options identified are led by the individual seeking help. When it comes to prioritising support, it could be that support for people who are congruent in their use would be around side-effect mitigation and evidence-based information but for those who are conflicted, a wider range of support options may be helpful, including talking therapies and even looking for prevention over harm reduction.

As a social worker, I believe that it is important, when using such a tool as LSW, for professionals to consider their own role and skills in order to help people reflect on their life experiences. To engage in a conversation where someone is asked to discuss personal details needs a relationship based on trust and empathy, which are skills that can be developed (Norfolk et al. 2007). Trust in a relationship can help support change (Dominelli 2004) and maintaining a curious approach can enhance this trust and rapport (Mcevoy et al. 2013). A curious approach also allows the service user to define their own problems and solutions (Teater 2014). Challenges of working in this way include time and resource limitations. However, there is a phrase that has come to mind, one that this researcher recalls from her previous military career: "*time spent in reconnaissance is seldom wasted*" (Oatts 1959). Here this reconnaissance would be taking the time to build a relationship with someone to understand their motivations as these may lead to key insights for the most effective types of support.

### **8.13 Reflections on academic evidence and policy-making**

Dawson (2001) argued that as AAS use in the UK is not illegal this should empower the doctor to treat the patient, and suggested support could include discussing the patients aims and giving advice on injections and types of substances. In 2006, Grogan and colleagues (2006) stated a need for professionals to work to gain

credibility and Dennington et al. (2008) found credibility was given to balanced information. Evans-Brown and McVeigh (2008) listed a number of recommendations or support for practitioners: the need to recognise the benefits, be non-judgemental, appreciate diverse motivations and the need for harm reduction advice. Yet these recommendations appear not to have been widely followed, except for a small number of specialised services. Since then numerous studies have added to knowledge including most recently Richard and Antonopolus (2019), Havnes and colleagues (2019), and Underwood (2019) and evidence that these recommendations are still relevant today. The findings of this study also show that this type of support is wanted but not readily available.

The way a social problem is defined reflects social policy responses (MacGregor 1999), thus defining AAS-users as 'injecting drug users' focuses on transmission of BBVs. Arguably, IPED use is not the same as using drugs such as heroin or cocaine, even if linked to psychological issues, because it often carries with it long-term goals and could be seen as purposeful. The end of the welfare consensus brought with it a change in how policy was informed, moving from technical expertise and scientific discourse to include a strong influence from mass media (MacGregor 1999). This notion, suggested before the widespread use of social media platforms, may be more relevant today, and could in part explain why the prevailing discourse in the literature is being overlooked, as it does not fit with public discourse around drug use. Other reasons for not taking evidence-based advice could be cost, lack of political will, as supporting a seemingly deviant behaviour would have little public support, that the potential harms are individual rather than public health issues or that social norms mean men's mental health is something that has been consistently seen to have been given a lower priority or ignored (9.4.6). It could even be that supporting AAS-users is less of a priority as substance use is only tackled if there are other issues such as criminal or other undesirable social behaviours. When it comes to AAS use and policy, perhaps "paternalism and morality tend to take precedence over individual choice" (Mulrooney et al. 2019, p.2), which is a position at odds with riskier legal and socially acceptable pursuits such as drinking and smoking. Whatever the reason, this researcher would argue that this needs to be addressed and support based on academic evidence.

## **8.14 Reflections on personal experiences impacting on the researcher / research**

As a social worker I come from a perspective of anti-oppressive practice, believing that the substance-user is the expert in their own use. I am a feminist and have considered how these lenses have meant that I may have viewed masculinity from the perspective that the patriarchal nature of our society has negatively impacted on men's view of themselves and their ability to access support. Moreover, it has led me to consider how changes in society via social media have seen a rise in pressures on men aligned to appearance that have previously been the realm of women.

Monaghan (2002) suggested that if you are part of the same culture as the participants you could run the risk that they may make assumptions about your knowledge. As an outsider this was not a consideration, however I was concerned about personal credibility within this community. Another challenge for me was the clash of perspectives between 'me – the researcher'; purely curious and objective, and 'me - the social worker'; the need to want to offer support and solutions. This was particularly evident in one interview, where a participant seemed very conflicted in his use. At the end of the interview I felt compelled to explore support options with him. This was my social worker persona coming into play, and my tendency towards being a rescuer (de Vries 2013). Reflecting on this raised my awareness for future interviews, and enabled me to better retain my researcher focus, consequently improving my interview technique.

Qualitative research is an embodied experience and may affect the researcher (Dickson-Swift et al. 2009) and I have felt empathy for the stigma faced by this sub-community. It has impacted my personal value of authenticity, and I want to ensure that I share the participant's stories honestly. Yet, as a researcher, I need to be objective and non-judgemental, honouring their participation, and still raise challenging themes. I was affected in part by their ethnopharmological knowledge, by their keenness to have a research summary and to partake because they felt that more support should be available for people. It has been a privilege to share the stories, in a non-judgemental way. I do recognise that participant views are biased and subjective, and reflection enabled me to review



my work and not let my gratefulness to the interviewees influence concerns about being critical in my analysis. They may have their own agenda to 'minimise harms experienced' and show how controlled or considered or safe they are in their use. However, there is still a desire to ensure that my research does not fuel any argument that could do this population harm by adding to the stigma and mythology. Furthermore, as noted in the limitations in Chapter 7 concerning the potential for use of AAS for libido and sexual function to be under-reported, as interviewees may have been reluctant to discuss such issues with a female interviewer, there also may be other elements of the interviews that might have been impacted due to the researcher's gender and as someone not part of the AAS-using community such a downplaying of side-effects. However, alternatively as the interviews were confidential participants may have seen them as a safe space to share their views, as potentially there was less social pressure on them to maintain a certain persona.

Research interviews can be an intervention (Hutchinson and Wilson 1994) as the act of asking a specific question can lead someone to question themselves. Several participants reflected on their answers and motivations for use in the light of the conversation. It would, therefore, seem relevant to suggest this as an area to be considered as part of the support that should be offered; a space where people can talk about and reflect on their use. Although people ask questions about use within the fora, this is not a place that naturally lends itself to reflective conversations and this may be where peer support groups have a place. This also led to the development of the AAS use pathway model (Figure 9-6) and recommendation of the potential benefit of using LSW.

One of the challenges faced, possibly not unexpectedly to those who are well versed within academic culture, was the forthright stances taken when it comes to certain positions or philosophies. I learnt early on that taking a pragmatist approach, even though it is well supported and documented, appeared to be controversial. Throughout my research journey whether it was in the Transfer presentation or getting my literature review published I found myself coming up against polarised views, and the idea that this type of research could only be qualitative. This became apparent in the feedback from the peer review of the paper (Chapter 7). On one level, the feedback was confidence-inducing as both

reviewers felt the paper had something to add to the current body of knowledge, however there were elements that made the revisions challenging. The reviewer comments themselves came from opposing positions which potentially reflects the complexity of undertaking any mixed-methods study. I understand the value of having an appropriate methodology but found it hard to understand the fixedness of some of those who came from different ideological backgrounds. Arguably, this was a good lesson to learn as part of the PGR journey, after all a PhD can be considered an apprenticeship of sorts. This led to a realisation that my lens was that of an outsider when it came to academia, as a social worker I was coming from a different research paradigm and this shed light on why I was experiencing confusion.

### **8.15 Dissemination**

The dissemination of results is an important aim of research (Lawrence 2006) and one way of disseminating information is ensuring contact and building relationships with end users (McBride et al. 2008). Consequently, all participants and gatekeepers who requested a summary of the study will be provided with one.

### **8.16 Summary**

This section has explored the researcher's reflections on the benefits of using typologies. It has suggested that although useful, taking a person-centred approach might be a more efficacious way of identifying individual support needs. Highlighting the importance of considering the person, in the context of their whole life experience and suggesting that using a pathway tool aligned to LSW, may be a way to facilitate such discussion and help to identify types of support services that could best meet the needs of the user. This could allow a person to explore the context of their use within their life story related to their identity and may lead to a reduction in doses used and possible cessation, if the person can find other ways to feel more congruent with their identity. This section also shared how reflective practice impacted on the researcher's journey and influenced the research. It concluded with summary of the dissemination plans; the next chapter provides the conclusion to the study.

## Chapter 9 Conclusion

This study explored the experiences of AAS-users, particularly in relation to understanding the information and support desired. As previously discussed (1.3, 9.2.5.3), there has been an increase in AAS use, and the current UK support provision is focussed on BBV transmission with services provided through NSPs. Such provisions may not meet the needs of the current population of AAS-users, and this alongside the narrative of harm aligned to AAS use within society could be dissuading people from accessing services (2.5). A gap was identified in the literature regarding information and support wanted by AAS-users; there was a significant amount of data on information and support services, but little that explored their preferences (Chapter 3). This current study offers a unique insight into both the types of information and support users want and their experiences of managing use.

This study found six themes related to AAS-users' experiences of use (Figure 5-1). A number of motivations were found consistent with those in the literature and the study identified that, in some instances, motivations for continuing use differed from those for starting use (5.3.1.1). One of the interesting additions that this study brings to the literature is a fuller picture into how identity can impact AAS use, and an underlying motivation for use could fulfil a need to reinforce a specific identity, for example an AAS-user's decision to use could be influenced by their internalisation of society's perception of what is a 'real man' (9.4.4). It illuminates the emotional aspect of AAS use, for some showing it goes deeper than the physical side-effects and is a way of helping them not just attain and maintain a physique but also giving them a sense of wellbeing and symbolising their masculine identity (9.2.2.1). It found that an individual's concept of identity could potentially affect how AAS is used and that changes in identity could change usage patterns. Additionally, this study highlights that one of the reasons for continued use (or in some cases initiation) was not through a desire to body build but as a desire to overcome actual or perceived effects of having low testosterone levels (5.3.1.3).

This study found a range of positive and negative effects of use (5.3.2, 9.2.2). This is consistent with current literature, however what is potentially unique about these findings is that the majority of participants stated that AAS use had a positive impact on their lives. Additionally, this study found that positive effects, such as increases in libido became reasons to continue using or restarting use and that for many the positive effects outweighed the negative effects (5.3.2). This study also found self-reported evidence that AAS use had a strong emotional impact with some substances, such as Trenbolone being particularly associated by users with increased aggression, and that the emotional effects experienced when stopping use were often seen as more detrimental than the negative physical effects of using. Another theme explored how AAS-users managed the side-effects of their use (5.3.3). Participants saw risk management as a vital element of using, with many having a strong level of ethnopharmacological knowledge; they had often undertaken self-medication for unwanted side-effects and were acutely aware of the physical and emotional impact on their bodies from using AAS. A unique and unexpected finding was that when it came to the management of the emotional side-effects of use, several of the AAS-users reported employing a number of techniques for managing these, and also felt that it was their responsibility to do so. Although the majority of participants felt there was little need for emotional support, there was a number that felt this would be useful, and arguably these people are most in need of support. A further key contribution from this study highlights the need for support for people who self-medicate to mitigate the effects of perceived or actual low testosterone levels. Consequently, key to providing support is the need to fully appreciate the perceived benefits that people get from using AAS, from both a physical and emotional perspective. In addition, support provision should encompass both physical and psychological harm reduction.

This study highlighted the importance of the role played by the AAS-using community in providing support (5.3.4) and also that many participants felt the public's perception of AAS-users was unbalanced, biased, and fed by media stories about 'roid' rage (5.3.4.2, 9.2.4.1). This perception is important as it could impact on public health policy and those working within support services. Furthermore, it contributes additional data to the evidence base as many users felt medical professionals were often judgmental toward their AAS use and took a solely

preventative focus. This study found that there was an identity aligned to AAS-users which was very different from that of a 'traditional' illicit drug-user (5.3.4), and also a somewhat separate one aligned to a 'self-medicator' for low testosterone. It also highlighted the impact of societal expectations of what an 'ideal man' should look like (9.4.4) and that for some people, internalisation of this idea was an underlying motivation for use.

The findings of this current study are relevant to professionals working with people who use AAS. Users predominantly sought information from peers within the AAS-using community (5.3.5) as they considered this advice to be trustworthy and based on years of experience. This study recommends using a range of possible methods of communicating harm minimisation evidence-based information with AAS-users (Chapter 6). It was clear from this study that, regardless of country few of the participants accessed NSPs or saw these as useful services (5.3.5.3.2). Evidence from the study (Chapter 3, 5.3.5.3.3) suggested that people wanted to access information and support services but faced several barriers. The reason for this was not down to the nature of the services themselves, but instead was due to perceived stigma and scepticism of the knowledge of professionals around AAS use (9.2.4.1). This also helped to reinforce their views on the benefits of self-medication. AAS-users were keen to have access to non-judgemental support provided by professionals who understood why people choose to use AAS (Chapter 6). It was felt that it was important such provision was detached from other services that support people who use illicit substances such as opiates, and many were willing to pay for such support (9.2.5). This study also includes a recommendation for incorporating peer mentors as part of services (9.2.5.2).

This study has explored two concepts: management of use and identity. These were interconnected, however for the most-part identity impacted on how AAS-users managed their use. It is the first study, to the researcher's knowledge, to apply Erikson's Life Stage Theory to AAS use (9.5), and in doing so has illuminated the importance of understanding the AAS-user in the context of their individual life story. This is important as it is clear from this study that motivations for use influence the type of information and knowledge sought. In the reflections on the study, consideration was given to typologies of AAS use (9.11.1), agreeing that

these can be useful to make generalisations for the types of support services needed, and perhaps ensure that professionals understand that people use in different ways and for different reasons. However, ultimately this report has argued for an individualised approach and support needs aligned to facilitate engagement, minimise harm and work towards improving quality of life. Life Story Work (9.11.2.1.1) was offered as a method for how discussion about a person's journey could help to understand the person in the context of their use and life as a whole. A pathways model (Figure 9-6) was also suggested in order to support professionals to take a person-centred approach.

Specific considerations for targeted support were recommended, including certain professions, people with HIV and adolescents (9.2.5.4). These specific considerations for support should not take away from the concept that services/support provision should have the individual at its heart. Understanding where the user is on their journey, the motivations for starting use, how they use, how they are managing risks and how their motivations may have changed, might be a more beneficial way of both identifying information and support needs, and help to engage people with services.

As this is a current study, further areas for research have been highlighted. Firstly, research into initiation of use is important. For those who choose to start during their adolescent years, AAS use is arguably more harmful (9.2.5.4). Consequently, a deeper understanding of the risk and protective factors could help professionals identify those potentially at risk and allow early intervention. Secondly, there is a need for greater understanding of the emotional impact of use, particularly in relation to having perceived or actual low testosterone levels. The research focus could identify routes for support and help men to move away from self-medication (9.4.6, 9.4.7). It would also be useful to have more evidence on the barriers to men seeking emotional support. Thirdly, it would be beneficial to understand why the longer people use AAS the less likely they are to seek support. Fourthly, there is a need to further explore what improvements lead users to say that AAS use improves their overall quality of life. Finally, it would be beneficial to further understand the changing motivations for use across the lifespan. This would enable a greater understanding of long-term use, and

methods to more effectively provide targeted support interventions, in particular to older users.

The final chapter of the thesis offers recommendations for practice, policy and research derived from this study.

## **Chapter 10      Recommendations**

### **10.1 Chapter overview**

This chapter presents a summary of the overall recommendations from the study.

### **10.2 Introduction**

The intention of the research was to propose concrete recommendations for professionals on the basis of stated needs. The aim of this research was to gain an understanding of AAS use from the perspective of the user and to explore how motivations may impact on information and support requirements to effectively support AAS-users (3.9). Therefore, the recommendations are presented under the following areas: practice, policy and research.

### **10.3 Recommendations for practice**

#### **10.3.1 Information and support**

A key recommendation is that there should be appropriate information and support available for people who use AAS. There should be an individual person-centred approach to support based on assessment of: motivations for use, risk, behaviour, health and lifestyle (0, 8.12.2). Support should include a range of services including substance, blood and other panel tests, supply of injecting paraphernalia, harm reduction advice, and PCT (8.2.2.4). Chapter 6 outlines the suggested services for specialist IPED/AAS clinics. Specifics of this support could also include clear advice on a range on healthy lifestyle choices, including diet (nutrition) and exercise, information aligned to wellbeing and men's health issues (5.3.6, 8.2.2.6), and self-medication of side-effects (5.3.3, 8.2.3).

For this support to be effective it needs to take a psycho-social perspective and not be purely based on the medical model, with professionals encouraged to talk to users about their history of AAS use, including initiation, their current use and any worries and fears for the future (8.12.2). Moreover, professionals should start with the concept that users are experts in their own use and use this as a framework to take time to explore the motivations for use. This would allow for



exploration of alternative evidence-based options, as user's patterns of use are related to motivations (8.2.2.4) and users openly seek out evidence-based advice (0 and Chapter 6). Interventions such as Life Story Work may be a way to help understand users' experiences in the context of their life pathway of use (8.12.2.1). Support for AAS-users should be tailored to their needs and include consideration of use as self-medication for low testosterone (Chapter 7, 8.4.6).

A further recommendation for support is a need for emotional support services such as counselling and group support. Professionals who offer support to AAS-users should talk frankly to users about sex (Chapter 7, 8.6), the need to monitor behavioural changes and how to effectively manage emotional side-effects (8.2.2.6). Moreover, specialist one-to-one support should be available for those conflicted about their motivation for use (8.5, 8.12.2.1.1). Consideration should also be given to providing group and peer support (8.2.5.2). This could include groups led by a professional around beliefs and values linked to concepts of masculinity and negative self-talk/bodytalk, and peer-led support, which could include sharing nutritional and exercise advice, risk management, mindfulness and mood management. Within all support services, professionals offering support need to have a clear understanding of the benefits, be non-judgemental (8.2.5.1) and acknowledge (where applicable) the depth of 'specialised' knowledge of the AAS-users (0). Although there is a need for specialised support services, consideration should be given to where these are situated. It may be that such support services should be placed alongside GP surgeries, linked to pharmacies, within gyms or stand-alone and not attached to traditional drug-using services (8.2.5.3). Options should also be given to allow people to pay for specialist services (5.3.4.1, Chapter 6, 8.4.6). There should also be services that provide confidential information for families and support for next of kin services (0).

#### **10.3.1.1 Communication channels**

Recommendations for a range of communication channels and methods for the provision of information and support are in Chapter 6. Support for AAS use needs to be targeted through already established communication channels for this community, for example via online specialist fora and gyms. Information should

be evidence-based and where possible have academic references (8.2.5.1). Information should also be targeted at personal trainers, those prescribed with AAS as a result of contracting HIV, and those using for anti-ageing reasons (8.2.5.4, 8.4.7).

### **10.3.2 Wider professional services**

It is not just those who work in specialised services who should have an awareness of AAS use. A key recommendation from this study is that any professional working with adolescent/young men, particularly those with adverse childhood experiences, which includes nurses, doctors, social workers, youth workers, mental health practitioners, sexual health clinic workers, teachers, sports coaches, support workers, should have a base-level understanding of AAS use (8.4.6). This knowledge should include: risks of starting use, motivations for use, potential harms to self and support services (8.2.5.4, 8.6), and should have a balanced non-judgemental perspective when addressing the issues (Chapter 6). Professionals working with children should aim to address issues of masculinity and challenge stereotypes as a desire to change one's appearance to align with having absorbed the physical manifestation of the hegemonic ideal as part of the male identity could be a reason to initiate use (8.2.5.4, 8.4.4). Here schools, colleges and universities (and other institutions accessed by young people) are encouraged to have conversations about such issues as hegemonic masculinity, gender stereotypes and the impact of internalisation of media ideals versus realistic norms (8.4.4).

## **10.4 Recommendations for policy**

Policy should predominantly take a harm reduction focus as a prevention message creates barriers (8.2.5.3, 8.13). Moreover, the issue of self-phlebotomy and blood donations should be noted as a cause for concern and addressed (Chapter 6).

## **10.5 Recommendations for research**

In order to assist professionals in information provision and to help them meet AAS-users' needs, it would be useful to undertake more detailed research into predictors for initiating use, including: adverse childhood experiences, the impact

of social media and peer pressure on AAS use, and why some men are more affected by media influences such as hegemonic masculinity than others (8.4.5). It may also be beneficial to gain more data on the protective factors against initiating use. Moreover, a deeper understanding of the effects of low testosterone on men entering middle age may shed light on why men choose to use AAS to maintain their libido (Chapter 7), the motivations for changes in use across the lifespan and implications for treatment (8.6). Additionally, more research is required into the emotional and psychological side-effects of specific substances, for example Trenbolone, to more effectively advise those experiencing emotional side-effects (8.2.2.6). At present, there is scant information in the literature on the underlying perceptions aligned to quality of life improvements (Figure 5-4) and also risks of sustained-long-term use of testosterone, therefore these would also be useful areas for further research. It would also be beneficial to investigate reasons for and potential mechanisms to overcome those barriers to implementing recommendations from research into policy and practice (8.13). Finally, there is need for research into the risks and management strategies for women who use AAS (Chapter 6, 8.8).

