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**Creator(s):** Monna Arvinen-Barrow

**Title:** Psychological rehabilitation from sport injury: issues in training and development of chartered physiotherapists

**Research supervisor(s):** Brian Hemmings, Gillian Penny and Susan Corr

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Psychological Rehabilitation from Sport Injury:  
Issues in the Training and Development of Chartered  
Physiotherapists

Submitted for the Degree of Doctor of Philosophy  
At the University of Northampton

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Monna Maria Arvinen-Barrow

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## Abstract

Despite growing interest into the role of physiotherapists in providing psychological rehabilitation to athletes during sport injury, very little research exists outside North America, Australia, and New Zealand (e.g., Hemmings & Povey, 2002). Thus, the main purpose of this research was to explore the role of UK chartered physiotherapists in the process of psychological rehabilitation from sport injuries.

This thesis consists of four studies. With the intention to gain further insights into the physiotherapists' views on the psychological aspects of their work, study one used the Physiotherapists and Sport Psychology Questionnaire (PSPQ; Hemmings & Povey, 2002) in a national survey with 361 UK chartered physiotherapists working in sport medicine. The results from the survey provided useful insights into the ways in which psychological interventions are currently employed in rehabilitation physiotherapy. In study two, these findings were explored further, by developing a questionnaire survey to explore chartered physiotherapists' ( $N = 22$ ) preferred method of sport psychology intervention training. With the purpose of gaining an insight into the physiotherapists' personal experiences in using psychological interventions with injured athletes, study three adopted a qualitative approach, in which semi-structured interviews were conducted with seven UK chartered physiotherapists. The findings from the Interpretative Phenomenological Analysis (IPA; Smith, 1996) provided deeper understanding on physiotherapists current knowledge on, and their past experiences and opinions on using range of psychological interventions in their work with injured athletes. Similarly study four used semi-structured interviews and IPA with ten athletes who had previously encountered moderate or severe sport injuries requiring physiotherapy treatment. The findings revealed useful information on the physiotherapists' role in providing psychological support and using psychological interventions in their work with injured athletes.

In conclusion, the research presented in this thesis makes a contribution to knowledge by: (a) providing an insight into the views of chartered physiotherapists in the UK on psychological content of their practice, (b) making preliminary suggestions into how further training in sport psychology for chartered physiotherapists could be delivered, (c) enabling deeper understanding of physiotherapists current practices and past experiences in utilising selected psychological interventions in their work, and (d) giving a voice to injured athletes with regard to the role of physiotherapists in providing psychological support during sport injury rehabilitation.

**Preface:**  
**Placing the research into a personal context**

"I was running for a ball and totally twisted my ankle;  
things just spiralled downward from there."

(Serena Williams, 2005)

Rarely do I feel the ability to relate myself to such a high level, professional athlete like Serena Williams. Yet when first reading the above quote I thought to myself; if I was to change the words "running for a ball" with "landing a double axel", that quote would describe me. In an instant, the feelings of disbelief and despair, and the horrible sensation of pain from 20 years ago reappeared, and in my mind I could see myself lying on ice, holding my right ankle, and screaming. Reading Serena's words took me back to 1988 Finland, when during early morning training I encountered a season-ending ligament injury which totally transformed my promising career as a figure skater. I never recovered back to my pre-injury level of performance; instead, I missed a season, and alongside a fading career as a competitive skater, made an obvious transition into coaching.

After several years of working as a professional coach, I woke up one morning and decided to pack my belongings and move to the UK in pursuit of becoming a sport psychologist. As part of my third year applied sport psychology module, I was asked to critically evaluate an article by Hemmings and Povey titled: Views of chartered physiotherapists on the psychological content of their practice: A preliminary study in the United Kingdom. Little did I know the extent to which that particular article would impact my future career and more specifically, my way of thinking. As before, the idea of combining psychological interventions with physiotherapy was something I had never really thought about. The article made me reanalyse my own post-surgery rehabilitation and regardless of my positionality, I always came to the same conclusions: I, as an athlete, would have definitely benefited from the use of systematic goal setting, performance imagery, and different forms of social support as part of my rehabilitation!

So when the opportunity for taking up a PhD building on the work of Hemmings and Povey came, I did not think twice about turning down an MSc programme at Loughborough University and accepting the post. The title of the project attracted me, and as I had no previous in-depth knowledge on psychology of injury, I was motivated by the idea of starting from the very beginning and becoming an expert

on it. And despite being seven months pregnant, I felt that my enthusiasm about the topic would be of great use in sustaining my motivation throughout the years to follow.

And indeed, it has. After five years of hard work, I am as committed and excited as I was when I first started. I am still a strong believer in providing the best possible treatment during sport injury rehabilitation for all athletes, and not only to those at the very top. To me, this PhD is about giving a voice to the physiotherapists and the athletes with regards to their thoughts, experiences, and desires about the process of psychological rehabilitation from sport injuries. In doing so, I, as a researcher had to consider my role in the research process, and the ways in which I have reflected on before, during, and after the fact. As a consequence, in writing this thesis, I believe there has been three "me's" working alongside each other: me, the injured athlete, me, the professional working with the injured athlete, and finally me, the academic.

The balance between the three me's has allowed me to build an excellent rapport with the participants, and to be empathetic when talking to the physiotherapists and athletes alike, and yet being objective and realistic when analysing the data collected. During the course of this research, "me the academic" has grown from "recently-graduated-undergraduate-rookie-researcher" into "soon-to-be-a-PhD-and-competent-academic" who during the course of writing this thesis has found ways to combine practical experience with academic theory and research and to use it when making sense of issues arising. In proof of that, I can now say with a conviction: "twenty years ago, I was the one landing a double axel and totally twisted my ankle; and things just spiralled downward from there. Fortunately the circle has now closed and things have certainly turned for the better."

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First, I would like to thank Dr. Brian Hemmings, my supervisor, for sticking by me through thick and thin, and from the beginning to the end. There are not enough words to describe how much I appreciate your expertise and continued support. Somehow you always say the right words to keep me going. And most of all, you have helped me to find a balance between being a mother and an academic. For that, I am ever grateful.

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Now, I would like to fly my gratitude across the Atlantic, to Cottage Grove, Oregon. Dr. Daniel Weigand, thank you for igniting the academic spark in me all those years ago. It was you who made me realise my own potential. Without your editorial skills and meticulous persistence, much of my early work would have gone unpublished.

A special thank you goes to my fellow colleagues @ Unit 1, especially those who took part in the RUVARANTA summer solstice summit 2007. Liz and Michelle; you two are the best friends a PhD student could ever ask for. Thank you for sharing your thoughts, feelings, and your soup with me. Waldo and Mr President, you two are unbelievable, yet invaluable. For you two I can only say شكراً, and DALU!

Equally, a big thank you goes to David Watson, my senior research degrees administrator. If it wasn't for you, the Cinderella would have never made it to the ball. Instead, the clock would have stricken and her carriage would have turned into pumpkin. And the rest of you at the UofN (staff, students, and the honorary postgraduate), you know who you are. Thank you.

My utmost appreciation goes to all of my family. During the course of this thesis, I believe it is them who have encountered the most, sacrificed the most, and supported me the most – THANK YOU.

In particular, I would like to say ABARAKA to Kemo, for giving me space to be me, and for being an integral part of this roll-a-coaster in more ways than one. For that, I am forever grateful. To Amie, KIITOS for being my ray of sunshine and source of

strength during times of doubt. To Henna and Raisa, my two sisters. KIITOS for being honest with me at all times, both good and bad. To Mummi, KIITOS for never judging me, and forever believing in me. KIITOS Äiti for your emotional, listening, and tangible support. Without your assistance as “an in-house babysitter”, I don’t think I could have managed the final stages of writing up without losing my sanity. And finally Bjørn, I can only say TAKK for providing me your financial support during the times in need.

So this is it, finally. Five years of my life neatly bound together. Hope you enjoy the read.

Until next time,



## Dedication

I dedicate this thesis to *äidin pienelle enkelille, Amielle* (to mommy's little angel, Amie) who came into this world kicking and screaming a week after submitting my PhD research proposal. Over the past five years, you have grown alongside the PhD (and vice versa) into a happy, confident, and a fantastic little girl whom I am very proud of. Amie, you are, and always will be, my inspiration and the reason for all the hard work. Because of you, it has all been worthwhile.

## Table of contents

|                                  |           |
|----------------------------------|-----------|
| <i>Abstract</i>                  | <i>i</i>  |
| <i>Preface</i>                   | <i>ii</i> |
| <i>Acknowledgements</i>          | <i>iv</i> |
| <i>Dedication</i>                | <i>vi</i> |
| <i>Table of contents</i>         |           |
| <i>List of tables</i>            |           |
| <i>List of figures</i>           |           |
| <i>Glossary of abbreviations</i> |           |

### **Chapter 1: Introduction and outline of the thesis**

|  |   |
|--|---|
| 1.1. Introduction  | 1 |
| 1.2. Guiding the reader through the research: An outline of the thesis | 4 |

### **Chapter 2: The psychological process in sport injury: Existing theories and models**

|  |    |
|--|----|
| 2.1. Introduction  | 12 |
| 2.1.1. Sport injury statistics   | 13 |
| 2.1.2. Sport injury: Problems with concept definition  | 14 |
| 2.2. Sport injury antecedents: Psychological perspective   | 17 |
| 2.2.1. The stress and injury model   | 17 |
| 2.3. Theories explaining the psychological impact of injuries  | 22 |
| 2.3.1. Stage models  | 23 |
| 2.3.2. Cognitive appraisal models  | 26 |
| 2.3.3. An integrated model of psychological response to<br>the sport injury and rehabilitation process | 28 |
| 2.3.4. The biopsychosocial model of sport injury rehabilitation  | 33 |
| 2.4. Psychological impact of sport injury: Placing the current<br>research into theoretical context    | 36 |
| 2.5. Chapter summary   | 37 |

## **Chapter 3: The process of psychological rehabilitation from injury: Interventions to enhance recovery**

|      |   |     |
|------|---|-----|
| 3.1. | Introduction  | 39  |
| 3.2. | Goal setting  | 42  |
|      | 3.2.1. Goal setting in sport injury rehabilitation                    | 43  |
|      | 3.2.2. Using goal setting for rehabilitation: The process             | 47  |
|      | 3.2.3. Goal setting: The conclusions                                  | 51  |
| 3.3. | Imagery   | 52  |
|      | 3.3.1. Imagery in sport injury rehabilitation                         | 54  |
|      | 3.3.1.1. Healing imagery  | 56  |
|      | 3.3.1.2. Pain-management imagery                                      | 58  |
|      | 3.3.1.3. Rehabilitation-process imagery                               | 59  |
|      | 3.3.1.4. Performance imagery  | 61  |
|      | 3.3.1.5. Cognitive and motivational imagery                           | 62  |
|      | 3.3.2. Using imagery for rehabilitation: The process                  | 66  |
|      | 3.3.3. Imagery: The conclusions                                       | 67  |
| 3.4. | Relaxation techniques   | 68  |
|      | 3.4.1. Relaxation techniques in sport injury rehabilitation           | 70  |
|      | 3.4.1.1. Breath control techniques                                    | 72  |
|      | 3.4.1.2. Progressive muscular relaxation                              | 73  |
|      | 3.4.1.3. Passive relaxation   | 74  |
|      | 3.4.2. Using relaxation techniques for rehabilitation: The<br>Process | 77  |
|      | 3.4.3. Relaxation techniques: The conclusions                         | 78  |
| 3.5. | Self-talk   | 79  |
|      | 3.5.1. Self-talk in sport injury rehabilitation                       | 80  |
|      | 3.5.2. Using self-talk for rehabilitation: The process                | 85  |
|      | 3.5.2.1. Cognitive restructuring/reframing                            | 86  |
|      | 3.5.2.2. Thought stopping   | 87  |
|      | 3.5.3. Self-talk: The conclusions                                     | 89  |
| 3.6. | Social support  | 90  |
|      | 3.6.1. Social support in sport injury rehabilitation                  | 91  |
|      | 3.6.1.1. Sources of social support                                    | 95  |
|      | 3.6.2. Using social support for rehabilitation: The process           | 100 |
|      | 3.6.3. Social support: The conclusions                                | 102 |
| 3.7. | Chapter summary   | 103 |

## **Chapter 4: Psychological interventions in sport injury rehabilitation: The role of the physiotherapist**

|      |   |     |
|------|---|-----|
| 4.1. | Introduction  | 104 |
| 4.2. | Integrating psychological rehabilitation into physiotherapy: A rationale    | 106 |
| 4.3. | Integrating psychological rehabilitation into physiotherapy:<br>The dilemma | 108 |
| 4.4. | Evaluating existing research: The physiotherapists' perspective             | 110 |
|      | 4.4.1. Narrowing the field: Existing research in the UK                     | 116 |
|      | 4.4.2. Evaluating existing research: A summary of the findings              | 120 |
| 4.5. | Evaluating existing research: The athletes' perspective                     | 123 |
| 4.6. | Conclusions   | 129 |
| 4.7. | Aims and objectives of the research   | 131 |

## **Chapter 5: Chartered physiotherapists' views on psychological content of their practice: A national survey**

|      |  |     |
|------|--|-----|
| 5.1. | Introduction   | 132 |
| 5.2. | "Methods are the tools of the researcher's trade" (Moore, 2000, p.101) | 135 |
|      | 5.2.1. Instrument  | 136 |
|      | 5.2.1.1. Questionnaire validity and reliability of<br>the PSPQ         | 138 |
|      | 5.2.2. Participants  | 139 |
|      | 5.2.2.1. Gaining access to the participants                            | 139 |
|      | 5.2.2.2. Sample size   | 142 |
|      | 5.2.2.3. Awareness of possible sampling errors                         | 144 |
|      | 5.2.3. Procedure and analysis  | 145 |
|      | 5.2.3.1. Selecting appropriate procedures                              | 145 |
|      | 5.2.3.2. Surveys   | 146 |
|      | 5.2.3.2.1. Postal surveys  | 146 |
|      | 5.2.3.2.2. Online surveys  | 147 |
|      | 5.2.4. Procedure   | 148 |
|      | 5.2.4.1. Conducting a postal survey: Procedure                         | 149 |
|      | 5.2.4.2. Conducting an online survey: Procedure                        | 149 |
|      | 5.2.5. Ethical considerations  | 150 |
| 5.3. | Results  | 151 |
|      | 5.3.1. Participants  | 151 |
|      | 5.3.2. Psychological impact of injury                                  | 152 |

|          |  |     |
|----------|--|-----|
| 5.3.2.1. | The extent of the psychological effect of injury                                 | 153 |
| 5.3.2.2. | Positive negative conditions encountered   | 153 |
| 5.3.2.3. | The importance of treating psychological effects of injury                       | 154 |
| 5.3.3.   | Athletes' coping characteristics   | 154 |
| 5.3.3.1. | Successful coping characteristics  | 155 |
| 5.3.3.2. | Less successful or non successful coping characteristics                         | 156 |
| 5.3.4.   | Availability and previous use of an accredited or a chartered sport psychologist | 157 |
| 5.3.5.   | The use of psychological interventions and further training needs                | 158 |
| 5.3.5.1. | Psychological interventions used by physiotherapists                             | 158 |
| 5.3.5.2. | Need for further training in using psychological interventions                   | 159 |
| 5.4.     | Discussion   | 162 |
| 5.5.     | Research limitations   | 171 |
| 5.6.     | Conclusions  | 172 |
| 5.7.     | Chapter summary  | 173 |

**Chapter 6: Chartered physiotherapists' views on preferred methods of sport psychology training: A preliminary survey**

|          |  |     |
|----------|--|-----|
| 6.1.     | Introduction                           | 175 |
| 6.2.     | Delving into the methodology           | 178 |
| 6.2.1.   | Participants                           | 179 |
| 6.2.1.1. | Selecting the participants             | 179 |
| 6.2.1.2. | Gaining access to the participants     | 180 |
| 6.2.2.   | Instrument                             | 180 |
| 6.2.2.1. | Developing the instrument: A rationale | 180 |
| 6.2.2.2. | The instrument                         | 181 |
| 6.2.3.   | Procedure                              | 183 |
| 6.2.4.   | Ethical considerations                 | 183 |
| 6.3.     | Results                                | 183 |
| 6.3.1.   | Participants                           | 183 |
| 6.3.2.   | Further training needs                 | 184 |
| 6.3.3.   | Best method of delivery                | 185 |

|        |  |     |
|--------|--|-----|
| 6.3.4. | Preferred geographical distance  | 186 |
| 6.3.5. | Preferred level of intensity and time available<br>for future training | 186 |
| 6.3.6. | Preferred organisation for training delivery                           | 188 |
| 6.4.   | Discussion   | 188 |
| 6.5.   | Research limitations   | 189 |
| 6.6.   | Conclusions  | 191 |
| 6.7.   | Chapter Summary  | 193 |

## **Chapter 7: Chartered physiotherapists' personal experiences in using psychological interventions: An interpretative phenomenological analysis**

|      |  |     |
|------|--|-----|
| 7.1. | Introduction   | 195 |
| 7.2. | From Quantitative to qualitative? Contemplating a shift in methodology           | 200 |
|      | 7.2.1. The use of qualitative research in sport psychology                       | 201 |
|      | 7.2.2. Qualitative research: Defining the concept and approach                   | 203 |
|      | 7.2.3. Choosing the methodology: Interpretative<br>phenomenological analysis     | 204 |
|      | 7.2.4. IPA in sport psychology   | 206 |
|      | 7.2.5. Collecting data   | 207 |
|      | 7.2.6. Constructing the interview schedule                                       | 208 |
|      | 7.2.7. Moving towards sampling   | 210 |
|      | 7.2.8. Participants  | 211 |
|      | 7.2.9. Procedure   | 212 |
|      | 7.2.10. Ethical considerations   | 212 |
|      | 7.2.11. Analysis   | 212 |
|      | 7.2.12. Reflexivity  | 213 |
| 7.3. | Results  | 214 |
|      | 7.3.1. Acquired knowledge  | 215 |
|      | 7.3.1.1. Limited formal training   | 215 |
|      | 7.3.1.2. Awareness of injured athletes' emotional<br>process                     | 215 |
|      | 7.3.2. Understanding psychological interventions                                 | 216 |
|      | 7.3.2.1. Setting goals is vital  | 216 |
|      | 7.3.2.2. Imagery misunderstood   | 218 |
|      | 7.3.2.3. Misconceiving relaxation techniques                                     | 218 |
|      | 7.3.2.4. "We are massively positive" – but not<br>encouraging positive self-talk | 218 |

|   |     |
|---|-----|
| 7.3.2.5. Recognising the importance of social support               | 219 |
| 7.3.3. Experiences of using psychological interventions             | 219 |
| 7.3.3.1. Role of personal perceptions and attitudes                 | 220 |
| 7.3.3.2. Intuition – “I go on my gut”                               | 220 |
| 7.3.3.3. The athlete in the process                                 | 221 |
| 7.3.3.4. The notion of time   | 222 |
| 7.3.4. Physiotherapists’ role in the process                        | 223 |
| 7.3.4.1. Recognising the importance of psychological rehabilitation | 223 |
| 7.3.4.2. Role clarity   | 224 |
| 7.4. Discussion   | 225 |
| 7.5. Research limitations   | 235 |
| 7.6. Conclusions  | 236 |
| 7.7. Chapter summary  | 237 |

**Chapter 8: Injured athletes’ views on psychological aspects of rehabilitation physiotherapy: An interpretative phenomenological analysis**

|   |     |
|---|-----|
| 8.1. Introduction   | 239 |
| 8.2. Focus on the methods: The process of data collection               | 244 |
| 8.2.1. Constructing the interview schedule                              | 244 |
| 8.2.2. Contemplating the sample size                                    | 245 |
| 8.2.3. Participants   | 246 |
| 8.2.4. Procedure  | 246 |
| 8.2.5. Ethical considerations   | 247 |
| 8.2.6. Analysis   | 247 |
| 8.2.7. Reflexivity  | 248 |
| 8.3. Results  | 249 |
| 8.3.1. Emotional responses to injuries                                  | 250 |
| 8.3.1.1. Self-doubt   | 250 |
| 8.3.1.2. Frustration  | 251 |
| 8.3.2. Behavioural responses to injuries: Experiences of social support | 252 |
| 8.3.2.1. ... From girlfriend, family, and friends                       | 252 |
| 8.3.2.2. ... From team mates and injured players                        | 254 |
| 8.3.2.3. ... From physiotherapist                                       | 255 |
| 8.3.2.4. ... And I expect it to be subtle                               | 256 |

|   |     |
|---|-----|
| 8.3.3. Physiotherapist as the primary treatment provider                      | 257 |
| 8.3.3.1. Different is, different does... the significance<br>of individuality | 257 |
| 8.3.3.2. Diagnose me, treat me, and make me fit again                         | 260 |
| 8.3.3.3. I want to tell you about my pain                                     | 261 |
| 8.3.3.4. I trust you.   | 262 |
| 8.3.4. Experiences of psychology in physiotherapy                             | 264 |
| 8.3.4.1. Psychological support? No, not for me thanks...                      | 264 |
| 8.3.4.2. ... Yet setting targets during rehabilitation is<br>vital            | 267 |
| 8.3.5. Sport injury: It is just "part and parcel"                             | 268 |
| 8.3.5.1. Take personal responsibility   | 268 |
| 8.3.5.2. Just get on with it!   | 269 |
| 8.4. Discussion   | 270 |
| 8.5. Research limitations   | 275 |
| 8.6. Conclusions  | 277 |
| 8.7. Chapter summary  | 279 |

**Chapter 9: Contextualising the research: Contribution to existing knowledge, implications, applications, and future research**

|  |     |
|--|-----|
| 9.1. Summary of the research programme                       | 281 |
| 9.2. Theoretical contributions                               | 284 |
| 9.3. Recommendations for sport injury practitioners          | 288 |
| 9.4. Recommendations for sport psychology training providers | 291 |
| 9.5. Research limitations                                    | 294 |
| 9.6. Issues for further consideration                        | 295 |

|                   |     |
|-------------------|-----|
| <b>References</b> | 297 |
|-------------------|-----|

**Appendices**

|   |     |
|---|-----|
| 5.1. The Physiotherapist and Sport Psychology Questionnaire<br>(Hemmings & Povey, 2002) | 328 |
| 5.2. Research website for study one   | 335 |
| 5.3. Study one: Participant information sheet   | 341 |
| 6.1. The Best Method of Sport Psychology Delivery Questionnaire                         | 342 |
| 6.2. Study two: Participant information sheet   | 346 |



|      |   |     |
|------|---|-----|
| 7.1. | Study three: Interview Schedule             | 348 |
| 8.1. | Study four: Interview Schedule              | 352 |
| 9.1. | List of publications arisen from the thesis | 356 |

## List of figures

|             |   |     |
|-------------|---|-----|
| Figure 1.1. | Structure of the thesis   | 6   |
| Figure 2.1. | The stress and injury model (Williams & Andersen, 1998)   | 18  |
| Figure 2.2. | Cognitive appraisal model of psychological adjustment to athletic injury (Brewer, 1994)   | 27  |
| Figure 2.3. | An integrated model of psychological response to the sport injury and rehabilitation process (Wiese-Bjornstal et al., 1998)   | 29  |
| Figure 2.4. | The biopsychosocial model of sport injury rehabilitation (Brewer et al., 2002)  | 34  |
| Figure 3.1. | Types and levels of goals for rehabilitation (generated from the works of Taylor & Taylor, 1997)  | 45  |
| Figure 3.2. | An example of thought stopping process during rehabilitation  | 89  |
| Figure 3.3. | The six types of social support for sport   | 93  |
| Figure 3.4. | Four types of social support applicable to sport injury rehabilitation (Udry, 1997; 2002)   | 95  |
| Figure 6.1. | Preferred training methods for further psychological intervention training  | 186 |
| Figure 9.1. | Visual display of the proposed additions to the integrated model (Wiese-Bjornstal et al., 1998) with regards to the role of chartered physiotherapist in using psychological interventions during sport injury rehabilitation | 287 |

## List of tables

|            |  |     |
|------------|--|-----|
| Table 5.1. | Psychological conditions encountered by physiotherapist when working with injured athletes   | 153 |
| Table 5.2. | Top 10 characteristics of athletes who cope successfully with athletic injury                | 156 |
| Table 5.3. | Top 10 characteristics of athletes who cope less successfully with athletic injury           | 157 |
| Table 5.4. | Psychological interventions used by physiotherapists as part of the rehabilitation programme | 159 |
| Table 5.5. | Psychological interventions in which further training was regarded as important              | 161 |
| Table 5.6. | Comparison table of research findings in the UK  | 162 |
| Table 7.1. | Master table of the emergent themes: Physiotherapists' accounts                              | 214 |
| Table 8.1. | Master table of the emergent themes: Athletes' accounts                                      | 249 |

## Glossary of abbreviations

### A

|        |  |
|--------|--|
| AAI    | Attitudes about Imagery Questionnaire                        |
| ACL    | Anterior Cruciate Ligament                                   |
| ACPSM  | Association of Chartered Physiotherapists in Sports Medicine |
| AIIQ   | Athletic Injury Imagery Questionnaire                        |
| AIIQ-2 | Athletic Injury Imagery Questionnaire-2                      |
| ANOVA  | Analysis of Variance   |
| ART    | Applied Relaxation Technique                                 |
| ATC    | Certified Athletic Trainer                                   |
| ATSPQ  | Athletic Training and Sport Psychology Questionnaire         |

### B

|        |  |
|--------|--|
| BASEM  | British Association of Sport and Exercise Medicine |
| BASES  | British Association of Sport and Exercise Sciences |
| BMOSPD | Best Method of Sport Psychology Delivery           |
| BOA    | British Olympic Association                        |

### C

|            |  |
|------------|--|
| CG imagery | Cognitive General Imagery              |
| CR         | Cognitive Restructuring                |
| CS imagery | Cognitive Specific Imagery             |
| CSP        | the Chartered Society of Physiotherapy |

### E

|     |                            |
|-----|----------------------------|
| EIS | English Institute of Sport |
|-----|----------------------------|

### F

|    |                      |
|----|----------------------|
| FA | Football Association |
|----|----------------------|

### G

|    |              |
|----|--------------|
| GS | Goal Setting |
|----|--------------|

### I

|           |   |
|-----------|---|
| ICD-10-AM | International Classification of Diseases 10 Australian Modification |
| IFSP      | International Federation of Sport Physiotherapists                  |
| IJSEP     | International Journal of Sport and Exercise Psychology              |
| IPA       | Interpretative Phenomenological Analysis                            |
| IPQ       | Intervention Perceptions Questionnaire                              |

**J**

JSEP Journal of Sport and Exercise Psychology

**M**

MG-A imagery Motivational General Arousal Imagery

MG-M imagery Motivational General Mastery Imagery

MS imagery Motivational Specific Imagery

MST programme Mental Skills Training Programme

**N**

NAIRS National Injury reporting System

NATA National Athletic Trainers Association

NCAA National Collegiate Athletic Association

NCAA ISS National Collegiate Athletic Association Injury Surveillance System

NGB National Governing Body

NHS National Health Services

NSMI National Sports Medicine Institute

**O**

OMI Olympic Medical Institute

OSICS Orchard Sport Injury Classification System

**P**

PMR Progressive Muscular Relaxation technique

POMS-BI The bipolar Mood States

PSPQ the Physiotherapists and Sport Psychology Questionnaire

**R**

ROM Range of Motion

**S**

SDQ the Sporting Details Questionnaire

SFAIQ Sportsmen's Feelings after Injury Questionnaire

SINI Sports Institute of Northern Ireland

SIS Scottish Institute of Sport

SIRBS Sport Injury Rehabilitation Beliefs Survey

ST Self-Talk

SSIIA Social Support Inventory for Injured Athletes

SSS Social Support Survey

**W**

WIS Wales Institute of Sport

## **CHAPTER 1**

### **INTRODUCTION AND OUTLINE OF THE THESIS**

#### **1.1. Introduction**

In many societies today, sport forms an important part of the ways in which we can identify ourselves, interact with each other, and reflect on our position amongst those around us. According to the Council of Europe (2001), the term sport refers to "all forms of physical activity which, through casual or organised participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels". At its best, sport can provide opportunities for physical, psychological, and economical growth, and be a venue for providing exciting, challenging, rewarding, and memorable experiences for all those involved.