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## Appendix 1 Typology of AAS users

Taken from Zahnow et al. (2018).

<p style="text-align: center;"><b>The YOLO type</b></p> <ol style="list-style-type: none"> <li>Motivated by impatience, curiosity and influence from peers and authoritative role models</li> <li>Focus on asserting masculinity, impressing girls, advancing upwards in the male hierarchy</li> <li>Little to no concern about side effects</li> <li>Aims at immediate benefits</li> <li>Low level of knowledge- based on lore and advice from gym 'rats'</li> <li>Hedonistic and 'flying blind' attitude towards health-combines AAS with recreational drugs and is more likely to end up in fights than the other types</li> <li>Little concern about diet and recovery has an experimenting life style which includes various types of risk taking.</li> </ol> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>Cluster 1</b></p> <ol style="list-style-type: none"> <li>Younger age group on average than other clusters</li> <li>Typically use oral AAS and rarely use other IPEDs</li> <li>High levels of alcohol use including binge drinking</li> <li>Experienced few adverse effects</li> </ol> </div>	<p style="text-align: center;"><b>The Athlete type</b></p> <ol style="list-style-type: none"> <li>Motivated by competitive aspirations</li> <li>Focus on performance (e.g. skills, size and definition)</li> <li>Concerned with side effects but willing to run health risks to fulfil sporting ambitions</li> <li>Aims at maximising benefits by combining different steroids (stacking) with other performance enhancing drugs (polypharmacy)</li> <li>Medium to high level of knowledge – based on medical assistance and experience from his sporting community</li> <li>Plans training and diet according to season – avoids recreational drugs</li> <li>Dedicated to the athlete lifestyle</li> </ol> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>Cluster 3</b></p> <ol style="list-style-type: none"> <li>Use a range of oral and injectable AAS</li> <li>Use a range of IPEDs in addition to AAS</li> <li>Moderate to low levels of alcohol consumption but greater psychoactive drug use than other clusters</li> <li>Experience more adverse effects</li> </ol> </div>
<p style="text-align: center;"><b>The Well-being type</b></p> <ol style="list-style-type: none"> <li>Motivated by vanity and/wishes for restoration or rejuvenation</li> <li>Focus on well-being, moderation and peer recognition</li> <li>Considers side effects and wants to play it safe</li> <li>Aims at slight improvements</li> <li>Medium level of knowledge- based on own experience, online fora and other users</li> <li>Wants to improve his quality of life and has relaxed take on nutrition</li> <li>Focus on healthy living and are typically older than other types</li> </ol> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>Cluster 2</b></p> <ol style="list-style-type: none"> <li>Unlikely to use other IPEDs in addition to AAS</li> <li>Typically use few types of AAS</li> <li>Moderate levels of alcohol consumption and psychoactive drug use</li> <li>Experience few adverse effects</li> </ol> </div>	<p style="text-align: center;"><b>The Expert type</b></p> <ol style="list-style-type: none"> <li>Motivated by scientific curiosity and fascination with pharmacological performance enhancement</li> <li>Focus on muscularity, learning, information sharing</li> <li>Concerned with side effects, wants to play it safe</li> <li>Aims at optimising benefits with a perceived sensible drug regimen</li> <li>High level of knowledge – based on various sources including scientific papers</li> <li>Values health and monitors his body systematically</li> <li>Offers advice on harm reduction to others and seeks recognition as an expert on AAS</li> </ol> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>Cluster 4</b></p> <ol style="list-style-type: none"> <li>Typically use few types of AAS</li> <li>Moderate use of peptides and other IPEDs in addition to AAS</li> <li>Rarely drink alcohol or use psychoactive drugs</li> <li>Experience few adverse effects</li> </ol> </div>

Features of Christiansen et al. (2016) steroid user typologies and the four clusters.

## Appendix 2 Scoping review search strategy (PICO)

To identify the most effective search strategy, key words and number of word groupings were tested to select articles on AAS. The final search strategy used is below.

		Questions and Search algorithms
		What type of support (if any) do people who use AAS want?
<b>PI(CO)</b>		What support is available for people (recreational?) who use non-prescriptive Anabolic Androgenic Steroids
<b>Population</b>		anabolic androgenic OR designer N3 steroid* OR recreat* steroid* OR anabolic steroid* OR anabolic drug* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescrip*" steroid* OR non-prescript* steroid* OR "non-medic*" steroid* OR "non prescri*" N2 steroid* OR non-prescri* N2 steroid* OR "non medic*" N2 steroid* OR non-medic* N2 steroid* OR performance N3 enhanc* drug* or image N3 enhanc* drug* or appearance N3 enhanc* drug* or muscle N3 enhanc* drug* OR muscle N3 develop* drug* or performance N3 develop* drug* OR doping N3 steroid*
<b>Intervention</b>	AND	Support or advice or help or aid or barrier* or information or guidance or intervention* or "needle exchange* or program*"
<b>(to clarify population)</b>	NOT	<i>animal* OR mice OR rats OR "guinea pig*" OR spectrometry OR bovine</i>
	AND	In English language
	AND	peer reviewed

## Appendix 3 Testing of word groups for search strategy

Steroid* or AAS or performance N3 enhanc* or image N3 enhanc* or appearance N3 enhanc* or muscle N3 enhanc* or designer or "Synthe* testosterone"
WITH: anabolic* or androgen* or recreational* or drug* or substance* or *use* or non prescri* or "non-prescri*" or non-medic* or "non-medic"
WITH: Qualitative or "focus group*" or Forum* or phenomenology or interview* or audiorecording or thematic or "grounded theory" or attitude or them* or "semi-structured" or semistructured or unstructured or informal or "in-depth" or indepth or "face-to-face" or structured or guide or guides or narrat* or ethnograph* or "field work" or "key informant" or discussion* or fieldwork
<b>More focused - Facet 1</b>
anabolic androgenic OR designer drug* OR recreat* drug* OR recreat* steroid* OR anabolic steroid* OR anabolic drug* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescri*" steroid* OR non-prescri* steroid* OR "non-medic*" steroid* OR "non prescri*" N2 steroid* OR non-prescri* N2 steroid* OR "non medic*" N2 steroid* OR non-medic* N2 steroid* OR performance N3 enhanc* drug* or image N3 enhanc* drug* or appearance N3 enhanc* drug* or muscle N3 enhanc* drug* OR muscle N3 develop* drug* or performance N3 develop* drug*
<b>More focused - Facet 2</b>
performance N3 enhanc* drug* or image N3 enhanc* drug* or appearance N3 enhanc* drug* or muscle N3 enhanc* drug* OR Gym OR musde N3 develop* or performance N3 develop* or performance N3 increas* or muscle N3 increas*
<b>or motiv* OR muscle dysmorphia</b>
<b>Limit</b>
Qualitative or "focus group*" or Forum* or phenomenology or interview* or audiorecording or thematic or "grounded theory" or attitude or them* or "semi-structured" or semistructured or unstructured or informal or "in-depth" or indepth or "face-to-face" or structured or guide or guides or narrat* or ethnograph* or "field work" or "key informant" or discussion* or fieldwork
<b>More broad - Facet 1</b>
designer drug* OR recreat* drug* OR recreat* steroid* OR anabolic steroid* OR anabolic drug* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescri*" steroid* OR non-prescri* steroid* OR "non-medic*" steroid* OR non-medic* N2 steroid*
<b>More broad - Facet 2</b>
Perform* or image* or appear* or muscle* or increas*
<b>More broad - Facet 3</b>
<b>Use or using:</b> Motiv* or
Androgen* N3 Steroid* OR performance N3 enhanc* OR image N3 enhanc* OR appearance N3 enhanc* or muscle N3 enhanc* OR designer OR "Synthe* testosterone" OR doping anabolic* OR doping androgen* OR recreational doping OR anabolic androgenic OR designer androgen* OR recreat* steroid* OR anabolic steroid* OR anabolic drug* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescri*" steroid* OR non-prescri* steroid* OR "non-medic*" steroid* OR "non prescri*" N2 steroid* OR non-prescri* N2 steroid* OR "non medic*" N2 steroid* OR non-medic* N2 steroid*
Androgen* OR performance N3 enhanc* OR image N3 enhanc* OR appearance N3 enhanc* or muscle N3 enhanc* OR doping anabolic* OR doping androgen* OR recreational doping OR anabolic androgenic OR designer androgen* OR recreat* OR anabolic* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescri*" OR non-prescri* OR "non-medic*" OR "non prescri*" OR non-prescri* OR "non medic*" OR non-medic* OR "Synthe* testosterone"
<b>Drug* or steroid*</b>
Support or advice or help or aid or barrier* or information or guidance or intervention* or "needle exchange*"
anabolic androgenic OR designer N3 steroid* OR recreat* steroid* OR anabolic steroid* OR anabolic drug* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescri*" steroid* OR non-prescri* steroid* OR "non-medic*" steroid* OR "non prescri*" N2 steroid* OR non-prescri* N2 steroid* OR "non medic*" N2 steroid* OR non-medic* N2 steroid* OR performance N3 enhanc* drug* or image N3 enhanc* drug* or appearance N3 enhanc* drug* or muscle N3 enhanc* drug* OR muscle N3 develop* drug* or performance N3 develop* drug* OR doping

Synonyms for AAS	Combined With	
<i>Steroid* or AAS or performance N3 enhanc* or image N3 enhanc* or appearance N3 enhanc* or muscle N3 enhanc* or designer or "Synthe* testosterone"</i>	<b>anabolic* or androgen* or recreational* or drug* or substance* or *use* or non prescri* or "non-prescri*" or non-medic* or "non-medic*"</b>	A
anabolic androgenic OR designer drug* OR recreat* drug* OR recreat* steroid* OR anabolicsteroid* OR anabolic drug* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescript*" steroid* OR non-prescript* steroid* OR "non-medic*" steroid* OR <b>"non prescri*" N2 steroid* OR non-prescri* N2 steroid* OR "non medic*" N2 steroid* OR non-medic* N2 steroid* OR</b>	performance N3 enhanc* drug* or image N3 enhanc* drug* or appearance N3 enhanc* drug* or muscle N3 enhanc* drug* OR muscle N3 develop* drug* or performance N3 develop*drug*	B
designer drug* OR recreat* drug* OR recreat* steroid* OR anabolic steroid* OR anabolic drug* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescript*" steroid* OR non-prescript* steroid* OR "non-medic*" steroid* OR non-medic* N2 steroid*		c
Perform* or image* or appear* or muscle* or increas*		d
<i>Androgen* N3 Steroid* OR performance N3 enhanc* OR image N3 enhanc* OR appearance N3 enhanc* or muscle N3 enhanc* OR designer OR "Synthe* testosterone" OR doping anabolic* OR doping androgen* OR recreational doping OR anabolic androgenic OR designer androgen* OR recreat* steroid* OR anabolic steroid* OR anabolic drug* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescript*" steroid* OR non-prescript* steroid* OR "non-medic*" steroid* OR "non prescri*" N2 steroid* OR non-prescri* N2 steroid* OR "non medic*" N2 steroid* OR non-medic* N2 steroid*</i>		e
<i>Androgen* OR performance N3 enhanc* OR image N3 enhanc* OR appearance N3 enhanc* or muscle N3 enhanc* OR doping anabolic* OR doping androgen* OR recreational doping OR anabolic androgenic OR designer androgen* OR recreat* OR anabolic* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescript*" OR non-prescript* OR "non-medic*" OR "non prescri*" OR non-prescri* OR "non medic*" OR non-medic* OR "Synthe* testosterone"</i>		f
anabolic androgenic OR designer N3 steroid* OR recreat* steroid* OR anabolic steroid* OR anabolic drug* OR Synthe* testosterone OR "Synthe* testosterone" OR "non prescript*" steroid* OR non-prescript* steroid* OR "non-medic*" steroid* OR <b>"non prescri*" N2 steroid* OR non-prescri* N2 steroid* OR "non medic*" N2 steroid* OR non-medic* N2 steroid* OR</b> performance N3 enhanc* drug* or image N3 enhanc* drug* or appearance N3 enhanc* drug* or muscle N3 enhanc* drug* OR muscle N3 develop* drug* or performance N3 develop*drug* OR doping		g

## Appendix 4 Data extraction form and example of quality review by supervisor

<b>Information requirements for data extraction for SLR</b>			
Record number (to uniquely identify study):			
<b>General information</b>		<b>Participant characteristics</b>	
Researcher performing data extraction		Number of participants	
Date of data extraction		Age range:	
<b>Identification features of the study:</b>		Gender recorded:	
Record number (to uniquely identify study):		No. Male:	
Author:		No. of females:	
Year:		Ethnicity:	
Article title:		Socio-economic status:	
Citation:		Co-morbidities:	
Type of publication (e.g. journal article, conference abstract):		Use of other substances:	
Country of origin:		Groups defined AAS users v Non-AAS users (Types of users):	
Source of funding:		Demographics described:	
<b>Study characteristics</b>		Inclusion/Exclusion criteria reported:	
Aim/objectives of the study:		Length of time using AAS:	
Study inclusion and exclusion criteria:		Age started using AAS:	
Recruitment procedures used:		<b>Findings:</b>	
Setting: Gym, Needle Exchange Clinics:		Sources of Information (Y/N)	
Methodology clear:		<b>Type of Information (list what and how accessed)</b>	
Paper-based Questionnaires:		Sources of support (Y/N)	
Online questionnaires:		<b>Type of Support (list what and how accessed)</b>	
Face to Face interviews:			
<b>Outcome data/results</b>			
Researcher's Bias:			
Author's conclusions:			
<b>Decisions:</b>			
Name of second reviewer:			
Agreement with Reviewer:			
Should study be included?			
Reason for exclusion:			

## Example of quality review by supervisor

Data Extraction Table				
Record Number		11	16	10
Identification features of study	Citation	Grogan, S., Shepherd, S., Evans, R., Wright, S., and Hunter, G., 2006. Experiences of Anabolic Steroid Use: In-depth Interviews with Men and Women Body Builders. <i>Journal of Health Psychology</i> [online], 11 (6), 845.	Iversen, J., Topp, L., Wand, H., and Maher, L., 2013. Are people who inject performance and image-enhancing drugs an increasing population of Needle and Syringe Program attendees? <i>Drug &amp; Alcohol Review</i> [online], 32 (2), 205–207.	Griffiths, S., Henshaw, R., McKay, F. H., and Dunn, M., 2016. Post-cycle therapy for performance and image enhancing drug users: A qualitative investigation. <i>Performance Enhancement &amp; Health</i> [online].
	References review: no. of articles identified	0	0	0
	Type of publication	Journal article	Journal article	Journal article
	Country of Origin	UK	Australia	Australia
	Source of funding		Australian Government Department of Health and Ageing.	
General Information	Researcher	OH	OH	OH
	Date	23.8.17	23.8.17	22.8.17
Participant Characteristics	Number of participants	11	2395	26
	Age range:	20-39		21-62
	Gender recorded:	y		yes
	No. Male:	5		24
	No. of females:	6		2
	Ethnicity:	n		n
	Socio-economic status:	n		
	Co-morbidities:			
Use of other substances:				



	Groups defined AAS users v Non-AAS users (Types of users):	AAS users	Comparison with non-injectors of PIEDs	PIED users
	Demographics described:	n		Location, age, gender
	Inclusion/Exclusion criteria reported:			yes: non-prescribed PIED use
	Length of time using AAS:	y		
	Age started using AAS:	?		
Study characteristics	Aim/objectives of the study:	to investigate anabolic steroid users' experiences of, and motivations for, use.	Are people who inject performance and image-enhancing drugs an increasing population of Needle and Syringe Program attendees?	to understand issues related to post-cycle therapy (PCT) among a sample of performance and image enhancing drugs (PIED) users in Australia.
	Study inclusion and exclusion criteria:			
	PED/AAS or other	AAS	PIEDS	PIED
	Recruitment procedures used:	The women were contacted through 'snowball sampling' from an initial contact known by the fifth author. Two of the male interviewees were known to the first author. The other four men volunteered to take part in the study responding to a request by the second author.	The ANSPS is a national cross-sectional sero-survey conducted annually at ~50 NSP services. Consent- ing NSP attendees complete a brief self-administered questionnaire and provide a capillary blood sample for human immunodeficiency virus (HIV) and hepatitis C (HCV) antibody testing.	personal contacts, advertisements posted on Internet discussion boards, and snowball sampling
	Setting: Gym, Needle Exchange Clinics:	Gym	NSPs	
	Methodology clear:	semi-structured interviews	y	
	Notes	Recruitment process limited, no inclusion/exclusion criteria	National survey Response rate 41%	

	Validity considered			
	Qualitative or Quantitative	qualitative	Quantitative	
	Paper-based Questionnaires:			
	Online questionnaires:			
	Online Forum data reviewed			
	Face to Face interviews:	y		y
Findings:	Sources of Information (Y/N)	y	n	n
	Type of Information (list what and how accessed)	research via books, internet & trusted information sources: lack of faith in GP	n	n
	Sources of support (Y/N)		y	y
	Ideal information or support			access to medical support for PCT
	Type of Support (list what and how accessed)		where they got hold of needles	PCT
Outcome data/results	Statistical techniques / measurements used	thematic analysis	clearly outlined	thematic analysis
	Researcher's Bias:			
	Study limitations noted			yes
	Author's conclusions:	Support from within the body building community is necessary to enable the development of realistic and credible health promotion strategies for use with this group, and for the development of viable prevention programmes.	provision of specialist training to existing NSP services or the establishment of state-wide specialist services, similar to that operating in Victoria, may be warranted. NSP services must continue to engage with PIEDs injectors to provide sterile injecting equipment	PCT is one way in which PIED users attempt not only to maximise
	Include/Exclude	Include	Exclude	Include
	Notes Re include/exclude		No numbers, focus on injecting (PIED not AAS) data not on support needed	But the focus is on post-cycle therapy to reduce impact of being off cycle not on

			or information	support (as PCT needs drugs)
<b>Decisions</b>	<b>Second reviewer:</b>	<b>Margarete</b>	<b>Margarete</b>	<b>Edwin</b>
	Agreement with Reviewer:	agree	agree	yes
	Should study be included?	Include	exclude	yes, the following authors' comment is telling: "Steroids were seen as easier to access than PCT; as such, participants tended to continue to use steroids rather than taper down their use, leading to health concerns."
	Reason for exclusion:	small, but seemingly very relevant study-- congruent with your study's focus	interesting, but unclear about actual numbers used, and focus solely on IV usage isn't congruent with your study--	

## Appendix 5 Methodological quality appraisal tool – Quantitative studies

1	<p><b>Sampling method: Was it representative of the population intended in the study?</b></p> <p>A. Non-probability sampling (including: purposive, quota, convenience and snowball sampling)</p> <p>B. Probability sampling (including: simple random, systematic, stratified g, cluster, two-stage and multi-stage sampling)</p>	0 1
2	<p><b>Was a response rate mentioned within the study? (Respond no if response rate is below 60)</b></p> <p>A. No</p> <p>B. Yes</p> <p>C. Not applicable</p>	0 1
3	<p><b>Was the data collection tools used valid and reliable?</b></p> <p>A. No</p> <p>B. Yes</p>	0 1
4	<p><b>Was it a primary or secondary data source?</b></p> <p>A. Primary data source</p> <p>B. Secondary data source (survey, not designed for the purpose)</p>	1 0
5	<p><b>Were the statistical methods appropriate for the study design?</b></p> <p>A. Yes</p> <p>B. No</p>	1 0
6	<p><b>Was data on information and/or support for AAS use recorded within the study?</b></p> <p>A. No</p> <p>B. Yes</p>	0 1
Scoring: Total score divided by total number of items multiplied by 100		
<b>Methodological Appraisal Score</b>		
<b>Bad *</b>	<b>Satisfactory **</b>	<b>Good ***</b>
0 – 33 %	34 – 66 %	67 – 100 %

Adapted from Davids and Roman's (2014) Quantitative Review Methodology:

Appraisal Score: 67–100% \*\*\*, 34 – 66% \*\*, 0 – 33% \*

## Appendix 6 Appraisal of mixed-methods paper

Paper reviewed: (Dennington et al. 2008)

1	<b>Sampling method: Was it representative of the population intended in the study?</b> A. Non-probability sampling (including: purposive, quota, convenience and snowball sampling) B. Probability sampling (including: simple random, systematic, stratified g, cluster, two-stage and multi-stage sampling)	0
2	<b>Was a response rate mentioned within the study? (Respond no if response rate is below 60)</b> A. No B. Yes C. Not applicable	Not applicable
3	<b>Was the data collection tools used valid and reliable?</b> A. No B. Yes	1
4	<b>Was it a primary or secondary data source?</b> A. Primary data source B. Secondary data source (survey, not designed for the purpose)	1
5	<b>Were the statistical methods appropriate for the study design?</b> C. Yes D. No	1
6	<b>Was data on information and/or support for AAS use recorded within the study?</b> A. No B. Yes	1
Scoring: Total score divided by total number of items multiplied by 100		
<b>Methodological Appraisal Score</b>		
<b>Bad *</b>	<b>Satisfactory **</b>	<b>Good ***</b>
0 – 33 %	34 – 66 %	67 – 100 % (80%)

Adapted from Davids and Roman's (2014) Quantitative Review Methodology (Appendix XX): Appraisal Score: 67–100% \*\*\*, 34 – 66% \*\*, 0 – 33% \*

**Quant: \*\*\* and Qual: \*\*\***

### Mixed methods (Pluye et al. 2011)

- 5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)? Yes \*\*\*
- 5.2. Is the integration of qualitative and quantitative data (or results\*) relevant to address the research question (objective)? Yes, but results were not integrated \*\*
- 5.3. Is appropriate consideration given to the limitations associated with this integration, e.g., the divergence of qualitative and quantitative data (or results\*) in a triangulation design?
  - Can't tell – data not integrated
  - *Criteria for the qualitative component (1.1 to 1.4), and appropriate criteria for the quantitative component (2.1 to 2.4, or 3.1 to 3.4, or 4.1 to 4.4), must be also applied.*
  - \*These two items are not considered as double-barrelled items since in mixed methods research, (1) there may be research questions (quantitative research) or research objectives (qualitative research), and (2) data may be integrated, and/or qualitative findings and quantitative results can be integrated.
- Overall, \*\*

## Appendix 7 PROSPERO International prospective register of systematic reviews

### Review title and timescale

#### Review title

Give the working title of the review. This must be in English. Ideally it should state succinctly the interventions or exposures being reviewed and the associated health or social problem being addressed in the review.