However not all sport participation is positive, and often experiences gained through sport are in fact the opposite (Brown, 2005). When involved in sport, athletes are often experiencing immense physical and psychological pressure, and as a consequence the likelihood of experiencing negative outcomes such as injuries is amplified. Despite injuries being seen as experiences that athletes are trying to avoid (Pargman, 1999), virtually all athletes, regardless of their level of participation, will encounter injuries that can temporarily (or permanently) impede any subsequent sport participation (Taylor & Taylor, 1997). Existing research worldwide has highlighted a high number of sport related injuries taking place annually, as for example in Australia, it has been estimated that 20% of all child/adolescent and 18% of adult hospital accident and emergency room consultations were sport injury related (Finch, Valuri, & Ozanne-Smith, 1998). In 2002, approximately 20.3 million Americans suffered a sport injury, of which half required medical attention (Conn, Annett, & Gilchrist, 2003). In the UK, it has been

estimated that nearly 30 million sport injuries occur every year (Nicholl, Coleman, & Williams, 1995), accounting for nearly 33% of all injuries nationwide (Uitenbroek, 1996). In fact, when it comes to sport related injuries, it appears that "serious athletes come in two varieties: those who have been injured, and those who have not been injured *yet*" (Brown, 2005).

In general, the process of sport injury can be relatively straightforward. When an athlete gets injured, first he/she will be diagnosed, then treated accordingly, and once recovered, he/she will return back to sport. Due to advanced medical knowledge and technology, most injured athletes have the potential for full recovery to their pre-injury (or higher) level of fitness and performance. Nevertheless, for one reason or another, numerous athletes fail to recover back to their pre-injury level of play (Taylor & Taylor, 1997), and often this failure is attributable to psychological factors. Professionals working with injured athletes have highlighted that psychological issues can determine the extent to which an athlete is able to cope successfully with their injuries (e.g., Heaney, 2006; Hemmings & Povey, 2002; Larson, Starkey, & Zaichkowsky, 1996), and research has also found links between sport injuries and reduced levels of self-esteem, loss of personal identity, anxiety (e.g., re-injury anxiety), depression, and on occasions, feelings of isolation (Leddy, Lambert, & Ogles, 1994; Petitpas & Danish, 1995). Such reactions are common amongst all athletes alike, as it has been suggested that virtually all athletes are psychologically affected by their injuries, and psychological factors can have a significant impact on recovery and athletes' responses to the injury (e.g., Ievleva & Orlick, 1991; McDonald & Hardy, 1990).

Developing the argument that injuries have both physical and psychological consequences, providing holistic care during recovery should be of importance for all those working with athletes during injury rehabilitation (e.g., Petitpas & Danish, 1995). According to Kolt (2000) sport injury rehabilitation has developed into being

a multifaceted process, and as such, it can be argued that those medical professionals working with athletes on a day-to-day basis (e.g., athletic trainers and physiotherapists) need adequate skills to facilitate both physical and psychological healing for any treatment to be effective. Indeed, the literature suggests that athletic trainers and physiotherapists are in an ideal position to inform, educate, and assist with both psychological and physical process of injury (e.g., Gordon, Potter, & Ford, 1998; Larson et al., 1996; Pearson & Jones, 1992; Wiese & Weiss, 1987; Wiese, Weiss, & Yukelson, 1991).

Despite the apparent ideal position to address psychological issues with injured athletes, some physiotherapists appear to experience some conflicts in providing and being knowledgeable enough to provide such services to injured athletes (Jevon & Johnston, 2003). Both physiotherapists and athletic trainers alike have recognised the importance of treating psychological facets of sport injuries (e.g., Crossman, 1997), have indicated using psychological interventions<sup>1</sup> as part of their work, and expressed a desire for further training in these issues (Ford & Gordon, 1998; Francis, Andersen, & Maley, 2000; Heaney, 2006; Hemmings & Povey, 2002; Larson et al., 1996). This desire for further training is not surprising, as it appears that during professional training physiotherapists receive very little or no training in using psychological interventions in their work (Taylor & Taylor, 1997). More recent literature proposes that while virtually all higher education training programmes worldwide do employ some psychology training, great disparity exists in both context and depth of the taught material (Kolt & Andersen, 2004b).

Drawing from the above, investigating the role of the physiotherapist in providing psychological support to the athlete during rehabilitation could be considered

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<sup>1</sup> For the purposes of this thesis the term 'psychological interventions' will be used to describe psychological skills, strategies, and techniques commonly employed in sport psychology.



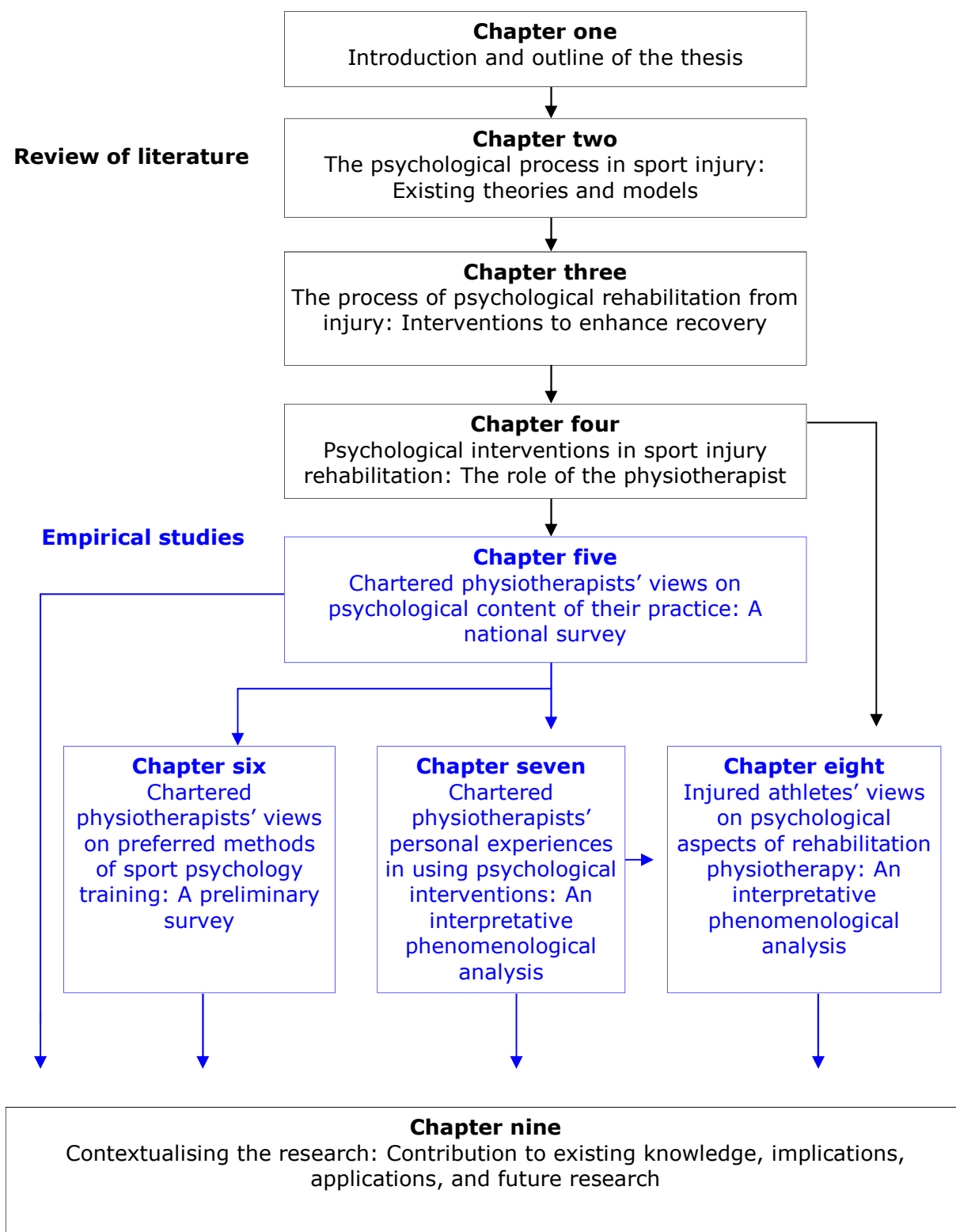
important. Therefore the purpose of this research is to examine the role of the UK chartered physiotherapists in psychological rehabilitation from sport injuries. More specifically, the research presented in this thesis aims to investigate, document, and explore UK chartered physiotherapists past experiences, existing views, and current state of knowledge in using psychological interventions as part of sport injury rehabilitation. Based on the knowledge gained, it is anticipated that the knowledge gained will provide sufficient information for which a further training programme on psychological interventions could be developed, implemented, and later evaluated. As a result, the research reported in this thesis has four main objectives: (a) to investigate on a national level, the views of chartered physiotherapists on the psychological content of their practice, (b) to investigate physiotherapists' preferred methods of delivery for further training in psychological interventions, (c) to explore chartered physiotherapists' personal experiences of dealing with psychological issues in sport, and (d) to establish injured athletes experiences of, and their views on, psychological aspects of rehabilitation physiotherapy. By doing so, the research aims to provide answers to some of the under researched issues in the field, which the future training of chartered physiotherapists and subsequently testing the usefulness of such training could be based upon.

## **1.2. Guiding the reader through the research: An outline of the thesis**

Primarily, a thesis should be a coherent story about the process which occurred during the course of the research (Cryer, 2006). Cryer states that the reader should be taken through the steps which the researcher went through whilst conducting the research. In essence, the chapters of a thesis should link together, and through one or more storylines, should be a unified narrative in making the case for what the thesis is arguing (Cryer, 2006). In light of the above, this thesis will incorporate a body of research conducted to investigate the psychology of sport injuries, particularly in examining the role of the physiotherapists in providing

psychological support to injured athletes. In essence, this thesis consists of nine chapters, all of which are integral in making the case for the overall argument. The current chapter, i.e., chapter one, is intended to act as an introduction to the thesis as a whole. The aim of this chapter is to underline the importance of the research by situating the reader into the wider context of psychological rehabilitation from sport injury. By introducing the chapter contents, the reader will be presented with greater insight into the research as a whole, thus providing a better understanding of the main purpose, the methodology, the results, and the overall conclusions of the research.

Figure 1.1. Structure of the thesis



The review of previous literature will be presented in three separate chapters (i.e., chapters two, three, and four) which will form a foundation in providing the rationale and aims for the research. Chapter two will provide the reader with the general foundations to the psychological process in sport injury by introducing, outlining, and evaluating the existing theories and models explaining the psychological consequences of injuries. At the end of chapter two, the ways in which the current research fits within the existing theoretical frameworks will be presented. By doing so, chapter two intends to provide a theoretical foundation to which the subsequent literature review chapters will build.

Based on the literature reviewed, the research will adopt a position in which injuries are seen as having psychological consequences on the individual athlete, and that individual's cognitive appraisal of the injury, as well as their emotional and behavioural responses are influenced by range of personal (e.g., athletes existing coping skills) and situational (e.g., influences from the sport medicine professionals) factors. In particular, the research will aim to examine the physiotherapists' role (i.e., situational factor) in facilitating injured athletes use of psychological interventions (i.e., behavioural response) during sport injury rehabilitation.

After the establishment of the theoretical stance, chapter three will focus on outlining the process of psychological rehabilitation by introducing and evaluating the existing research into the use of psychological interventions as a means of facilitating the sport injury rehabilitation process. Some of the most popular and prominent interventions will be introduced to the reader, and research on its usefulness for sport injury rehabilitation will be presented and evaluated. In particular, the chapter aims to append to the information presented in chapter two, by providing a case for the use of goal setting, imagery, relaxation, self-talk, and social support during injury recovery. Moreover, by reviewing the existing literature

on each intervention in turn, chapter three highlights the need for further research on the extent to which each of the above mentioned interventions could/should be used during sport injury rehabilitation.

Chapter four discusses the process of implementing psychological interventions to sport injury rehabilitation. More specifically, the chapter aims to review and critically evaluate the existing research in relation to practicalities of providing psychological support to injured athletes by examining the role of the chartered physiotherapists in the process. First, the importance of sport medicine professionals in providing psychological support will be highlighted with reference to research (e.g., Gordon et al., 1998; Kolt, 2003; Ray, Terrell, & Hough, 1999), and the predicament between existing training and practical work as highlighted by researchers and physiotherapists themselves will be presented. Following on, the chapter will examine the existing work on the role of the physiotherapist in providing psychological care to injured athletes from both the physiotherapists' and the athletes' perspective, as, in order for any treatment to be effective, the physiotherapists should be able to integrate psychological interventions in a way that it forms an expected part of the rehabilitation for the athlete (Kolt & Andersen, 2004a).

With the aims and objectives of the research clarified, the following four chapters (chapters five, six, seven, & eight respectively) will focus on the empirical work conducted to meet each of the research aims stated earlier. All four chapters will follow a similar format; first the reader will be presented with a short introduction and brief review of literature of the areas investigated. As the aim of any thesis is to present the research process as it happened, the methodology and the process of selecting appropriate methods will then be discussed in detail. So in presenting the research, the information related to methods and methodology will be presented in the order which it happened rather than following the conventional

order of information (i.e., design, participants, materials/apparatus, and procedure, as demonstrated in Harris, 1986). Subsequently the empirical findings will be presented, followed by the conclusions, and discussion of the research implications.

Chapter five covers the research process and the empirical findings from study one. With the aim of conducting a national survey with chartered physiotherapists treating a broad scope of athletic injuries at all levels of competition, a combination of online and postal survey methods using the Physiotherapist and Sport Psychology Questionnaire (PSPQ; Hemmings and Povey, 2002) instrument was conducted. The data obtained was then analysed through descriptive statistical analyses with regards to physiotherapists' current views on range of issues surrounding the use of psychology in their work. Based on the findings, it appears that to some extent, physiotherapists believe all athletes are psychologically affected by their injuries, and identified stress and anxiety as the most common responses to injuries, and perceived athletes' attitude, treatment compliance, and understanding of the injury as key characteristics in determining athletes' coping ability. They also reported using a range of psychological interventions as part of the rehabilitation, and expressed the importance of the need for further training in such skills.

Chapter six expands from the findings arising from study one, by investigating practicalities of providing further training in psychological interventions for physiotherapists. Much of the existing research to date has advocated further training of physiotherapists in providing psychological support to injured athletes (e.g., Francis et al., 2000; Heaney, 2006; Hemmings & Povey, 2002; Larson et al., 1996); however the aspect of *how* this type of training could and should be delivered has not been included in previous surveys. Therefore the aim of this chapter was to present the research process that took place when investigating physiotherapists preferred methods of training delivery for further education in

psychological interventions. The results from the descriptive statistical analyses revealed that physiotherapists appeared to prefer intense training days/weekends in the form of traditional "going-to" training methods (e.g., workshops, seminars) over more contemporary distance learning methods. The vast majority were willing to travel over 50 miles to receive such training and expressed the view that the most suitable organisations to arrange training were professional bodies and associations.

Similarly, chapter seven aims to elaborate some of the quantitative findings from study one, by seeking an insight into the physiotherapists' personal experiences of using selected psychological interventions in their work with injured athletes. A qualitative approach was adopted, as it involves procedures that result in rich, descriptive, and contextually situated data (King, 1996). More specifically, as the aim of study three was to make sense of physiotherapists personal experiences, the use of Interpretative Phenomenological Analysis (IPA; Smith, 1996) was chosen as an appropriate methodology. By following the IPA guidelines, a semi-structured interview schedule was developed, and one-to-one interviews were carried out with seven chartered physiotherapists working in sport medicine. Following the IPA analysis, the physiotherapists were very open about lack of formal training in sport psychology, and appeared to be very knowledgeable and comfortable in using goal setting and encouraging social support. Physiotherapists placed a lot of importance on the use of "gut-feeling" and experiential knowledge, and had strong opinions on their personal role in the process of psychological rehabilitation.

Chapter eight contains details the description of the research process and the empirical findings from study four, which documented the injured athlete's expectations of, and experiences on psychological aspects of rehabilitation physiotherapy. Similar to study three, the use of qualitative methods was deemed most suited in meeting the research aims. Following the IPA (Smith, 1996)

guidelines, a semi-structured interview schedule was developed, pilot tested, and IPA was subsequently used for data analysis. The results provided good insights into the ways in which athletes perceive physiotherapists role in using psychological interventions during rehabilitation, the main emphasis being on recognising the individual needs of an athlete, and utilising any techniques necessary to ensure rapid return back to full fitness.

Finally, chapter nine presents a summary of the research programme and draws together the key findings from previous chapters. The research's theoretical contribution to the existing sport psychology and athletic injury literature is highlighted, and practical recommendations for sport injury practitioners and sport psychology training providers will also be discussed. The consideration of the limitations of the research will subsequently follow, and in light of such, new avenues for further research are also identified.



## **CHAPTER 2**

### **THE PSYCHOLOGICAL PROCESS IN SPORT INJURY: EXISTING THEORIES AND MODELS**

#### **2.1. Introduction**

In recent years, the number of people partaking in sport related activities has been on the increase (Kolt, 2003). Such trends are encouraging as existing research findings suggests that sport and exercise participation has great benefits for health, and inactivity itself is regarded as a health risk (Blair et al., 1995; Blair, LaMonte, & Nichaman, 2004). Unfortunately, along with increased levels of sport participation, the risk of encountering sport related injuries have also amplified. Over the past 15-20 years, the likelihood of injury has significantly increased (Orchard & Powell, 2003), and with the current trend in sport, is likely to continue to increase in the future. According to Pargman (2007) the rise in the number of injuries could be attributed to more rigorous training programmes and increasingly demanding competitive situations, both of which are subsequently placing high levels of pressure on the individual athletes and their skeletal system. As a result, the risk of sustaining a sport injury is a real and ongoing threat for all recreational and elite athletes alike (Walsh, 2005), and many athletes regard injuries as an expected part of sport participation (Shaffer & Wiese-Bjornstal, 1999).

The purpose of this chapter is to present the reader with a series of theoretical models that have been developed to explain the psychological process of sport injuries. The chapter will begin by providing a brief introduction to the topic of sport injury and present the most recent sport injury statistics. This is followed by a discussion of the problems of defining and classifying sport injuries. The chapter will then concentrate on the existing theories and models on psychology of sport injury. This will include a section on the psychological explanations for why sport

injuries occur, as well as an overview of the theories and models developed to explain psychological consequences of injuries. At the end of the chapter, the ways in which the current research aims to explore the existing framework will also be presented, which will act as a foundation upon which the subsequent literature review chapters will be built.

### ***2.1.1. Sport injury statistics***

As athletic injuries are a likely part of any sport participation, it is important to identify the extent to which they have taken place in a sport setting. Existing research findings provide statistics about increasing occurrence of sport injury worldwide. In the United States of America alone, an estimated 17 million sport injuries take place every year (Booth, 1987; cited in O'Connor, Heil, Harmer, & Zimmerman, 2005). Over a period of three years (1997-1999), an estimated seven million Americans received medical treatment for their sport and exercise related injuries (Conn et al., 2003). In addition, during a 12 month period (July 2000-June 2001), over 4 million nonfatal sport and recreation related injuries were treated in hospital emergency departments in the United States (CDC, 2002). More recent statistics suggest that in 2002, about 20.3 million Americans suffered a sport injury, and of those, approximately 10 million required medical attention (Conn et al., 2003). According to the same study, 20% of American children who were involved in sport encountered injuries, and about 25% of their injuries were classified as serious.

Outside America, the findings are of a similar nature. In Australia, it has been estimated that 20% of all child/adolescent and 18% of adult hospital accident and emergency room consultations were sport injury related (Finch et al., 1998). In Europe, comparable trends are evident, as for instance in the Netherlands, 21% of the school children that participated in a range of sports over a seven month period, sustained sport related injuries (Backx, Beijer, Bol, & Erich, 1991). In

Finland, almost 9% of all of those involved in competitive soccer, ice hockey, volleyball, basketball, judo, or karate during 1987-1991 encountered sport and exercise related injuries (Kujala et al., 1995). In the UK, such injuries account for nearly 33% of all injuries (Uitenbroek, 1996). More specifically, it has been estimated that nearly 30 million sport injuries occur every year in the UK alone (Nicholl et al., 1995). The findings from Australia and Europe are very similar to those gained in the United States, as it appears that not only are sport related injuries very common worldwide, but the occurrence of encountering sport injuries is also on the increase.

### ***2.1.2. Sport injury: Problems with concept definition***

One of the controversial issues surrounding sport injury research is lack of a mutually agreed definition, and in epidemiological studies for instance, the term "sport injury" has entailed a broad range of classifications. According to Fuller (2005) these definitions include: (a) any new injury sustained during training or competition that prevents sports participation for a minimum of 48 hours, (b) any injury during training or competition that resulted in an injury claim, (c) any injuries which required a hospital visit, (d) any player complaint which needed medical attention from the medical team, (e) any injury which resulted in the player not being able to play in the subsequent match, (f) any injury which resulted in taking time off from work and the inability to take part in usual activities.

Fuller (2005) argues that producing a universal definition of injury applicable to all sports would be convenient; however he states that such a definition is very difficult, if not impossible to obtain for a range of reasons. The causes of injuries vary, as some sport related injuries take place in sudden, unpredictable and often traumatic situations (acute injuries), whereas others occur due to repetitive stress built over a prolonged time period (chronic injuries). The injuries can affect both the bones and the soft tissue (e.g., ligaments, tendons, and muscles), thus the

implications of injury can vary greatly. Similarly each sport has its own characteristics, thus injuries may have differing effects on the athlete and any subsequent sport participation. For example if a gymnast suffers a thumb injury, it is more likely to have a long term effect on his/her sport participation, than if a marathon runner is diagnosed with the same injury.

As no common operational definition of sport injury exists, no universal classification of injury severity exists either (Hodgson Phillips, 2000). Injuries have been commonly categorised based on the length of time the injury prevents the athlete from sports participation (practice/competition). The National Accident and Injury Reporting System (NAIRS), classifies injuries as minor (prevents participation in practice/competition for up to 8 days), moderate (prevents participation for 8 to 21 days), severe (prevents participation for more than 21 days), and catastrophic (e.g., career ending, permanent physical disability). Building on the principles of NAIRS, the National Collegiate Athletic Association Injury Surveillance System (NCAA ISS) classifies reportable injury as one that (a) took place whilst participating in an organised intercollegiate practice or game, (b) required medical attention from the medical team, and (c) therefore restricted any further sport participation for one or more days beyond injury (NCAA ISS, 1982; cited in Zemper & Dick, 2007). The Athletic Injury Monitoring System (AIMS) is similar to that of NCAA ISS, as it classifies reportable injury as something which prevents athletic participation for one day or more (Zemper & Dick, 2007). Despite the differences, the NAIRS, NCAA ISS, and AIMS classifications appear to have some commonalities. They are also comparable with some of the earlier definitions listed by Fuller (2005), in that sport injuries are predominantly defined and classified according to the time it restrict subsequent sport participation.

Classifying injuries purely based on the time an injury has restricted sport participation is seen as simplistic. For example, some injuries which are classified

as minor in relation to the time lost from training and competition, can involve severe deep tissue damage which has the potential to develop into more chronic problems (Fuller, 2005). Other injury reporting systems have since been developed and some of the most prominent ones include the National Football Head and Neck Injury Registry, the National Center for Catastrophic Sports Injury Research, the International Classification of Diseases 10 Australian modification (ICD-10-AM), and the Orchard sport injury classification system (OSICS), all of which have their own unique characteristics in the ways in which sport injuries are classified. Rae, Britt, Orchard, and Finch (2005) argue that the ICD-10-AM (which is mainly used for clinical diagnosis) and the OSICS version 8 are currently the most used systems in epidemiological injury research. Fuller (2005) argues that of the two, the OSICS-8 is simpler and thus better for classifying sport injuries. Recently, an updated version of the OSICS (version 10) has been developed and validated (Rae & Orchard, 2007). The authors claim that by using the new four-letter coding system when classifying sport injuries, a greater depth in sport injury classifications can be achieved. The first letter indicates the anatomical site, i.e., what part of the body the injury occurred. The second letter explains the injury pathology, i.e., explaining the type of injury (e.g., bruising, laceration, fracture, or muscle injury). The further two letters provide a more detailed description of the pathology, including description of the injury severity.

Given the complexity of sport injuries and the range of ways in which they have been classified, it is not surprising that the researchers have been unable to produce one mutually agreed definition. Despite the lack of an all-inclusive definition, it is safe to say that sport injuries are seen as negative consequences of partaking in athletic activities. For most athletes sport injuries are seen as experiences that athletes are trying to avoid (Pargman, 1999); however in reality, a vast majority of athletes will encounter an injury that will restrain them from their sport for an extended period of time (Taylor & Taylor, 1997). With the above

in mind, and for the purpose of this research, adopting a simple definition often used to describe exercise injuries is appropriate. Thus, sport injury is seen as “trauma to the body or its parts that result in at least temporary, but sometimes permanent physical disability and inhibition of motor function” (Berger, Pargman, & Weinberg, 2007).

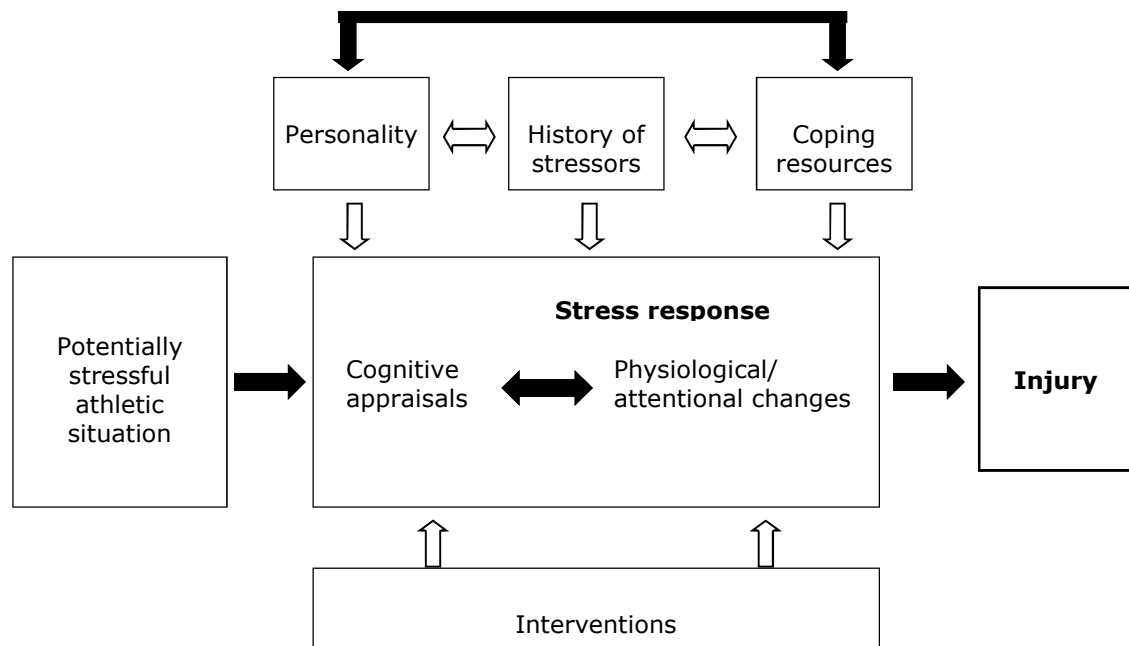
## **2.2. Sport injury antecedents: Psychological perspective**

Encountering sport injury is often a result of a range of external and internal factors. Although injuries are largely physical in nature, over the past few decades, the interest in the role of psychosocial factors as part of the injury process has increased (Brewer, Andersen, & Van Raalte, 2002; Kolt & Andersen, 2004b). Early psychological research into sport injuries focused largely on trying to determine a variety of psychosocial antecedents of sport injuries (Andersen & Williams, 1988), and a link between athletes’ previous life stressors and individuals’ resiliency to injuries have been found (Kolt & Andersen, 2004b). In essence, it has been suggested that individuals with inadequate personal resources and skills and who have experienced several recent stressors in their lives are more likely to encounter injuries than those with converse characteristics (Kolt & Andersen, 2004b). One of the most prominent models addressing the relationship between major life events, stress, and sport injuries to date, is the stress and injury model by Williams and Andersen (1998) which is outlined below.

### **2.2.1. The stress and injury model**

Originally developed in the late 1980’s the stress and injury model (Andersen & Williams, 1988) aims to explain the psychology underlying the occurrence of sport injuries. A decade later, the original model was revised by its authors. As a result, the revised stress and injury model (Figure 2.1.) by Williams and Andersen (1998) is regarded as the foundation for all psychosocial sport injury research, since it indicates an association between psychology and sport injury (Pargman, 1999).

Figure 2.1. The stress and injury model (Williams & Andersen, 1998)



Reproduced from Williams & Andersen, 1998, <http://www.tandf.co.uk>

The model proposes that individuals with certain personality characteristics, a previous history of stressful events, and with limited access to coping resources will appraise the injury as more stressful than those with opposite psychosocial characteristics (Williams & Andersen, 1998). In other words, athletes are often faced with a stressful athletic situation. Examples of such a situation could be performing under severe weather conditions (i.e., football match in a heavy rain, hail, or wind) or performing under pressure in training or competition to ensure desired career progression, team selection, and/or financial security. How an individual will appraise the stressful situation (i.e., how stressful they perceive the situation to be) depends on their personality characteristics (e.g., trait anxiety, locus of control), previous history of stressors (e.g., daily hassles, previous injuries, and past experiences of similar situations), and their personal (e.g., social competence or healthy diet) and environmental (e.g., family and friends), coping resources. According to the model, implementing psychological interventions with

the aim of lessening the stress response and decreasing the injury vulnerability is also proposed to have an impact on the athletes' cognitive processes. Consequently based on the cognitive appraisal process, an athlete will respond to the stressful situation, resulting in both physiological (e.g., muscle tension) and attentional (e.g., lack of focus or concentration) changes. Depending on the outcome of the stress response, the likelihood of incurring a sport injury in the situation will either increase or decrease.

Despite being regarded as the foundation for psychology of injury research, the model has received mixed support in the literature. To date, a majority of the research examining personality factors associated with injuries has focused on motivation, locus of control, and trait anxiety (Williams, 2001), and the findings have been conflicting. Research into motivation has suggested that athletes who are self-motivated tend to be more likely to overload their training and thus increase the likelihood of injury (McClay, Appleby, & Plascak, 1989).

In American football, injuries were found to have a positive correlation with the external locus of control (Pargman & Lunt, 1989). Kolt and Kirkby (1996) investigated psychological factors associated with injuries amongst 162 elite and non-elite female gymnasts in Australia. Their findings from the questionnaire survey suggested that athletes with a greater internal locus of control were significantly ( $p < .05$ ) more injury-prone than those with lower levels of internal locus of control (Kolt & Kirkby, 1996). In contrast, a study with 181 American university students found no relationship between locus of control and injury occurrence (Hanson, McCullagh, & Tonymon, 1992). Other studies have also come to similar conclusions and failed to find support for the relationship between injury and locus of control (e.g., Kerr & Minden, 1988; Passer & Seese, 1983, cited in Petrie & Perna, 2004).



Parallel to the above, the relationship between athletic injury and trait anxiety has also received partial support in the literature. For example, despite finding no relationship between locus of control and injury occurrence, Hanson et al (1992) found a relationship between trait anxiety and injury severity. When examining the effects of competitive trait anxiety, positive life stress, coping skills, and playing status on injury amongst football players ( $N = 158$ ), Petrie (1993) found that for players who were classed as starters<sup>2</sup>, trait anxiety along with positive life stress and coping skills accounted for 60% of the overall injury variance. However no relationship between injury and any of the variables were found for players who were classed as non-starters (Petrie, 1993).

Life stress, on the other hand, has been more strongly supported in the literature as a positive relationship between athletes' life stress and injury has been found (e.g., Andersen & Williams, 1999; Hanson et al., 1992; Kolt & Kirkby, 1996). For example, in their study with intercollegiate athletes ( $N = 196$ ), Andersen and Williams (1999) found that athletes with more negative life events during stress accumulated more injuries than those athletes with fewer negative life events. Similarly, life stress was found to be an important antecedent of injury occurrence amongst university students ( $N = 181$ ) in America (Hanson et al., 1992). In Australia, Kolt and Kirkby (1996) found that for the overall sample ( $N = 162$ ) and for the non-elite gymnasts, life stress was a significant predictor of athletic injury. Research has also found some support for the link between daily hassles and injury occurrence. Athletes who had experienced increased numbers of daily hassles immediately prior to their injury were more prone to incur an injury than those whose daily hassles had remained relatively stable (Fawkner, McMurray, & Summers, 1999). In contrast, Hanson et al (1992) found no support for the relationship between minor life events (i.e., daily hassles) and injury occurrence.

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<sup>2</sup> In Petrie (1993), the author used the term 'starters' to describe players who were normally part of the starting line-up in football.

The findings in support of coping resources are equivocal. The Williams and Andersen (1998) model suggests that athletes with better coping resources (e.g., those in receipt of greater support from family and friends) will have a better ability to appraise the stressful athletic situation, and are therefore less likely to get injured (Williams, 2001; Williams & Andersen, 1998). In empirical research, findings have been contradictory, as for example Hanson et al (1992) failed to find a significant relationship between social support and injury occurrence. Instead, they found social support as a significant discriminator for injury severity. In addition, regardless of the injury, all the athletes in their study displayed relatively high levels of perceived social support, thus not supporting the proposed hypothesis made by Williams and Andersen (1998).

To date, very few studies have tested the effects of interventions on sport injury occurrence. In 2004, only six studies examining the effects of interventions in reducing the risk of injury existed, and the results from these studies have been inconsistent (Kolt & Andersen, 2004b). For example, a study with a U.S alpine ski team ( $N = 18$ ) provided support for the use of imagery and attention control in reducing the rate of injuries (May & Brown, 1989), whereas a study by Kolt and Hume (2003) found that a 12-session stress management programme on injury for competitive gymnasts ( $N = 20$ ) produced no significant differences in stress scores for the experimental and control group. More recently Noh, Morris, and Andersen (2007) investigated the effects of two psychological interventions designed to reduce injury amongst ballet dancers by enhancing coping skills. A total of 35 dancers were assigned into control group ( $n = 12$ ), autogenic training group ( $n = 12$ ), and broad-based coping skills condition which included autogenic training, imagery, and self-talk ( $n = 11$ ). The results from the multivariate and univariate analyses revealed that broad-based coping interventions enhanced athletes coping skills in a range of ways. Significant improvements were found for peaking under pressure ( $p < .05$ ), coping with adversity ( $p = .01$ ), having high levels of

confidence and achievement motivation ( $p < .05$ ), and ability to concentrate ( $p = .05$ ). More specifically, the findings from an analysis of covariance revealed that those athletes in the broad-based coping skills condition spent significantly ( $p = .05$ ) less time injured than those in the control group. Despite the limited amount of research studies investigating the impact of psychological interventions on sport injury prevention, research findings to date appear to suggest that engaging in psychological interventions with the intention of enhancing athletes coping abilities is more beneficial than not using psychological interventions at all.

To summarise, a body of literature exists equivocal to the stress and injury model. It appears that for the most part, the hypotheses proposed by the stress and injury model have been relatively strongly supported in American football, but very little support for the model is found in other sports (Pargman, 1999). A decade on, the stress and injury model is still lacking empirical support for its arguments, and it has been proposed that the model is best applied from the pre-injury standpoint (Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998), rather than being suitable to be applied to the whole psychological process of sport injuries. Nevertheless, the model forms a strong foundation for all sport injury research (Pargman, 1999), and when conducting research into psychological responses of injuries, identifying and understanding the psychological factors that may predispose the athlete to getting injured in the first place are important to recognise.

### **2.3. Theories explaining the psychological impact of injuries**

Historically injuries have been viewed as "inevitable, random, and not amenable to prevention efforts" (Kolt & Andersen, 2004b, p. 9). In most cases, due to advanced medical technology, full physical recovery can be seen as a likely outcome. However, despite the potential for full physical recovery, many athletes are unable to return to their pre-injury level of performance (Taylor & Taylor, 1997). Often the inability to return back to sport is due to psychological factors such as re-injury

anxiety, lack of motivation, or feelings of self-doubt. According to Brewer (2001a), one of the first researchers in the field to recognise the importance of documenting and recognising the potentially devastating emotional impact of sport injuries was Little (1969; cited in Brewer, 2001a, p. 1). Nearly three decades later, this is widely recognised by researchers in sport, as Brown (2005) states: "the impact of injury is far more than physical; it can jeopardise an athlete's confidence, self-esteem, and sense of identity" (p. 217).

Several theoretical perspectives have been developed in an attempt to explain athletes' emotional and psychological responses to sport injury. These theories are important for two main reasons: firstly, to allow better-grounded research to take place, and secondly to give medical professionals such as physiotherapists and sport therapists a better ability to interpret the reactions displayed by injured athletes (Kolt, 2003). Researchers such as Brewer (1994) and Kolt (2003) have proposed that these theoretical models fall into two main categories: a range of psychological models (i.e., stage models and cognitive appraisal models), and the Biopsychosocial model (Brewer et al., 2002). This chapter will discuss each of these models in turn, with the purpose of explaining how the psychological impact of sport injury has been explained in the literature.

### ***2.3.1. Stage models***

Early research into the psychological aspects of sport injuries was mainly focused on a stage model approach (e.g., Walker, Thatcher, & Lavalley, 2007). The stage models presume that injury can be viewed as a partial loss of an aspect of the self (Brewer, 2001a, 2001b), and that the recovery process will occur in stages. In sport, the most commonly used stage models derive from the research on terminally ill patients by Kübler-Ross (1969). The Kübler-Ross grief-response model has been developed to explain individual responses to a significant loss (e.g., death of a family member) and proposes that individuals who have encountered such

experiences will typically progress through five stages of grieving: denial, anger, bargaining, depression, and acceptance (Kübler-Ross, 1969).

The Kübler-Ross's (1969) grief-response model has been applied to sport by a range of researchers (Astle, 1986; Lynch, 1988; Rotella, 1985; Rotella & Heyman, 1993) and a number of stage models have also been proposed (Evans & Hardy, 1995; McDonald & Hardy, 1990). The most frequently used stage models in sport injury rehabilitation involve five stages: first, the initial disbelief leads to denial in which athletes try to underestimate the significance of the injury, and probably reject the prognosis. As the injury becomes more evident, the initial denial is replaced with anger towards the self, or someone else the athlete may consider as responsible for the injury (e.g., other players involved with the injury incidence or a coach). Followed by anger, athletes may try bargaining with the sport medicine providers and rehabilitation professionals. Once the full realisation of the injury has occurred, athletes may become depressed about the situation. This can result in reduced motivation toward the rehabilitation process and engagement in malproductive behaviours (Horsley, 1995; cited in Kolt, 2003, pg. 170). Finally, the athlete will accept the situation and focus entirely on rehabilitation.

Until the late 1990's, stage-based grief process models were seen as the most probable explanation of how athletes cope with injuries (Crossman, 1997; Evans & Hardy, 1995). Early research in the field provided great support for the models (e.g., Astle, 1986; Lynch, 1988; Rotella, 1985; Rotella & Heyman, 1993), and sport rehabilitation professionals have reported observing behaviours consistent with various stages amongst their patients (Gordon, Milios, & Grove, 1991). Despite failing to report the sequence and duration of each stage, in their study, Gordon et al. found that 77% ( $N = 51$ ) of the physiotherapists observed stages of denial, anger, bargaining, and depression amongst the athletes they treated during rehabilitation. In contrast, when examining athletes emotional responses to

season-ending injuries, Udry, Gould, Bridges, and Beck (1997) found no support for the bargaining stage. In addition they were only able to provide partial support for the denial stage. According to Udry et al., the denial stage may be applicable to those athletes who are non-compliant with the rehabilitation programme, and despite being educated about their injuries, appear to be refusing to accept the severity of their injuries.

The brief overview of the existing sport injury literature on stage models suggests that injured athletes do not progress through set stages in a prearranged manner (Brewer, 1994). For example, McDonald and Hardy (1990) examined the affective, cognitive, and behavioural response patterns amongst five severely injured university athletes across a four-week injury period. Their findings supported a two-stage process (i.e., initial shock and retreatment<sup>3</sup>) instead of five-stage process, and the response patterns were greatly correlated with the athletes' perception of rehabilitation. In other words, as the perceived rehabilitation improved, an increase in positive, and a decrease in negative affect amongst the athletes was found (McDonald & Hardy, 1990). It appears that no universal sequence of distinct emotional reactions to sport injury has been found (Brewer, 1994).

According to Heil (1993c) the extent to which grief-like response is characteristic to all injuries is unknown. Since the early 1990's, very little emphasis on investigating the appropriateness of stage models for sport injury has taken place. Instead, much research has been focused on examining alternative ways of explaining the process of psychological rehabilitation from sport injuries. Despite the lack of recent interest in examining the usefulness of applying stage models to sport injuries, in terms of planning psychological interventions during rehabilitation,

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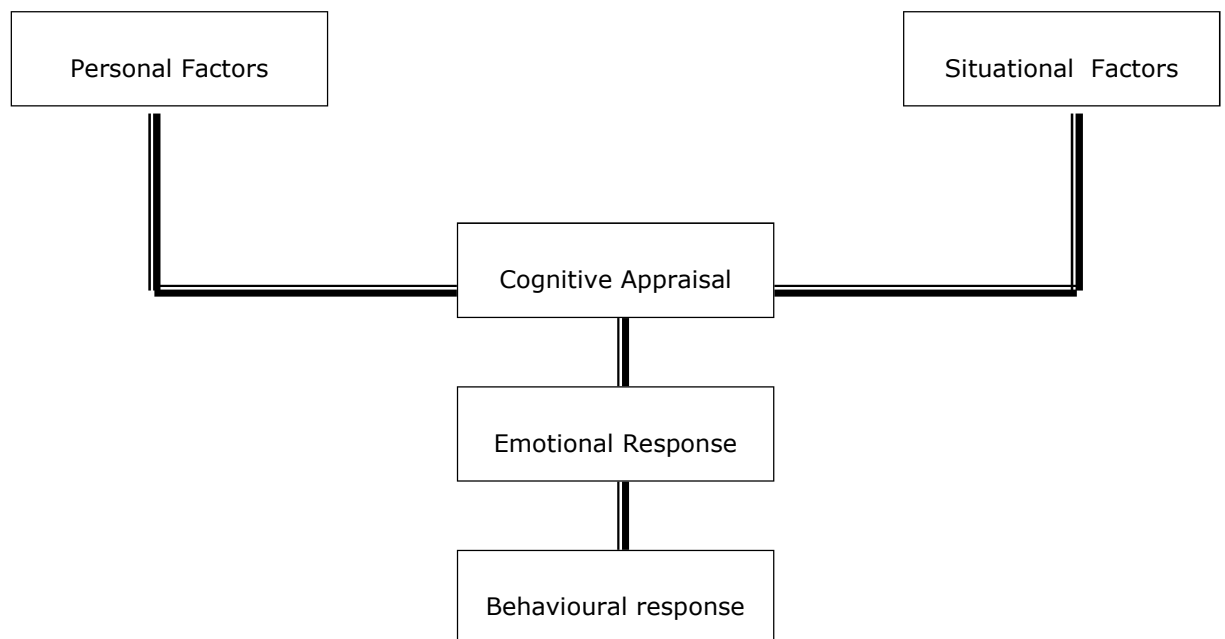
<sup>3</sup> Retreatment is a form of denial in which an athlete retreats into illness or into health

identifying different stages could be useful. If professionals (i.e., physiotherapists, athletic trainers, and sport therapists) would be able to recognise different psychological stages during rehabilitation, the planned interventions could then be better tailored to meet individual athlete needs (Gordon et al., 1991; Smith, Scott, & Wiese, 1990). However, the ability to identify the emotional stages alone would not be sufficient enough to form the foundation for any psychological intervention. Since athletes reactions and responses to injuries differ greatly and are influenced by both personal and situational factors (Brewer, 1994; Wiese-Bjornstal et al., 1998), it has been proposed that stage models may not be the most appropriate in elucidating how athletes deal with psychological aspects of sport injuries.

### ***2.3.2. Cognitive appraisal models***

The cognitive appraisal models were developed to clarify the psychological process the stage models failed to account for, i.e., to explain the individual differences in response to athletic injury (Brewer, 1994). Brewer lists numerous cognitive appraisal models (e.g., Lazarus & Folkman, 1984; Rotella, 1985; Weiss & Troxel, 1986; Gordon, 1986; and Wiese-Bjornstal & Smith, 1993, all cited in Brewer, 1994, p. 90) relevant to the psychological response to athletic injuries. Cognitive appraisal models in general, are based around stress, coping and emotional responsivity theories (Kolt, 2003), in which the injury itself is considered as the stressor. As shown in Figure 2.2., cognitive appraisal models assume that individual's appraisal of an injury has an effect on the individual's thoughts, feelings and actions. Evaluative cognitions intervene between the encounter and the response to determine consequent psychological responses and behavioural outcomes. Therefore, the importance is not placed on the fact that the injury has occurred, but on the ways in which it is perceived (Brewer, 1994).

Figure 2.2. Cognitive appraisal model of psychological adjustment to athletic injury (Brewer, 1994)



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The cognitive appraisal models have four main components: (a) stressful situation, (b) cognitive appraisal, (c) emotional responses, and (d) consequences (Kolt, 2003). The cognitive appraisal models propose that athletes' reactions to sport injuries involve both personality (i.e., dispositional and/or historical characteristics of the individual) and situational factors (i.e., injury related characteristics and variable aspects of social and physical environments). An individual's experience of stress (e.g., stress as a result of injury, or injury as a cause of stress), is a function of their thoughts about the particular situation (Weiss & Troxel, 1986). In other words, when injured, an athlete often experiences stress, as injury is seen as a stressful situation. How the situation is appraised depends on the possible outcomes of the injury (e.g., what are the long-term consequences of the injury in relation to the athlete's career, and/or life in general), and perceived personal/situational resources available for the injured athlete. Appraisal is followed by athletes' emotional responses to the situation, which varies from one individual



to another. Finally, these responses will have behavioural, psychological, and health-related consequences for the outcome of the rehabilitation process (Brewer, 1994).

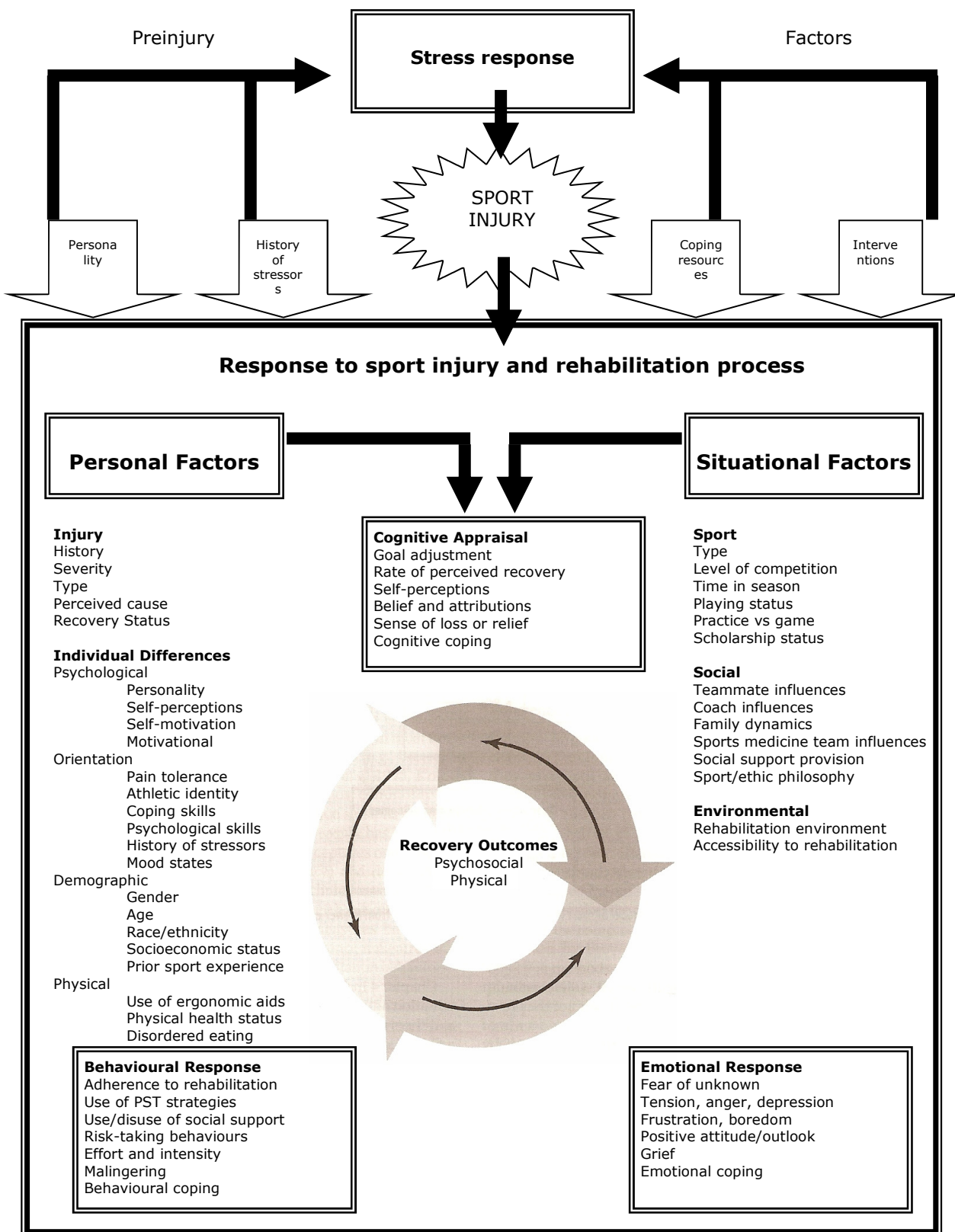
### ***2.3.3. An integrated model of psychological response to the sport injury and rehabilitation process***

Although the cognitive appraisal models seemed to provide the most comprehensive account for understanding the sport injury process, at the time of their development very little empirical evidence to support the models existed (Wiese-Bjornstal et al., 1998). Wiese-Bjornstal and her colleagues reviewed the existing stage and cognitive appraisal models, and as a result, proposed that the two models may not be as mutually exclusive as often presented. According to Wiese-Bjornstal et al., an athlete who considers his or her sport injury as a loss must first appraise the situation before the emotions associated with loss (i.e., grief, sadness, despair, depression, and anger) were to develop. As a consequence, a synthesis of existing theoretical models was developed and proposed in order to provide a comprehensive account of the psychological responses to sport injuries. By combining the existing post- and pre-injury models, Wiese-Bjornstal and her associates (1998) developed the integrated model of psychological response to the sport injury and rehabilitation process<sup>4</sup>. According to Kolt (2003) and other sport injury researchers (e.g., Anderson, White, & McKay, 2004; Brewer, 2001b), the integrated model (see Figure 2.3.), is the most developed and comprehensive account to date, and appears to provide the best framework for understanding the psychological responses to sport injuries and rehabilitation.