Support for people who use Anabolic Androgenic Steroids: an investigation into what they want and what they currently access

#### Original language title

For reviews in languages other than English, this field should be used to enter the title in the language of the review. This will be displayed together with the English language title.

#### Anticipated or actual start date

Give the date when the systematic review commenced, or is expected to commence. 03/07/2017

#### Anticipated completion date

Give the date by which the review is expected to be completed. 03/10/2017

#### Stage of review at time of this submission

Indicate the stage of progress of the review by ticking the relevant boxes. Reviews that have progressed beyond the point of completing data extraction at the time of initial registration are not eligible for inclusion in PROSPERO. This field should be updated when any amendments are made to a published record.

#### The review has not yet started

×

Review stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

Provide any other relevant information about the stage of the review here.

### Review team details

#### Named contact

The named contact acts as the guarantor for the accuracy of the information presented in the register record. [Orlanda Harvey](#)

#### Named contact email

Enter the electronic mail address of the named contact. [harveyo@bournemouth.ac.uk](mailto:harveyo@bournemouth.ac.uk)

#### Named contact address

Enter the full postal address for the named contact.

[Bournemouth House 17-19 Christchurch Road Bournemouth BH1 3LH UK](#)

**Named contact phone number**

Enter the telephone number for the named contact, including international dialing code. 01202 967435

**Organisational affiliation of the review**

Full title of the organisational affiliations for this review, and website address if available. This field may be completed as 'None' if the review is not affiliated to any organisation. None

**Website address:****Review team members and their organisational affiliations**

Give the title, first name and last name of all members of the team working directly on the review. Give the organisational affiliations of each member of the review team.

Title	First name	Last name	Affiliation
Mrs	Orlanda	Harvey	Bournemouth University
Dr	Margarete	Parrish	Bournemouth University
Professor	Edwin	van Teijlingen	Bournemouth University
Dr	Steve	Keen	Bournemouth University

**Funding sources/sponsors**

Give details of the individuals, organizations, groups or other legal entities who take responsibility for initiating, managing, sponsoring and/or financing the review. Any unique identification numbers assigned to the review by the individuals or bodies listed should be included.

Bournemouth University as part of PhD Studentship

**Conflicts of interest**

List any conditions that could lead to actual or perceived undue influence on judgements concerning the main topic investigated in the review.

Are there any actual or potential conflicts of interest? None known

**Collaborators**

Give the name, affiliation and role of any individuals or organisations who are working on the review but who are not listed as review team members.

Title	First name	Last name	Organisation details
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**Review methods****Review question(s)**

State the question(s) to be addressed / review objectives. Please complete a separate box for each question.

1. What support and information do people using non-prescriptive Anabolic Androgenic Steroids (AAS) for recreational purposes access?

2. What support and information do people using non-prescriptive AAS for recreational purposes say they want?

**Searches**

Give details of the sources to be searched, and any restrictions (e.g. language or publication period). The full search strategy is not required, but may be supplied as a link or attachment.

A three step search strategy will be carried out in an iterative manner: 1) An initial search will be carried out in the EBSCO database using the term AAS. This will be followed by an analysis of key text words contained in the title and abstract and the index terms used to describe the article in order to broaden search terms. 2) The identified keywords and index terms will then be used across

included databases. 3) The reference lists of included articles will be scanned to identify any potentially relevant articles not picked up through the database search. The following databases will be included: Academic Search Complete, British Library EthOS, Business Source Complete, CINAHL Complete, Communication Science, Hospitality and Tourism complete, Directory of Open Access Journals, Environment Complete, Education Source, Emerald Insight, IEEE XPLORE Digital Library, J-Stage, JSTOR Journals, Information Science & Technology Abstracts, MEDLINE Complete, Supplemental Index, SciELO, GreenFILE, SocIndex with Full text, SwePub, Complementary Index, SportDiscus with full text, PsycINFO, ScienceDirect, Communication abstracts, Teacher reference Center, and ERIC. The PROSPERO database and Cochrane Library database will also be searched for on-going reviews. Key terms developed in the context of review inclusion criteria relating to anabolic androgenic steroids, information, and support. There will be no geographical or date restrictions, however publications were limited to those studies in English (due to a lack of resources for translation), which have been peer reviewed.

#### **URL to search strategy**

If you have one, give the link to your search strategy here. Alternatively you can e-mail this to PROSPERO and we will store and link to it.

I give permission for this file to be made publicly available  No

#### **Condition or domain being studied**

Give a short description of the disease, condition or healthcare domain being studied. This could include health and wellbeing outcomes.

The use of AAS has historical roots in enhancing performance in sports, however in recent years they are increasingly used by the general population (particularly male gym users) for their anabolic effects (Bojsen-Møller and Christiansen 2010, Nutt 2012). Research over the last twenty years has demonstrated that the use of AAS can be detrimental to a person's physical and emotional wellbeing (Jones et al. 2011, McVeigh et al. 2012). Social Workers often work with the most vulnerable in society and have a role in helping people to identify the types of support available to them to help minimise harm. The review aims to investigate the support that people who use AAS for recreational (non-competitive) purposes access and also identify the types of information and support people who use AAS want. This review will identify and synthesise the available evidence on the support for people using AAS.

#### **Participants/population**

Give summary criteria for the participants or populations being studied by the review. The preferred format includes details of both inclusion and exclusion criteria.

Studies including populations such as recreational AAS users, non-competitive AAS-using bodybuilders and, AAS users accessing drug services will be eligible for inclusion. The review will include evidence on all individuals who use AAS including occasional and long-term users.

#### **Intervention(s), exposure(s)**

Give full and clear descriptions of the nature of the interventions or the exposures to be reviewed

Any support (information or intervention) designed to support people who use muscle enhancing substances will be considered for inclusion. This will include support and information offered by local authorities, government, internet, peers, gyms and drugs services. Excluded will be any intervention given by professionals to professional athletes.

#### **Comparator(s)/control**

Where relevant, give details of the alternatives against which the main subject/topic of the review will be compared (e.g. another intervention or a non-exposed control group).

Any alternative support or no support comparisons.

#### **Types of study to be included**

Give details of the study designs to be included in the review. If there are no restrictions on the types of study design eligible for inclusion, this should be stated.

Any studies with a clearly defined set of objectives and pre-defined eligibility criteria will be considered for inclusion. This may include: Studies that report on findings which use quantitative methods (data collection and analysis) and studies which include qualitative questions on types of



information and support sought out by people who use AAS.

### **Context**

Give summary details of the setting and other relevant characteristics which help define the inclusion or exclusion criteria.

Studies that seek information from participants who use non-prescribed AAS recreationally. Inclusion • Studies including populations such as recreational AAS users, non-competitive AAS-using bodybuilders and weightlifters and, AAS users accessing drug services will be eligible for inclusion. • Qualitative and quantitative data • Articles where participants have been asked about where they access support, advice and information to help them manage their substance use. • Any AAS-user information on support (information, advice, service or intervention) designed to support people who use muscle enhancing substances will be considered for inclusion. This could include support and information offered by local authorities, GPs, internet, peers, gyms and drugs services. Exclusion criteria: • Articles not in English • Articles not peer-reviewed • Studies on wider drugs prevention interventions • Specific medical interventions i.e. efficacy of treatments for side effects • Studies involving participants who compete professionally. • Prevention strategies • Studies that focus on prevention of AAS use amongst school athletes were excluded from this study, as the aims focused on education and the prevention of AAS use within the sporting context rather than focussing on and working with people who used AAS, with recreational motivations. • Any study that focuses on competitive sports/athletes or (high) school athletes

### **Primary outcome(s)**

Give the most important outcomes.

Qualitative and Quantitative studies: Outcomes related to insights, views, perspectives etc. of people who use AAS about on the support and information they require. Qualitative and Quantitative studies: Studies that identify which support and information AAS users' access.

Give information on timing and effect measures, as appropriate.

### **Secondary outcomes**

List any additional outcomes that will be addressed. If there are no secondary outcomes enter None. **None**

Give information on timing and effect measures, as appropriate.

### **Data extraction (selection and coding)**

Give the procedure for selecting studies for the review and extracting data, including the number of researchers involved and how discrepancies will be resolved. List the data to be extracted. Data will be extracted from articles included in the review into a pre-designed form which will be piloted and amended as appropriate. The initial data extraction will be the same for all selected papers which will gather the demographic information from the paper as well as research design.

### **Risk of bias (quality) assessment**

State whether and how risk of bias will be assessed, how the quality of individual studies will be assessed, and whether and how this will influence the planned synthesis.

The pre-designed extraction form will be reviewed by EvT. The first researcher (OH) will screen articles for eligibility based on their title and abstracts to exclude articles outside the scope of this systematic review; full text articles will be sourced if there is any uncertainty. SK undertook a 10% review of articles screened out by title and a 20% of those screened out by abstract. Potentially relevant articles will undergo a full text screen and 30% will be cross checked (10% by SK, 10% by MP and 10% by EvT) and consensus will be sought where there is ambiguity. The first researcher (OH) will then extract the data with MP, SK and EvT independently checking 30% of the extraction forms for accuracy. Disagreements which may arise will be resolved by discussion and a third opinion will be sought from an independent researcher where there is discrepancy. The quality of the selected papers will be reviewed using the relevant CASP (Critical Appraisal Skills Programme) checklist.

### **Strategy for data synthesis**

Give the planned general approach to be used, for example whether the data to be used will be

aggregate or at the level of individual participants, and whether a quantitative or narrative (descriptive) synthesis is planned. Where appropriate a brief outline of analytic approach should be given.

The results of data extraction and quality assessment will be presented in structured tables and as a narrative summary. Thematic analysis will be used to synthesise the data from any qualitative studies and where possible identifying high order themes to offer a summary of findings. Due to the high possibility that there will be a lack of heterogeneity between the studies a narrative synthesis will be carried out of the quantitative studies. If possible, the findings from both the qualitative and quantitative analysis will then be synthesised to give an overall picture for a picture of how the current support available matches the wishes of people who use AAS.

#### **Analysis of subgroups or subsets**

Give any planned exploration of subgroups or subsets within the review. 'None planned' is a valid response if no subgroup analyses are planned.

None planned

#### **Review general information**

##### **Type and method of review**

Select the type of review and the review method from the drop down list. **Systematic review**

##### **General interest**

**Language** Select the language(s) in which the review is being written and will be made available, from the drop down list. Use the control key to select more than one language.

English

Will a summary/abstract be made available in English? **Yes**

##### **Country**

Select the country in which the review is being carried out from the drop down list. For multinational collaborations select all the countries involved. Use the control key to select more than one country.

United Kingdom

##### **Other registration details**

Give the name of any organisation where the systematic review title or protocol is registered together with any unique identification number assigned. If extracted data will be stored and made available through a repository such as the Systematic Review Data Repository (SRDR), details and a link should be included here.

##### **Reference and/or URL for published protocol**

Give the citation for the published protocol, if there is one.

Give the link to the published protocol, if there is one. This may be to an external site or to a protocol deposited with CRD in pdf format.

I give permission for this file to be made publicly available **Yes**

##### **Dissemination plans**

Give brief details of plans for communicating essential messages from the review to the appropriate audiences. **The review will be submitted to an academic journal on completion**

Do you intend to publish the review on completion? **Yes**

##### **Keywords**

Give words or phrases that best describe the review. (One word per box, create a new box for each term) **Anabolic Androgenic Steroid Use, support, information, advice. Substance-related disorders**

##### **Details of any existing review of the same topic by the same authors**

Give details of earlier versions of the systematic review if an update of an existing review is being registered, including full bibliographic reference if possible.

**Current review status**

Review status should be updated when the review is completed and when it is published. **Ongoing**

**Any additional information**

Provide any further information the review team consider relevant to the registration of the review.

**Details of final report/publication(s)** This field should be left empty until details of the completed review are available. Give the full citation for the final report or publication of the systematic review.

Give the URL where available

## Appendix 8 BU Ethics Checklist



# Research Ethics Checklist

Reference Id	16649
Status	Approved
Date Approved	31/07/2017

### Researcher Details

Name	Orlanda Harvey
School	Health and Social Care
Status	Postgraduate Research (MRes, MPhil, PhD, DProf, DEng)
Course	Postgraduate Research - HSC
Have you received external funding to support this research project?	No

### Project Details

Title	A Mixed Methods Study into Anabolic Androgenic Steroid (AAS) Use – The voice of the recreational AAS user
Proposed Start Date of Data Collection	20/08/2017
Proposed End Date of Project	20/11/2017
Original Supervisor	Margarete Parrish
Approver	Research Ethics Panel

Summary - no more than 500 words (including detail on background methodology, sample, outcomes, etc.)

In summary, this project will collect data on motivations, experiences and support accessed by those who use anabolic androgenic steroid (AAS). As a result of the participation, the research aims to bring the voice of those who use AAS to the fore. It seeks to achieve this by gaining AAS users perspectives on the type of support and advice that they feel would be most helpful and could identify more effective communication strategies for discussing the risks of use, with the potential for providing new information on possible recommendations for ways to support those who use AAS. The participants will be adults who use AAS. Aims: 1.To understand AAS use from a user's perspective of their experiences of their use for predominantly recreational purposes 2.To understand and explain what AAS users perceive as the barriers to and opportunities for accessing support services and identify effective pathways to share information on the risks associated with using AAS, especially amongst recreational users and those vulnerable to starting use.3.To consider the practice implications for social work and related inter-professional teams working with services that offer support to people using AAS or to those working with people who may be using AAS. Method: The Study will have 3 phases: A systematic literature review, a questionnaire and then a series of semi-structured interviews. This submission seeks ethical approval for Phase 1 and 2 of the project. Phase 1: A systematic literature review investigating the support for AAS users. Phase 2: The first element of the primary research is to use a questionnaire with people who use AAS to explore their AAS use and identify the types of support they access. The questionnaire has been designed on the basis of feedback that has been sought from service users by the Poole Addiction Team Harm minimisation lead, through informal anonymous conversations. The draft questionnaire has been reviewed through Supervision and feedback from the PACT Harm Minimisation Team lead, and by a number of professionals who have knowledge of AAS users, social work or questionnaire design and revised on the basis of the feedback gained. The intention is to pilot this with female AAS users via local needle exchange service. After the pilot, the questionnaire will be distributed to participants (in electronic BOS survey and/or paper version) via online forums, social media, needle exchange services and through adverts in public areas. A participation information page forms part of the online questionnaire (Document attached AAS Questionnaire final). The Participants: This project entails working with adults (age 18+) who are using AAS in ways that are not prescribed. The participants will be self-identified AAS Users from online forums, social media, needle exchange clients and the general public who choose to access the online questionnaire, or complete a paper-based version Outcomes: The project aims to contribute both to the existing knowledge base and literature, especially in the field of social work. The study will form the basis of a PhD thesis, along with predictable scholarly publications.

## External Ethics Review

Does your research require external review through the NHS National Research Ethics Service (NRES) or through another external Ethics Committee?	No
--	----

## Research Literature

Is your research solely literature based?	No
---	----

## Human Participants

Will your research project involve interaction with human participants as primary sources of data (e.g. interview, observation, original survey)?	Yes
Does your research specifically involve participants who are considered vulnerable (i.e. children, those with cognitive impairment, those in unequal relationships—such as your own students, prison inmates, etc.)?	No

Does the study involve participants age 16 or over who are unable to give informed consent (i.e. people with learning disabilities)? NOTE: All research that falls under the auspices of the Mental Capacity Act 2005 must be reviewed by NHS NRES.	No
Will the study require the co-operation of a gatekeeper for initial access to the groups or individuals to be recruited? (i.e. students at school, members of self-help group, residents of Nursing home?)	Yes
Will it be necessary for participants to take part in your study without their knowledge and consent at the time (i.e. covert observation of people in non-public places)?	No
Will the study involve discussion of sensitive topics (i.e. sexual activity, drug use, criminal activity)?	Yes

Are drugs, placebos or other substances (i.e. food substances, vitamins) to be administered to the study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind?	No
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Will tissue samples (including blood) be obtained from participants? Note: If the answer to this question is 'yes' you will need to be aware of obligations under the Human Tissue Act 2004.	No
--	----

Could your research induce psychological stress or anxiety, cause harm or have negative consequences for the participant or researcher (beyond the risks encountered in normal life)?	No
Will your research involve prolonged or repetitive testing?	No
Will the research involve the collection of audio materials?	No
Will your research involve the collection of photographic or video materials?	No
Will financial or other inducements (other than reasonable expenses and compensation for time) be offered to participants?	No

Please explain below why your research project involves the above mentioned criteria (be sure to explain why the sensitive criterion is essential to your project's success). Give a summary of the ethical issues and any action that will be taken to address these. Explain how you will obtain informed consent (and from whom) and how you will inform the participant(s) about the research project (i.e. participant information sheet). A sample consent form and participant information sheet can be found on the Research Ethics website.

Some of the effects of AAS use can be considered unpleasant and cover sensitive topics e.g. loss of libido (Jones et al. 2011). AAS use can also cause changes in behaviour or mood (Piacentino et al. 2015) which may be difficult to express. It is important for participants to be able to express their concerns about these areas, as they could be where they would appreciate support. Understanding AAS users' experiences of use could help researchers and professionals identify pathways and mechanisms to support AAS users seeking support and help to educate young people who may be vulnerable to starting to use AAS. The questionnaire will provide a link to support information and also be explicit that participants are not obliged to complete the questionnaire and can stop at any time. Vulnerability: The Safeguarding Vulnerable Groups Act 2006 defines adults who are subject to regulated activity as vulnerable. There is the potential that some of the participants may meet the criteria under the Act, but this could be for many reasons and not necessarily relate to their AAS use. The Care Act 2014 classes people with problematic substance use as vulnerable adults if it affects their ability to manage everyday living (Social Care Institute for Excellence, 2015). Discussion with Andrew Teale (PACT) highlight that the needle exchange clients do not see AAS use as impacting on their everyday living nor do they see their use as problematic (Teale 2016). AAS users are unlikely to be classed as vulnerable under the Care Act 2014 criteria purely as a result of using AAS. However, using AAS does have some significant side effects and as such information on accessing support will be provided. One way of gaining access to this potentially secretive target population is via local substance use services. In Bournemouth and Poole these services are provided by local authorities or charities. I have had contact with the Poole Addiction Community Team (PACT) Harm minimisation lead (Teale 2017) and the manager of PACT, who have both given their support to this project and would be willing to share this questionnaire with any service users. These particular service users use the needle exchange service anonymously and questionnaires would be handed out by any professionals in line with the local services guidelines, to ensure service users do not feel coerced into completing the questionnaire. Service users will be given the opportunity to take paper-based questionnaires away with them and return directly to the research in envelopes provided should they choose to participate. No records will be kept as to who has and has not been given and/or completed the questionnaires. With the online surveys, participants are completely free to choose whether to participate. Emotional Impact: Because completing questionnaires may raise emotional material for some people (Labbitt et al. 2013), participants will be informed that they can stop completing the questionnaire, and information will be provided on support services. (References in attached Research Summary).

## Final Review

<p><b>Will you have access to personal data that allows you to identify individuals OR access to confidential corporate or company data (that is not covered by confidentiality terms within an agreement or by a separate confidentiality agreement)?</b></p>	<p>Yes</p>
--	------------

**Please explain below why your research requires the collection of personal data. Describe how you will anonymize the personal data (if applicable). Describe how you will collect, manage and store the personal data (taking into consideration the Data Protection Act and the 8 Data Protection Principles). Explain how you will obtain informed consent (and from whom) and how you will inform the participant about the research project (i.e. participant information sheet).**

Personal data (in this case participant contact details) will only be collected from those participants who request a summary of results or those who express an interest in taking part in further research (qualitative interviews), which is Phase 3 of the project. Further Ethics approval will be sought for phase 3. For those participants wishing for a summary of the research, the Participants Information Sheet will outline the project. The questionnaire will offer the opportunity for participants to receive a summary of the outcomes and include a statement explaining that they need to share an email address to do this and that this could mean that a level of anonymity would be lost. However it will be made explicit that this will not be shared out for other purposes than sending the summary and will not be linked to the data collected. For those participants wishing to take part in further research the Participants Information Sheet will outline the project and mention this opportunity. At the end of the questionnaire, participants will be offered the opportunity to take part in further research and also give them the option to choose the type of interview they prefer. Participants will also be asked to leave their preferred contact name and method of contacting them. The questionnaire will include a statement explaining that this could mean that a level of anonymity would be lost, but that this would not be used in any publications for other purposes than contacting them to take part on the qualitative research where the use of pseudonyms will apply. Data: Data will be anonymised and the Bristol Online Survey Tool does not collect IP/computer data). All the information that is collected during the course of the research will be kept strictly anonymous and confidential, both password protected and in a locked environment (for paper copies).

<b>Will your research involve experimentation on any of the following: animals, animal tissue, genetically modified organisms?</b>	No
<b>Will your research take place outside the UK (including any and all stages of research: collection, storage, analysis, etc.)?</b>	No

**Please use the below text box to highlight any other ethical concerns or risks that may arise during your research that have not been covered in this form.**

Legal: This project entails working with adults (age 18+) who are using AAS in ways that are not prescribed. While AAS are not illegal to possess and consume for personal use, complex ethical concerns necessarily arise when interviewing people engaged in AAS use and it is illegal to purchase or sell in the UK and it is classified as a Class C Substance. Consequently, sources of AAS are not among the questions being asked and participants' anonymity will be protected through the use of anonymous questionnaires. Safety of interviewers and participants: There are no foreseen risks to participants or the researcher from the online-questionnaires. The paper-based questionnaires will be distributed and participants asked to complete them in their own time and return them in the envelopes provided, therefore the risk to professionals handing out the questionnaires and to participants is minimal. DBS is not required for this project, however the researcher has undergone a recent DBS check as a qualified Social Worker.



## Appendix 9      Social Work and AAS article

**Harvey, O., 2019. 'Shades of Grey': The Ethics of Social Work Practice in Relation to Un-prescribed Anabolic Androgenic Steroid Use. *Practice: Social Work in Action*, 31 (4), 239-258.**

See: <https://eprints.bournemouth.ac.uk/31664/>

## Appendix 10 Participant information sheet and research questionnaire

My name is Orlanda Harvey and I am seeking your help in relation to a research study on why people choose to use Anabolic Androgenic Steroids (AAS)

I am a researcher from Bournemouth University and I am conducting research on this subject, so that we can better understand the reasons why people use AAS, as well as what sorts of information and support AAS users currently have, or wish they had.

All details and information collected through the research will be completely confidential and anonymised, and no individual will be identifiable. Before you decide whether to answer the questionnaire, please take time to read the following information and discuss with others, should you wish. You can also contact me directly should you have any questions.

**Participants:** To take part in the study, **you must be 18 years or older**, and use, or have recently used, AAS (within the last 6 months).

**Purpose:** The study aims to explore people's first-hand experiences of using AAS, compare these experiences with information available from academic studies, and understand what types of support people who use AAS would like. This will help to identify and understand the types of support and information that people who use AAS are most likely to want and use.

The questionnaire will take approximately 15 minutes to complete, as it covers a wide range of issues. The questionnaire features several questions where the answers are 'free text' boxes, as we would like to give you the opportunity to share your thoughts and opinions. Please be as open and detailed as you can and would like when answering any question. The more honest you are the more helpful and meaningful the data will be.

**Benefits:** Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will lead to a broader understanding of the support that AAS users would value. Being involved in the research does mean giving up a little time to fill in the questionnaire. However, you do not have to give any information you do not wish to, and no questions relate to the purchase of AAS.

**Confidentiality:** Only I, and my supervisory team, will be able to access the study data. Anonymised data collected in this study may be used in future reports, such as academic journals and conference presentations. However, all details are anonymous and no individual will be identifiable through such publication of data. For the protection of yourself and the researchers conducting this study, this research has been reviewed and approved in line with Bournemouth University's research ethics code of practice.

**Withdrawal:** You can withdraw at any time. Please note that to withdraw you would only need to close the browser page (if completing online) or not return the questionnaire to the researcher. However, once you have completed and submitted the questionnaire, we are not able to remove your anonymised responses from the study.

Thank you for taking the time to read this. **If you have any questions regarding this research, please feel free to contact me using the information below.** There is also an opportunity at the end of the questionnaire for you to consider taking part in further research. **Please return in a sealed envelope to:** O Harvey: Rm 202, Royal London House,

Christchurch Road, Bournemouth. BH1 3LT (or you can email to:  
harveyo@bournemouth.ac.uk)

Your participation in this research study will make a valuable contribution to our understanding of AAS use and the potential for future support for AAS users, so I do hope that you decide to take part.

**Contact Information:** Researcher: Orlanda Harvey: harveyo@bournemouth.ac.uk; tel: 01202 967435

Supervisor: Dr M. Parrish, Email:  
mparrish@bournemouth.ac.uk

If you have a concern about any aspect of this study and wish to complain, please contact: Prof V. Hundley, Deputy Dean for Research & Professional Practice: Faculty of Health and Social Care, Bournemouth University by email to researchgovernance@bournemouth.ac.uk

**By completing this questionnaire, it is assumed that you have given full informed consent.**

<b>1. At what age did you start using AAS?</b>	
<b>2. For how many years have you used AAS?</b>	
<b>3. How many hours on average do you exercise /workout a day?</b>	

	<i>(Please tick)</i>	
	Yes	No
<b>4. Do you take part in competitive sports?</b>		
<b>5. Do you use other supplements and drugs in conjunction with using AAS?</b>		
5a. If yes, what do you use them for?		

<b>6. Do you use Human Growth Hormone (HGH)?</b> <i>Please tick one box only</i>		
Yes	No, and never intend to	No, but I am considering using HGH

<b>7. How would you best describe your AAS use pattern?</b> <i>Please tick one box only</i>			
Use in 8-12 week cycles, with off-cycle, or post-cycle therapy	Continual low-level use with topping up when desired	Other	If you selected Other, please describe:

<b>8. It is suggested that there are a wide range of reasons for using AAS, and many people have more than one. Please tick <i>all</i> of the reasons that are relevant to your use</b>			
For my Job		Improve my appearance	Enhance my muscles or strength
Become happier		Increase my aggression	Increase my sexual attractiveness
For personal security		Increase my confidence	A celebrity I respect uses AAS
For competition		In preparation for crime	Recommended by my coach/trainer
Prevent injury		Increase my sex drive	Conceal the use of other illicit drugs
Overcome depression		Help me stop being bullied	An elite sportsperson I respect uses AAS
Curiosity		Impress my friends	Positive results I achieve from using AAS
Become brave		Improve endurance or stamina	Frustration, I've not achieved the desired results from exercise
Lose weight		My friends use AAS	My work colleagues use AAS
Transitioning gender		A family member uses AAS	Positive results that others achieved who used AAS
Improve fitness		My partner uses AAS	Other
If you selected Other, please describe:			
<b>9. Who (if anyone) has helped you to decide to start using AAS to achieve your goals? Tick <i>all</i> that apply</b>			
A fellow gym user		A brother or sister (or step)	Parent or step-parent
Another family member		A close friend	My personal trainer / coach
Purely my own decision		Other	My Partner
If you selected Other, please describe:			

<b>10. What do you see as the benefits to you of using AAS?</b>		
<b>11. What, if any, do you see as the risks to you of using AAS?</b>		
<b>12. Do you see your AAS use as putting others at risk?</b> <i>(Please tick one only)</i>		
Yes	Maybe	No
<b>12a. Please describe in what ways (if any) your use of using AAS puts others at</b>		

risk

<b>It is suggested that a wide range of unintended side effects result from using AAS, and people's experiences of these are varied.</b>	
<b>13. Please list any positive side effects you have experienced:</b>	
<b>14. Please list any negative or unwanted side effects you have experienced:</b>	
<b>15. Have you ever sought help for any side effects of AAS use?</b> <i>(Please tick one only)</i>	
Yes	No
If yes, please answer the following questions... <i>(if not please go to question 16)</i>	
<b>15a. What did you seek help for?</b>	
<b>15b. Where did you seek help from?</b>	
<b>15c. Was the help effective?</b>	Yes   No   (if no, why not)
<b>15d. Did you tell the person(s) you sought help from that you used AAS?</b>	Yes   No   (if no, why not?)
<b>15e. Did you feel that the person(s) you sought treatment from were helpful?</b>	Yes   No   (If yes, what did they do that was helpful?)

<b>16. Do you inject AAS?</b> <i>(Please tick one)</i>	<b>Yes:</b>	<b>No:</b>
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If yes, please answer question 17, if no please go to question 18:

<b>17. If yes, where do you get your needles from?</b> <b>Please tick <i>all</i> of the reasons that are relevant to your use?</b>					
Needle exchange	<input type="checkbox"/>	Pharmacy	<input type="checkbox"/>	My doctor	<input type="checkbox"/>
Friends	<input type="checkbox"/>	Family	<input type="checkbox"/>	Work colleagues	<input type="checkbox"/>
Gym goers	<input type="checkbox"/>	AAS users	<input type="checkbox"/>	Websites that sell AAS	<input type="checkbox"/>
AAS supplier	<input type="checkbox"/>	My partner	<input type="checkbox"/>	Other	<input type="checkbox"/>
If you selected Other, please specify:					
<b>17a. Who taught you how to inject AAS?</b>					

<b>18. What type of support do you feel should be available for people using AAS?</b>	
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Please complete the grid: Please tick *all* those that are applicable to you.

	19. Where do you get your advice from concerning the most effective types of AAS to use?	20. Who do you trust to give you advice on AAS?	21. Where do you get your advice from concerning the risks of AAS use?	22. Where do you get your advice from concerning cycling and stacking of AAS?	23. Who, if anyone do you discuss your AAS use with?
Needle Exchange	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pharmacy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My Doctor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My partner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work colleagues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gym goers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AAS users	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Website: Health/ Government sponsored	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Websites selling AAS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AAS-user forums	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AAS users You-Tube	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

videos					
AAS supplier					
Other					
If other: please state					

<b>24. Do you feel you could stop using AAS at any time if you chose to do so? (Please tick)</b>	<b>Yes</b>	<b>No</b>
<b>24a. If no, why not?</b>		
<b>25. Would you consider accessing any type of professional support that would assist you to stop using AAS? (Please tick)</b>	<b>Yes</b>	<b>No</b>
<b>25a. If yes, what types of support would you consider accessing?</b>		

<b>26. Do you ever get mood swings that you relate directly to your AAS use? (Please tick one)</b>					
Yes			No		
<b>26a. If you selected yes, please describe</b>					
<b>27. Do you ever experience changes in your behaviour that you link directly to your AAS use? (Please tick one)</b>					
Yes			No		
<b>27a. If you selected yes, please describe</b>					
<b>28. It is suggested that there may be a range of positive emotions (feelings) from using AAS, and that people's experiences of these are varied: Please tick the ones (if any) that you have experienced?</b>					
	Yes	No		Yes	No
Increase in my libido (desire to have sex)			Feeling strong		
Feeling unconquerable			Feeling happier		
Feeling high			Feeling proud of my body		
Increase in confidence			Feeling brave		
Feeling pumped			Euphoria		
If you have other positive feelings, please describe them here					

<p><b>29. It is suggested that there may be a range of negative emotions (feelings) from using AAS, and that people's experiences of these are varied. Please consider each of the ones listed below and tick the box that is most applicable to your AAS use experience.</b></p>					
	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
My irritability has increased					
I have become quick to anger					
My jealousy (in relationships) has increased					
I have hit someone					
My libido (sex drive) has increased					
I lose my temper more often					
My aggressive feelings have increased					
I get into fights more often					
I am more tired					
I have some loss of sexual function					
If you have other negative feelings, please add them here					
<b>29a. If you have experienced any of these feelings, please describe how you manage them?</b>					
<p><b>30. Some suggest that there are a range of emotions (feelings) from stopping using AAS (or in post-cycle therapy), and that people's experiences of these are varied. Please tick the ones (if any) that you have experienced?</b></p>					
	Yes	No		Yes	No
Low mood			Become anxious		
Unhappiness			Relief		
Reduction in my confidence			Fear		
If you have other feelings, please add them here					
<b>30a. If you have experienced any of these feelings, please describe how you manage them?</b>					
<p><b>31. Have you ever acted on any feelings of aggression because of your AAS use? (Please tick one)</b></p>					
Yes			No		
31a. If you selected yes, please describe					
<p><b>32. Do you believe that there should be support for the emotional impact of using AAS? (Please tick one)</b></p>					
Yes	No	Maybe	Don't know		
32a. If yes, what support do you think would be helpful?					



<b>33. Do you believe it is possible to become addicted to using AAS? (Please tick one)</b>		
Yes	No	Other
If you selected Other, please explain		
<b>34. Since using AAS, which of the following statements is true for you? (Please tick one)</b>		
My quality of life has improved		
My quality of life has stayed the same		
My quality of life has got worse		

35. If you have any other comments that you would like to make about your own AAS use, or AAS use in general, please add them here:

**Demographic Information:** And finally, to help me clarify your answers statistically for the purposes of the research, there are a few questions about yourself

<b>In which country do you live?</b>	
<b>For UK residents, please state which county in the UK</b>	
<b>How old are you (in years)?</b>	
<b>To which ethnic group do you belong?</b>	
<b>With what gender do you identify?</b>	

<b>Please tick which of the following you consider yourself to be?</b>					
Recreational exerciser		Competitive bodybuilder		Personal trainer	
Competitive weightlifter		Competitive athlete		Other	
If you selected Other, please specify					

<b>Are you? (Please tick one)</b>					
A student		Unemployed		Self-employed	
Retired		Employed		Other	
If you selected Other, please specify					
<b>Which is the highest level of education do you have? (Please tick one)</b>					
Primary Education		Secondary Education		College or University	
<b>What is your Sexual Orientation? (Please tick one)</b>					
Straight/Heterosexual		Gay		Prefer to self-describe	
Self-description:					

I confirm that I am 18 years of age or older - please circle:      Yes      No  
AAS Use: I currently use AAS (or have used within the last 6 months) – please circle:      Yes      No

### Opportunity to take part in further research

<b>Would you be interested in taking part in a more in-depth follow up (anonymous) interview about your experiences of AAS use? (Please tick one)</b>	
Yes	No
<b>If yes, which would be your preferred method for such an interview? (Please tick all that apply)</b>	
In person: one to one interview (Bournemouth and Poole area)	
In person: as part of a focus group (Bournemouth and Poole area)	
Via live chat (online)	
On Skype	
On the telephone	
No preference	
Other: please specify	
If you are interested in being invited to take part in an interview, please leave your contact details: <b>Name you would prefer to be known by:</b> <b>Contact details:</b> (Please give your preferred contact details e.g. phone number/email address/twitter) <b>By leaving your contact details you are expressing an interest in being interviewed and are not committed to doing so.</b>	

<b>Would you like a summary of the findings? (Please tick one)</b>	
Yes	No
If yes, please enter your email address here:	

Leaving your contact information will not affect your confidentiality as any contact information will only be used for the purpose of contacting you to arrange an interview by the named researcher (Orlanda Harvey) and will not be recorded as part of the research data. All personal data relating to this study will be held for 30 months from the date of publication of the research. BU will hold the information we collect about you in hard copy in a secure location and on a BU password protected secure network where held electronically. Except where it has been anonymised, we will restrict access to your personal data to those individuals who have a legitimate reason to access it for the purpose or purposes for which it is held by us.

**Thank you very much for taking the time to complete the questionnaire.**

Should you have any further questions, please do not hesitate to contact me on:

Orlanda Harvey: harveyo@bournemouth.ac.uk - Twitter: @arrowandthesong

Should you wish to find out further information on AAS use, the following website has a wealth of useful information, advice and support:

<http://ipedinfor.co.uk/contact.html> and this one has more information on the topic: <https://humanenhancementdrugs.com/>

Confidentiality Confirmation: The study data will only be accessible by researcher and her supervisory team. Anonymised data collected in this study may be used in future reports such as academic journal and conference presentations. No individual will be identifiable through such publication of data.

## Appendix 11 Questionnaire design: References for options used in the questionnaire

Survey Question Data: Options	References/Sources
<p><b>Motivations:</b> Occupational, improved appearance, aggression, enhanced muscle or strength, personal security, psychological well-being (including boosting self-esteem or confidence) or satisfaction, sexual attraction, physiological recovery or injury prevention, overcoming depression, curiosity, trainers' approval, family influence, media influence, peer influence, use of AAS as a sport or social norm and for sporting or competitive activities frustration as not achieved the desired results from exercise. Because my friends use AAS, Because my work colleagues use AAS, Because a family member uses AAS to get fitter, to improve endurance or stamina, in preparation for crime, concealing concomitant substance use and becoming brave. increase in sex drive and to lose fat were also motivations for use</p>	<p>(Petrocelli et al. 2008, Petersson et al. 2010, Sagoe, Molde, et al. 2014, McVeigh et al. 2015, Hanley Santos and Coomber 2017)</p>
<p><b>Support Provision:</b> Needle Exchange, Pharmacy, My Doctor, My partner, Friends, Family, Work colleagues, Gym goers, AAS users, Website: Health / Government sponsored, Websites selling AAS, AAS-user forums, AAS users, You-Tube videos, AAS supplier</p>	<p>(Kimergård and McVeigh 2014b, 2014a, Dunn et al. 2016, Griffiths, Henshaw, et al. 2016, Rowe et al. 2016, Hanley Santos and Coomber 2017, Tighe et al. 2017, Zahnow et al. 2017, Greenway and Price 2018)</p>
<p><b>Positive Effects:</b> Increase in my libido (desire to have sex), Feeling strong, Feeling unconquerable, Feeling happier, Feeling high, Feeling proud of my body, Increase in confidence, Feeling brave, Feeling pumped, Euphoria</p>	<p>(Petrocelli et al. 2008, Petersson et al. 2010, Sagoe, Andreassen, et al. 2014, Greenway and Price 2018)</p>
<p><b>Negative Effects:</b> Increase irritability, quick to anger, increase in jealousy (in relationships), hit someone, increase in libido (sex drive), lose my temper more often, increase in aggressive feelings, get into fights more often, increase in tiredness, some loss of sexual function</p>	<p>(Petrocelli et al. 2008, Skårberg et al. 2008, Petersson et al. 2010, McVeigh et al. 2015, Greenway and Price 2018)</p>
<p><b>PCT side-effects:</b> Low mood, Become anxious, Unhappiness, Relief, Reduction in my confidence, Fear</p>	<p>(Piacentino et al. 2015, Griffiths, Henshaw, et al. 2016, Greenway and Price 2018)</p>
<p><b>Type of user:</b> Recreational exerciser, Competitive bodybuilder, Personal trainer, Competitive weightlifter, Competitive athlete</p>	<p>(Ager 2015)</p>
<p><b>Quality of life:</b> Since using AAS, which of the following statements is true for you? (Please tick one) My quality of life has improved My quality of life has stayed the same My quality of life has got worse</p>	<p>Adapted from: 17. How has your lifestyle or quality of life changed since you have been using steroids? (Ager 2015)</p>