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<sup>4</sup> For the purposes of this thesis, the integrated model of psychological response to the sport injury and rehabilitation process (Wiese-Bjornstal et al., 1998) will be subsequently referred as the integrated model.

Figure 2.3. An integrated model of psychological response to the sport injury and rehabilitation process (Wiese-Bjornstal et al., 1998)



The integrated model consists of two sections. The first section has its focus on the pre-injury factors as identified in the stress and injury model (Williams & Andersen, 1998). The integrated model acknowledges that pre-injury factors (e.g., personality, history of stressors, coping resources, and interventions) have an impact on athletes' stress response leading to sport injury. The second section extends the pre-injury stress response to the post-injury responses, where the injury itself is considered the main stressor. Once injured, an athlete will cognitively appraise the injury. According to Wiese-Bjornstal et al. (1998), the bi-directional arrows in the core of the model represent the dynamic nature of the rehabilitation process. When heading upward (i.e., clockwise) the arrows represents the predominant path of rehabilitation process, i.e., cognitive appraisals affecting emotions, which in turn affect behaviour. The model also recognises that influences in the opposite direction (i.e., counter clockwise) are also possible, and changes in direction between any of the responses during rehabilitation can occur. The arrows in the dynamic core should also be viewed as a three-dimensional spiral towards full recovery (heading upward in clockwise direction) and away from full recovery (heading downward in counter clockwise direction).

According to the integrated model, the appraisal process is influenced by a range of personal factors (e.g., severity/type of injury and the individual's psychological, demographic, and physical differences) and situational factors (e.g., type/level of sport, social, and environmental components). The cognitions will then in turn have an effect on the athletes' behavioural (e.g., treatment compliance, and use of psychological interventions) and emotional (e.g., anger, fear, and frustration) responses (Wiese-Bjornstal et al., 1998). The above process is also known as the dynamic core (e.g., Walker et al., 2007), and it highlights the equal relationship between the cognitive appraisals and the emotional and behavioural responses.

Nearly a decade since the development of the model, only a few studies exploring the different components have been conducted (Walker et al., 2007). To date, minimal research has been carried out focusing on the interactional aspects of the model, thus the empirical evidence in that area is still sparse (Kolt & Andersen, 2004b). One study investigating the relationship between pre- and post injury factors amongst 84 American football players in the US suggested that athletes who reported higher levels of negative life-event stress prior to the athletic season, were more likely to have greater difficulties in dealing with their injuries (Albinson & Petrie, 2003). However, as the study was conducted in American football, the generalisability of the findings to other athletes competing in a range of other team and individual sports is difficult.

Conversely most of the separate aspects of the integrated model of psychological response to the sport injury and rehabilitation process have been well supported in the existing literature. For instance, sport injuries are viewed as a significant source of stress (e.g., Bianco, Malo, & Orlick, 1999; Ford & Gordon, 1998; Gould et al., 1997), with both situational and personal factors being regarded as moderators affecting the psychological responses to sport injuries (e.g., Brewer, 1994, 1998; Brewer, Jeffers, Petitpas, & Van Raalte, 1994). Some support for gender differences and a difference due to type of sport in athletes' ability to cope with injuries has also been found in the literature. For example, in a study with 81 long-term injured athletes, Johnson (1997) found that injured female athletes ( $n = 16$ ) were more likely to feel anxious and to use emotion-focused coping strategies than their male ( $n = 65$ ) counterparts. However, due to the uneven distribution of male and female participants, such results should be reviewed with caution.

More recently Walker (2006) used a case study approach with four injured athletes when exploring the meaning of their sport injury experiences. As a result of the analyses conducted, she found support for a range of personal factors identified in

the Wiese-Bjornstal et al.'s (1998) model. With regard to injury characteristics, all suggested moderators were identified. In relation to individual differences, Walker (2006) found support for personality, pain tolerance, athletic identity, coping skills, history of stressors. Evidence for a series of situational factors was also present, as apart from scholarship status, all factors in relation to sport were endorsed. Similarly all social mediators were supported. However, Walker also found support for re-injury anxiety, which is not currently presented in the integrated model.

In addition to the above, cognitive appraisal and thought processes have also been found to have an effect on the athletes' emotional responses and the rehabilitation process. For example, in a qualitative study with 10 injured (moderate to severe injuries) university athletes in northeast America, Tracey (2003) found that in order to achieve a successful recovery, athletes felt that it was important to keep things in perspective, and to remain positive and optimistic. Such findings are supported by research investigating physiotherapists views on the athletes injury coping characteristics, as physiotherapists' have rated positive attitude as one of the top characteristics amongst athletes who cope well with their injuries (e.g., Heaney, 2006; Hemmings & Povey, 2002).

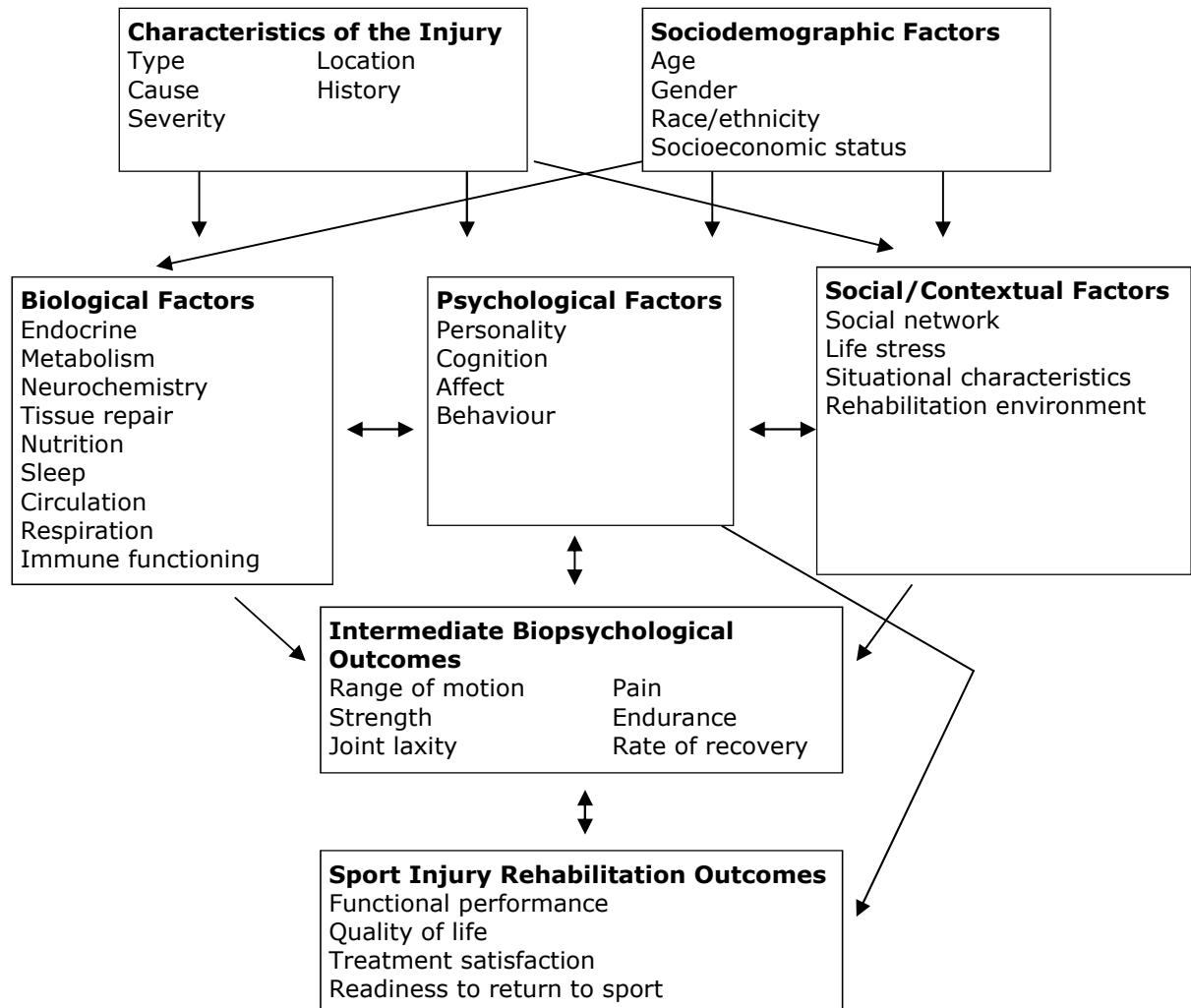
Similarly cognitive and emotional responses to injuries have been found to have an impact on the behaviours displayed by the athletes during the rehabilitation (Kolt, 2003). The ways in which athletes cope with their injuries have an effect on their behaviour during rehabilitation. Some of the research into rehabilitation adherence suggests that athletes who cope well with their injuries tend to adhere better (e.g., Daly, Brewer, Van Raalte, Petitpas, & Sklar, 1995). The relationship between rehabilitation adherence and rehabilitation outcomes has also received support in the literature. For example, a study by Brewer et al. (2000) investigated the extent to which rehabilitation adherence mediates the relationship between psychological factors and rehabilitation outcomes. In their quantitative study with 95 injured

athletes scheduled for anterior cruciate ligament reconstruction surgery and subsequent physical therapy, Brewer et al. found a positive relationship between adherence and outcomes with athletes who had undergone knee surgery. Athletes, who adhered well to the rehabilitation programme, demonstrated higher levels of functional performance. A study by Quinn and Fallon (2000) investigated possible predictors of sport injury recovery time amongst 136 elite injured athletes. A comprehensive injury survey was administered over 4 critical phases of recovery. The results from the analyses found adherence to be one of the predictors for increased recovery time. Support for the suggestion about psychological responses being associated with sport injury rehabilitation outcomes has also been found (Brewer et al., 2002). Similarly Walker (2006) found a wealth of support for the above, but stated that some of the coping responses found in her research (i.e., use of alcohol and re-injury anxiety) were not featured in the original model.

#### ***2.3.4. The biopsychosocial model of sport injury rehabilitation***

Building on the work of Wiese-Bjornstal et al (1998), suggestions about the importance of considering both medical and psychological perspectives has been proposed in the literature (Brewer, 2001b). According to Brewer et al. (2002), the psychological models to date typically fail to specify specific mediators between psychological factors and the physical recovery. Similarly all the medical models tend to focus solely on the physical aspects of recovery, thus ignoring the psychological factors of injury rehabilitation. As a result, the biopsychosocial model of sport injury rehabilitation was developed (Brewer et al., 2002). The model draws from other relevant injury models (e.g., Flint, 1998a; Leadbetter, 1994; Wiese-Bjornstal et al., 1998) of sport injury rehabilitation by integrating the existing medical and psychological based frameworks into one (Brewer et al., 2002). As presented in Figure 2.4., the fundamental nature of the biopsychosocial model is to provide a comprehensive model of sport injury rehabilitation by containing numerous factors involved in sport injury rehabilitation procedures and outcomes.

Figure 2.4. The biopsychological model of sport injury rehabilitation (Brewer et al., 2002)



Reproduced from Brewer et al. (2002)

The model consists of seven key components: characteristics of injury, sociodemographic factors, biological factors, psychological factors, social/contextual factors, intermediate biopsychological outcomes, and sport injury rehabilitation outcomes (Brewer et al., 2002). According to the model, the sport injury rehabilitation process is instigated by the injury occurrence. The characteristics of injury (e.g., type, cause, severity, location, and previous injuries) and sociodemographic factors (e.g., age, gender, race/ethnicity, and socio-economic

status) are all thought to have an influence on the biological, social/contextual and psychological factors. The psychological factors (e.g., personality, cognition, affect, and behaviour) are placed in a principal role in the model, and are regarded as having a reciprocal relationship with both biological (e.g., neurochemistry, nutrition, sleep, and respiration) and social/contextual (e.g., social network, life stress, situational characteristics, and the rehabilitation environment) factors (Brewer et al., 2002).

According to the model, psychological, biological, and social/contextual factors are all thought to have an effect on the intermediate biopsychological outcomes such as the rate of recovery, range of motion, strength, and endurance. Furthermore, along with psychological factors, the intermediate biopsychological outcomes are believed to be the key determinants of the final rehabilitation outcomes (Brewer et al., 2002). The paths between psychological factors, intermediate biopsychological outcomes, and the sport injury rehabilitation outcomes are proposed as being bi-directional (Brewer, 2001b; Brewer et al., 2002).

The main advantage of the model is its proposals for the links between several components affecting athletes' injury rehabilitation (Kolt, 2003). By combining traditional psychological models with more medically focused models, the biopsychosocial model can be seen as a relatively broad framework for investigating the sport injury rehabilitation process. In the context of the current research, the biopsychosocial model can be applicable when seeking understanding on how the rehabilitation environment, as well as the medical professional (i.e., the physiotherapists) working in the environment can have an effect on injured athletes rehabilitation behaviour, which in turn impacts upon the intermediate biopsychological outcomes, and ultimately the actual rehabilitation outcomes. This should be done with caution, as although the model does provide possible explanations for how psychological factors can have an effect on the rehabilitation



outcomes, in comparison to the psychological models, it fails to give an account of the relationships between various psychological factors (Brewer et al., 2002). Podlog and Eklund (2007) argue more strongly that despite the model being a useful general framework, it is not a theory and thus cannot provide a comprehensive explanation as to how different components interact in producing different return-to sport outcomes.

#### **2.4. Psychological impact of sport injury: Placing the current research into theoretical context**

Based on the research reviewed, the models presented above have provided useful information on how stress manifests itself in relation to sport injury. From a pre-injury standpoint, an individuals' stress response has been proposed as being a key factor in predisposing athletes to sport injuries. Building from the stress and injury model (Andersen & Williams, 1988; Williams & Andersen, 1998), other researchers such as Wiese-Bjornstal et al (1998) have identified sport injury itself as a stressor, and the ways in which an individual will appraise and construct his/her response to the stressful situation is dependent on range of factors. Both personal (e.g., injury characteristics and individual differences like coping ability) and situational (e.g., sport characteristics, and social influences such as sport medicine team influences) have been found to affect the injury appraisal process, which, according to the integrated model will have an effect on how an athlete responds to the injury and rehabilitation emotionally. The emotional response (e.g., coping, attitude, fear, anger, frustration, and depression) will in turn impact the athletes' behavioural response (e.g., rehabilitation adherence, and the use of psychological interventions).

Notwithstanding the lack of research findings in relation to testing the interactional aspects of the model, the integrated model can be regarded as the most comprehensive framework to date. Despite evidence to suggest that the model is

not fully inclusive, and a lack of empirical support for some of its components, the leading researchers in the field all tend to be in agreement that the integrated model of psychological response to the sport injury and rehabilitation process is an excellent tool through which the psychological responses to sport, exercise, and other forms of physical activity injuries can be explained (Brewer, 2001b; Kolt, 2003; Kolt & Andersen, 2004b). Therefore, in the context of the above, this research will examine the notion in which injuries are seen as having psychological consequences on the individual athlete, and that individual's cognitive appraisal of the injury, as well as their emotional and behavioural responses are influenced by a range of personal (e.g., athletes existing coping skills) and situational (e.g., influences from the sport medicine professionals) factors.

## **2.5. Chapter summary**

The purpose of this chapter was to provide an introduction to the overall concept of the psychology of sport injuries, and to present the theoretical foundations on which the subsequent literature has been based. Recent statistics about sport and exercise injury occurrence were presented to the reader (Conn et al., 2003; Uitenbroek, 1996), which was subsequently followed by a discussion about the problems with the concept of sport injury definition and classification. As a result, it was concluded that despite the variety of definitions and classifications, injuries are common and inevitably experiences that athletes in general are trying to avoid (Pargman, 1999).

The chapter then discussed the origins of psychological sport injury research. Following a seminal article by Little in 1969 (cited in Brewer, 2001a) the idea of injury having emotional effects on the athlete stimulated the researchers to investigate the psychological consequences of sport injuries further. By presenting the different theoretical models as a chronological narrative, this chapter has shown how different concepts and ideas have developed and evolved. Based on the

information presented, existing models appear to be in an agreement that sport injury, regardless of type, cause, or severity, has an emotional cost for the athlete. How an individual athlete copes with such feelings and thoughts depends on the individual in question, their thought processes (i.e., cognitive appraisals), and the situation in which the injury occurred, and how the injury will be subsequently managed.

The review of literature will now progress to examine the ways in which the psychological process of sport injury rehabilitation can be facilitated. More specifically, as research to date has suggested that athlete's responses to sport injuries can be influenced through the use of psychological interventions, the focus of chapter three will be placed on evaluating the existing research examining the usefulness of psychological interventions to sport injury rehabilitation.

## **CHAPTER 3**

# **THE PROCESS OF PSYCHOLOGICAL REHABILITATION FROM INJURY: INTERVENTIONS TO ENHANCE RECOVERY**

### **3.1. Introduction**

As demonstrated in chapter two, one of the ways in which athletes' coping skills, treatment compliance, and rehabilitation adherence can be facilitated is through the use of psychological interventions. In an early meta-analysis on studies conducted with athletes competing in organised events on a regular basis, Greenspan and Feltz (1989) concluded that psychological interventions are often associated with improved performance. When applied to sport injury rehabilitation settings, similar inferences have been made. A number of psychological interventions have been proposed as useful during rehabilitation processes (e.g., Flint, 1998b; Wiese & Weiss, 1987), and several intervention studies have been carried out in the applied setting. For example, one of the first of its kind was a study by Ievleva and Orlick (1991), who conducted an exploratory study to investigate any possible links between the use of psychological skills and healing. Their findings suggested that fast healing athletes were more likely to use psychological interventions than their slow healing counterparts.

In addition to facilitating recovery, psychological interventions have also been found to provide injured athletes with a sense of control over their rehabilitation process. Having control over one's own actions can in turn increase personal responsibility, and subsequently enhance individual motivation and adherence to a rehabilitation programme (Flint, 1998b). Findings by Durso-Cupal (1996) indicate that athletes who engage in interventions which enable them to perceive themselves as active agents in their recovery, were more likely to have better physical recovery outcomes than those in the control groups.

Through the use of psychological interventions, the communication between the individuals involved in the rehabilitation process can potentially be facilitated. If an athlete feels that he/she is actively involved in the decision making process, and that their needs are understood and cared for, their overall performance during rehabilitation will improve (Ray & Wiese-Bjornstal, 1999). Research has also found that good communication between medical professionals and injured athletes can enable athletes' greater understanding of the actual injury, injury process and possible recovery outcomes (Heaney, 2006; Hemmings & Povey, 2002). Greater understanding of the injury can also affect athletes' treatment compliance, which, as demonstrated in research reported in chapter two, is also believed to have an effect on athletes' coping skills and injury recovery (e.g., Hemmings & Povey, 2002).

Using psychological interventions during injury rehabilitation may also assist athletes in coping with stressful situations and in becoming totally committed to the rehabilitation process. According to Flint (1998b), having the ability to cope effectively with the injury and being committed to the rehabilitation programme is vital for successful rehabilitation, as very rarely is any injury recovery process linear and uncomplicated. Almost all athletes will face setbacks and drawbacks during the injury rehabilitation process; however, with high levels of dedication and necessary coping skills, successful recovery is a likely outcome.

The most popular and prominent interventions utilised in sport today are goal setting, imagery, relaxation training, and positive self-talk (Brown, 2005; Vealey, 1988). Encouraging and employing the use of social support has also found to be important and beneficial for the athletes (Brown, 2005; Heil, 1993c). More specifically, research has demonstrated that the use of above interventions can have substantial psychological benefits for the injured athlete on a number of levels (Hinderliter & Cardinal, 2007; Shaffer & Wiese-Bjornstal, 1999). For example,

systematic goal setting (GS) during rehabilitation setbacks can assist athletes to focus on the future, rather than the past and its problems (White & Black, 2004). Moreover, the use of imagery and relaxation techniques during rehabilitation have been found to significantly reduce the levels of pain and re-injury anxiety amongst athletes recovering from anterior cruciate ligament (ACL) reconstruction surgery (Cupal & Brewer, 2001). In addition to the range of psychological benefits, a recent review paper by Beneka et al. (2007) also highlighted the usefulness of goal setting, imagery, relaxation, self-talk, and athletes' education for specific physiological components of the rehabilitation. The use of goal setting was seen as useful during the process of obtaining a normal range of motion (ROM), muscular strengthening, and when planning and executing sport related skills. Imagery and relaxation techniques were found to be beneficial for the process of gaining a normal ROM and during joint restoration process, and the use of positive self-talk was regarded as suitable for joint restoration, muscular strengthening, and in rehearsing sport related skills (see Beneka et al., 2007).

By drawing from the existing models and empirical research, the current chapter is based on the premise that sport injuries have psychological consequences for athletes, and that during the process of rehabilitation both physical and psychological facets of injury should be addressed. In that context, the aim of this chapter is to introduce, discuss, and evaluate the five most popular psychological interventions used in sport. The key concepts and underlying theories of goal setting, imagery, relaxation, positive self-talk, and social support will be presented. This will be followed by a description of the application of each intervention in the injury rehabilitation setting. Conclusions on the potential usefulness of these for sport injury rehabilitation will also be evaluated through a review of existing research in the field.

### **3.2. Goal setting**

The importance of setting goals in sport has been recognised by sport researchers, coaches, and athletes alike, and the first to put forward such suggestions were Locke and Latham (1985). Over the past two decades, goal setting (GS) has become one of the most popular and widely used psychological interventions in sport, and is recurrently implemented for (and by) athletes of all levels in different sports with the aim of improving their performance (Weinberg & Gould, 2007). Indeed, when it comes to enhancing participation motivation, GS appears to be the most advocated psychological technique in sport (e.g., Fisher, Mullins, & Frye, 1993; Weinberg, Harmison, Rosenkranz, & Hookim, 2005; Weiss & Troxel, 1986).

Goal setting as a construct refers to the process of deciding, planning, and progressively working towards a predetermined objective or a goal. A goal is something that "an individual is trying to accomplish, it is the object or aim of an action" (Locke, Shaw, Saari, & Latham, 1981, p. 126). In the case of an individual athlete, for example, a goal could be to qualify for the Olympics. After deciding on the goal, an athlete would then decide on what is required for successful goal achievement, and plan the process of how the tasks required will be accomplished. According to Hardy, Jones, and Gould (1996), goals should identify specific targets that lie within the performer's control. Goals should also be set in a staircase format, i.e., easy and attainable short-term goals leading towards harder and challenging medium- and long-term goals (Weinberg & Gould, 2007). Typically sport psychology research has identified three different types of goals; namely outcome, performance, and process goals (Hardy et al., 1996). Outcome goals are usually focused on the outcome of an event such as winning or earning a medal and often involve interpersonal comparison. In contrast, performance goals often involve intrapersonal assessment, as they are typically focused on achieving a particular level of performance in comparison to one's previous performances and not to that of other competitors. The process goals are focused on the actions and

the required tasks an individual must engage in order to achieve the desired performance outcome (Hardy et al., 1996; Weinberg & Gould, 2007). When setting goals, the mechanistic goal setting theory (Locke & Latham, 1990) proposes four ways in which goals are assumed to influence performance. According to the theory, goals which are difficult yet realistic, specific, and measurable lead to greater performance improvement than vague, easy, and do-your-best goals, providing that the person who is trying to achieve the goals has accepted and taken ownership of the set goals.