## Appendix 12 Summary of distribution contacts for questionnaire

### UK Services

	Service		Service
1	Aberdeen Steroid Clinic	14	NECA STEP Harm Reduction Service
2	Bolton Harm Reduction Service	15	One Recovery Staffordshire: addiction Dependency Solutions
3	Bournemouth Addaction	16	PACT NOW EDAS
4	Bristol Drugs Project (BDP)	17	Project 6
5	Bucks One recovery: The OASIS Partnership	18	Smart Muscle <a href="#">Turning Point</a>
6	CHOICES Chelmsford	19	Somerset Drug & Alcohol Service (SDAS)
7	DHI Warmley	20	Southampton Drug & Alcohol Recovery Service (SDARS)
8	Guernsey Drug Concern	21	The Juice Bar
9	Harbour Community Access Safer Injecting Service	22	Turning point
10	Harm Minimisation at the Pump Clinic	23	WDP ( <a href="http://www.wdp.org.uk">www.wdp.org.uk</a> )
11	IRiS Sandwell	24	North Westminster Drug & Alcohol Service
12	KIKIT Pathways to Recovery	25	Weymouth and Dorset
13	Middlesbrough	26	Welsh Centre for Action on Dependency and Addiction

### American, Canadian, Ireland and Australian Support Services - Offered help

Organisation
The Exchange Anchor Point, AK <a href="http://homernews.com/homer-news/2017-02-23/grant-helps-make-syringe-exchange-program-viable">http://homernews.com/homer-news/2017-02-23/grant-helps-make-syringe-exchange-program-viable</a>
Generations Project Alameda, CA   <i>Tri City Health Center</i> - <a href="http://www.tri-cityhealth.org/">http://www.tri-cityhealth.org/</a>
ACONhealth - <a href="https://www.acon.org.au/about-acon/#-acon-sydney">https://www.acon.org.au/about-acon/#-acon-sydney</a>
<a href="#">Drugs Outreach Worker Kilkenny</a>

## Summary of overall distribution of questionnaire to targeted populations

Communication Tool	Targeted Populations	Number Contacted	Number of Shares Known*	Other known sharing of information or acknowledgement of post
<b>Email or Phone</b>	UK Support Services for people who use recreational drugs	76	26	
<b>Email</b>	Overseas Organisations (USA, Canada, Ireland, Australia, New Zealand) Support Services for people who use recreational drugs	72	4	
<b>Email</b>	UK Gyms (Pro muscle)	46	1	
<b>Email</b>	Muscle Forum Admins	32		5 allowed Forum posts: (see Appendix XX for interaction example)
<b>In person</b>	Shops selling Supplements	2	2	
<b>Via personal friends with membership of pro-muscle gyms</b>	Local gyms:	2	2	
<b>LinkedIn</b>	Personal contacts messaged	213	40	
<b>Facebook</b>	Personal contacts directly messaged	117	29	
<b>Facebook</b>	Posted on personal FB page			7 people re-posted
<b>Facebook</b>	Messaged closed AAS / Testosterone groups to see if they would share		2	
<b>Twitter</b>	People directly tweeted to using @.... and asking them to share questionnaire link	306		37 (retweets)
<b>Twitter</b>	Unsolicited retweets by Twitter users			23
<b>Instagram</b>	<b>Instagram Users</b>			98 likes in total for posts, and 65 followers on the basis of the posts.
<b>Youtube</b>	<b>Presentation and link to study posted</b>			22 views

\*it is possible people shared the survey without confirming or replying that they were sharing it

## Appendix 13 Summary of promotion and distribution channels for the questionnaire

### Business card flyer

This image is the business card sized flyer that was distributed to NSPs and local shops.

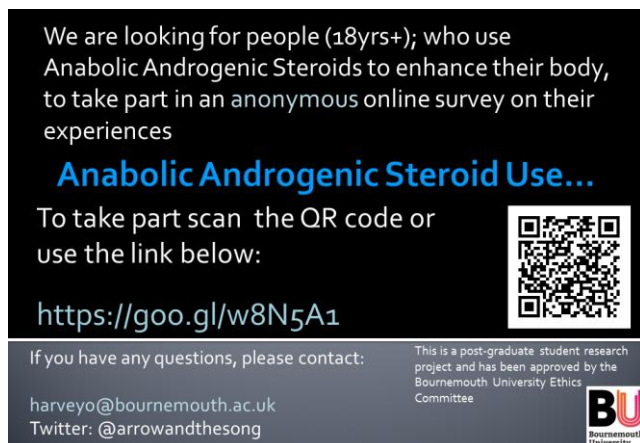


Figure 0-1 Flyer

### Social media platforms: Twitter and Instagram

Figure 0-2 is the tweet that was pinned to the researcher's Twitter profile and shared via Instagram, FB and Twitter. A number of hashtags were used (Table 0-1) and Google translate was used to translate the post into a number of languages to share on twitter (Table 0-2). A presentation as created for Youtube to promote the study (Figure 0-3). It was also posted on Reddit (Figure 0-4).

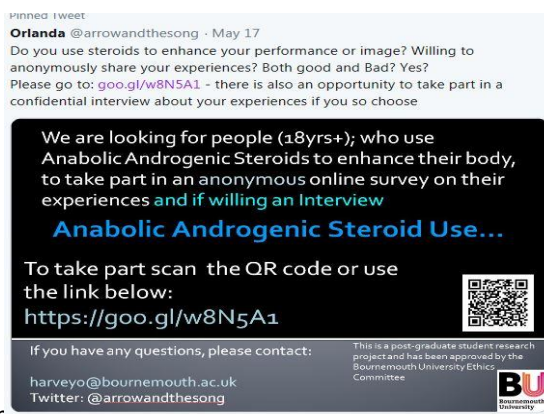


Figure 0-2 Social media promotion

Table 0-1 Hashtags used on Twitter and Instagram

Hashtags Used on Twitter
<p>#anabola steroider #muskel #spieren #músculos #esteroides #bodybuilding                      #steroiden #culturismo #steroidy #mięśnie #kulturystyka #lamusculation #stéroïdes                      #muscles #Muskeln #бодибилдинг #стероиды #мышцы #músculos #esteróides                      #steroidi #Muscoli #lihakset #steroidit #kehonrakennus #筋 #ステロイド #steroidler                      #steroider #muskel #spieren #músculos #стероиды #мышцы #músculos #esteróides                      #steroidi #Muscoli #lihakset #steroidit #kehonrakennus #steroid anabolik                      #steroidanabolik #анабалічныястэроіды #bodybuilding #anabolskesteroider</p>
<p>#muscle #muscles #muscleworship #bodybuilder #bodybuilding #biceps #abs #pecs                      #posing #pumped #flex #steroids #shredded #ripped #physique #enhancement #roids                      #gym #actor #sculpting #roids #gains #harmmin #support #IPED #bodyimage                      #enhancement #muscleworship #beard #abs #posing #flexing</p>
Instagram: Instagram hashtags
<p>#aesthetic #ripped #roids #gym #gymlife #steroids #muscle #powerbodybuilding                      #strength #physique #fitness #actor #power #fitfam #sculpting #workout #gymrat                      #gains #bodybuilding #bodybeautiful #workout #instafit Use Anabolic steroids: Share                      your experiences: link in my Bio - <a href="https://goo.gl/w8N5A1">https://goo.gl/w8N5A1</a></p>

Table 0-2 Languages used for posts

Language: Tweet translated into via Google Translate	
Russian	Bulgarian
Spanish	Finnish
Polish	German
Lithuanian	Norwegian
Hungarian	Swedish
Greek	Icelandic
Danish	French

YouTube and Reddit

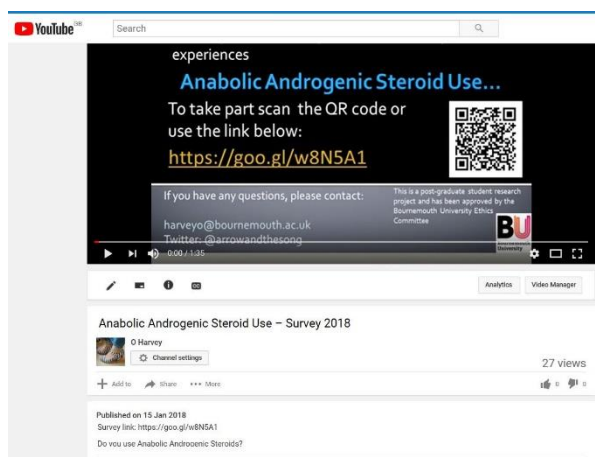


Figure 0-3 Screenshot of Youtube post

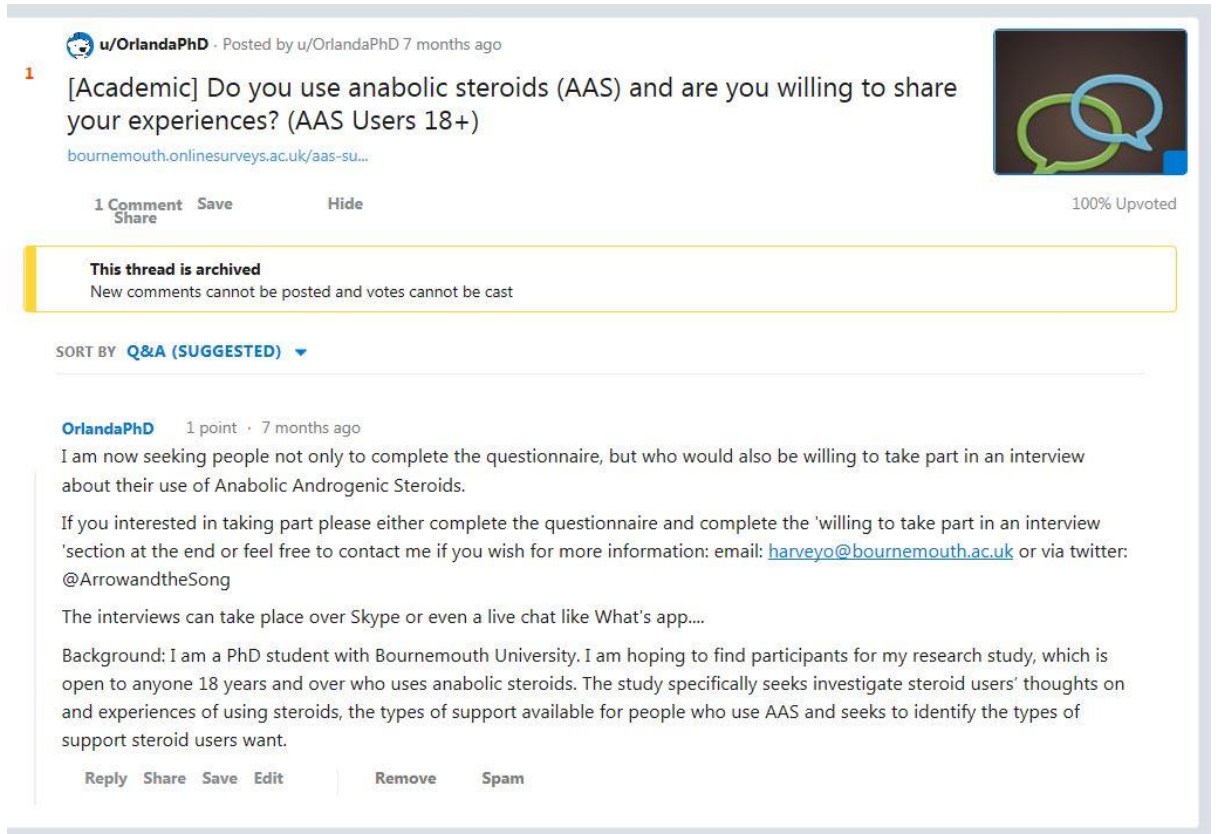


Figure 0-4 Screenshot of Reddit/forum request post

A formal request was emailed to ask if the study could be posted on muscle forums (Table 0-3) and Figure 0-7 is an example of one that was posted once permission was granted. This post was shared on the forums and posts did receive a few comments (Figures 0-5 and 0-6).

Table 0-3 Muscle Forums

<b>Muscle Forums:</b> – Agreed to allow Survey to be posted
UK-Muscle.co.uk
Tmuscle.co.uk
Muscle Talk <a href="https://www.muscletalk.co.uk/Testosterone-Other-Steroids-f10.aspx">https://www.muscletalk.co.uk/Testosterone-Other-Steroids-f10.aspx</a>
Forum.bodybuilding.nl
<a href="https://thinksteroids.com/community/threads/please-assist-aas-survey.134390001/">https://thinksteroids.com/community/threads/please-assist-aas-survey.134390001/</a>



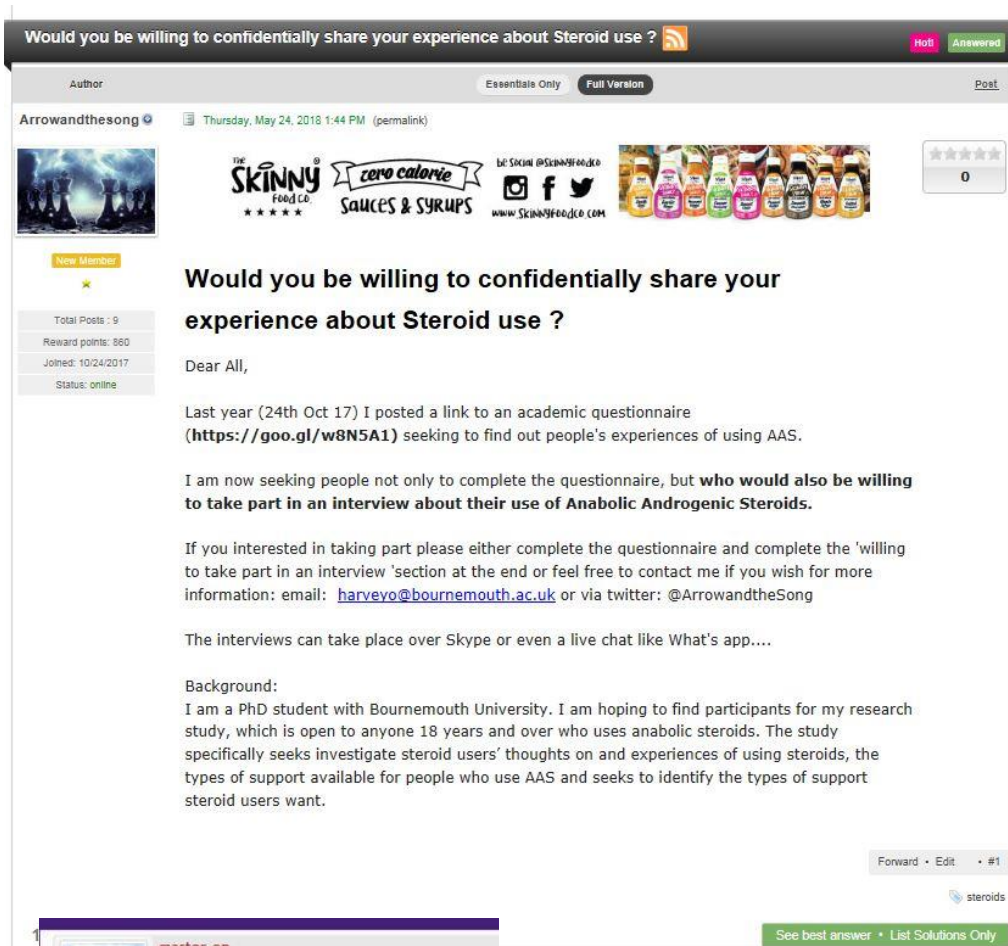


Figure 0-7 Screenshot 2 of forum post

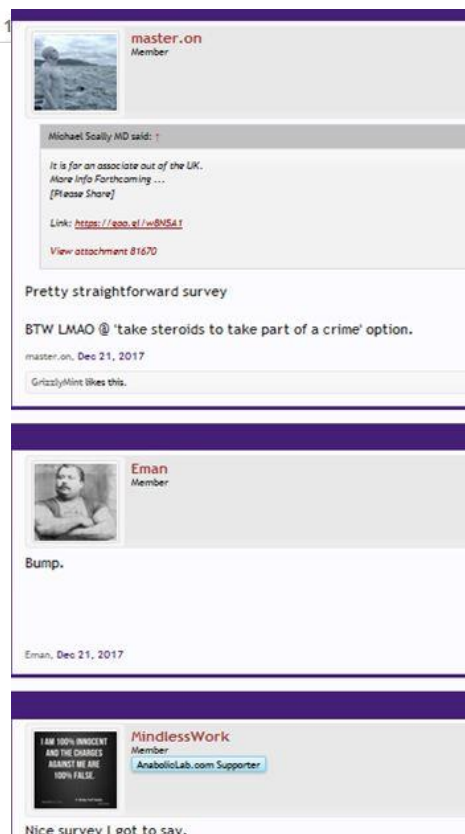


Figure 0-6 Screenshot 1 of forum interaction

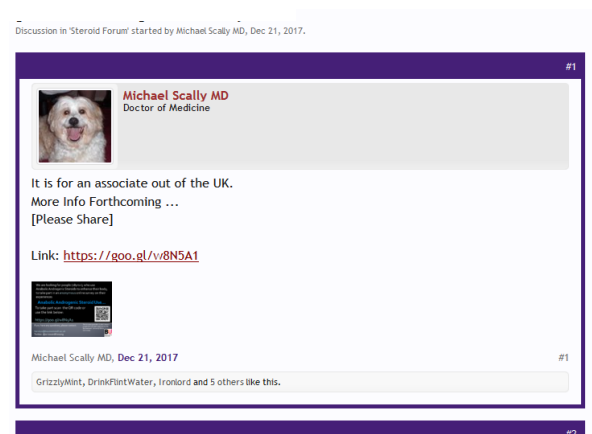


Figure 0-5 screenshot of forum interaction

The following page is the poster that was sent to NSPs, gyms and handed out to shops and friends alongside the questionnaire (see Appendix 12 for distribution).

We are looking for people (18yrs+);  
who use Anabolic Androgenic  
Steroids to enhance their body, to  
take part in an anonymous online  
survey on their experiences

## Anabolic Androgenic Steroid Use...

To take part scan the QR  
code or use the link below



<https://goo.gl/w8N5A1>

If you have any questions,  
please contact:

[harveyo@bournemouth.ac.uk](mailto:harveyo@bournemouth.ac.uk)

Twitter: [@arrowandthesong](https://twitter.com/arrowandthesong)

This is a post-graduate  
student research project  
and has been approved by  
the Bournemouth University  
Ethics Committee



## Project interview, Participant information and agreement forms



Dear XXX,

Thank you very much for expressing an interest in being interviewed as part in a research project about the use of Anabolic Androgenic Steroids.

This email is to invite you to take part in an interview to share your experiences of using Anabolic Androgenic Steroids and offers you important information regarding the study.

Just to confirm, in order to be eligible to take part in the study potential participants must be 18 years or older and using, or have recently used Anabolic Androgenic Steroids (AAS) within the last 6 months.

The research involves a 30 - 45 minute interview, and seeks to gain an insight into your experiences of using AAS with a particular focus on understanding the barriers to seeking support and types of support AAS users want. By participating in the interviews you will be helping professionals to understand AAS use from a user's perspective and also give a clearer picture of the type of support and information that people who use AAS would like to access

The interview is designed to be conversational and you are not compelled to give an answer to each question, should you choose not to do so. Interviews can be carried out at a variety of times and locations to suit your preference. NB: *(potential participants were asked their preference on the questionnaire – dependent on their preference will depend on which of the following information is entered here:*

Either

*In your expression of interest for taking part in an interview, you suggested that you would prefer a telephone (online) interview.*

Or

*In your expression of interest for taking part in an interview, you suggested that you would prefer face-to-face interview. There are several options available to you: Bournemouth University (Talbot or Lansdowne Campuses) or XXX (again this will depend on location of participant – it is envisaged this could be a local Needle Exchange Office).*

Confidentiality: In helping us by being interviewed it is important for you to understand that all the information that you provide will be treated with the strictest of confidence and all data will be completely anonymous when it is analysed. The study data will only be accessible by researcher and her

supervisory team. Anonymised data collected in this study may be used in future reports such as academic journals and conference presentations. However, no individual will be identifiable through such publication of data. The research process and its findings are subject to ethical guidelines set out by Bournemouth University.

Finally, I feel it is important to state that your participation in this research study will make a highly valuable contribution to our understanding of AAS use and the potential future safety of other AAS users, so I do hope that you decide to take part.

Thank you for taking the time to read this.

If you are still willing to take part in an interview, I would be grateful if you would contact me, and we can arrange a suitable time and place.

Best wishes

Orlanda

Orlanda Harvey  
PhD Student (Research)  
Faculty of Health and Social Sciences, Bournemouth University  
Interest: Anabolic- Androgenic Steroid Use and Social Work  
Office: 01202 967435  
Twitter [@arrowandthesong](#)

If you have a concern about any aspect of this study and wish you complain, please contact:

Deputy Dean for Research & Professional Practice, Bournemouth University, Tel: +44 1202 965206, Email: [researchgovernance@bournemouth.ac.uk](mailto:researchgovernance@bournemouth.ac.uk)

## Participant Information Sheet – Interviews

My name is Orlanda Harvey and I am seeking your help in relation to a research study on why people choose to use Anabolic Androgenic Steroids (AAS)

I am a researcher from Bournemouth University and I am conducting research on this subject, so that we can better understand the reasons why people use AAS, as well as what sorts of information and support AAS users currently have, or wish they had.