### ***3.2.1. Goal setting in sport injury rehabilitation***

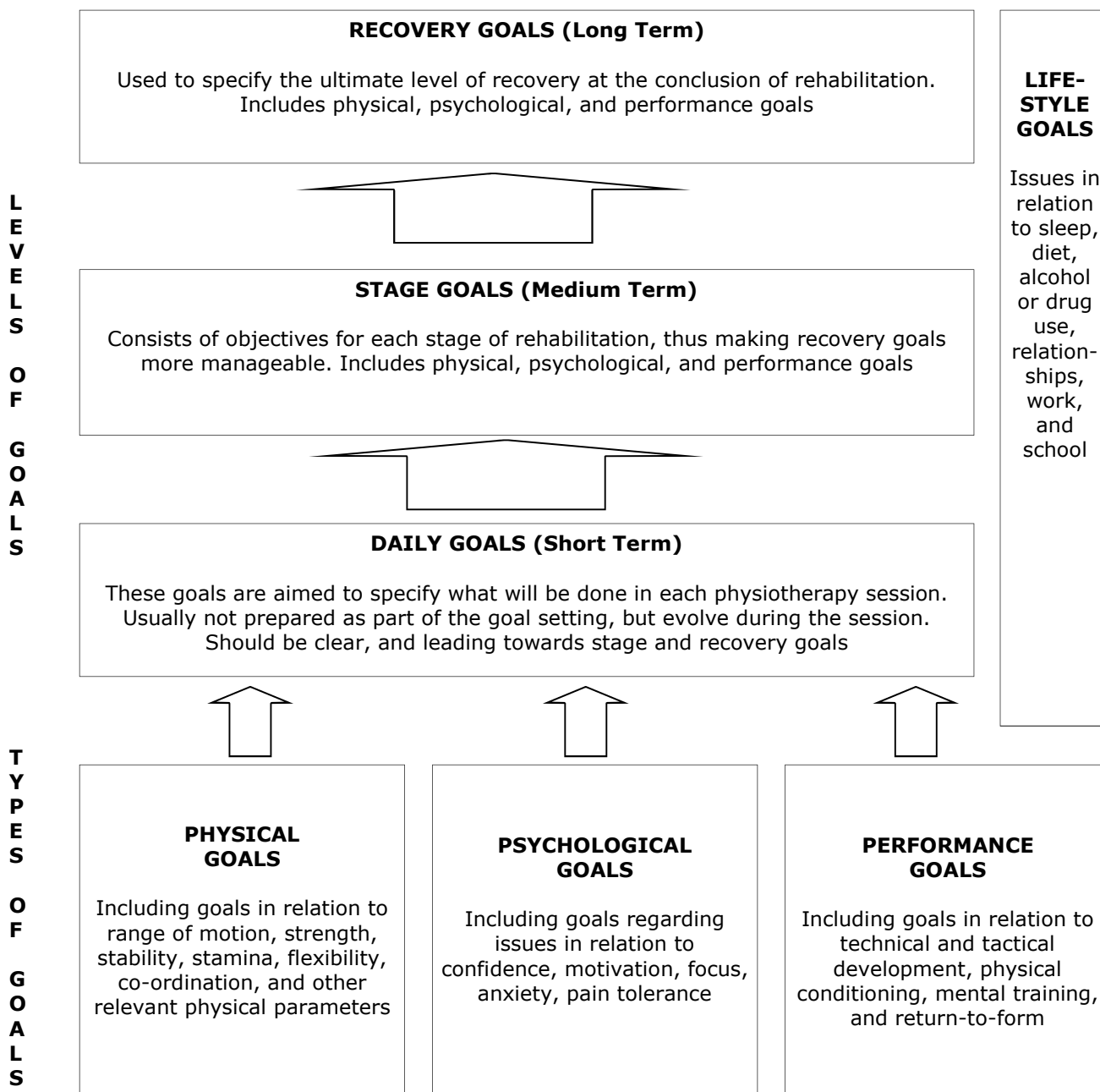
When applied to sport injury rehabilitation, GS should seek to assist injured athletes in returning back to their sport. The main aim of rehabilitation GS should be to identify clear objectives for the rehabilitation process through different goals. At its best, a well planned and structured rehabilitation GS programme facilitates full physical, psychological, and performance recovery, and allows athletes the possibility to make substantial performance gains (Taylor & Taylor, 1997). Consequently possessing awareness of different types of rehabilitation goals (i.e., physical, psychological, and performance goals) is imperative when planning GS for rehabilitation.

According to Taylor and Taylor (1997), physical goals can enable a clear direction for the physical aspects of recovery. Psychological goals can assist with issues associated with motivation, self-confidence, focus, stress, and anxiety, all of which can have a notable negative effect on the rehabilitation process and the final outcome. Performance goals can benefit the athlete by identifying potential areas for improvement in areas of performance (e.g., technical and tactical development, physical conditioning, mental training, and return-to-form), which, during regular training might not have received priority.



Although setting different types of goals can provide injured athletes with clear objectives (Flint, 1998b), it is also necessary to think about how these goals can be accomplished. With the intention to achieve full recovery, Taylor and Taylor (1997) propose that different levels of goals should also be considered (see Figure 3.1.). Hence, they propose four levels of goals, namely recovery goals, stage goals, daily goals, and lifestyle goals. Pertaining the general principles of the goal setting theory (Locke & Latham, 1990), recovery goals are associated with the ultimate level of recovery (long-term goals), stage goals consist of specific objectives for each of the different stages of rehabilitation (medium term goals), and daily goals relate to daily objectives and targets for each rehabilitation session (short term goals). Often daily goals are not planned into the goal setting programme; however they are set with the intention to ensure that stage and recovery goals will be successfully attained as planned. In addition, Taylor and Taylor (1997) recommend that setting goals in relation to the athlete's lifestyle should also be considered, as often existing lifestyle (i.e., sleep, diet, alcohol and drug use, relationships, work and school commitments) can either assist or hinder rehabilitation adherence and ultimately have an effect on the outcome. White and Black (2004) also recommend identifying and setting goals for employment, social and leisure activities, and general household tasks as useful for injured athletes.

Figure 3.1. Types and levels of goals for rehabilitation<sup>5</sup>



Generated from the works of Taylor and Taylor, 1997

<sup>5</sup> The figure was generated by the researcher during the process of reading about goal setting for rehabilitation, and for the purposes of gaining a better understanding of the Taylor and Taylor's (1997) proposals on the ways in which the different types and levels of goals may interact during sport injury rehabilitation.

Ievleva and Orlick (1991) were amongst the first in the field to explore the use of psychological interventions as part of sport rehabilitation. In their retrospective study, they surveyed 32 sport injury clinic patients who had encountered ankle or knee injuries, but had since recovered back to their pre-injury level of performance. The findings from the survey indicated that in comparison to their slow healing (recovery took longer than 12 weeks) counterparts ( $n = 5$ ), those athletes who had healed faster (recovery in less than five weeks) from their injuries ( $n = 4$ ) reported greater use of GS and other psychological interventions as part of their rehabilitation. More specifically, the findings suggested GS as having a positive effect on increasing athletes' motivation, rehabilitation adherence, and compliance during injury rehabilitation.

Brewer et al. (1994) conducted two experiments with the aim of investigating injured athletes' perceptions of psychological interventions as part of sport injury rehabilitation. The first experiment required 161 college students to rate their perceptions of goal setting, imagery, and counselling as an adjunct to physiotherapy treatment for a hypothetical athlete. The second study involved twenty injured athletes, who received introductory sessions on the above psychological interventions, after which they were asked to report their perceptions of the techniques. In both experiments, the participants displayed preference for the use of goal setting. The motivational qualities of GS were highlighted by the participants, as was the risk of setting unrealistic goals or goals that give athletes false hope. The authors conclude by stating that, to ensure psychological interventions not being viewed as 'extra' or as 'addition to' rehabilitation, goal setting and other psychological interventions should be integrated into the actual physical rehabilitation programme.

More recently a five-week GS intervention study with 77 injured athletes (Evans & Hardy, 2002a) also revealed great support for the use of GS during sport injury

rehabilitation. In this study, the participants were matched across six variables, and then randomly assigned to either a GS intervention group, a social support group, or the control group. The results from the analyses of variance revealed that at the end of the five-week intervention, the GS intervention group displayed significantly higher levels of self-efficacy, and their adherence to the rehabilitation programme was significantly higher than that of the other two groups. Furthermore, the athletes in the GS group appeared to exhibit greater levels of self-confidence and significant decreases in dispiritedness (e.g., loss of motivation and apathy) over time. To follow up, Evans and Hardy (2002b) conducted semi structured interviews with nine athletes (three from each group) from the aforementioned study. With regards to GS, the findings provided support for the importance of long term goals (i.e., the recovery goals as labelled by Taylor and Taylor, 1997). In addition, the authors called for further research to explore the efficacy of using different GS strategies during sport injury rehabilitation.

In addition to all the psychological benefits listed above, GS has also been found to be extremely useful for a number of physiological rehabilitation components. According to a recent review of literature on simple counselling techniques for specific components of the rehabilitation plan, goal setting can be beneficial for pain-management when obtaining normal range of motion (ROM), muscular strengthening, and numerous sport related skills (Beneka et al., 2007) .

### ***3.2.2. Using goal setting for rehabilitation: The process***

To date, some guidelines on how to set effective goals for rehabilitation have been put forward. Gould (1986) presented six main guidelines applicable to rehabilitation goal setting. Parallel to the GS theory first put forward by Locke (1966, 1968; cited in Hardy et al., 1996), successful rehabilitation GS requires those involved with the process to: (1) set challenging, but realistic and attainable goals, (2) set goals that are specific and concrete, (3) focus on the degree of, rather than on the absolute

attainment of goals, (4) remember that the goal setting process is dynamic, (5) prepare a written contract with the injured athlete, and (6) provide/and engage in regular feedback.

Another guide to injury rehabilitation GS was proposed by Heil (1993a). Consistent with Gould, Heil also believes that rehabilitation goals should be specific and measurable, challenging but realistic, and stated in positive versus negative language. Consistent with Taylor and Taylor's (1997) proposals, rehabilitation goals should include process goals linked with outcome goals, and such should be set for all levels of rehabilitation (short-, intermediate-, and long term). Heil also advocates the integration of sport goals with life goals and regards injury and rehabilitation as life learning experiences. Successful GS entails goals which have a clear timetable for completion, are monitored and evaluated regularly, and most importantly, are internalised and accepted by the athletes (Heil, 1993a).

In support of Heil's work, an action research study by Gilbourne, Taylor, Downie, and Newton (1996) administered a six-week GS programme to five injured athletes at a sport injury centre in the UK. The athletes attended educational GS workshops, in which they were taught about the process of GS, types of goals, the goal perspective, and life-skill issues. They were also given instructions on how to use a GS diary. The rehabilitation specific goals were set in co-operation with the sports scientists, the athlete, and the physiotherapists. Consistent with Heil's (1993a) work, the authors believed that in order for an intervention to be successful, the athletes involved would have to accept the set goals. The results also provide support for the use of task-orientated goal setting as part of the sport injury rehabilitation process.

With regards to setting a clear timetable for goal completion as proposed by Heil (1993a), research tends to be in favour of adopting a flexible approach to GS

during rehabilitation. As rehabilitation process can occur faster or slower than originally predicted, researchers like Gilbourne and Taylor (1998) have suggested that rehabilitation goals should be set in a flexible manner as "recovery is typified by an unpredictable mix of rapid progress and disappointing setbacks" (p. 135). In support, a few years later Evans Hardy, and Flemming (2000) conducted an action research study with three injured rugby players. Overall, their findings provided support for the use of long- and short-term goals, as well as process and performance goals. As evident from one participant's diary, support for goal flexibility was also found. When faced with recurrent problems with his knees, the participant in question reported the need for flexible rehabilitation goals, which were largely dictated by setbacks and unpredictable physical factors such as swelling, soreness, and pain.

In addition to the above, guidelines on how to use GS in sport injury rehabilitation have also been put forward by Flint (1998b). As with the other researchers (e.g., Gould 1996; Heil, 1993a; Taylor & Taylor, 1997), Flint too believes that the set goals should be constantly monitored, evaluated, and adjusted. Also in line with previous proposals, rehabilitation GS should also include both process and outcome goals. Nevertheless, Flint argues that greater emphasis should be placed on the process goals since they are more likely to be within the athletes own control, and are directly linked with effort. Furthermore, it is important to set both short- and long-term goals, and when possible, to link goals with aspects of athletes performance with which he/she is familiar (e.g., designing goals to enhance important aspects of athletes sport).

Comparable to Gould's suggestions on GS being a dynamic process, Flint proposes that rehabilitation goals should be constructed in collaboration with the injured and the other relevant members of the sport medicine or training team. He also believes that goal setting should include specific details on how the goals are to be

achieved, and this process should be educational. Such is in keeping with the levels of goals (Taylor & Taylor, 1997) discussed earlier, as through a good understanding of the process and desired outcome, an athlete is more likely to comply with the rehabilitation process.

In support, a study by Bassett and Petrie (1999) investigated the effects of treatment goals on patient compliance with physiotherapy exercise programmes. Their sample consisted of 17 physiotherapists, and a total of 66 injured patients (male  $n = 32$ , female  $n = 34$ ) who had suffered a limb injury and were about to start a new course of physiotherapy treatment which would require home-based exercises. The injured patients were randomly allocated to one of three treatment goal groups: no formal goals, physiotherapists-mandated goals, or to a group where goals were set in collaboration between the participant and the physiotherapist. Their findings indicate that for overall compliance, no significant differences between the groups were found. However when measuring participants' improvements on the range of motion, and muscle strength, it appeared that the patients in the collaboratively set goal group were significantly more compliant than those in the physiotherapist-mandated group. The study used non-athletes, thus the results may not be directly applicable to injured athletes.

Not all rehabilitation GS research has been undisputed. In their study with Australian physiotherapists ( $N = 57$ ) and male professional basketball players ( $N = 28$ ), Francis et al. (2000) found that physiotherapists regarded the use of short-term goals as an effective technique for treatment, and believed that athletes who set goals during rehabilitation were more likely to cope better with their injuries. Conversely the basketball players viewed goal setting as useful for coping with injuries, but rated the importance of setting short-term goals considerably lower than physiotherapists. Whether this was due to the athletes' lack of knowledge on the basic GS process can only be speculated, thus warranting further research.

Likewise, Johnson (2000) investigated the effects of short-term psychological interventions with long-term injured competitive athletes in Sweden. A total of 58 competitive athletes were assigned into three experimental groups (i.e., GS, stress management strategy & cognitive control, relaxation/guided imagery) and a control group. The outcome of the intervention effectiveness was measured by assessing possible changes in athletes' mood. The results indicated that GS alone showed no significant effect in the injured athletes' overall mood. Yet in comparison to the control group, on the whole the athletes in the experimental groups appeared to have significant changes in their overall mood. The above results suggests that when used in combination, psychological interventions can have an elevating effect on injured athletes overall disposition. The authors conclude that short-term cognitive-behavioural based intervention can potentially elevate injured athletes mood during rehabilitation.

### ***3.2.3. Goal setting: The conclusions***

The importance of setting goals during rehabilitation has been highlighted in the literature. Support for GS can be found in various studies investigating athletes representing a range of sports, and various competitive levels (e.g., Bassett & Petrie, 1999; Brewer et al., 1994; Evans & Hardy, 2002a, 2002b; Evans et al., 2000; Francis et al., 2000; Gilbourne et al., 1996; Gould et al., 1997; Ievleva & Orlick, 1991; Johnson, 2000).

Drawing from the literature presented above, three main principles should be employed when setting goals for injured athletes. First, rehabilitation professionals involved in the process need to work together with the injured athletes to establish realistic goals for the rehabilitation programme (Kolt, 2004). According to Taylor and Taylor (1997), the process for setting goals should begin with a conversation between the rehabilitation professionals and the athlete in which crucial physical aspects of rehabilitation will be discussed and explained. This should then be



followed by setting clear goals for each of the component of physical recovery: range of motion, strength, stability, stamina, flexibility, and any other relevant physical parameters. Psychological goals should then be discussed in a similar manner, and one of the most effective ways to initiate psychological rehabilitation goals is through rehabilitation profiling (Taylor & Taylor, 1997). Secondly, strategies for achieving goals need to be agreed upon and learned by athletes. By doing so, the athlete is more likely to feel a sense of control (Boyle, 2003; Kolt, 2004), which has been found to have an effect on rehabilitation adherence. Thirdly, and perhaps most importantly, set goals need to be revised and assessed on a regular basis in order for them to be effective (Gould, 1986). Butler (1997) indicates that this could be done through various methods, such as diaries, meetings, graphs, and contracts.

In summary, studies to date have indicated that using GS during sport injury rehabilitation is beneficial. For many injured athletes, the hardest thing is to try and slow down, listen to what their bodies are trying to tell them, and not to progress too fast (Samples, 1987; cited in Wagman & Khelifa, 1996, p. 257). Through GS, appropriate pace of progression can be identified and monitored. Furthermore, GS often forms an integral part of athletes' everyday training programmes, thus it makes sense to continue similar procedures during rehabilitation. For that reason, the integration of GS into the physiotherapy process is not only profitable, but should also be easily transferable (Taylor & Taylor, 1997).

### **3.3. Imagery**

Similarly to goal setting, many athletes, coaches, and sport psychologists recognise mental imagery as a valuable tool in enhancing sport performance (Hall, 2001). In sport, imagery is seen as an activity which involves creating a clear mental picture of the sporting situations, which can mean the venue, the performance, the

conditions, the people, the emotions, and the feelings. Cumming, Hall, Harwood, and Gammage (2002) referred to imagery as an activity that requires full concentration from the athlete in order to create and control images. Morris, Spittle, and Watt (2005) stated:

imagery, in the context of sport, may be considered as the creation or re-creation of an experience generated from memorial information, involving quasi-sensorial, quasi-perceptual, and quasi-affective characteristics, that is under the volitional control of the imager, and which may occur in the absence of the real stimulus antecedents normally associated with the actual experience (p. 19).

According to Morris et al. (2005), most athletes create and recall mental experiences related to their sport. Existing research has found that athletes of all levels frequently use imagery (e.g., Arvinen-Barrow, Weigand, Hemmings, & Walley, 2008); however it appears that elite, high-level, and successful athletes use significantly more imagery than their novice, lower-level, and less successful counterparts (Arvinen-Barrow et al., 2008; Callow & Hardy, 2001; Cumming & Hall, 2002a, 2002b). Such a trend could be a reflection of elite performers greater commitment to their sport (Hall, 2001), or simply a manifestation of elite level performers as having a clearer and more accurate image of what a specific skill should look like (Vealey & Greenleaf, 1998).

Recurrent imagery use has also been reported by athletes involved in different sports, however the findings are equivocal. It appears that the use of imagery goes beyond sport type classification (e.g., team vs. individual, open vs. closed, and fine vs. gross skill) as athletes involved in range of sports such as gymnastics, dance, figure- and synchronised skating, field hockey, rugby, and martial arts appear to use imagery extensively (e.g., Arvinen-Barrow et al., 2008; Arvinen-Barrow,

Weigand, Thomas, Hemmings, & Walley, 2007; Hall, Rodgers, & Barr, 1990; Munroe, Hall, Simms, & Weinberg, 1998). Evidence to support athletes' use of imagery across the season has also been found in the literature. Cumming and Hall (2002a) found significant amounts of imagery use during the off season. Munroe et al. (1998) reported significant increases in athletes' use of imagery use across the competitive season. As the season progressed, the athlete's use of imagery increased. Similarly Arvinen-Barrow et al. (2008) found recurrent imagery use amongst synchronized skaters in Finland, yet the use of imagery was significantly higher during the competitive season than at the beginning of the pre-season.

To conclude, much of the research to date has provided support for imagery being one of the most popular performance-enhancement techniques in sport (e.g., DeFrancesco & Burke, 1997; Hall & Rodgers, 1989). Researchers have found imagery to be useful for athletes of all levels, representing different sports, and throughout the season. Some of the main benefits of using imagery include significant decreases in competitive anxiety (e.g., Carter & Kelly, 1997), and considerable increases in athletes levels of confidence (e.g., Amba, Fry, Li, & Relyea, 2002; Callow & Hardy, 2001), self efficacy (e.g., Feltz & Reissinger, 1990), and intrinsic motivation (e.g., Martin & Hall, 1995).

### ***3.3.1. Imagery in sport injury rehabilitation***

Along with being useful for sports performance enhancement, imagery can be of assistance during sport injury rehabilitation in a range of ways. Imagery has been recommended as a means of coping for injured athletes (Rotella, 1982), and fifteen years later, a similar recommendation was made by Gould et al. (1997). Their retrospective qualitative study with alpine and freestyle skiers in America with season-ending injuries provided support for the use of visualisation as a means of coping with injuries. Other uses of imagery during rehabilitation include eliminating counterproductive thoughts, developing "possible selves", using imagery to

facilitate goal setting, rehearse performance related skills, to cope with pain, and to assist the athlete in bringing closure to the injury (Green, 1999; Green & Bonura, 2007). Very recently, Waters (2007) reviewed the literature on rehabilitation imagery, and found that imagery was useful in increasing injured athletes motivation and rehabilitation exercise adherence. In addition, imagery has also been found to be beneficial in helping injured athletes to manage their emotions, to decrease anxiety, increase relaxation, and in alleviating pain.

Over the past few decades, much research on the different types of imagery (i.e., the content of what is being imagined) suitable for rehabilitation has taken place. The first to put forward four distinguishable types of imagery suitable for rehabilitation was Rotella (1982, 1985; Rotella & Heyman, 1993): (1) emotive imagery (i.e., visualising the feelings of security and self-efficacy, and confidence in the rehabilitation outcome), (2) body rehearsal (i.e., seeing the injury healing), (3) mastery rehearsal (imagining being back at play), and (4) coping rehearsal (i.e., anticipating potential problems that might occur during rehabilitation). Taylor and Taylor (1997) proposed three different types of rehabilitation imagery beneficial for athletes: healing imagery, soothing imagery (i.e., imagery to soothe the pain), and performance imagery. According to Flint (1998b) injured athletes could benefit from skill performance and tactics imagery, healing imagery, and treatment imagery. Despite the differing terminology to describe the different types of imagery, it appears that all of the researchers above are in agreement on the overall imagery content beneficial to injured athletes during recovery. Drawing from the earlier proposals, Walsh (2005) has recently compiled the existing information and listed four main types of imagery beneficial to sport injury rehabilitation: (1) healing imagery (i.e., visualising and feeling the injured body part healing), (2) pain-management imagery (i.e., assisting the athlete to cope with the pain associated with the injury), (3) rehabilitation-process imagery (i.e., assisting in dealing with challenges that they may encounter during the

rehabilitation programme), and (4) performance imagery (i.e., practicing physical skills and imagining themselves performing successfully and injury free).

#### 3.3.1.1. Healing imagery

According to Walsh (2005) healing imagery can be used to envision the internal processes and anatomical healing that take place during rehabilitation, that is, to see the injured body part getting better. Taylor and Taylor (1997) claim that for effective healing imagery an athlete must possess a full understanding of their injury and to have a realistic picture of the injured area. An awareness of the anatomical healing process and knowledge of the treatment modalities employed during rehabilitation is also essential. Furthermore, an athlete should know what the injury should look like once healed. Given the above, it can be assumed that engagement in successful healing imagery requires a fair amount of practice and high-level skill, which unsurprisingly requires some time and effort from the individual athlete and those involved.

Very few studies to date have examined the possible benefits and effects of healing imagery on rehabilitation and the actual recovery process. The early work in this area found a positive correlation between recovery time and the use of healing imagery (Ievleva & Orlick, 1991). The athletes who recovered faster ( $n = 4$ ) had used significantly more healing imagery during the rehabilitation process than those who recovered more slowly ( $n = 5$ ). Qualitative findings from the same study indicated that the fast healing group also tended to take personal responsibility for their healing through the use of creative visualisation. A follow-up study by Loundagin and Fisher (1993, cited in Waters, 2007, p. 5) came to similar conclusions stating that healing imagery, along with goal setting and focus of attention were most highly related to faster healing rates.

Support for imagery acting as a facilitator for healing rates have also been reported by Cupal and Brewer (2001). In their study, Cupal and Brewer conducted a randomised controlled clinical trial (control, placebo, and a treatment group) with 30 individuals (male  $n = 16$ , female  $n = 14$ ) representing a range of sports (basketball  $n = 8$ , alpine down-hill skiing  $n = 14$ , soccer  $n = 2$ , volleyball  $n = 1$ , hockey  $n = 1$ , rodeo  $n = 1$ , and other activities  $n = 3$ ). Those in the treatment group received 10 individual sessions of relaxation and guided imagery along with their normal course of physiotherapy. The findings from the study provided support for using a combination of relaxation and guided imagery as an effective means of facilitating ACL injury recovery. The most considerable benefits were found for increases in knee strength, decreases in re-injury anxiety, and lowered levels of pain. However, due to number of limitations (including the relatively small sample size), the results should be generalised with caution. With regards to reinjury, the scale of measurement used was a single-item scale instead of multi-item scale specific to reinjury in sport. The integrity of assessing the clinic-based portion of the interventions could also be questioned, as it was conducted only periodically and with the knowledge of the clinician performing the interventions. More frequent checks without the clinician's knowledge would probably have produced greater understanding of how the intervention was facilitated by the clinician and received by the injured athletes.

A study by Handegard, Joyner, Burke, and Reinmann (2006) also conducted a relaxation and guided imagery intervention study with two injured athletes (soccer and baseball player) in the USA. The participants used imagery twice daily (total of 25 minutes/day), immediately prior to or after physical therapy sessions, and throughout the day when convenient to them for two weeks. The imagery intervention was aided by an audiocassette or guided by the researcher. The imagery script focused on healing imagery as it contained thoughts on healing the injured area and overall body wellness. The results from the qualitative and

quantitative analyses provided a better understanding athlete's experiences of the effects of imagery and relaxation intervention during injury rehabilitation. Both participants were able to visualise their injury, and to see the injured body part healing. It was also found that their ability to visualise got better over time.

Despite some conflicting findings, it appears that healing imagery does have a facilitative effect on physical healing. However, rather than focusing on the physical aspects of recovery, it has also been suggested that the effectiveness of healing imagery should be investigated in relation to athlete's psychological well-being (Walsh, 2005). More specifically the effects of healing imagery on the athletes' self-confidence, motivation, rehabilitation adherence, anxiety control, and ability to manage pain are all areas worthy of investigation. According to Heil (1993b), if an intervention can assist (being it directly or indirectly) an athlete to feel more confident, relaxed, and motivated to adhere to the rehabilitation plan, then the intervention should be considered effective.

#### 3.3.1.2. Pain-management imagery

Pain-management imagery can assist injured athletes to cope with pain and to reduce pain. Of the six pain-management techniques identified by Fernandez and Turk (1986; cited in Heil, 1993b); pleasant imagining (visualising yourself in a comfortable and relaxed setting such as lying on a beach), pain acknowledgement (assigning the pain physical properties e.g., colour, size, shape, sounds, feelings), and dramatised coping (pain seen as part of a challenge and reframing it as a motivational tool) are seen as most appropriate for sport injury rehabilitation imagery (Walsh, 2005). Little research has examined the effectiveness of pain-management imagery in sport injury rehabilitation. Until now, existing studies have used different types of imagery as a means to alleviate pain, but not specifically employed what is considered as pain-management imagery. For example, a previously mentioned study with athletes receiving rehabilitation for ACL injuries

(Cupal & Brewer, 2001) found reduction in pain as one of the main benefits of using a combination of relaxation and guided imagery along with normal course of physiotherapy. In contrast, a study by Christakou and Zervas (2007) investigated the effects of relaxation along with pain-management and rehabilitation-process imagery on athletes' levels of pain, edema, and range of motion (ROM). In their study, a total of 18 male athletes with grade II ankle sprain were randomly allocated to either control (i.e., no psychological intervention;  $n = 9$ ) or to a relaxation and imagery group ( $n = 9$ ). After 12 individual sessions of imagery, the acute levels of pain intensity were measured. Based on the findings, no demonstrable effects of imagery on the reduction of pain were found, however such could be due to relatively small sample size. Despite the lack of empirical findings to support the use of pain-management imagery for rehabilitation, leading authors in the field advocate the use of imagery (be it healing, pain-management or other) as a means of alleviating pain during injury recovery and rehabilitation (Crossman, 2001; Taylor & Taylor, 1997; Walsh, 2005).

#### 3.3.1.3. Rehabilitation-process imagery

Rehabilitation-process imagery can assist athletes in dealing with the challenges that may occur during the course of the rehabilitation (Walsh, 2005). Rehabilitation-process imagery can contain images for many aspects of rehabilitation such as completing set exercises, adhering to the rehabilitation programme, overcoming setbacks and obstacles, maintaining a positive attitude and staying focused (Heil, 1993b; Ievleva & Orlick, 1991; Wiese et al., 1991). One of the ways in which rehabilitation-process imagery is proposed to facilitate recovery is through self-efficacy. If an athlete believes and is able to visualise their ability to successfully complete a task, they are more likely to be able to perform well and succeed. Research on rehabilitation-process imagery has mainly focused on the use of imagery to enhance rehabilitation adherence. Green and Bonura (2007) suggested that rehabilitation-process imagery is central in a rehabilitation



programme, as it can enhance athletes' motivation, and subsequently have a positive effect on adherence.

The findings from a longitudinal intervention study with a male rugby player with a severely dislocated shoulder injury (Vergeer, 2006) also supported the use of rehabilitation-process imagery. Over the course of 8 interviews, the participant reported visualising himself making full(er) use of his shoulder. In addition, he also reported seeing himself performing at his pre-injury level of performance, and imagining his injured arm copying the movements of his healthy arm during and after gym training. In addition to using rehabilitation-process imagery, the findings from unstructured interviews revealed that during the early stages of his rehabilitation, the participant often experienced involuntary replay images of the accident. By the third interview, taking place 42 days after the injury, such images had virtually disappeared. He also explained how some of the images he was visualising were associated with physical sensations, such as visualising the movement of his "bone ripping". According to the participant, such images were also helping him to understand what had happened to his body, which in turn he felt was facilitating his recovery. Interestingly, over the course of the physiotherapy, such images diminished as the healing progressed. Despite being able to see his "head-of-the-humerus" bone ripping, the participant reported no use of healing imagery, and despite appropriate training, he was not interested in trying healing imagery. According to him, his injury was too complex, and he was not physiologically knowledgeable enough to envisage the healing process appropriately.

Existing research has provided support for the use of rehabilitation-process imagery during sport injury rehabilitation. However, it appears that much of the research is still in its infancy, and further understanding of how athletes and sport medicine

professionals utilise rehabilitation-process imagery during rehabilitation could be beneficial.

#### 3.3.1.4. Performance imagery

As athletes often view injury as a hindering setback and as an obligatory and unnecessary time away from their sport (Taylor & Taylor, 1997), ensuring athletes' involvement in performance related imagery can be useful for a number of reasons. For example, Richardson and Latuda (1995) stated that if an athlete is able to recognise the performance gains of mental imagery, this is likely to increase athletes' motivation and subsequently the rehabilitation process. According to Walsh (2005), performance imagery can assist injured athletes to increase confidence in their ability to return to sport by imagining themselves back at play, and by reducing stress and anxiety through the mental rehearsal of sport specific skills during rehabilitation. Performance imagery can also assist athlete to achieve major performance gains in areas, which may not receive priority during regular training (Walsh, 2005). It appears that the benefits of imagining aspects of performance in sport have been well documented in the literature (see reviews by Hall, 2001; Murphy & Martin, 2002); however in injury setting, there is limited research measuring the effectiveness of performance imagery. Instead, research has focused on various aspects of returning back to play, and often the actual imagery type used has been left unstated (Walsh, 2005).

Despite much research lacking empirical rigour, support for the use of performance imagery during rehabilitation has been found. Two decades ago, Weiss and Troxel (1986) highlighted the usefulness of visualising successful recovery (i.e., performance imagery) during injury rehabilitation. In an exploratory study with 32 former sport medicine clinic patients, Ievleva and Orlick (1991) used a questionnaire survey when investigating the importance of focusing on positive images during rehabilitation. Their results from t-test analyses revealed that

athletes who engaged in performance and healing imagery recovered faster than those who reported less frequent or no use of imagery. A study by Johnson (2000) investigated the effectiveness of psychological interventions on long-term injured athletes' mood. The athletes ( $N = 58$ ) were randomly allocated into two groups: no intervention control group ( $n = 44$ ,) and experimental group ( $n = 14$ ), which included interventions on stress management, goal setting, and relaxation/guided imagery. The latter was mainly performance imagery based with some elements of healing imagery. The results indicated that in relation to the injured athletes' responses from the patient self-rating questionnaire (PSQ) the only statistically significant findings ( $p < .05$ ) between the intervention group and the control group were found for the relaxation/guided imagery interventions.

A study investigating the adjunctive role of imagery on the functional rehabilitation of a grade II ankle sprain injuries (Christakou, Zervas, & Lavallee, 2007) provided partial support for the use of performance imagery during rehabilitation. A total of 20 injured athletes were randomly assigned into control and imagery intervention group. Those in the intervention group received twelve individual sessions of imagery alongside their normal course of physiotherapy. In comparison to the control group, the results revealed significantly higher functional performance gains for muscular endurance for the imagery intervention group. In contrast, no significant differences for dynamic balance and functional stability were found.

#### 3.3.1.5. Cognitive and motivational imagery

Much of the research stated above has focused on exploring the effectiveness of different types of imagery for sport injury rehabilitation. In other words, research has been focused on aiming to understand the content of *what* is being imagined, and in doing so, mixed support for the use of healing, pain-management, rehabilitation process, and performance imagery has been found. Not only is it important to understand *what* is being imagined during rehabilitation, it is also

useful to understand the different functions of imagery (i.e., for what purpose is imagery used for). Therefore, the research into the reasons *why* an individual athlete uses imagery should also be taken into account when evaluating the use of imagery in sport injury rehabilitation.

Sordoni, Hall, and Forwell (2000) were the first to explore the functions as to why athletes use imagery during rehabilitation. Similarly to sport imagery for performance enhancement, their findings indicated that rehabilitation imagery serves both cognitive and motivational functions. When developing the Athletic Injury Imagery Questionnaire (AIIQ), Sordoni et al. (2000) conducted a survey with 71 injured athletes (male  $n = 44$ , female  $n = 27$ ) attending physiotherapy treatment in Canada. Their results revealed that regardless of imagery type, overall the athletes used imagery less frequently during rehabilitation than in training and competition, competitive athletes used more imagery than recreational athletes, and the use of motivational imagery was higher than cognitive imagery use. Athletes' previous use of cognitive imagery in training and competition was significantly correlated ( $p < .001$ ) with the use of cognitive imagery during rehabilitation, and a strong positive correlation ( $p < .001$ ) was also found for athlete's previous and current use of cognitive and motivational imagery during rehabilitation.

In a subsequent study, Sordoni, Hall, and Forwell (2002) revised the AIIQ by incorporating the healing function of imagery alongside motivational and cognitive imagery to the questionnaire. Contrary to their hypothesis, the findings from the AIIQ-2 indicated that athletes used all three functions of imagery in a similar manner. It appeared that athletes were more aware of the healing functions of imagery than initially anticipated, and that once again, higher level athletes appeared to use more imagery than their lower level counterparts. In addition, they also found a significant relationship between healing imagery and athlete's self-

efficacy, as the athletes with higher levels of self-efficacy, and belief in their capabilities of successfully completing the rehabilitation reported greater use of healing imagery.

A study exploring the predictive relationships between self-efficacy, imagery use, and rehabilitation adherence (Milne, Hall, & Forwell, 2005) also provided an insight into why athletes use imagery. A total of 270 injured athletes attending an outpatient physiotherapy clinic took part in the survey. The findings from an analysis of variance (ANOVA) revealed that athletes used significantly ( $p < .05$ ) more imagery for motivational and cognitive purposes than for healing imagery. A link between imagery and self-efficacy was also found, as cognitive imagery was a significant predictor of task self-efficacy. In contrast, motivational imagery was not found to be a predictor for athletes coping self-efficacy, thus implying that motivational imagery is not as important source of self-efficacy during injury rehabilitation as it is in sport.

Another study providing crucial information for building a foundation for imagery use during rehabilitation is that of Driediger, Hall, and Callow (2006). In their study, they explored the use of imagery by injured athletes through qualitative methods. By interviewing 10 injured athletes during their rehabilitation, they found that athletes used imagery for motivational purposes, mainly in the form of re-enforcing recovery goals (i.e., imagining being fully recovered). In addition, the content of the imagery also varied, as the athletes reported using different types of imagery, i.e., healing, pain-management, and performance imagery (to learn and properly perform the rehabilitation exercises).

Similarly a qualitative investigation by Evans, Hare and Mullen (2006) explored the use of imagery during rehabilitation. Four (male  $n = 2$ , female  $n = 2$ ) international/semi-professional athletes representing different sports (pole vault,

soccer, field hockey, and swimming) were purposively selected for the study. The participants had sustained a sport injury requiring a minimum rehabilitation period of eight weeks, were in the early stages of their rehabilitation, and stated using imagery as part of their normal sports training and performance preparation. Semi-structured interviews were conducted with each of the participants three times; at the early, mid, and late phases of the rehabilitation. The results from the deductive thematic analysis revealed that during the early and mid stages of rehabilitation, athletes appeared to use healing, pain-management, and performance imagery, and that the performance imagery (CS imagery) was used for performance, not for rehabilitation. The use of CS imagery (i.e., imagining successful execution of technical skills) was seen as having a positive effect on their motivation, attitude and the levels of self-confidence. During the latter stages, however, athletes' imagery use was reported to be relatively similar to what it had been prior to the injury. Athletes appeared to use CS, CG, and MG-M imagery, and imagery was used mainly to maintain positive attitude and to increase self-confidence.

In conclusion, it is being argued that during sport injury rehabilitation, imagery seems to serve four main purposes: to facilitate the actual healing process, to promote positive and relaxed outlook towards recovery, to create the required mind-set for optimum performance, and to provide a closure to the injury experience (Green, 1992). Drawing from the literature presented above, it can be concluded that during rehabilitation, athletes use imagery for a range of reasons. Depending on the stages of recovery, imagery serves motivational, healing, and cognitive purposes. The content of what is being imagined (i.e., the type of imagery) also fluctuate, as the potential for using healing, pain-management, rehabilitation-process, and performance related imagery for rehabilitation is largely dependent on the individual athlete, and the injury status and situation in question. With that in mind, it is therefore important to understand the process of *how* successful imagery intervention could be implemented during rehabilitation.

### **3.3.2. Using imagery for rehabilitation: The process**

Richardson and Latuda (1995) have proposed a four-step programme as to how a therapeutic imagery programme should be integrated into the rehabilitation plan. First, imagery should be introduced to the injured athlete. If an athlete is informed about the practical application process and potential benefits of imagery for his/her injury, they are more likely to be receptive to its use during rehabilitation. In essence, "imagery works the best when the athlete believes it will be beneficial to the healing process" (Richardson & Latuda, 1995, p. 11). Secondly, the athletes' imagery ability needs to be informally assessed, mainly through simple questions asking the athlete to describe the 'how', 'why' and 'what' of his/her previous and current imagery use. Such is vital as successful imagery intervention will require an athlete to see, control, and vividly construct a mind-image. Mastering such abilities takes time, and often background training in imagery ability is essential. Depending on the athletes' existing imagery ability, an intervention can then be planned and implemented. The third step involves assisting the athlete in developing basic imagery skills. Richardson and Latuda propose 15 minute training sessions twice daily for imagery vividness (5 minutes), imagery controllability (5 minutes), and self-perception of the image (imagining your best ever performance for 5 minutes). Once the basic understanding has been obtained, these skills should be incorporated into the rehabilitation process. Finally, step four emphasises keeping the rehabilitation imagery process as simple and concise as possible. The main focus of the programme should be on the injury.

When developing a rehabilitation imagery programme, Taylor and Taylor (1997) believe that identifying possible areas of development for rehabilitation should be of primary importance to consider. Once the key areas have been identified, goals for rehabilitation imagery should be set. These goals should then form the basis of the rehabilitation imagery programme, which at its best incorporates all imagery types (i.e., healing, pain-management, rehabilitation-process, and performance

imagery). Along with guidelines for rehabilitation programme development, Taylor and Taylor also offered specific guidelines on how to maximise the rehabilitation imagery usefulness:

1. Choose the imagery perspective (i.e., internal/external) which is most natural, and then experiment with the other perspective
2. Aim to visualise realistic, detailed and clear images which are of similar quality than real life. Remember that imagery ability develops over time (Smith, 1987), thus practicing these skills is essential
3. Stay in control of your images. Effective imagery rehearsal contains positive, constructive images, feelings and performances
4. Reproduce total performances. This means using all physical and psychological aspects of the rehabilitation experience, and the use of all senses
5. Combine imagery with relaxation. The most important part of imagery is to feel it physically and emotionally and such can only be achieved if your body is relaxed and your mind is calm
6. Use imagery to facilitate physical and emotional well-being and feeling good

Similar to Taylor and Taylor, Flint (1998b) put forward guidelines for using mental imagery for rehabilitation. According to Flint, mental imagery should encourage the athletes to draw on as many senses as possible. In addition to using some form of relaxation to start the imagery, athletes should also be aware of the benefits of imagery, and be able to establish a link between imagery from sport specific situations to rehabilitation.

### **3.3.3. Imagery: The conclusions**

In summary, those involved in the sport injury rehabilitation process and athletes alike have all demonstrated having belief in the value of using imagery for speeding up the recovery process (e.g., Brewer et al., 1994; Green & Bonura, 2007; Ievleva



& Orlick, 1991; Richardson & Latuda, 1995). Similarly support for other benefits such as reduction in levels of re-injury anxiety (e.g., Cupal & Brewer, 2001), pain-management (e.g., Whitmarsh & Alderman, 1993), and preparation for returning back to sport (Johnson, 2000) have also been found. Such a wealth of support is not surprising, as rehabilitation imagery has the potential to address the various concerns and challenges injured athletes face during the rehabilitation process (Taylor & Taylor, 1997). Flint (1998b) argues that imagery can also be used to draw attention to the injured site (healing imagery), or as a distraction from pain (pain-management imagery). Often during injury an individual may feel powerless against the injury and therefore imagining the healing process could potentially provide a sense of positive action and a feeling of contributing to the recovery process. Despite existing research being contradictory, and on occasions lacking empirical rigour, rehabilitation imagery has the potential to be a practical psychological intervention technique to be used during sport injury rehabilitation. As much of the research to date has been conducted with multiple interventions, investigating the role of imagery as part of the rehabilitation process is of importance and warrants further inquiry.

#### **3.4. Relaxation techniques**

Along with goal setting and imagery, the use of relaxation has been frequently utilised by athletes. According Hardy et al. (1996), athletes can benefit from the ability to relax for two major reasons. Firstly, relaxation can help athletes to alleviate levels of anxiety, enable anxiety control, and even assist athletes to use anxiety to their advantage. Secondly, a link between being relaxed and the ability to produce peak performances has been found (e.g., Jackson 1992; Williams & Krane, 1993; cited in Hardy et al., 1996, p. 12).

According to Hill (2001), relaxation can be defined as a temporary deliberate withdrawal from everyday activity that aims to moderate the functions of the

sympathetic nervous system which is usually activated by stressful situations. In sport, the term relaxation has been used to describe a range of methods through which an athlete can facilitate his/her physical and psychological well-being. Commonly relaxation techniques have been divided into two main categories, namely 'physical' and 'mental' relaxation, depending on the techniques' focus (Flint, 1998b). The aim of physical relaxation techniques is to release physical tension in the body by focusing systematically on specific muscles or body parts. The most commonly used physical relaxation techniques in sport include Progressive Muscular Relaxation technique (PMR; Jacobson, 1938), an Applied Relaxation Technique (ART; Ost, 1988), breath control techniques, Centering (Hardy & Fazey, 1990), and Biofeedback (cited in Hardy et al., 1996; Weinberg & Gould, 2007). Mental relaxation techniques on the other hand attempt to focus more directly on the mind and not the body, and are constructed around the belief that a relaxed mind will in turn relax the body. Some of the main mental relaxation techniques employed in sport are autogenic training (Schultz & Luthe, 1969) and transcendental meditation, which in sport forms the basis for the Relaxation Response technique (Benson & Proctor, 1984).

A body of research to support the use of relaxation with the hope of improving sports performance exists. For example, findings from an early meta-analysis from nineteen published psychological intervention studies covering 23 different psychological interventions (Greenspan & Feltz, 1989) indicated that overall, relaxation based interventions are generally effective. More recently, support for the use of relaxation as part of a mental training skills (MST) programme has also been found in the sport domain (e.g., Thelwell, Greenlees, & Weston, 2006). Some evidence against has also been found, as a study with a random sample of 17 horseback riders failed to find a significant relationship between performance improvements and the implemented MST programme (Blakeslee & Goff, 2007). However, the authors highlighted that during the course of the research, the

participants in the control group had received inadvertent MST from coaches, engaged in conversations with their fellow riders from the experimental group, and they also may have held prior knowledge of sport psychology from their college courses, therefore contaminating the data. As a result, the authors of the study concluded that due to the possible flaws of the research, MST programme consisting of relaxation, imagery, self-talk, and goal setting could potentially be beneficial for horseback riders, but called for further research to investigate how and why athletes respond to the MST programme.

It appears that mixed support for the use of relaxation techniques in the hope of improving sport performance exists. The actual techniques used vary across individuals, and often relaxation is viewed as natural preparation developed by the athletes, which often occur in a fairly unstructured and untrained manner (Jones & Hardy, 1990). Despite some of the applied relaxation research being in its infancy, based on the evidence presented in this chapter, it can be concluded that relaxation is often utilised in conjunction with other mental training techniques, mainly imagery.

#### ***3.4.1. Relaxation techniques in sport injury rehabilitation***

Flint (1998b) argues that relaxation techniques form an integral part of the rehabilitation process. According to Flint, many of the psychological skills and techniques (e.g., imagery) employed during injury rehabilitation rely on a foundation of relaxation for it to be effective. Drawing from the literature, it appears that relaxation techniques are useful during injury rehabilitation for two main reasons: first, relaxation techniques can be used to alleviate, control, and cope with pain, and second, to assist athletes in coping and controlling levels of somatic and cognitive anxiety (e.g., Beneka et al., 2007). Several studies investigating the effects of pain-management techniques in a range of settings have indicated that individual's overall pain tolerance can be improved, and levels

of pain can be reduced through the use of non-pharmacological pain-management strategies like relaxation techniques (e.g., Gauron & Bowers, 1986; Turk, Meichenbaum, & Genest, 1983; cited in Taylor & Taylor, 1998, p. 69).

A recent review of literature suggests relaxation techniques are useful when the aim of the rehabilitation exercise is to obtain normal range of motion, or restoring joint stability (Beneka et al., 2007). In addition to the above, relaxation techniques have also been found to be beneficial in coping with and controlling levels of somatic and cognitive anxiety (Taylor & Taylor, 1997). According to O'Connor et al. (2005) relaxation techniques can facilitate the reduction of negative effects of anxiety by reducing tension, lowering heart rate, slowing breathing, and increasing blood flow. As it is more than likely that despite best prevention efforts, all athletes will experience some form of anxiety during the course of their rehabilitation (Taylor & Taylor, 1997), having the ability to control anxiety levels through simple and practical techniques (i.e., relaxation) is of importance. Harmful levels of anxiety could potentially have a detrimental effect on athletes' physiological and psychological recovery, and ultimately affect their return to sport.

A range of relaxation techniques have been found to be useful for injured athletes during rehabilitation. Flint (1998b) considers the use of PMR, meditation, yoga, breathing control, and autogenic training as beneficial for injured athletes. Wagman and Khelifa (1996) propose the use of breathing techniques and PMR as the most beneficial in helping injured athletes to cope with stresses related and associated with injury. Alternatively Taylor and Taylor (1997) acknowledge simple breathing techniques as useful for alleviating anxiety during rehabilitation. They also promote two types of relaxation strategies as effective during rehabilitation: progressive relaxation (PMR; Jacobson, 1938), and passive relaxation (Taylor, 1996). For the purposes of this thesis, only the three central techniques (i.e., breath control

techniques, PMR, and passive relaxation) will be introduced, discussed, and evaluated in more detail.

#### 3.4.1.1. Breath control techniques

The use of breathing routines has a long tradition and history in the East, particularly as part of yoga, meditation, and other related disciplines. In the western world, breathing techniques are often used in conjunction with other relaxation techniques, such as PMR. According to Payne (2004) some of the more prominent breathing techniques include slow breathing, deep breathing, diaphragmatic breathing, breathing meditation, and breathing with imagery. When applied to sport injury rehabilitation, breath control techniques are seen as suitable for alleviating and controlling pain as well as dealing with increased levels of somatic and/or cognitive anxiety. Currently very few studies investigating the effects of breathing techniques on rehabilitation has been conducted. For example, slow breathing technique has been acknowledged as having stress-relieving properties, but the underlying mechanisms as to why this is the case are unclear (Payne, 2004), however the extent to which slow breathing techniques are employed in sport injury rehabilitation is currently unknown.

In contrast, deep breathing has been proposed as being one of the simplest and effective way to control pain and anxiety during rehabilitation (Taylor & Taylor, 1997, 1998). First, deep breathing is proposed to relax the muscles, subsequently relieving muscle tension and any other physiological symptoms related to increased muscle tension. Second, it facilitates the transportation of oxygen to the injured area which in turns facilitates the healing process. Deep breathing is also suitable to use as a means of redirecting the injured athletes focus away from the experienced pain and discomfort during rehabilitation (Catalano, 1987; cited in Taylor & Taylor, 1998, p. 76). Deep breathing enables a reduction in athletes' levels of anxiety, thus allowing the athletes to gain greater levels of control over

their bodies, which in turn can have positive effects on the athlete's self-efficacy, self-confidence, and motivation. Yet despite the apparent physical and psychological benefits, when it comes to relieving pain, deep breathing appears to be the most neglected and least used relaxation technique (Catalano, 1987; cited in Taylor & Taylor, 1998, p. 76). Similar to research on slow breathing, research on the effectiveness of diaphragmatic (i.e., abdominal) breathing routines during sport injury rehabilitation is sparse. In fact, according to Payne (2004) one of the only studies investigating the effectiveness of breathing techniques was conducted by Bell and Saltikov (2000; cited in Payne, 2004, p. 118). Their comparative study with 45 male participants compared the effectiveness of a combination of Mitchell method<sup>6</sup> and diaphragmatic breathing with diaphragmatic breathing alone. Based on the changes in participants' heart rates no significant differences in the results for the two forms of intervention were found. However as research on breathing techniques is limited, no definite conclusion on their effectiveness can be drawn.

#### 3.4.1.2. Progressive muscular relaxation

Progressive muscular relaxation (PMR) is the most commonly used and taught relaxation technique in sport (Flint, 1998b). Based on the early work by Jacobson (1938), PMR refers to the combination of deep breathing and systematic tensing and releasing of specific major muscle groups. The intention of PMR is to relax the skeletal musculature, which, once successful will often be followed by the relaxation of the mind (e.g., Crossman, 2001; Flint, 1998b; Payne, 2004; Taylor & Taylor, 1997, 1998), and over has been since revised and modified to make it simpler and more effective by Bernstein and Borkovec (1973).

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<sup>6</sup> The Mitchell method is a form of physiological relaxation which involves adopting body positions that are opposite to those associated with anxiety (i.e., fingers spread rather than hands clenched) and it is often used by physiotherapists in women's health in relation to assisting women during childbirth.

The process of PMR is relatively simple. Anxious and tense athletes may find it difficult to “just shake their muscles out and get them to relax” (Taylor & Taylor, 1997, p. 161). Therefore, instead of attempting to relax the muscles, the PMR requires the athletes to first tighten the muscle, and then relax them. This procedure will cause the muscles to rebound from a previous state of muscle tension down to a lower level of tension. Often PMR is used with either four major muscle groups (i.e., face and neck, arms and shoulders, chest and back, and legs and buttocks), or more localised to a specific set of muscles which appear to be the main cause of the tension. This systematic process is accompanied by controlled deep breathing, which, when combined with tensing and releasing can also assist the athletes to become more aware of the different muscle groups in their bodies.

As a result, PMR has been proposed as best suited for athletes who are unaware of the level of tension in their bodies, and where that tension is seen as facilitator for pain and general physical discomfort (Taylor & Taylor, 1997). Rotella (1982) believes that PMR is most suitable for athletes who exhibit the tendency to be overly anxious about their injuries, and who suffer from insomnia, tension headaches, or general tightness. In his opinion, PMR should not be imposed with athletes who, over the years have learned effective means of coping with stress independently and have been coping well for years.

#### 3.4.1.3. Passive relaxation

In contrast to the above, passive relaxation has been proposed as most suited to athletes with low or moderate levels of muscle tension that are using relaxation to achieve an overall sense of calm and physical relaxation (Taylor & Taylor, 1997). Passive relaxation was developed by Taylor (1996), and rather than tensing and releasing major muscle groups (PMR), passive relaxation involves the use of imagery. During the process, athletes are required to imagine their tension (or pain) as a liquid which is filling their muscles. Aided by deep breathing, athletes are

then required to imagine the process of draining this liquid away from their bodies through the drain plugs on the bottom of their feet. The purpose of deep breathing is to act as a facilitator in pushing the tension away (Taylor, 1996).