All details and information collected through the research will be completely confidential and anonymised, and no individual will be identifiable. Before you decide whether to take part in the interview, please take time to read the following information and discuss with others, should you wish. You can also contact me directly should you have any questions.

**Participants:** To take part in the study, **you must be 18 years or older**, and use, or have recently used, AAS (within the last 6 months).

**Purpose:** The study aims to explore people's first-hand experiences of using AAS, compare these experiences, and understand what types of support people who use AAS would like. This will help to identify and understand the types of support and information that people who use AAS are most likely to want and use.

The interview will take between 30 and 45 minutes to complete, as it covers a wide range of issues. Please be as open and detailed as you can and would like when answering any question. The more honest you are the more helpful and meaningful the data will be. If you do not wish to answer any question, you may choose not to do so.

**Benefits:** Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will lead to a broader understanding of the support that AAS users would value. Being involved in the research does mean giving up the time to take part in the interview. However, you do not have to give any information you do not wish to, and no questions relate to the purchase of AAS.

**Confidentiality:** Only I, and my supervisory team, will be able to access the study data. Anonymised data collected in this study may be used in future reports, such as academic journals and conference presentations. However, all details are anonymous and no individual will be identifiable through such publication of data. For the protection of yourself and the researchers conducting this study, this research has been reviewed and approved in line with Bournemouth University's research ethics code of practice. No questions will be asked about the purchase or supply of AAS. This is a confidential interview and information is being used for research purposes only, However, should, at any time during the

interview, information be shared that would lead to you or another person being at significant risk of imminent harm, then the researcher has a duty to break confidentiality.

### **Interview Recording: Will I be recorded?**

If you chose to take part in the interview the conversations will be audio recorded and used for analysis within the study. All recordings will be anonymised and kept on a password protected secure server and stored at Bournemouth University for a minimum of 5 years.

**Withdrawal:** You can stop and withdraw from the interview at any time. Please note that to withdraw you would only need to tell the researcher that you wish to withdraw. However, once you have completed the interview and the data analysed, we are not able to remove your anonymised responses from the study.

**Personal Data:** All personal data relating to this study will be held for 30 months from the date of publication of the research. BU will hold the information we collect about you in hard copy in a secure location and on a BU password protected secure network where held electronically. Except where it has been anonymised, we will restrict access to your personal data to those individuals who have a legitimate reason to access it for the purpose or purposes for which it is held by us.

**Contact Information:** Leaving your contact information will not affect your anonymity or confidentiality as any contact information will only be used for the purpose of contacting you to share the results by the named researchers (Orlanda Harvey/Margarete Parrish) and will not be recorded as part of the research data.

Should you have any further questions, please do not hesitate to contact me on:  
Orlanda Harvey: harveyo@bournemouth.ac.uk - Twitter: @arrowandthesong

Should you wish to find out further information on AAS use, the following website has a wealth of useful information, advice and support:  
<http://ipedinfo.co.uk/contact.html> and this one has more information on the topic:  
<https://humanenhancementdrugs.com/>

Thank you for taking the time to read this. **If you have any questions regarding this research, please feel free to contact me using the information below.**

Your participation in this research study will make a valuable contribution to our understanding of AAS use and the potential for future support for AAS users, so I do hope that you decide to take part.

**Contact Information:** Researcher: Orlanda Harvey: [harveyo@bournemouth.ac.uk](mailto:harveyo@bournemouth.ac.uk);  
tel: 01202 967435

Supervisor: Dr M. Parrish, Email:  
[mparrish@bournemouth.ac.uk](mailto:mparrish@bournemouth.ac.uk)

If you have a concern about any aspect of this study and wish to complain, please contact:

Prof V. Hundley, Deputy Dean for Research & Professional Practice: Faculty of Health and Social Care, Bournemouth University by email to [researchgovernance@bournemouth.ac.uk](mailto:researchgovernance@bournemouth.ac.uk)



## Participant Agreement Form - Interview

**Title of project:** A Mixed Methods Study into Anabolic Androgenic Steroid (AAS) Use –  
The voice of the recreational AAS user

**Name, position and contact details of researcher: Orlanda Harvey:**  
**harveyo@bournemouth.ac.uk**

**Name, position and contact details of supervisor:** Dr Margarete Parrish: Senior  
Lecturer [Mparrish@bournemouth.ac.uk](mailto:Mparrish@bournemouth.ac.uk) Address: Bournemouth University,  
Bournemouth House, 19 Christchurch Road, Bournemouth. BH1 3LH

	<b>Please Initial here</b>
I have read and understood the participant information sheet (ref 4PI sheet_interviews approved) for the above research project.	
I confirm that I have had the opportunity to ask questions.	
I understand that my participation is voluntary.	
I understand that I am free to withdraw up to the point where the data are processed and become anonymous, so my identity cannot be determined	
I am 18 years of age or over	
I am currently using, (or within the last 6 months have used) AAS	
I have given my full consent to being interviewed about my experiences of using AAS	
During the interview, I am free to withdraw without giving reason and without there being any negative consequences.	
Should I not wish to answer any particular question(s), I am free to decline.	
I give permission for the members of the research team (the researcher and her Supervisors) to have access to my anonymised responses.	
I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the outputs that result from the research.	
I understand taking part in the research will include being recorded (audio) but that these recordings will be deleted once transcribed.	
I agree to take part in the above research project.	



Date \_\_\_\_\_

Signature/initial

\_\_\_\_\_

Name of Researcher

Date

Signature

Orlanda Harvey

*This form should be signed and dated by all parties after the participant receives a copy of the participant information sheet and any other written information provided to the participants. A copy of the signed and dated participant agreement form should be kept with the project's main documents which must be kept in a secure location.*

<b>Would you like a summary of the findings?</b>		<i>(Please tick one)</i>
Yes	No	
If yes, please enter your email address here:		

## **Appendix 15     Format and qualitative questions for one-to-one interviews**

### **Standardised Introduction:**

My name is Orlanda Harvey and I am a postgraduate researcher from Bournemouth University and will be interviewing you today. Thank you for agreeing to take part in this interview. The interview will take about 30 – 45 mins and consist of a series of questions, some of which have been pre-written and some which will be asked on the basis of your answers. The research seeks to gain an insight into your experiences of using AAS and also on understanding the barriers to seeking support and types of support AAS users want. This is a confidential interview and information is being used for research purposes only, However, should, at any time during the interview, information be shared that would lead to you or another person being at significant risk of imminent harm, then the researcher has a duty to break confidentiality.

The interview is designed to be conversational and you are not compelled to give an answer to each question, should you choose not to do so. The interview will also be recorded (with your permission). You may withdraw from this interview at any time and the data will be destroyed. All the information that you provide will be treated with the strictest of confidence and all data will be completely anonymous when it is analysed.

At the end of the interview, should you wish it, information can be provided on where to seek further support and advice.

Can I please confirm that you have a copy of the participant information sheet and have signed the participant agreement form?

## **Question Outline:**

### **Theme 1: Motivations for use**

- Could you please tell me why you decided to use AAS?
  - How old were you when you started using AAS?
  - *Follow up question around the motivations - (any underlying motivations) – dependent on answer given*
- What do you see as the hardest time you have been through in your life?
  - *Follow up question around how this links to decision to use AAS (if relevant)*
- How has AAS use impacted on your life?

### **Theme 2: AAS use**

- What are the good points/ not so good points of using AAS for you?
  - *Follow up question around any behavioural changes mentioned or issued raised*
- Has your use of AAS impacted on your relationships with others?

### **Theme 3: Support**

- Where do you go for support and advice on using AAS?
  - Has this changed from when you started?

For each type of support or source of advice mentioned:

- How reliable (helpful) do you find this support?
- What type of support and advice do you think should be available to people who use AAS?
  - *Dependent on answers, further question on why they think there should/shouldn't be support and the types of support?*
- Is there anything else you would like to share about your experiences with using AAS use?

### **Standardised conclusion:**

Thank you for taking part in this study, by doing so you have made a highly valuable contribution to our understanding of AAS use and the potential future safety of other AAS users. These are my contact details (hand over business card); please do not hesitate to contact me should you have any further questions, or if you would like a summary of the report. Just to confirm this interview is completed confidential and the data will be anonymised.

Appendix 16 Extract from transcript (two pages)

almost continuously then for 3 years on blast and cruise, high doses augmented with low doses. So, I and I upped the ante then on the 2<sup>nd</sup> cycle, I went from using Nandrolone, which is like, as they call it Test Deca Debol is a classic bulker, I went well that was rubbish so I want something a bit better than that, and I went straight to Trenbolone, and as soon as I hit Trenbolone, I went, this is the magic, this is the stuff and that was it and I was just hook, line and sinker, I just poured all my money into basically being on cycle, for the next 3 years, yeah

*- Best exercise upped the ante -  
Tren worked for me! -*

O: So did you, what were the positives for you? (16:31)

Don: Um, I don't, I guess you call it a vague positive, I was kind of living under this delusion that the things were getting better and I was progressing, and as the weights went up, you know my self-esteem was going magically go up as well. I don't know if there were any positives, I suppose the positive's you could say, were like its regular exercise at least, it's heavy weight training and I was super dedicated to it, so in a way I suppose it did teach me an awful lot about discipline and self-discipline probably to my detriment, but at least it showed me, you know, I was like wow, the effort that I can, you know, if I apply myself to anything, gosh, I really go at, 100%. So, I suppose that's a positive to take out of it, but it's kinda hard for me really to look retrospectively and see, cos the whole thing was driven by fear and pain, and that, it was like where the hell are the positives in any of this really, it's very hard to give you a clear positive.

*self-aware.*

*dedication  
discipline*

*self-aware -  
not the magic pill.  
fear & pain -  
not positive.*

O: is that on reflection, is there a difference between now reflecting back on it and what you felt the positives were at the time, because you did it for a significant period of time?

Don: mmm, well the positives, oh, I guess it was me clinging on to the belief that this thing is going to be my saviour, so I just got to keep injecting and I've just got to keep dieting and I've got to keep doing it and then eventually, at some point, I am just going to wake up one morning and go, ah I am fixed, amazing (laughs) that was the belief, in it, and looking back retrospectively it seems bonkers to (18:23) me now, but that was what I genuinely believed at the time, this is the path I want to take, and this is genuinely going to work.

*"my saviour"*

*- Knows this but is  
thinking of  
wrong again.*

O: and so while you held that belief and you were doing these cycles, were there any negatives around using that you found?

Don: oh well, yes, I mean there's where the list goes arm's length you know, my lipid profile was terrible, you know my kidneys and my liver profile were deranged. I didn't probably have enough self-awareness at the time to realise, to realise that, again looking retrospectively I'd short-temper, I was irritable, I was having all the effects of taking

*health problems  
behaviour  
change.*



negative impact on friends

obsessive!

Metaphor - other's opinion

focus on muscle loss

chasing the ideal

woodrow

lost job

Perception of others

androgens like testosterone and Trenbolone. And then seeing the impact that has on other people that you work with, or relationships with friends, it's all played out there so, I think I remember, going to, like we went on a night out with all of our team, I used to work in a restaurant, so we'd all go out on a night out to another restaurant, just to have a bit of fun and some beers and stuff, and of course all the time, the only thing on my mind was nutrition and the meal, and the protein and nutrients XX and um, and I think one of my colleagues was like are you going have some of that rice? and I said something like, it serves no nutritional purpose to me, you know what I mean, wow this guy's is a robot, this guy is a machine (20:06), (Laughs) so, and it is sad really to think of that, because that's a, you know, I've done things like I remember going to see. I was in London to see a very very good old friend of mine, at half past 2 in the morning we were in this club, in, god knows where, but Johnny Rotten from the Sex Pistols was there, and XX, it was in Muswell Hill and I went I have to eat something, and I walked 4 and 1/2 miles to a takeaway that was open, just so I could eat at half 4 in the morning and even then I was panicking the whole time, going, that is an hour passed my schedule, shit, what if I lose muscle, that's how, you know, to the exclusion of everything else in your life, that's how Xx I had become with the whole thing.

O: wow

Don: yes, wow, so it' like, gees we're in a nightclub and Johnny Rotten's here, just having a beer, and it's wow this incredible, but anyway I've got to go eat, what are you insane? so I was cutting myself from an awful lot of pleasure in pursuit of this thing, whatever it was, this ideal that somehow, that I'd wake up and I'd be like this and then all my self-esteem and confidence problems and all the things, and all the inadequacies that I felt about myself would be magically vanished. So there are lot of negatives really, there's mood swings, there is the effect it had on work, then on top of that in order to try and control all of this, I developed a second addiction then into benzo-diazepines, that really, I was fired from my job as a result of that because my benzo use went from being an occasional thing up to 200 mg of diazepam a day which is a huge amount for anyone to take, and I had to go cold turkey on it because I ran out of money, there is no way you can stay on a 200mg a day diazepam addiction on the wages that I was on. So, work just called me in and said, look you are just, you are a wreck basically, and we have to fire you but that was the making of me, you know it is kind of like well, that was ground zero and then things just kind of went up from there, so it was the making of me but, yeah on top of all that there was, then

\*Other substances - benzos

## Appendix 17 Sample of development of codes and themes

- Initial Codes – coded on the transcripts
- Data then entered into NVivo and recoded

### Secondary Coding Framework

Name
⊕ AAS users mentality and identity, and societal influences to want to gain muscle
⊕ Access to AAS Supplies
⊕ Assessing information, support, identifying good from bad
⊕ Attitudes towards using AAS
⊕ Change in Use
⊕ Childhood History, Adult History, Co-morbidities
⊕ Ethnopharmaceutical Knowledge
⊕ Experience of and thoughts on using Medical Professionals
⊕ Experiences and views on Stigma and Sub Culture, Society's perception of AAS use
⊕ Ideal Support
⊕ Information and Support Accessed
⊕ Low Testosterone doses and TRT experiences and views
⊕ Motivation for Training
⊕ Negative Physical side effects of using
⊕ Negative Psychological effects of using
⊕ Othering - My use compared to how others use
⊕ Positive Physical results experienced
⊕ Positive Psychological benefits of AAS use
⊕ Preparation prior to using
⊕ Reasons for starting use
⊕ Reasons to continue use
⊕ Reasons to Stop Using
⊕ Risks and Risk Management
⊕ Role as an Educator and Me
⊕ Self-knowledge - Body and
⊕ Trenbolone
⊕ Worries and Fears

### Tertiary Coding Framework

Search Project

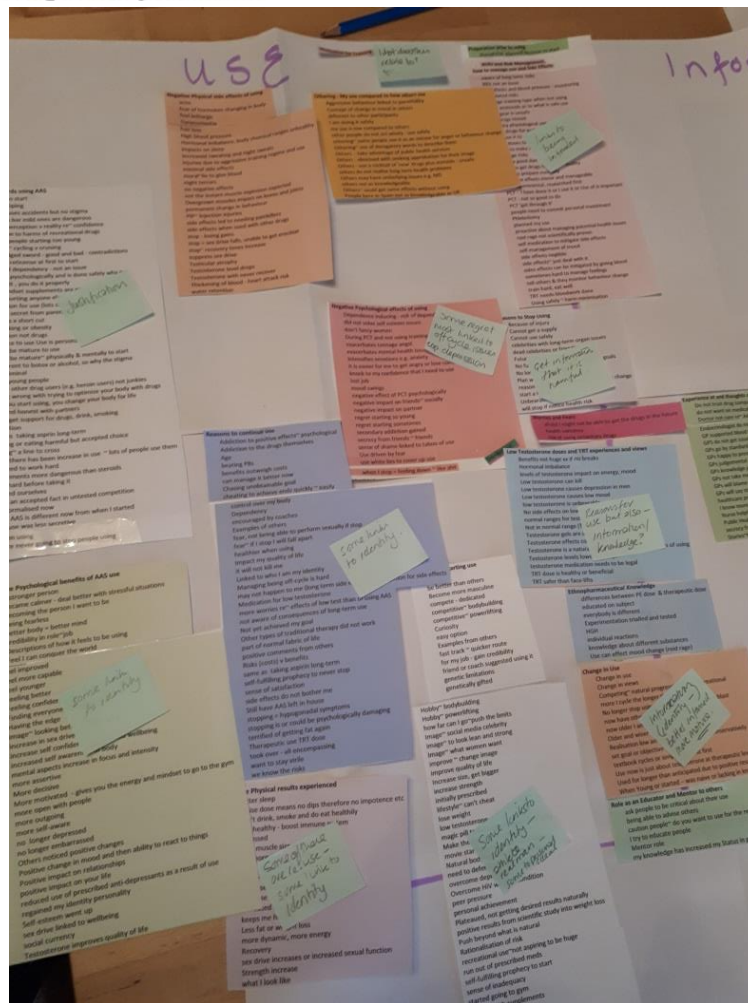
Name	Files	Referen
⊕ Self-knowledge - Body and Mind	23	175
⊕ Role as an Educator and Mentor to others	10	25
⊕ Risks and Risk Management, how to manage use and Side Effec	24	517
⊕ Reasons to Stop Using	20	50
⊕ Reasons to continue use	22	188
⊕ Reasons for starting use or re-starting use	25	261
⊕ Postive Effects of using AAS	23	633
⊕ Othering - My use compared to how others use	23	101
⊕ Negative Psychological effects of using	21	297
⊕ Negative Physical side effects of using	21	293
⊕ Low Testosterone doses and TRT experiences and views	19	101
⊕ Information and Support Accessed	25	844
⊕ Ideal Support	23	506
⊕ Experiences and views on Stigma and Sub Culture, Society's per	21	143
⊕ Ethnopharmaceutical Knowledge	22	95
⊕ Childhood History, Adult History, Co-morbidities	20	56
⊕ Change in Use	18	66
⊕ Attitudes towards using AAS	22	140
⊕ Access to AAS Supplies	14	28
⊕ AAS users, society, masculinity and identity	22	92



# Development of themes

- AAS users, society, masculinity and identity
- Attitudes towards using AAS
- Change in Use
- Childhood History, Adult History, Co-morbidities
- Ethnopharmaceutical Knowledge
- Experiences and views on Stigma and Sub Culture, Society's perception of AAS use
- Ideal Support
- Information and Support Accessed
- Low Testosterone doses and TRT experiences and views
- Negative side effects of using AAS
- Postive Effects of using AAS
- Reasons for starting use or re-starting use
- Reasons to continue use
- Reasons to Stop Using
- Risks and Risk Management, how to manage use and Side Effects
- Role as an Educator and Mentor to others
- Self-knowledge - Body and Mind

Fourth iteration of coding framework



## Appendix 18 Data cleansing of questionnaire: Summary of actions taken

Question	Action	Example Participant responses	Resolution
3. Number of hours per day exercised	Averaged out answers (26 recoded)	14. 2-3	2.5
		20. 3 times/w-	Missing (-9)
		91. 1 and a half to 2 hours	1.7
		Not all respondents will exercise every day – in some cases unable to determine hours per day (so were coded as missing)	
In which country do you live?	Standardised Country Names	U.K., United Kingdom, England, Scotland, Wales	UK
		America, United States, US	USA
		Note: 93. Poland England now Canada (and removed county as London)	Canada
In which county do you live?	Counties grouped to regions of England	If no region (or region outside England) used the country that makes up the Union	Wales
			Scotland
			NI
What age did you start using AAS	Recoded erroneous answers	Age stated as 21333, 240	Missing
Number of years using AAS	Recoded erroneous answers	Number of years 200	Missing
With which gender do you identify?	Standardised term for gender	Man, M, Malr, I'm a fucking man, I have a penis	Male
		7. f	Female
Ethnicity?	Recoded into set groups: standardised and groups terms	Caucasian, white dude, White, non-Latino, white Christian, Human :) (interviewed in person – so white British), Caucasian Australian British decent	White
		Ethnic swede, Sweden/European (with roots in Europe), Caucasian European, just... an average Dutch guy :), Slav, (Mediterranean/Caucasian), Viking, Easturopen katolic	White European
		Latino	Hispanic
		WB	White British
		Indian	Asian
		Asian/European, Half Indonesian, Half Dutch, Middle Eastern (Caucasian), White British and Arab mixed, South Asian), Asian & white), British Pakistani	Mixed Race
		American, None, Maori	Other/Unknown
		Greek, Mediterranean, Italian/Canadian, Dane	European
Education Level	Those coded: Other recoded dependent on self-	RVT RDCS former cardiovascular sonographer, Those with Masters degrees, MSW, NVQ 3/4 Electricotechnical Engineering, NVQ6 Construction Management, Registered	College or university