Most of the research on relaxation techniques to date has been conducted collectively with imagery. A study by Johnson (2000) investigated the effects of relaxation in conjunction with guided imagery. The injured athletes ( $N = 14$ ) were taught relaxation and breathing techniques; however the type of relaxation taught was not elaborated further. The only significant differences ( $p < .05$ ) between the intervention group and the control group were found for relaxation/guided imagery condition, thus suggesting a combination of the two interventions as being effective in enhancing mood. Cupal and Brewer (2001) used a similar research design when investigating the effects of relaxation and guided imagery combination on knee strength, re-injury anxiety, and perceptions on pain. Thirty injured athletes receiving physiotherapy treatment to their anterior cruciate ligament injuries took part in a randomised controlled trial (placebo, control, and treatment group). In the treatment condition, the relaxation element of the intervention consisted of several minutes of breath-assisted relaxation. As a result of the intervention, the most considerable benefits were found for increased knee strength, decreased re-injury anxiety, and lowered levels of pain.

Conversely Handegard et al. (2006) used a case study approach when investigating the effects of relaxation and guided imagery intervention with a soccer player and a baseball player in the US. From the article, it is evident that relaxation was introduced to the athletes by the researcher; however, when describing the implemented intervention, the authors fail to describe the particulars of the type of relaxation used. Nevertheless, the results revealed that both athletes attributed 30-40% of their recovery to their MST programme (including the use of both imagery



and relaxation) and the athletes themselves reported increases in their levels of self-confidence.

In contrast to the above, Christakou and Zervas (2007) used a combination of relaxation and a combination of pain-management and treatment imagery (i.e., rehabilitation-process imagery). In their study, 18 injured athletes (age range 18-30) with grade II ankle sprain were randomly allocated into control and intervention group. The participants in the intervention group underwent 12 individual 45 minute sessions of imagery, each of which began with systematic relaxation of the muscle groups (relaxing all the muscle groups starting with their feet and progressing up to their face). The findings from the analyses revealed some improvement on pain, edema, and ROM after the relaxation and imagery intervention; however none of the findings were statistically significant. This could be a result of small participant numbers, and by increasing the participant numbers for each condition might have produced different results.

The most recent study in this area investigated the effects of cognitive and relaxation interventions on injured athletes' mood and pain during rehabilitation (Naoi & Ostrow, 2008). Three male and two female US University level athletes representing track, baseball, soccer, and basketball took part in an intervention study consisting of two intervention periods (cognitive intervention and relaxation intervention) and two baseline periods (before and after the interventions). The relaxation interventions were aimed to relax both the muscles and the mind, and consisted of both breathing exercises and autogenic training. The participants were required to listen to a pre-recorded relaxation audio CD at least once a day during the intervention session, and were given an opportunity for and encouraged to listen to the CD at home as often as they felt necessary. The results revealed that three of the five participants displayed improvements in mood and/or levels of pain during the relaxation intervention period. Four of the participants also felt that

relaxation had facilitated their physical and psychological recovery. The authors conclude by stating that all the athletes responded differently to the interventions, therefore suggesting that for successful implementation of psychological interventions during rehabilitation, the interventions should be tailored to meet the individual athletes' needs.

#### ***3.4.2. Using relaxation techniques for rehabilitation: The process***

Regardless of the type of relaxation to be used, several prerequisites are necessary for effective relaxation. Flint (1998b) states that learning how to relax is a skill, and as with any other skill, must be learned and practised for it to be effective. Crossman (2001) proposed that when relaxing, athletes will pass through three levels of relaxation: symbolic level, mental level, and physical level. During the symbolic level, the breathing becomes deeper and slower. During this initial phase, a realisation of creating tension (during PMR) or relaxation (in passive relaxation) will take place. The mental level will create a sense of calm in the athlete, and their focus will start to digress from the anxiety causing distractions. At this level, athletes are reasserting control over themselves by being in control of their muscles and bodies. The final level, i.e., the physical level will be achieved through practice. Once an athlete is able to achieve physical level of relaxation, they become able to evoke a deep relaxed state, and to control any physical or psychological anxieties which may be hindering their injury recovery process. As an individual passes through these levels, their state of relaxation increases and their sense of control over their bodies is enhanced.

Rotella (1982) believes that the first step in any relaxation training should be education. The athlete should be educated about the purpose, the benefits, and the rationale for the use of relaxation, and any possible questions and qualms about the technique should be highlighted and resolved. On a more practical level, it is also vital to ensure that relaxation takes place in a quiet, calm, comfortably warm

area with subdued lighting (Crossman, 2001; Rotella, 1982; Taylor & Taylor, 1997). Athletes should be positioned lying down or in a chair, with the emphasis being on athletes feeling comfortable in the position adopted. Athletes should use loose and comfortable clothing, and to remove any unnecessary items such as shoes, watches, glasses, contact lenses (Crossman, 2001; Rotella, 1982). It has also been proposed that pre-recorded audio recording of the relaxation script and the use of audio equipment (i.e., CD, iPod, MP3 player) during the relaxation process can be beneficial in facilitating the relaxation process (Taylor & Taylor, 1997). Taylor and Taylor also propose relaxation as being most effective when integrated into the structure of daily physical sessions (e.g., using deep breathing during the times when pain is prominent and hindering the rehabilitation process). They also regard ending physiotherapy sessions with relaxation as beneficial, since it can be a rejuvenating experience following the painful and unpleasant experience of rehabilitation.

#### ***3.4.3. Relaxation techniques: The conclusions***

It appears that a range of relaxation techniques can be of use for injured athletes during rehabilitation. As demonstrated above, relaxation can facilitate athletes' ability to manage and alleviate pain, and to deal with range of anxieties during rehabilitation. Much of the research to date has investigated the effectiveness of relaxation interventions on physiological outcome measures (e.g., muscle strength, joint stability, pain, and ROM), and relaxation interventions have been currently used in combination with, or as complimentary to imagery intervention (e.g., Christakou & Zervas, 2007; Cupal & Brewer, 2001). Recent studies have investigated the effects of imagery and relaxation on injured athletes' mood or other psychological factors (e.g., Handegard et al., 2006; Johnson, 2000; Naoi & Ostrow, 2008); however to date, existing research on the effectiveness of relaxation techniques continues to be equivocal.

### **3.5. Self-talk**

Another psychological skill often utilised by athletes in the hope of shaping and improving their sporting performance is self-talk (ST). All athletes engage in some form of ST, but the extent, frequency, content, and type will vary depending on the situation and the individual athlete (Zinsser, Bunker, & Williams, 2006). Research findings on ST tend to suggest that both male and female athletes use ST, and some support for males using more external and negative ST than females has been found (Hardy, Hall, & Hardy, 2005). Hardy and his associates also found no significant differences in the ST content due to athletes' skill level; however it appeared that individual athletes used more ST than team athletes.

Over the past twenty years, a number of global definitions of ST have been put forward by a range of researchers. For example, Hackford and Schwenkmezger (1993) defined ST as an "internal dialogue in which the individuals interpret feelings and perceptions, regulate and change evaluations and cognitions and give themselves instructions and reinforcement" (p. 355). Another definition was later put forward by Theodorakis, Weinberg, Natsis, Douma, and Kazakas (2000) in which two important aspects of ST acknowledged in the earlier definition by Hackford and Schwenkmezger (1993) were highlighted and clarified further: ST involves statements addressed to oneself and not others, and it can be articulated either overtly (external ST) or covertly (internal ST). In particular, according to Theodorakis et al. (2000), "self talk is what people say to themselves either out loud or as a small voice inside their head" (p. 254).

ST as a construct has been typically classified into three main types: positive (i.e., motivational), instructional, or negative (Weinberg & Gould, 2007; Zinsser et al., 2006). Positive ST refers to the positive statements or individual words (e.g., now) an athlete may use to enhance their effort, increase their energy levels, and to maintain positive attitude with no reference to specific task-related cues (e.g., keep

going, I can do this). Instructional ST on the other hand consists of task-related cues, and is used to help the individual in focusing on technical or tactical aspects of their performance (e.g., keep your eye on the ball, bend your knees, and relax shoulders). In contrast, negative ST is critical and self-demeaning (e.g., I can't do this, I am such an idiot for making such an error), and can affect athlete's ability to complete the required task and subsequently have an impact on how well the set goals are reached (for more details, see Moran, 1996; Weinberg & Gould, 2007; Zinsser et al., 2006).

In conclusion, ST has been proposed as being one of the most pervasive cognitive strategies employed by all athletes alike (Theodorakis, Hatzigeorgiannis, & Chroni, 2008), and has been proposed as one of the most important methods for cognitive control (Zinsser et al., 2006). The use of positive and instructional ST can be useful for athletes in enhancing concentration, breaking bad habits, initiating action, sustaining effort, and acquiring skill (Weinberg & Gould, 2007). The use of ST is often seen as a fundamental part of other intervention strategies employed in sport (Conroy & Metzler, 2004), however until very recently research on ST has been sparse. Much of the work on ST has also been lacking theoretical foundations (Hardy, 2006), which consequently has led to the development and application of a range of theories and models. To date, many of the existing theories and models are lacking rigorous empirical support (Hardy, 2006), which according to Theodorakis et al. (2008), has left the researchers relatively unaware of all the different constructs of ST and how it works.

### ***3.5.1. Self-talk in sport injury rehabilitation***

Similar to using ST for performance enhancement, it can also facilitate the actual physical recovery. A recent review of literature indicated that ST was found to be useful for joint restoration, muscular strengthening, and rehearsing sport related skills (Beneka et al., 2007). ST can also assist injured athletes with the

psychological aspects of injuries, particularly in the form of coping with their sport injury rehabilitation process. Once injured, many athletes cognitively appraise the injury as detrimental (Flint, 1998b), and as a result are likely to engage in negative thoughts and self-defeating personal dialogue (e.g., Crossman, 2001; Granito, Hogan, & Varnum, 1995; Kolt, 2004). If such thoughts are left unchallenged, they can have a hindering effect on the athlete's mood, adherence, compliance, and ultimately on the psychological and physical rehabilitation outcome. Thus, applying ST and managing thoughts during sport injury rehabilitation is seen as vital, since it can assist an athlete in restructuring hindering thoughts into positive and task-orientated thoughts leading to more positive and motivated attitudes towards injury and rehabilitation process (Granito et al., 1995; Wagman & Khelifa, 1996).

A limited amount of research into the use of ST as part of rehabilitation exists. Twenty years ago Weiss and Troxel (1986) were the first to document injured athletes' post-injury experiences. In their study with ten injured athletes representing a range of sports, Weiss and Troxel found that many athletes experienced a range of emotions and feelings once injured. The most frequently reported responses to injuries were disbelief, fear, anger, depression, tension and fatigue. It was also found that many injured athletes may feel panic and helplessness as a result of engaging in irrational and negative thoughts (Weiss & Troxel, 1986), and therefore the use of positive (self)statements during rehabilitation would be appropriate and beneficial.

Following on, Ievleva and Orlick (1991) were the first to study the impact of different psychological intervention methods on athletes' ( $N = 32$ ) recovery from sport injury. In their retrospective study with athletes already recovered from their sport related injuries, Ievleva and Orlick found a strong positive correlation between athletes' recovery time and the use of positive self-talk. Along with goal setting and imagery, the fast healing athletes ( $n = 4$ ) reported greater use of

positive self-talk than their slow healing counterparts ( $n = 5$ ). Qualitative findings revealed that overall; the fast healing athletes had a tendency to be highly positive (e.g., 'I can do anything'), whereas slow healing athletes had a tendency to be totally negative ('it will probably take forever to get better') and unforgiving ('dumb mistake', and 'you stupid fool!'). The athletes who recovered at an average rate appeared to be a combination of both of the above. Such findings provide support for athletes' ability to influence and control thoughts during injury and the rehabilitation process, subsequently also supporting the use of positive self-talk during rehabilitation.

In a study by Ross and Berger (1996) the authors investigated the effects of stress inoculation training<sup>7</sup> on athlete's postsurgical subjective pain, anxiety, and physical functioning. A total of 60 male athletes were randomly assigned into intervention and control groups. Similar to the findings by Ievleva and Orlick (1991), the use of cognitive-behavioural interventions appeared to facilitate athletes' recovery rate. In addition, stress inoculation training was also found to be beneficial in reducing athlete's levels of anxiety and pain.

Gould and his associates published a series of articles exploring range of coping strategies employed by injured athletes (Gould, Eklund, & Jackson, 1993; Gould, Finch, & Jackson, 1993; Gould et al., 1997; Udry, Gould, Bridges, & Beck, 1997). For example, in their study with Olympic level wrestlers ( $N = 20$ ), 80% of the participants reported the use of thought control strategies as means of coping with their injuries (Gould, Eklund et al., 1993). In a study with national championship level figure skaters ( $N = 17$ ), rational thinking and self-talk were reported as the

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<sup>7</sup> Stress Inoculation Training is a form of cognitive restructuring as it is a method of changing an individual's thinking patterns about themselves and their lives. The aim SIT is to change an individuals emotional responses and behaviour ideally before the individual becomes very anxious or depressed as a result of stress.

most popular (76%) coping strategies employed by the athletes (Gould, Finch et al., 1993). Few years later, 21 US alpine and freestyle skiers (76%) regarded the management of thoughts and emotions as the third most important technique when coping with season-ending injuries (Gould et al., 1997). In a qualitative study with US ski team members ( $N = 21$ ), thinking positively was regarded as the third largest general dimension to emerge from the data, with 81% of the athletes citing a theme within the dimension (Udry et al., 1997). Similar to the findings by Udry et al. (1997), Taylor and Taylor (1997) highlighted the use of positive statements as beneficial. In particular, using such statements at the beginning and at the end of each rehabilitation session can be seen as having the potential to generate positive emotions in athletes, which in turn can facilitate the quality of the rehabilitation (Udry et al., 1997; Taylor and Taylor, 1997).

In addition to enhancing the quality of the rehabilitation, positive self-talk has also been found to enhance home exercise adherence with athletes who undertook ACL rehabilitation (Scherzer et al., 2001). In their study with 54 patients undergoing rehabilitation, most participants denied the use of self-talk. Why such was the case was not clarified and warrants for further research. Amongst those who did report using ST during rehabilitation, both the use of positive ST and GS were found to have a positive correlation with home exercise completion. Despite finding no significant relationships between positive ST and home cryotherapy (use of ice) completion, sport injury rehabilitation adherence scale rating, and physiotherapy attendance, in light of the other existing research (e.g., Ievleva & Orlick, 1991), the authors proposed that ST has the potential to help athletes to stay motivated to adhere to their rehabilitation. Such findings might suggest that once athletes have adopted ST as part of the rehabilitation process, it appears to be beneficial. However, as very few athletes reported using ST, educating athletes further about the benefits of ST might be useful.



Further to the above, Rock and Jones (2002) also investigated athletes undergoing rehabilitation after an ACL reconstruction surgery. Three athletes who met the inclusion criteria took part in six counselling-skills intervention sessions (containing cognitive restructuring) once fortnightly. The findings from the quantitative outcome measures and semi-structured interviews with the athletes 12 weeks post surgery were in support of using cognitive restructuring as part of rehabilitation process. More specifically, the authors concluded that during rehabilitation counselling skills could have a positive effect on athletes' psychological well-being, particularly during setbacks, thus providing support for the use of ST during sport injury rehabilitation.

A recent doctoral thesis by Walker (2006) also provided support for the use of cognitive reframing. With the intention of observing participant's re-injury anxiety during the course of sport injury rehabilitation, Walker conducted a relaxation and cognitive restructuring intervention with three male association football players who had suffered a Grade II anterior talofibular ligament injury. During the briefing sessions following each of the physical rehabilitation sessions, the athletes were asked to record any negative thoughts regarding re-injury. Any negative thoughts were then reframed by the athletes (with support from the researcher) into positive and personal affirmations. As suggested by Porter (2003), the athletes were also asked to tear up the negative thoughts and place them into the waste bin. The findings from the study indicated that after the introduction of the intervention, a clear decrease in participants' reinjury anxiety scores was detected. It was also reported that the change in anxiety levels was relatively rapid after the implementation of the intervention. Such findings could imply that for the purposes of reducing re-injury anxiety, football players participating at University standard or above, required a relatively limited amount of time for learning the intervention for it to be effective. However, as the study adopted a case study approach, and since little is known about the ways in which reinjury anxiety manifests itself during

rehabilitation, further research is needed to gain a greater understanding on these issues.

The most recent investigation exploring cognitive interventions (incl. reading positive self-statements, cognitive restructuring, and self-monitoring) aimed to investigate the effects of relaxation and cognitive interventions on injured athletes' mood and pain during rehabilitation (Naoi & Ostrow, 2008). Five injured athletes representing NCAA division I and II universities in a range of sports who had undergone surgery for their injuries took part in the study. The study used a single subjects design, and the changes in mood and pain were measured through standardised psychological instruments (for more details, see Naoi & Ostrow, 2008). The findings from the analyses revealed that three of the five participants showed an increase in mood during the cognitive intervention. However one of the participants displayed negative effects on mood and levels of pain during both cognitive and relaxation interventions. Despite such negative effects, post-tests revealed that all participants reported cognitive intervention as being beneficial in aiding their physical and psychological recovery. As all of the five participants in this study displayed relatively dissimilar reactions to the interventions; the findings therefore supported the development of cognitive and relaxation interventions to meet individual athletes' needs.

### ***3.5.2. Using self-talk for rehabilitation: The process***

Given that most athletes engage in negative personal dialogue when injured, several thought management techniques have been proposed as useful during injury rehabilitation. Rotella (1985) proposed cognitive restructuring, rational thinking, the A-B-C approach, and self-statement modification as suitable for athletes during sport injury rehabilitation. Wagman and Khelifa (1996) lists cognitive re-structuring, positive self-talk, and thought stoppage as possible interventions useful in dealing with troubling aspects of injury, whereas Flint

(1998b) considers the use of interrupting negative thought patterns and thought stoppage as important. Taylor and Taylor (1997) believe talking strong (i.e., "I will have full recovery"), the use of "Rehab Litany" (i.e., a group of positive self-statements), thought stopping, and using negative thinking positively as helpful during rehabilitation. More recently, Crossman (2001) has highlighted the importance of using rational thinking and thought-stopping during injury rehabilitation. Similarly to the consideration of the range of relaxation techniques, only the process of implementing the two most prominent techniques (namely cognitive restructuring and thought stopping) into sport injury rehabilitation will be introduced, discussed, and evaluated in more detail in this thesis.

#### 3.5.2.1. Cognitive restructuring/reframing

During rehabilitation many injured athletes engage in self-demeaning and self-defeating thoughts such as 'I am never going to get back in play' or 'I do not believe my back will ever heal properly'. One of the ways in which injured athletes are able to deal with such negative thoughts during rehabilitation is through the use of cognitive restructuring (CR; a.k.a. reframing). According to Gauron (1984), reframing refers to a process in which an individual will create alternative frames of reference or different ways of looking at the world. In essence, CR allows an athlete to reframe existing negative and irrational thoughts into more positive and more rational thoughts (Kolt, 2004). Simultaneously, CR does not deny, downplay, or encourage athletes to ignore their negative and troublesome experiences. Rather, CR encourages athletes to acknowledge what is happening, and to use the situation to their advantage. For instance, negative self-statements above could be restructured as 'after a thorough and intensive rehabilitation, I will be healthier and stronger than ever to get back in play', 'with hard work and determination, my back will get better'.

In general, reframing has been found to be beneficial during rehabilitation in a number of ways. What athletes say or fail to say to themselves can influence their rehabilitation behaviour (Rotella, 1985) and subsequently have an effect on the rehabilitation outcome. As with any skills, learning CR takes time. As a result, researchers like Rotella have been proposed that in order for ST to be beneficial, athletes should actively seek to cultivate the skill of reframing, and to engage in the process not only during the injury and rehabilitation, but also when partaking in sport as a whole.

#### 3.5.2.2. Thought stopping

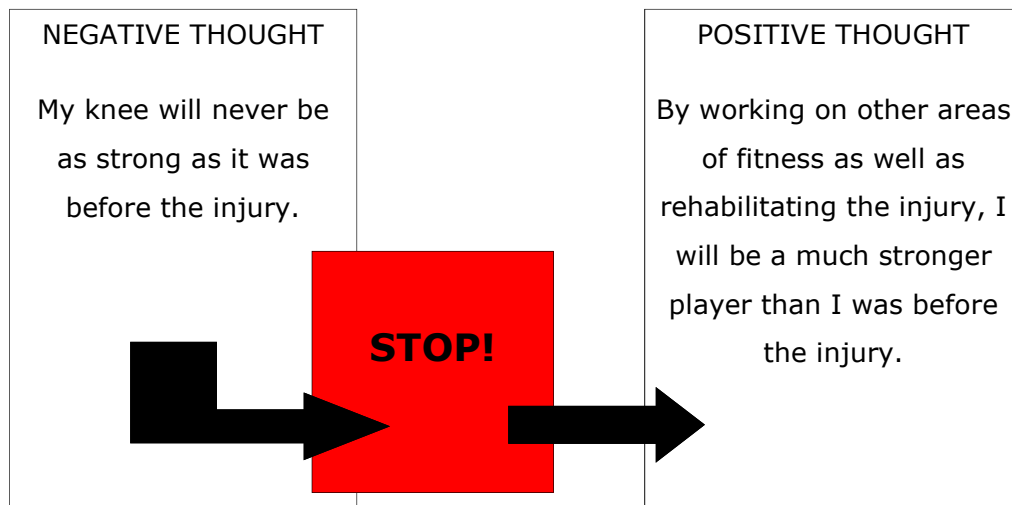
In sport psychology literature, thought stopping has been defined as a cognitive control technique in which negative thoughts are eliminated through the use of mental or physical triggers (Wann, 1997). When applied to a sport injury setting, Crossman (2001) defined thought stopping as a process of stopping negative thoughts (i.e., positive ST) by replacing them with positive ones through the use of a mental cue. The aim of thought stopping is to learn how to control, reduce, and eliminate negative or counterproductive thoughts which may result in increased levels of anxiety, self-doubt, and reduced level of performance. In keeping with the above, the ultimate goal of thought stopping process is to replace negative thoughts with positive affirmations (Wagman & Khelifa, 1996).

With the purpose of implementing thought stopping process to sport injury rehabilitation, three phases have been suggested as important for successful execution (Crossman, 2001). During the first phase, *the educational phase*, an athlete should be educated about the detrimental effects of negative ST on performance and recovery. The importance of replacing negative thoughts with positive ones should also be highlighted. Following on from the education phase, the second phase, i.e., *the awareness phase* should involve teaching the athlete awareness of their personal use of negative thoughts. Athletes should be

encouraged to write down the actual content of their negative thoughts, followed by corresponding or preferred positive thoughts. These positive thoughts should be meaningful and individual to the athlete, and according to Crossman, should contain the following four requisites: (1) it should be opposite to or conflict with the negative thought, (2) it should be true, or at least more probable and realistic, (3) it should be assertive, and (4) it should be positive. Once the existing negative thoughts have been identified and conveyed into positive ones, the athlete can proceed to the third phase, i.e., *the implementation phase*.

During the implementation phase, according to a range of authors (e.g., Crossman, 2001; Flint, 1998b; Taylor & Taylor, 1997), three key steps should be followed: (1) an athlete must recognise and possess an awareness of the negative and unwanted ST, (2) once negative ST has been recognised, an athlete must use a trigger/a cue to interrupt the unwanted thought, and (3) after the trigger, the negative and unwanted ST must be replaced with a positive and constructive one (see Figure 3.2.). Taylor and Taylor (1997) advocate the creation of an awareness of the negative ST patterns as the most difficult part of the thought stopping process. If an athlete is unaware of the negative and unwanted thoughts, he/she will be unable to proceed to step two, which requires the use of a trigger to stop the negative thoughts. Such trigger can be a simple word (e.g., stop, positive, or wait), or an action (e.g., snapping fingers, clenching a fist). The trigger, whatever it may be, needs to be consistent and of a kind that feels natural to the athlete. Moreover, an athlete should never be able to complete the negative statement, but the trigger should be used immediately after the negative thought occurs.

Figure 3.2. An example of thought stopping process during rehabilitation



*Information generated for the purposes of this thesis from the works of Crossman (2001), Flint (1998b), and Taylor and Taylor (1997).*

### **3.5.3. Self-talk: The conclusions**

Drawing from the sport injury and sport performance enhancement literature, it appears that research on self-talk is relatively limited. For example the different motivational and cognitive functions of ST (as identified by Hardy, Gammage, & Hall, 2001) are yet to receive rigorous empirical testing in sport, particularly in the sport injury rehabilitation settings. Even though research to date appears to be partial, evidence to support the usefulness of engaging in positive ST during rehabilitation exists (e.g., Brewer, 1998; Brewer, 2001a; Granito et al., 1995; Kolt, 2004). Similarly, support for the use of thought management techniques to modify athletes existing ST behaviour has been found in the literature (e.g., Naoi & Ostrow, 2008; Rock & Jones, 2002; Ross & Berger, 1996; Walker, 2006). Moreover, a recent review of the literature also found ST to be useful for enhancing specific physiological components of rehabilitation (Beneka et al., 2007). Despite the growing number of studies on ST, very little is known about the specifics on how injured athletes use ST during the rehabilitation process. Thus, further

research on the experiences of using ST as part of the rehabilitation process is warranted.

### **3.6. Social support**

Despite many athletes preferring to “go it alone” (Hardy et al., 1996, p. 234), a body of literature exists to support the importance of using social support during various sporting moments, especially during the times in need (Rees, 2007). For example, social support, coming from a range of sources, has been found to be useful for national champion figure skaters as a means of coping with expectations and pressure to perform, relationship issues, and a range of other uncategorised stress sources such as lack of training enjoyment, personal crises, unexpected disruption at the Olympic Games, skating politics, substance abuse struggles, and depression from unfulfilled expectations (Gould, Finch et al., 1993). More recently social support has also been found to have a beneficial impact on athletes self-confidence (Rees & Freeman, 2007). More specifically, in their study with a sample of 222 university athletes, Rees and Freeman found that social support influenced self-confidence both directly and indirectly in the form of reducing the effects of stress on self-confidence (all  $p < .001$ ).