Question	Action	Example Participant responses	Resolution
	<b>description</b>	investment advisor. Series 7, 73, 65, 66 etc, about to finish my masters in geological engineering	
		Some high school	Secondary Education
<b>Employment status</b>	<b>Standardised answers</b>	Other: no description given Other: Suck. Car accident, Other: no description given	Left as Other
		employed on sick leave	Employed
<b>Q10.b Who taught you to inject</b>	<b>Standardised answers – changed to multi question</b>	Google, online	Internet
		Physician, former nurse, a nurse friend, close friend with medical training, studying chiropractic and is a qualified phlebotomist. - NB: if word friend used also coded friend	Medical professional
		Youtube, Internet tutorial, Online tutorial, instructional video	Online videos
		Myself, self, self/medical training, me, researched it myself, i'm a goddamn doctor- <b>If mentioned medical training also coded other</b>	Self-taught
		My dad, my father, family member, i am not in able: provide my wife	Family
		medical journals, medical textbooks and public health leaflets contained within injecting equipment sports packs	Books
		a friend who use to compete, friends, best friend, One of my first boyfriends. Training partners, myself. Other AAS users, Fellow gym user	Friend or Peer
		Safe injecting with worker	NSP
		Strength coach	Coach
<b>Q9 Seeking help for support</b>	<b>Changed No to yes</b>	Stated no but then gave answers given to follow on questions about the help received	Yes
<b>Q10-a-12/13 Where do you get your needles from?</b>	<b>Re-categorising: Other</b>	Added 2 categories based on Other responses and recoded: 1. General online stores such as ebay, 2. 2. online stores that sell medical supplies	
<b>Q 12 – 16 (9,13) - Advice sought:</b>	<b>Re-coding</b>	Repetition error in questions on support AAS users appears twice – checked each respondent for each question and ensured if Y ticked in first instance	Removed second column

**NB: if a participant ticked both yes and No then the answer was recoded to yes**

## Appendix 19 Interview Summary and demographics of interviewees

### Interview Summary (UK)

Participant pseudonym	Country	Method Chosen	Transcript Actions**	Supervisor check
Isaac	UK	Skype video call	A B (Y)	
Milton	UK	In person	A	ST
Andrew	UK	Telephone	A	EVT
Harry	UK	Telephone	A B (Y) C	
Peter	UK	Telephone	A	
Del	UK	In person	A	MiP
Han	UK	Telephone	A	EvT
Alvin	UK	Skype video call	A	
Clinton	UK	What's App typed chat (Synchronous)	A	
Powel	UK	Google Hangouts call	A	
Don	UK	Skype video call	A	MIP
Lawrie	UK	In person	A	
Robert	UK	Skype call	A	

### Interview Summary (Overseas)

Participant pseudonym	Country	Method Chosen	Transcript Actions	Supervisor check
Joel	USA	What's App call	A B (Y)	
Asi	USA	Skype video call	A	
Hugo	USA	Skype video call	A B (Y)	EvT
Theo	Denmark	FB Messenger call	A B (Y)	ST
Lewis	USA	What's App call	A	
Lee	USA	Google Hangouts call	A B (Y)	
Tomaz	Belgium	FB Messenger typed chat (Synchronous)	A B (Y)	
Lev	Canada	Skype call	A	ST
Johan	Hong Kong	Skype video call	A B (Y) C	
Paul	USA	Skype call	A B (Y) C	MiP

\* used to maintain confidentiality \*\* **Transcript Actions:** A: sent offer email to read B: received Y/N reply and sent if said yes to review, C: received comments

## Demographics of interviewees

Case ID	Interview method	Country of Residence	Age	Gender~	Ethnic Group	How would you describe yourself: Other: added (self-description)	Which is the highest level of education do you have?*	Employed Other (self-description)	Sexual Orientation
Andrew	Telephone	UK	25	M	white	Competitive bodybuilder	College	Self-employed	H
Harry	Telephone	UK	52	M	white	Recreational Exerciser	College	Employed	H
Peter	Telephone	UK	24	M	white	Recreational Exerciser / Other (Personal Trainer)	College	Self-employed	H
Alvin	Skype	UK	36	M	white	Competitive Athlete	College	Self-employed	H
Clinton	What' App chat	UK	20	M	white	Recreational Exerciser	College	Employed / Student	H
Isaac	Skype	UK	42	M	white	Recreational Exerciser	College	Student	H
Don	Skype	UK	39	GF	white	Recreational Exerciser	College	Student	P
Del	In person	UK	35	M	mixed	Recreational Exerciser	College	Employed	H
Han	Telephone	UK	42	M	white	Other (Damaged goods)	Secondary	Other (Unemployable)	H
Asi	Skype	USA	28	M	white	Recreational Exerciser / Aspiring competitive athlete	College	Employed	B
Hugo	Skype	USA	53	M	white	Recreational Exerciser	College	Self-employed	Gay
Powel	Google Hangouts Call	USA	34	M	white	Personal Trainer	College	Self-employed	H
Lewis	What's App chat	USA	37	M	white	Personal Trainer	College	Employed	H
Lee	Google Hangouts	USA	43	M	white	Competitive bodybuilder / Personal Trainer	College	Employed	H

Case ID	Interview method	Country of Residence	Age	Gender~	Ethnic Group	How would you describe yourself: Other: added (self-description)	Which is the highest level of education do you have?*	Employed Other (self-description)	Sexual Orientation
	video								
Joel	What's app call	USA	34	M	hispanic	Recreational Exerciser	Secondary	Employed	H
Paul	Skype call	USA	29	M	white	Personal Trainer	College	Employed	H
Lev	Skype	Canada	32	M	white	Recreational Exerciser / Other (Before competitive athlete now just my own personal health and appearance)	College	Employed	H
Theo	Messenger call	Denmark	30	M	white	Other (Fat guy trying to lose weight)	College	Student	H
Tomaz	Messenger chat	Belgium	40	M	white	Competitive bodybuilder	College	Employed	H
Johan	Skype	Hong Kong	36	M	white	Competitive bodybuilder	College	Employed	H
Lawrie	In person	UK	27	M	white	Competitive Athlete	College	Self-employed	H
Robert	Skype	Spain	34	M	white	Recreational Exerciser	College	Employed	H
Milton	In person	UK	40	M	white	Competitive Athlete	Secondary	Retired	H

\*College = College or university, secondary = Secondary Education ~ M= Male, GF= Gender fluid H = Heterosexual, P = Pansexual, B = Bisexual

## Appendix 20 AAS use and the potential for addiction

<b>Participants thoughts on the addictive qualities of using AAS</b>
<p>'whilst steroids may not be physically addicting, I do think there's a mental aspect to them because ...they don't only make your body feel stronger and more capable. But when your body's like that your mind is better, ...you feel healthy and everything's good in your head. So, it's definitely, most assuredly a combination of both, like if I was to all of a sudden couldn't have them. I have no doubt that I in some way, shape or form, it would probably put me into a bit of a depression.' (Lewis/USA/37)</p>
<p>'oh you tasted it. So now I want to carry on because you're going so easily and so nice and the feeling on it is completely different than someone exercise without. It is that dopamine released in your brain you might not know it but it's there. So, later on when you want to stop, it's still there, ...you're missing that kick I would say or I would call that. ...and that's why it's like a vicious circle everyone and they get up to that and then it is hard to come off.' (Lev/Canada/32)</p>
<p>'it is easy to go forwards but it is not very easy to go backwards. And there would be the fact that I'd done so much research into the positives, long-term of maintaining a decent level, that it, psychologically it would blow me, because I would be like, shit I'm all those things, that I decided and took the risk to mitigate are now going to hit me full force and there is nothing I can do about it. So, one way or another I would have to find a way to stay on.' (Robert/Spain/34)</p>
<p>'I would say that it's a very hard ride to get off of. Once you feel the benefits and gains from using them, it's hard to not want to take them. I guess they aren't addictive, but they can be very gripping!' (Clinton/UK/20)</p>
<p>'physique changing is as much an addiction as it is to the drug' (Don/UK/39)</p>

## Appendix 21 Benefits of using AAS – Summary of questionnaire data

Benefits of using AAS*	Tally
Increased (faster) Strength, power “Significantly improved gains in strength, much more than what training and diet achieve alone,”	43
Faster muscle building capabilities, increased muscle, increase size, maintain muscle mass while calorie restricted, Sparing muscle while burning fat	42
Increased Sex drive, improved sexlife, libido, sexual benefits, positive effects in the bedroom	26
Recovery, healing properties, less injuries, control over my own body (especially regarding injuries), “Less injuries and more recovery firstly and allowing me to train more”, Better regeneration	25
Confidence, improved confidence and outlook on life	19
Work harder the next day, more stamina, easier gains, endurance, better results from exercise, Greater results, enabling me to workout harder and longer, thus gaining better results, feel better in the gym, easier to train more often, workouts get more intense and productive, Achieve higher results, ie breaking pr's, Faster progress on my fitness goals, Able to continue to progress when lifting weights “feeling amazing in and outside of the gym”	18
Improved mood, less depression, positive mood, mood enhancement, improved mental health	14
Fat loss/harder to put on fat, faster weight loss, fat burning, my fat body wants to be fat. Its hormones fight me every step of the way. My will power alone is not enough	12
Personal, image acceptance in a world that is so appearance based, I have the desired appearance, Appearance, better physical attractiveness, “My physical appearance mostly and the effect you gain from that. The more I grow and the more I get ripped, the more I walk around confidently and I think it improves my overall confidence and hapiness.”	11
Increased, improved performance, faster results, over all better performance in all aspects of life.	10
More aesthetic body, body transformation, improved physique, Healthier look, Better looking body, A look to the physique that couldnt be achieved naturally, Improvements in physique; better physical appearance and condition, look amazing	10
Feeling of wellbeing, feeling better, Increased wellness, “AAS can be used to promote health, longevity, and wellness”	9
Improved health, better overall health reducing the risk of Diabetes, and other obesity related conditions, overall boost to health	8
Increased sex-appeal, attractiveness, Increased attraction from the opposite sex, attract more women, “Not the main reason but I have noticed increased attention from females whilst I was single at the time.”, More sexually attractive to females	6
Anti-aging, slowing of the age process, You feel much younger	6
More energy	5
Quality of life, I enjoy my life more due to AAS	5
Growth, definition, Body composition, helped change my body shape	5
Hyperbolic word descriptors: Awesomeness, everything, Get jacked as fuck	4
Improved physical appearance	4
Happier	3
More mentally stable, stabilised moods, stable mood	3
Less pain, less aches and pains	3

<b>Benefits of using AAS*</b>	<b>Tally</b>
More alert, Increased focus, more focused more determined	3
Up my low-test level, A steady high normal Testosterone level, Stable but elevated T levels are an advantage to me	3
Increased lean body mass, Less loss of lean mass dieting	2
Increase in overall fitness	2
Improved Joints, Therapeutic effect on joints with increased sinovial fluid and greater collagen uptake	2
Improved metabolism	2
Reduced Stress, enhanced ability to deal with stress	2
Increased mental performance, Improved cognition	2
Rock-hard erections, improved sexual performance, acquire super boners	2
Self esteem	2
A hobby, "gave me something to train and focus on at a difficult time in my life."	2
Social admiration, big = respect	2
'Fighting HIV wasting', 'Survived 34 years of HIV. Look better than HIV negative people my age'	2
'I think what looks like permanent muscle from usage will play a part in helping me move my salary up faster in the future too', 'I'm a doorman so using them benefits my job too'	2
Weight gain	2
Increased protein retention, better protein synthesis	2
Helps with my damaged body,	1
I feel more in touch with my emotions, which probably sounds strange, but is most likely attributed to fluctuations in hormones such as estrogen. I still regard it as a benefit	1
Helps me stay alive	1
More competitive in my sport	1
Improves motivation	1
Increased aggression	1
Increased trust and reverence from people	1
A sense of self satisfaction that allows me to now focus more on what I'm passionate about than trying to look good for society	1
Longevity in weight training	1
Increased tendon strength, increased bone density	1
Less likely to lose size while dieting hard.	1
Healthy lifestyle	1
I came back to be a better version of myself by giving a chance	1
Intimidation	1
Feeling normal again	1
Developing my understanding of AAS using my body as my own guide	1
Keeping my hormonal levels balanced	1
Increase IGF	1
Reduces insulin sensitivity	1
Preventing sarcopenia while getting older	1
Improved sleep	1
Immune boost during the winter	1
Play an endurance heavy sport without sacrificing muscle	1

\* Benefits have been grouped together and some specific quotes have been used to illustrate certain elements and to keep the user's own words to keep their 'voice'



## Appendix 22 Questionnaire comments referencing aggressive behaviours and management

Answers to the following questions all elicited answers concerning aggressive behaviours, which are summarised in the Table below.

Q. Risks of using AAS

Q. Negative or unwanted side-effects you have experienced of using AAS

Q. If you selected ye, you get mood swings, please describe:

Q. If you selected yes, you experience behavioural changes, please describe:

Q. If you have other negative feelings, please describe:

Q. If you have experienced any of these feelings, please describe how you manage them?

Q. If you selected yes, I have acted on feelings of aggression, please describe what happened?

<b>Behavioural Changes Aggression: from Questionnaires (self-report)</b>
<ul style="list-style-type: none"> <li>from use of oral AAS I will often get a very focused and aggressive mood swing</li> </ul>
<ul style="list-style-type: none"> <li>Short tempered, less caring, more selfish, relationship deterioration</li> <li>Very bad tempered and intolerant of those around me</li> <li>no care of others around me.</li> <li>Playing rugby, far more fights</li> </ul>
<ul style="list-style-type: none"> <li>more aggro easier</li> <li>more aggressive and more forward person</li> </ul>
<ul style="list-style-type: none"> <li>One time I yelled at my sister.</li> <li>Increased motivation and aggressiveness.</li> </ul>
<ul style="list-style-type: none"> <li>When I took trenbolone it made me more angry but I quickly stopped using and the aggression decreased.</li> </ul>
<ul style="list-style-type: none"> <li>increased aggression (&lt;- deserves it's own text box), relationship problems</li> </ul>
<ul style="list-style-type: none"> <li>I shouted at someone because I was irritable... Because my E2 was high.</li> </ul>
<ul style="list-style-type: none"> <li>Angry over the simple issues</li> </ul>
<ul style="list-style-type: none"> <li>More aggressive in a positive way. More assertive.</li> </ul>
<ul style="list-style-type: none"> <li>Certain compounds cause great aggression like Trenbolone so I no longer use that steroid.</li> </ul>
<ul style="list-style-type: none"> <li>Loss of control ( mania ) alone deep feeling of frustration</li> </ul>
<ul style="list-style-type: none"> <li>Anger</li> <li>Arguments Snapping at people</li> </ul>
<ul style="list-style-type: none"> <li>Become aggressive in the gym and keep lifting until exhausted.</li> </ul>
<ul style="list-style-type: none"> <li>agression</li> <li>phychosis</li> <li>violence in material things</li> </ul>
<ul style="list-style-type: none"> <li>increased aggression</li> </ul>
<ul style="list-style-type: none"> <li>I've also noticed cardiac and psychological issues after usage and cessation of Tren E, anger and difficulty controlling mood.</li> <li>Constant persistent anger, cold mechanical mildly sociopathic affect towards people</li> </ul>

<b>Behavioural Changes Aggression: from Questionnaires (self-report)</b>
<ul style="list-style-type: none"> <li>• Angrier now after Tren, getting better, persisted for at least 3-6 months. Feel bad looking back at how I acted.</li> </ul>
<ul style="list-style-type: none"> <li>• Aggressive tendencies that I can control</li> </ul>
<ul style="list-style-type: none"> <li>• I do notice my temperament may be a little shorter fused at times, especially with certain substances.</li> </ul>
<ul style="list-style-type: none"> <li>• If testosterone is at a supraphysiological level your aggression and dominance can come out as well</li> </ul>
<ul style="list-style-type: none"> <li>• They give me higher aggression and a shorter fuse</li> </ul>
<ul style="list-style-type: none"> <li>• Just feel irritable more</li> <li>• Just more on edge</li> </ul>
<ul style="list-style-type: none"> <li>• Very mild increase in temper. Have to be mindful of it</li> <li>• quicker to anger</li> </ul>
<ul style="list-style-type: none"> <li>• getting angry faster</li> <li>• I hacked my ex's facebook to check if she'd been with someone else - which she had</li> </ul>
<ul style="list-style-type: none"> <li>• I experience aggression and anger at doses of testosterone higher than 1000mg a week of long esters.</li> </ul>
<ul style="list-style-type: none"> <li>• Tren has caused heightened aggression.</li> <li>• Some verbal arguments when using Tren.</li> </ul>
<ul style="list-style-type: none"> <li>• I've become more mature so my AAS effect on my irritability has gone down however it's not related to the drug.</li> </ul>
<ul style="list-style-type: none"> <li>• Temper</li> <li>• Rage</li> <li>• Hitting out</li> </ul>
<ul style="list-style-type: none"> <li>• Irritation and frustration.</li> </ul>
<ul style="list-style-type: none"> <li>• Quicker to anger.</li> </ul>
<ul style="list-style-type: none"> <li>• Sudden irritation</li> <li>• More impulsive</li> <li>• I lost my temper while driving the car</li> </ul>
<ul style="list-style-type: none"> <li>• Easily irritable sometimes a explosive behavior but thi is really rare</li> </ul>
<ul style="list-style-type: none"> <li>• Not crazy bipolar mood swings.. but if you mad about something it makes you pissed.</li> <li>• Ehh. Yes and no. I mean I'm more straight forward and blunt while on aas</li> </ul>
<ul style="list-style-type: none"> <li>• More agressive</li> <li>• Angry over small things</li> </ul>
<ul style="list-style-type: none"> <li>• Slightly agitated more easily, never more aggressive</li> </ul>
<ul style="list-style-type: none"> <li>• Short fuse,</li> <li>• Maybe short tempered. But have complete control of myself as to whether i act on aggression.</li> </ul>
<ul style="list-style-type: none"> <li>• aggression</li> <li>• irritability</li> </ul>
<ul style="list-style-type: none"> <li>• I get irritated alot easier but it's not a problem.</li> </ul>
<ul style="list-style-type: none"> <li>• pronounced aggression (particularly with trenbolone)</li> <li>• Trenbolone makes me very short tempered, aggressive and my mind is filled with viscious and violent thoughts. However, in company with other people, they cannot tell as I am so adept at internalising these feelings</li> <li>• Increased impulsivity and risk taking</li> </ul>
<ul style="list-style-type: none"> <li>• Got very angry in traffic once</li> </ul>

<b>Behavioural Changes Aggression: from Questionnaires (self-report)</b>
<ul style="list-style-type: none"> <li>• Im always on. I cant imagine the increased aggression hasnt affected my behavior</li> </ul>
<ul style="list-style-type: none"> <li>• I get irritated easier</li> </ul>
<ul style="list-style-type: none"> <li>• I get mad quicker</li> </ul>
<ul style="list-style-type: none"> <li>• Anger</li> <li>• Rage, MOre aggressive</li> <li>• I quit my job i start yelling and screaming because of a small fight</li> </ul>
<ul style="list-style-type: none"> <li>• Sometimes I can be a little more impatient</li> </ul>
<ul style="list-style-type: none"> <li>• very easily irritable</li> <li>• less emotional /(cold )</li> <li>• get in to argument with my partner over stupid little things with time and yeras this become easily contoble drinking lots of melisa and other herbal tea to help with my mood swings</li> </ul>
<ul style="list-style-type: none"> <li>• I'm gettin aggressive very easy or I have bad mood without a reason Also some of the thing which never have any whay to piss me off they do</li> <li>• Again aggressive very focused sometimes rude and very easy going in to the conflict</li> <li>• I was on noight out and some guys was laughing from me or my miss and I nearly broke them fingers but normally I would never do that</li> </ul>
<ul style="list-style-type: none"> <li>• I can get angry on levels that are crazy, and since i am mental stable understand that i feel angry without no reason, so just stay patient until it goes away.. it's the hormone instability at that moment that makes me feel angry even though i had nothing that troubled me or made me angry</li> <li>• Mood Swings, Bad mood, being angry / mad it's the most common things</li> <li>• Had a fight with my girlfriend. I was about to slap her when i understood what i was about to do and said to myself "immediately calm the fuck down. you are not THAT type of a faggot person"</li> <li>• Apologized and asked her a minute to calm down myself before we continue the argument.</li> </ul>
<ul style="list-style-type: none"> <li>• Some (few) anabolic steroids may cause irritability or anxiety, although the effect in my experience is mild, simply makes things like getting stressed out while stuck in traffic more noticeable</li> </ul>
<ul style="list-style-type: none"> <li>• roid rage, false sense of security</li> <li>• can be on top of the world then feel angry over the smallest thing</li> <li>• losing temper and its escalated into a fight</li> </ul>

## Appendix 23 Self-reported effects of using Trenbolone

This study did not seek to find out the individual effects of specific brands or types of AAS however, one substance 'Trenbolone' did stand out as something that could have very beneficial effects but was also particularly problematic to use, in relation to unwanted behavioural side effects.

Use	Quotation
Effects on Cycle	'compounds cause behavioural changes like Trenbolone so I no longer use that steroid' (Nick/USA/50)
	'Tren has caused heightened aggression. If estrogen [sic] spikes I can get moody but knowing my dosages and blood levels I can actually manage moods more' (Rod/Australia/39)
	'Trenbolone makes me very short tempered, aggressive and my mind is filled with viscious [sic] and violent thoughts' (Don/UK/39)
	'that is the one compound that does make me raise an eyebrow, but just because of the people that have come back to me after using it, and said, that I can't ever use that again, I went crazy' (Robert/Spain/34)
	'I never got on with Trenbolone. Trenbolone was one steroid that did make me irritable and did make me agitated.' (Isaac/UK/42)
	'I did use one compound: trenbolone, for a while and I had every negative side effect with it imaginable with that; I had shortness of breath, I had flushing, I had night sweats, I had quick, quick to enrage.' (Hugo/USA/53)
	it made me so indifferent about like my relationship with the people around me. It's like it was almost like a sense of arrogance that no one else really mattered around me' (Peter/UK/24)
	'I'm running Tren right now, and you know I get the full nightmares, I get the extreme sweats, the insomnia is pretty bad... I don't forget a single bit of the, the terror of the nightmare.' (Lewis/USA/37)
	'Tren is not the best drug to take, ...I am not emotional but Tren's not a good drug if you are not very in control of your impulses and your emotions and I am on Tren right now but very small doses of it because I've taken it before, and like man it just, it just makes you so depressed for no reason... I'm terrified of getting fat again... so that's why I like doing Tren so much, because it, it just sucks everything down really well ...I don't know if I'm gonna keep doing it because ...I'm not empathetic to stuff... I don't like the person that I am, when I'm doing it.' (Joel/USA/34)
	'I am on trenbolone and that could cause, actually that could cause problems right now. Definitely it's easier to get angry and Yeah, lose control that's for sure. Especially on trenbolone because that's a very specific compound, lots of friends and guys at the gym would say the same thing' (Lev/Canada/32)
	'I used it for a period of around eight weeks and I didn't get any sort of heightened aggression which some people find I didn't you know I got night sweats, it reduced the amount of sleep I needed it seemed and but it made me so indifferent about like my relationship with the people around me. It's like it was almost like a sense of arrogance that no one else really mattered around me' (Peter,24,UK)
	'I am having occasionally light night sweats, occasionally, slight er acid reflux, but no problem at all. It is very easy...um, with the Tren, I noticed initially a slight increase in irritability when I am driving, so you know, swearing at other drivers, you know, in my head sometimes, but that has passed now' (Del/35/UK)
	'Very low mood after using trenabol' (Grant/UK/29)
After a Cycle	'First cycle, off Tren I was very insecure' (Jason/UK/40)

## Appendix 24 Erikson's Life Stage Theory

Stage	Psycho-social crisis	Radius of significant relations	Basic strengths	Core-pathology basic antipathies
1: Infancy (birth to 18 months)	Trust vs. Mistrust	Maternal person	Hope	Withdrawal
Outcome	Children develop a sense of trust when caregivers provide reliability, care, and affection (Hope). A lack of this will lead to mistrust.			
2: Early childhood (18 months to 3 years)	Autonomy vs. Shame and Doubt	Parental persons	Will	Compulsion
Outcome	Children need to develop a sense of personal control over physical skills and a sense of independence. Exploration of environment. Success leads to feelings of autonomy, failure results in feelings of shame and doubt.			
3: Preschool (3 to 5 years)	Initiative vs. Guilt	Basic family	Purpose	Inhibition
Outcome	Children need to begin asserting control and power over the environment. Success in this stage leads to a sense of purpose. Children who try to exert too much power experience disapproval, resulting in a sense of guilt.			
4: School age (5 to 12 years)	Industry vs. Inferiority	Neighbourhood, School	Competence	Inertia
Outcome	Children need to cope with new social and academic demands. Success leads to a sense of competence, while failure results in feelings of inferiority.			
5: Adolescence (12 to 20 years)	Identity vs. Role Confusion	Peer groups and Outgroups. Models of leadership	Fidelity	Repudiation
Outcome	Teens need to develop a sense of self, values, aspirations and personal identity. Success leads to an ability to stay true to yourself, while failure leads to role confusion and a weak sense of self.			
6: Young adulthood (20 to 40 years)	Intimacy vs. Isolation	Partners in friendship, sex, competition, cooperation	Love	Exclusivity
Outcome	Young adults need to form intimate, loving relationships with other people. Success leads to strong relationships, while failure results in loneliness and isolation.			
7: Middle adulthood (40 to 65 years)	Generativity vs. Stagnation	Divided labor and shared household	Care	Rejectivity
Outcome	Adults need to create or nurture things that will outlast them, often by having children or creating a positive change that benefits other people. Success leads to feelings of usefulness and accomplishment, while failure results in shallow involvement in the world.			
8: Maturity (late adult) (65 to death)	Ego Integrity vs. Despair	Mankind, 'My Kind'	Wisdom	Disdain
Outcome	Older adults need to look back on life and feel a sense of fulfilment. Success at this stage leads to feelings of wisdom, while failure results in regret, bitterness, and despair.			

***Erikson's Stages of Development adapted from Erikson and Erikson (1997)***

## **Appendix 25    Sketches to illuminate the differing AAS use pathway**

The first two sketches consider two people (Hugo, and Asi,) who appear comfortable in their use, and the second two (Don, and Lewis,) who are more conflicted about their use. It is acknowledged that as these are only sketches the life stories are incomplete.

### Hugo's (USA/53) story (Table 1)

*Motivations: Improve my appearance, increase my confidence, enhance my muscles or strength, become happier, increase my sexual attractiveness, positive results I achieved from using AAS, increase my sex drive, my friends use AAS, impress my friends, improve endurance or stamina.*

Hugo is gay, contracted HIV as a young man and was prescribed AAS by a doctor to help combat the wasting side effects of HIV. His reasons for using have changed over time and he saw many benefits for using AAS. These benefits outweigh the risks for Hugo, and he did not suggest any confliction with use.

‘For me, it's a combination of the medical, originally for wasting syndrome. And then lately to me, it's been about the medical in the sense of healthy aging because of testosterone replacement and then, the recreational... There's a medical side where I'm interested in ...testosterone replacement therapy for middle aged man with hypogonadal symptoms ...and then there is, I guess, I'm sheepish to admit it. I think it's the, there is a cosmetic and cultural side because I think ... gay men fetishize muscularity it's just pretty, it's not universal, but it's darn close to it. And there's a prestige with that... I realized the critics if they heard me... would say, Oh, H will you get off your high horse, come on, dude, you're doing this because you're vain, you want to be muscular and you want to be admired for being muscular... And I understand that because there's an element of that, ...there's a certain kind of positive narcissistic benefit to somebody saying, you know, ...I can have a little bit of social currency, ...there comes a time walking on the street in a gay neighbourhood where, you know, you pass somebody, and you know, you do a double take, and I, you know, you can't circle the date on the calendar, but there comes a time I think, in the life of gay men when they don't get that anymore... it's that gay, middle aged men's invisibility and you know, sometimes I mean, a Bentley or a Rolls Royce will do it to but you know, muscularity will sometimes give you back something that aging has taken away. And, you know, and so it becomes a coping. Is it an adaptive coping, or a maladaptive coping? It depends on who you ask, but it's, you know, it's, to me, it's a little bit of an adaptive coping with the idea of the loss of status and the invisibility that comes with aging as a gay man. Now, with, you know, naturally just gradually getting a little more silver in my hair and stuff like that, you know, instead of being the blonde twink from the university that got into the gay bars without an ID now I'm the daddy. You know, it's like the grey hair and the beard and, and muscular’.

*Hugo selected a range of both physical and psychological motivations for using AAS and talked about his experiences as an older gay man, noting a positive consequence of having been prescribed AAS to combat his wasting syndrome, and the impact on his social life. There is evidence that gay men are more likely to report higher levels of internalisation of male ideals and body image concerns compared to heterosexual men (Strübel and Petrie 2019) and also at higher risk of AAS use (Blashill and Safren 2014). However, for Hugo his own risk/benefit analysis highlighted that he did not see his use as problematic, that it impacted positively on his quality of life and the risks outweighed the potential costs. Moreover, he had clear strategies for managing risks. Understanding that Hugo's use started through prescription steroids, that his use is now continuous and low-level, and that he now sees his use as both having physical and social advantages and linked to his identity as a gay man, could help professionals to consider the approach to take. It is likely that a preventative approach would not be accepted but that a more harm minimisation focus would be something he would engage with.*

### Asi's (USA/28) story (Table2)

*Motivations to use: Improve my appearance, increase my aggression, enhance my muscles or strength, become happier, prevent injury, curiosity, positive results I achieved from using AAS, increase my sex drive, improve endurance or stamina, other (hormone replacement therapy).*

Asi had been working out in the gym since being a teenager and starting using AAS in his mid-twenties. He had used recreational drugs previously, and said initially that AAS was a line he did not want to cross. However, he noticed his progress in the gym was not as fast as others and was curious about how AAS might make him 'bigger, faster and stronger'. He reported that part of what influenced his decision was that he had got tested and found that he had low testosterone levels. He described himself as an all or nothing kind of person, and he did a lot of research first. He listed the benefits of using, which included: symptoms of low testosterone no longer present, increased strength, ability to gain muscle and rid fat and higher libido. He said he felt more in touch with his emotions and described the risks and felt these could be mitigated by responsible use. He stated that his quality of life since using AAS has improved:

*"it feels more normal for me to have I sort of more sustained sex drive and that is just with testosterone replacement dose but it's just, it's kind of hard to put down in words but just an overall more, a better feeling of wellness I guess so I have more of a sort of energy feeling, I guess. Yeah almost like a confidence in a way, I guess"*

Asi had few concerns about his use, side-effects experienced were minimal and envisaged a potential change in use on the future. When it came to information and support, Asi reported that he did a lot of evidence-based research and got his bloodwork done privately and regularly. Asi said he chose not to seek help from a doctor as he felt their knowledge in this area was low. Asi reported one potential concern: self-phlebotomy. He felt there was need to support people who wanted to use phlebotomy as a way to mitigate harms. When considering future usage, Asi felt that other priorities might mean that he would not be able to sustain the fitness regime he has now, but that he would still want a TRT dose. (Asi/USA/28)

*This insight into Asi's journey is useful as it highlighted a complex range of motivations for use are both physical and psychological and that Asi's high sex drive is important to him. Asi's decision-making showed that any support offered that focussed on prevention was not something that would be acceptable as he was already of the mind-set that he will need to use low levels of testosterone in the future. However, as he took an evidence-based approach to use, he may be open to support aligned to harm minimisation. Notably, Asi said he had not experienced any particularly problematic side-effects yet in the questionnaire he listed a number of side-effects which were a direct result of use, (which he was self-medicating for), and others that he had previously but that AAS use had exacerbated including a risk of sleep apnoea. He also said that he was receiving treatment for lower jaw growth potentially as a result of using Human Growth Hormone (HGH), which is also a high-risk behaviour (Evans-Brown and McVeigh 2009). Consequently, building a trusting relationship with Asi could be vital; as although he does his research, he appears to be still taking risks and downplaying some of his side-effects.*



### Don's (UK/39) story (Table 3)

*Motivation: Increase my confidence, enhance my muscles or strength, become happier, overcome depression, help me stop being bullied, frustration: I've not achieved the desired results from exercise, become brave.* Don starting using AAS in a drive to change his appearance, to build muscle to become more 'manly': 'I felt well I am going to take a really practical approach to this and I thought I am going to, I am going to transform myself into this huge guy, this huge physique and that will magically fix all psychological problems'.

Don used supra-physiological doses of AAS, and spoke of having a plan for his use, and having done his research. Don was conflicted in his use; he liked the aesthetic changes but did not feel comfortable using and felt that this was potentially an unhealthy way of coping to overcome a sense of inadequacy. He felt his desire to use stemmed from his childhood experiences and the internationalisation of his beliefs around masculinity. Don's mother had a history of mental health problems, Don said his father could be very frightening and he had a 'very abusive, very traumatic childhood'. This had caused a major conflict for him around identity, which he described as having led to a number of psychological problems including diagnoses of anxiety and depression, and a tendency to use a range of substances to self-medicate. Don saw his choice to use AAS as a practical solution to fixing his issues around identity which years of counselling could not help. However, he was aware AAS use may not be a solution, particularly as he was also experimenting with an alter ego who was female: 'there is so much of an internal battle going on with me right now with regards to the steroid use because, it's revisiting the past, and all the old things come up, you know, this hyper-masculinised version of yourself, this feminine version of yourself, ...there is still an inadequacy'. Don's methods of procuring AAS also put in a very risky situation. Don reported he had taken a break but was considering starting use again:

*'It's a battle - I only recently ran a 12 week cycle for the first time in over 3 years. I was completely AAS free but that nagging inadequacy I feel in myself, my sense of lack of power and confidence overrides my logical brain. I justify it by minimising doses, compounds and cycles. At 39 years of age and having been in and out of psychotherapy for 15 years, I feel I need to train with AAS and practice jujitsu to gain a sense of power I never had in childhood due to an abusive, neglectful mother with BPD with narcissistic and histrionic traits. My father was a weak male role model who failed to defend me from my mother. I am desperate to feel some amount of normal power and control.'*

*There were a few participants with adverse childhood experiences such as bullying and parental abuse, and for some this led to an uneasy relationship with use. Don's story exemplifies this. Don is clearly conflicted in his use, he has sought help from doctors, NSPs and counsellors, yet when seeking such help much of Don's history would not be evident. For Don standard harm minimisation advice may not be enough. Don's life story suggests that counselling has also not been successful, as he has had negative experiences working with a counsellor. His history is further complicated by his use of a range of illicit substances and identity issues. His desire to self-medicate with AAS use does not seem to sit well with him as although he saw it as a solution, he kept questioning it. Don's wider problems impacted on his decision-making and his risk-taking, and this made him not just vulnerable to self-medicating and getting caught up in the darker side of AAS use putting him on the wrong side of the law. Understanding Don in the context of his life history is essential to offering him the widest possible range of support options and may even include CBT, mentoring or other forms of one-to-one support in fact a detailed plan incorporating a range of different options may be beneficial.*

*Field note from interview: Don stated in the questionnaire he was gender-fluid. He interviewed in his male persona, but his avatar was a female persona and he talked of going to University in his female persona as liberating.*

#### Lewis's (USA/37) story (Table 4)

*Motivations: Improve my appearance, enhance my muscles or strength, positive results I achieved from using AAS, improve endurance or stamina, improve fitness.* Lewis had been training in martial arts since the age of 7, took up wrestling at 15, had an abusive, aggressive father and was given AAS by coaches at the age of 15. Lewis described a traumatic childhood history:

‘I was really poor, I was ....constantly and physically abused as a kid. It was just a really, really shitty childhood ... my dad was a bit of a mean bastard... he raised me like you would raise a fighting Pitbull. You know, he wanted, he purposely raised me to be mean and aggressive and to fight every chance... So, so fighting and everything just came really naturally, my whole life. Up until now until I became a father and a husband and all that, I mean, fighting was just a constant occurrence or confrontation.’ Although he did not directly link this to his AAS use, his introduction to AAS was through his high-school wrestling coaches. He had a history of mental health issues, and these were exacerbated by some of the steroids: ‘I already have some mental health issues, so that and I already suffer from night terrors. Um. So that that exacerbates like, night terrors’.

Lewis talked about starting young and how using affected him: ‘I was a kid so, honestly, dumping, in retrospect, dumping that kind of hormone into an already hormonal body. It kind of messed up my, my mental state to be honest... I was always on edge, not like roid rage or anything. But, you know, I was already a teenager dealing with being a teenager so it kind of exacerbated all your natural teenage angst and issues at the time’.

Lewis was fearful of stopping use: ‘I’m not gonna lie to you it’s uh I have this fear that if I stopped training and since the PEDs do help me train, I have this fear that I’m just going to fall apart because a couple times when I’ve injured myself and haven’t been able to train for a while, my my joints start to hurt, I don’t feel as good, I start eating like shit, so I have this fear that if I can’t lift or train that I’m just gonna like break apart like Humpty Dumpty, kind of thing and I again I’m not gonna lie, you know at this point I’ve been, been steadily on them for so long, including big doses on and off that I am a little afraid that I won’t feel like the man I do now.’

Use has also changed for Lewis ‘I don’t PCT these days. ...I just go from high doses into my TRT doses’. He saw himself blasting and cruising going forward, but eventually saw a time where he would purely be using a TRT dose. He was aware of the risks of use and the need for evidence-based information: ‘for me, it was just all about the truth, the good or bad, good and bad, because yes, this shit isn’t 100% safe, even for a 38-year-old man with experience. I’m not stupid about that. I know that no matter what, it’s a science experiment I’m doing on my body and there’s always potential for error’.

*Lewis is concerned about the psychological effects of stopping use, but comfortable with how he is using now, feeling he is using responsibly, and is not looking to stop. Reflecting on his life story it is possible to see how, for Lewis, his use has become potentially problematic, and is linked to his internalisation of what it is to be a man. There is a need to help him reflect on side-effects of the compounds he is using and ways to reduce harm. Here too a possible discussion about supporting his mental health and fears for the future could be beneficial. There is the potential to discuss other ways to see how he could get more from his training whilst minimising AAS use.*

## Appendix 26 Excerpt from a forum discussion on UK needle exchange programmes

**Lloyds Pharmacy Steroid Needle Pack** - Started by **Anonymous**, April 19, 2015  
(Anonymous 2015)

- *My source told me lloyds dont give steroid needle packs anymore? (Greens and blues) Do they? If not, where can I get some?*

### Further comments from other members:

- *Don't get a pack - just go to any chemist that does needle exchange and tell them what you want. Personally I prefer the specialised places as they will let me take loads. Like boxes of stuff. Best experience was in Norwich where my partner is from. A really good service there. Went in and asked me what I wanted. I said I didn't want to clear them out - so she showed me just how much stuff they had! This was in a hospital though. Even gave the stuff out in tesco carrier bags, which i think is a nice touch rather than the black plastic bags which scream I've got needles to anyone in the know. The women was lovely.*
- *Buy them online.*
- *Chances are it's now moved to your local boots or superdrug store chap*
- *why do all you clowns still use needle exchanges , its costs a couple of quid for them where do you think the gov gets its statistics from for increased usage ???? it will be all well and good when you can done for having one dbol tab !!*
- *I may be totally wrong - but I think they get funding on the amount of stuff they give out. So in a strange way I think you are supporting them by getting stuff from them. MENTION=47330]kuju[/MENTION] can you confirm this? Pretty much yes - they need to demonstrate a need for teh service to justify its existence. .and given that steroid users are (in a lot of places) the majority of needle exchange clients - it's important to support them. That said - pharmacies will give fixed packs out, which vary wildly from area to area. Specialist needle exchanges will take a pick and mix approach, can give you more advice, possibly run health checks and in a lot of areas now..are running steroid user specific clinics, often outside normal hours.*
- *Well.....until last year I was responsible for collecting those statistics across a large chunk of the north west. I was also Chair of the National Needle Exchange Forum. So speaking based on that experience..... The majority of the government's statistics actually come from the British Crime Survey (an inherently flawed thing.). But regardless; the government was aware of all this 2011 when they asked the ACMD to look at anabolic steroids and provide recommendations. We were also involved in that. The net result was the ACMD stating there was no need to change the law; which teh government were happy to accept. Yes that may change one day but we'll fight against it. Given the slowly changing face of drug prohibition generally; I think it's getting increasingly less likely it'll get worse. Needle exchanges provide advice around injecting, sterile equipment, a place to dispose of used kit safely, they can provide confidential treatment for injection site issues such as abscesses..no judgements..no informing your GP. Some of them provide expert advice around diet and training, more advanced health checks such as bloodwork etc etc. It's a completely confidential health service...why wouldn't you engage with it?*
- *If steroids became illegal now, it'd be so stupid. 😊*
- *when ever i drop my sharps bins off at needle exchange i just tell them its for B12 injections, sisters ex was insulin user and they split up, someone chucked it in the lane round back of my house, used them for skag, basically anything to avoid bumping up the statistics on gear use and bringing it to the medias attention we got a nice little number going on over in the UK at the moment, dont want it to end up like the states.*