With the intention of defining social support as a concept, researchers are yet to agree on unanimous and all encompassing description. This is not surprising, as the current empirical work on social support expands across the discipline boundaries, in which various interests, agendas, and backgrounds have been found to influence the process of social support, and subsequently leading towards the development of a range of definitions (Hutchison, 1999). Within the context of sport, a definition frequently utilised in research was put forward by Sarason, Sarason, and Pierce (1990): “knowing that one is loved and that others will do all they can when a problem arises” (p. 119). For Heil (1993a) social support is a “form of interpersonal connectedness. It encourages the constructive expression of feelings, provides

reassurance in times of doubt, and leads to improved communication and understanding” (p. 145). Adding to the above, Rees (2007) characterised social support in sport as a multifaceted process in which the athlete is helped by the existence of a caring and supportive network, as well as by their personal perception of other people’s availability to provide help in times of need, and by the actual receipt of help and support. These factors will then have the potential to positively affect athletes’ cognitions, emotions, and behaviour.

Existing research has found social support as beneficial for athletes when dealing with sport related burnout, competitive stress, and decreases in levels of performance (Rees, 2007). Sarason et al. (1990) also proposed social support as having a direct influence on athletes performance, a notion which has recently received more empirical support in selected sports such as tennis (Rees & Hardy, 2004) and golf (Rees, Hardy, & Freeman, 2007). A link between social support and athlete’s levels of satisfaction with their coaches’ leadership characteristics has also been suggested in the literature, along with empirical research evidence to support a relationship between high levels of social support and task cohesion (Rees, 2007). Drawing from the literature, it appears that research into the role of social support in sport remains in its infancy. However one area within sport in which social support has received much more attention is that of sport injury. More specifically, combining social support with sport injury antecedents, injury vulnerability, coping with injury, the actual rehabilitation process, and return to form has become the most ubiquitous and widely researched area to date (O’Connor et al., 2005; Rees, 2007).

### ***3.6.1. Social support in sport injury rehabilitation***

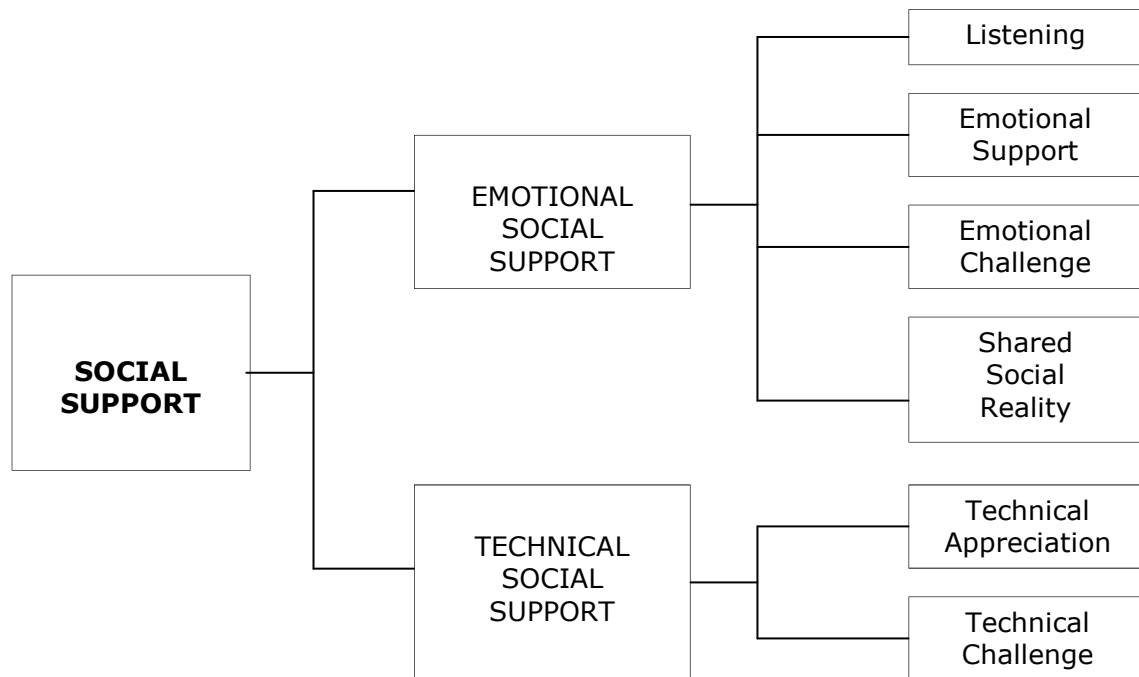
When applied to sport injury, social support has been proposed as being an integral part of the injury, stress, and coping process. With the focus of this research being placed on rehabilitation and recovery, it is important to note that the main aim of



rehabilitation social support is to provide the injured athlete with a sense of belonging and assurance that they are not alone in their experience of dealing with injury, but rather have a support network readily available to assist them with the process of recovery (Taylor & Taylor, 1997). In general, social support has been found beneficial in the hope of facilitating recovery (e.g., Rotella & Heyman, 1993; Weiss & Troxel, 1986). In particular, social support is considered to facilitate injury rehabilitation through two mechanisms: by protecting or 'buffering' athletes from the harmful effects of injury related stressors, and by directly influencing the rehabilitation process without any association with stress, or stress exposure (Mitchell, Neil, Wadey, & Hanton, 2007; Rees, 2007). Recreational athletes' satisfaction with their social support network has also been found to be significantly related to mood disturbance with increased levels of satisfaction leading to reduced levels of mood disturbances (Green & Weinberg, 2001). Moreover, when combined with a sense of personal responsibility, social support has also been associated with heightened levels of rehabilitation treatment adherence (Johnston & Carroll, 2000) which, as previously stated, can facilitate an athlete's rehabilitation motivation, and consequently assist the actual recovery process.

Similar to the psychological interventions discussed earlier in this chapter, much discussion and research in relation to the different dimensions/types of social support has taken place in the past few decades. Thus far, several types of social support have been proposed as beneficial to the athletes when injured. Based on the original works of Pines, Aronson, and Kafry (1981), social support in sport has been divided into six distinct types: listening, emotional support, emotional challenge, shared social reality, technical appreciation, and technical challenge (see Figure 3.3.). The above types can, and have been further grouped into two general areas, namely emotional and technical, depending on the nature of the support (Rosenfeld, Richman, & Hardy, 1989).

Figure 3.3. The six types of social support for sport



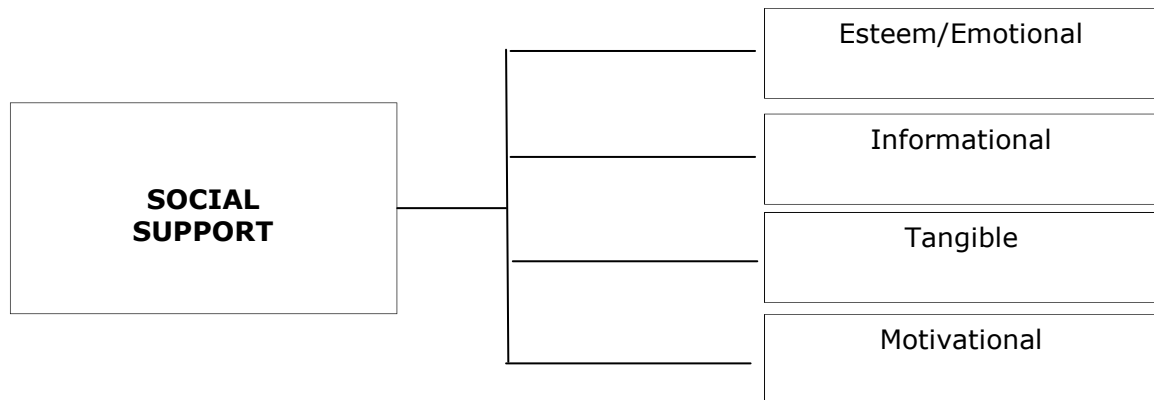
Collated from the works of Pines et al., (1981), as described in Taylor and Taylor, (1997)

According to Taylor and Taylor (1997), when applied to sport injury rehabilitation, *listening* support refers to the process of others actively listening to the athlete without giving advice or making judgements. Listening support should be purely about sharing positive and negative feelings associated with the rehabilitation, including joys of rehabilitation success and setback frustrations (e.g., doubts and anxieties, significant improvements). Providing *emotional support* relates to giving an athlete impartial assistance during emotionally difficult times without necessarily taking sides. *Emotional challenge* support on the other hand requires the person giving support to challenge the athlete to do their utmost best to overcome challenges and obstacles to meet their goals. Finally, emotional support in the form of *shared social reality* involves those giving support to possess similar values, priorities, and perspectives to act as reality touchstones, through whom the injured athletes are able to verify their perception of the social context. The two forms of technical social support refer to the support an athlete receives as an

acknowledgement of a good piece of work or an accomplishment (*technical appreciation*), and the support athlete receives in the form of challenge, stretch, and encouragement to achieve more, to be more creative, and excited about their own work and progress (*technical challenge*). Since the original work by Pines et al. (1981), Hardy and Grace (1991, 1993) have identified two additional types of social support: personal and material assistance. Personal assistance refers to the support given to the athlete in the form of time, skill, knowledge, and expertise to help accomplish a task. Material assistance on the other hand involves support in the form of financial assistance, products, and gifts, which can be beneficial to the athlete during times in need.

More recently Udry (2002) proposed four types of social support as relevant for sport injury situations: esteem/emotional, informational, tangible, and motivational. As shown in Figure 3.4., the *esteem/emotional* support refer to the reassuring behaviours (inc. feelings and actions) of communicating acceptance, belonging, and love. More specifically, *emotional* support refers to being there for comfort and security, whereas the *esteem* support is concerned with bolstering the injured athlete's sense of confidence or self-esteem (Rees, 2007). The *informational* social support entails the processes of providing advice, guidance, and informational assistance targeted directly at problem solving or feedback. *Tangible* social support can occur in the form of concrete assistance such as providing transport to rehabilitation, assisting with general household duties, and financial support. Unlike the preceding three forms of support, the fourth type of social support, the *motivational* support refers to the encouragement to overcome or give in to various obstacles or barriers during the rehabilitation process (Udry, 2001, 2002).

Figure 3.4. Four types of social support applicable to sport injury rehabilitation



Collated from the works of Udry, (1997; 2002)

#### 3.6.1.1. Sources of social support

Given the number of different types of social support available and perceived to be an important to athletes, it is not realistic for one person or a group to deliver all different types of social support. Individuals are engaged in a range of social interactions with different groups of people on a daily basis and often such groups (e.g., personal, athletic, rehabilitation) are not connected to each other. As a result various network members are likely to have a role in the provision of different types of social support (Bianco, 2001; Taylor & Taylor, 1997) and in the context of sport injury, three principal sources of social support have been identified by Heil (1993c): the sport medicine team, the sports team, and family and friends. In a similar manner, Wagman and Khelifa (1996) listed sport psychologists, the sport medicine team, family, coach, and peers as potential facilitators of social support. Taylor and Taylor (1997) appear to agree with Heil, as they also acknowledged the sport medicine team, sports team, and family and friends as the three main sources of social support for injured athletes.

The ways in which different social networks provide social support to injured athletes vary depending on the context and role they play in the athletes lives. One of the early studies by Rosenfeld et al. (1989) examined the social support

networks among athletes and their relationship to stress. A total of 170 college athletes from NCAA Division I university competing in range of sports took part in the study. The findings from the analyses revealed that coaches, team mates, friends, and parents were all an important source of social support for the athlete, each making a unique contribution to the athletes overall personal support network. Support from the coach was expected and came mostly in the form of technical support requiring sport specific knowledge and a certain level of expertise in sport. Interestingly, coaches were not seen as providers for listening support, emotional support, or shared social reality support. The team mates on the other hand were also regarded as vital source of sport specific and technical support, as well as providers of shared social reality support. Similar to coaches, they too were not seen as providing athletes with emotional or listening support. The widest range of support was provided by friends, as they were the primary sources for all emotional support, listening support and athletes shared reality support. In addition, some secondary support in the form of technical assistance was also provided by friends. Parents were also significant providers of various types of support, but unlike friends, were usually regarded as a secondary source for much of the support.

Drawing from the findings by Rosenfeld et al. (1989), and combining them with the works of Pires et al. (1981), Taylor and Taylor (1997) have also suggested as to what type of social support could potentially be provided by the three main sources of social support. According to Taylor and Taylor, sport medicine professionals are in a position to provide all six types of social support to injured athletes, placing them in an ideal situation to utilise this tool in practice. The sports team (inc. coaches, team mates) can provide athletes with support in the form of technical appreciation, technical challenge, and shared social entity. Family and friends are best suited to provide emotional and listening support, as well as support in the form of emotional challenge and shared social reality.

Support for the above can be found from the literature. In a retrospective study with athletes who had experienced season-ending injuries or were suffering from burnout, Udry, Gould, Bridges, and Tuffey (1997) found that in comparison to the athletes with burnout, injured athletes were more likely to view their coaches' role in the rehabilitation process as primarily negative. However, with regard to the influence of family and team mates, the influence was seen as more positive than negative, thus suggesting differing roles for the athletes' significant others in providing social support.

In contrast, in a study investigating professional coaches perspectives on the return to sport following a serious injury (Podlog & Eklund, 2007), the coaches interviewed felt that an important part of their role in assisting athlete's return to sport was to ensure that their support needs were met. The coaches felt that they were required to provide athletes with emotional, tangible, and informational support. Such findings can be viewed as contradictory to those by Udry et al. (1997) in that the athletes in their study viewed social support from coaches as primarily negative in nature, whereas coaches themselves in the study by Podlog and Eklund (2007) perceived social support as part of their role. Such discrepancy is worthy of noting, as it highlights the possibility of existing conflicting expectations of rehabilitation and the recovery process between the different agents in the process. On that note, it is also important to highlight that the two studies were not conducted with same participants, in the same settings, and thus making direct comparisons problematic.

In an action research study with injured athletes ( $N = 3$ ), Evans et al. (2000) used consultations with the participants, physiotherapists, case notes, diaries, and interviews when exploring the use of intervention strategies during injury rehabilitation. The reflexive narrative revealed that during rehabilitation setbacks, the use of sport psychology consultant as a source of social support was important

(Evans et al., 2000). Similarly, Bianco (2001) investigated the importance of social support as a coping resource during sport injury recovery for elite skiers. Ten alpine skiers from Canada were interviewed retrospectively about the injury experiences. The findings from the content analyses revealed that skiers needed various types of emotional, informational, and tangible support from the members of the treatment team, the ski team, and their home support networks. The extent to which each support type was utilised and required by the athletes depended on the person providing the support and the actual rehabilitation phase. Rock and Jones (2002) conducted a preliminary investigation into the use of counselling skills in support of rehabilitation from sport injury. In their research with three athletes undergoing rehabilitation from ACL reconstruction surgery, they found that other injured athletes, and members of the sport medicine team, particularly the physiotherapist were important sources of informational support.

Conversely a study by Bricker Bone and Fry (2006) investigated the influence of injured athletes' personal perceptions of received social support from the physiotherapists on their beliefs about rehabilitation. A total of 57 male and female athletes from division I college who had sustained a sport related injury causing them to miss at least five consecutive days from their sport were asked to complete a survey about their perceptions of social support and beliefs about rehabilitation. The results indicated that overall, no significant relationships were found. However, when testing the possible relationship with only the athletes who had encountered severe injuries, the social support variables were seen as accountable for their beliefs about the rehabilitation. In particular, when severely injured athletes perceived the level of social support from their physiotherapists as being high, they were more likely to believe in their rehabilitation programmes.

A case study with two male collegiate athletes by Handegard et al. (2006) investigated the extent of, and satisfaction with, different levels and types of social

support received from the head coach, assistant coach, and the physiotherapists during rehabilitation for moderate upper extremity injuries. Overall, the study provided interesting information on how coaches and physiotherapists perceived the social support they provided, as well as athletes' perceptions on the importance and satisfaction on the social support they received. It appeared that athletes' perceived satisfaction and importance of the received social support varied over the course of the rehabilitation and depended on the person providing the support. In addition, dissimilarities in the individual participants' responses were also found, thus providing further support for the argument of social support as being unique for each individual in question.

When investigating the role of gender in athletes' utilisation of social support, clear evidence to support gender differences exists. Hardy, Richman, and Rosenfeld (1991) used a prospective design when investigating the relationship between life stress and injury amongst intercollegiate athletes ( $N = 170$ ; male  $n = 78$ , female  $n = 92$ ) from NCAA Division I university. The results revealed that female athletes were perceived as having more emotional support available from their networks than male athletes. In the case of male athletes, a relationship between the number of social support providers and the injury frequency was found. In particular, as the number of social support providers increased, the frequency of encountered sport injuries also increased. According to the authors, it is likely that male athletes perceived the received social support as a distraction to their performance thereby increasing the likelihood of injury. Alternatively social support could have been seen as a facilitator for performance motivation and/or arousal, thus making the male athletes more injury prone. No such relationship amongst female athletes was found.

Support for gender differences has also been found in the rehabilitation setting. In a study with three athletes undergoing rehabilitation from ACL reconstruction



surgery, the female athlete reported receiving more emotional support exchanges than the two male athletes (Rock & Jones, 2002). In support, a study by Mitchell et al. (2007) focused specifically on investigating possible gender differences in athlete's social support during injury rehabilitation. A total of 207 injured athletes completed the Social Support Inventory for Injured Athletes (SSIIA; Mitchell, Rees, Evans, & Hardy, 2005; cited in Mitchell et al., 2007). The findings from the multivariate analyses revealed significantly ( $p < .05$ ) higher scores on emotion and esteem subscales for females than males.

Research to date has revealed that athletes seem to display preferences over the role which differing social support providers play in providing different forms of social support during sport injury rehabilitation. It appears that the athlete's need for social support is therefore individualistic, and can vary significantly due to both demographic (e.g., gender, Mitchell et al., 2007) and situational (e.g., timing, type, and severity of injury, rehabilitation stage; Taylor & Taylor, 1997) factors. Based on the literature, to ensure smooth and effective implementation of social support for rehabilitation, a number of guidelines on the ways in which social support should be implemented have been proposed.

### ***3.6.2. Using social support for rehabilitation: The process***

As a result of mutual brainstorming, Richman, Hardy, Rosenfeld, and Callanan (1989) proposed three specific recommendations on how best to enhance social support in sport. According to the authors, social support is (1) best provided by a network of individuals, (2) needs to be developed and nurtured, and (3) works best as part of an ongoing programme rather than when simply employed as a reaction to a crisis. According to Udry (2001), for social support to function adequately, the right type of social support must be provided, in the right amount, and at the right time. A person providing the social support should also be (1) a good listener, (2) to have the ability to identify personal and gender differences in athletes receiving

support, (3) they should also be able to acknowledge both effort and mastery, and (4) with the help from systematic goal setting to be able to balance the use of technical appreciation and technical challenge, (5) possess awareness of social support as being the most necessary yet least available technique when it comes to injuries requiring surgery and lengthy rehabilitation, and (6) to be able to identify correct intervention (e.g., support group or peer modelling) for the athlete in question (e.g., Heil, 1993a; Rees, 2007; Richman et al., 1989; Taylor & Taylor, 1997; Udry, 2001).

With the intention of providing different types of social support for injured athletes, one of the ways in which it can be done effectively is through the use of peer modelling. According to Kolt (2004), peer modelling refers to the process of linking a currently injured athlete with another athlete who has undergone similar rehabilitation and already recovered (or is nearly recovered) to their pre-injury level of performance. Support for the use of peer modelling has also been found in studies conducted with athletic trainers (e.g., Wiese et al., 1991), and injured athletes (Walker, 2006). For example, when investigating the meaning of sport injury and re-injury anxiety with four injured athletes, Walker found that when they were provided with social support, the injured athletes found the injury easier to cope with, they felt less isolated, and the support provided also appeared to buffer the general upheaval experienced. As a result, it was suggested that the use of peer support groups or 'buddy' systems during injury rehabilitation could be beneficial for the injured athletes. Peer modelling has been found to have a positive effect in improving rehabilitation adherence (Flint, 1991).

Another useful means of introducing social support is through the use of injury support groups (Wiese et al., 1991). Often employed with athletes undergoing long periods of rehabilitation, these support groups can provide the injured athletes to establish important networks with other athletes and to discuss their injuries and

rehabilitation. In addition, use of injury support groups has also been found to facilitate motivation (Weiss & Troxel, 1986), which as noted earlier can be a major factor in assisting athletes in reaching full recovery. Given that social support as a concept considers a range of social networks as potential sources of social support, and that injured athletes have individual preferences for the sources of social support they consider of benefit, the use of peer modelling and injury support groups may not be suitable for all.

### ***3.6.3. Social support: The conclusions***

In conclusion, social support appears to be a multifaceted construct, which, if employed well, can be a useful tool in enhancing sport injury recovery and rehabilitation process. According to Eubank and Nichols (2001), injured athletes need social support as they need to know that those around them care about their well-being and are willing and capable of listening to their concerns. Existing research has also demonstrated the usefulness of employing social support in the hope of facilitating recovery (e.g., Rotella & Heyman, 1993; Weiss & Troxel, 1986), and when combined with a sense of personal responsibility, social support has been found to be associated with heightened levels of rehabilitation treatment adherence (Johnston & Carroll, 2000). As evident above, the potential benefits of social support for sports performance and sport injury rehabilitation process have been highlighted well in the literature. However further research focusing on the practicalities of how social support operates and have been utilised in the field would be beneficial. This could then enable the development of clearer theoretical underpinnings, which in turn would provide opportunities for conducting research examining specifically from the functional perspective (i.e., the purpose of social support) and the nature of the relationship between the agents (i.e., the recipient and the provider) involved in the process.

### **3.7. Chapter summary**

The purpose of this chapter was to introduce, discuss, and evaluate the usefulness of implementing psychological interventions for sport injury rehabilitation. For each of the techniques the application to rehabilitation and the process of utilising such skills were discussed with reference to existing research evidence. Based on the evidence presented, it appears that all of the above mentioned interventions can be of use to athletes during sport injury rehabilitation (e.g., Beneka et al., 2007; Flint, 1998b; Hinderliter & Cardinal, 2007; Taylor & Taylor, 1997). However the evidence in sport is still in its infancy, as past research has been primarily focused on examining the effectiveness of using goal setting, imagery, relaxation, self-talk, and social support during injury rehabilitation. The extent to which medical professionals' and injured athletes' experiences of using such techniques in practice have been explored in the literature will be evaluated further in chapter four.

## **CHAPTER 4**

# **PSYCHOLOGICAL INTERVENTIONS IN SPORT INJURY REHABILITATION: THE ROLE OF THE PHYSIOTHERAPIST**

### **4.1. Introduction**

As illustrated in chapters two and three, injuries have both physical and psychological effects on athletes. Over the past thirty years, researchers in sport have explored psychological facets of sport injuries, and as a result, a large body of literature exists in support of addressing the psychological aspects of injuries. When injured, athletes often experience a range of emotions, feelings, and thoughts, some of which can have a negative effect on injury recovery (e.g., Fisher & Wrisberg, 2006). For example, over 80% of the 90 physiotherapists surveyed in the eastern region of UK believed that sport injuries can affect athletes both psychologically and physically (Hemmings & Povey, 2002). In professional soccer, physiotherapists ( $N = 39$ ) reported that on average, a professional soccer player is affected by injury 75% of the time (Heaney, 2006). Fortunately such effects can usually be controlled and alleviated through the use of psychological interventions during the injury rehabilitation process. More specifically, as illustrated in chapter three, research findings to date have provided some support (albeit not entirely unequivocal) for the use of goal setting, imagery, relaxation, self-talk, and social support as a means of assisting injured athletes with range of injury related emotional issues. For example, issues with athletes' ability to cope with pain, stress, and anxiety, and apprehensions related to self-efficacy, self-esteem, and confidence, along with problems associated with athletes' motivation and rehabilitation adherence/compliance can all be facilitated through the use of psychological interventions.

Given the importance of addressing both physical and psychological aspects of injuries during rehabilitation, there is a need to provide well-rounded and holistic care to the athletes when injured. In order to reflect the mind-body approach to recovery process, if at all possible, the care provided should entail the involvement of relevant sport medicine professionals, as well as the use of sport psychologists (Green, 1992). All of the professionals involved in the process should work closely together with the athlete towards a common goal in ensuring the athletes full physical and psychological recovery back to pre-injury level of performance. Having a multi-disciplinary team working with injured athletes is common practice in professional sports (Wiese-Bjornstal & Smith, 1999); however unfortunately such is thought to be rarely the case amongst athletes involved in lower levels of participation.

In the eastern region of UK for example, only a few physiotherapists treating injured athletes of all levels have established working alliances with sport psychologists, with the figure being as low as less than ten percent (Hemmings & Povey, 2002). Amongst sport injury rehabilitation professionals working in professional football in England and Wales however, the same figure was reported as 69% (Heaney, 2006), thus suggesting elite/professional athletes as being more likely to have an access to a sport psychologist. As the study by Hemmings and Povey was preliminary in nature and Heaney's sample was exclusive to those working in professional football, drawing conclusions about the extent to which physiotherapist's as a whole have access to an accredited sport psychologist are difficult to make. Nevertheless, such a discrepancy is worthy of noting and warrants for an all-inclusive national study.

In conclusion, it appears that in the unfortunate event of sport injury, athletes are often treated by a range of sport medicine professionals, including athletic trainers, physiotherapists, sport therapists, team doctors, and if necessary, surgeons. Very

seldom do athletes (except elite athletes) have access to a sport psychologists, yet psychological issues can play a significant part in any athletes' recovery to full fitness. For that reason, further examination of the role of medical professionals such as physiotherapists in the process of providing psychological support and assistance during injury rehabilitation is of importance. Therefore, the purpose of chapter four is to extend the information presented in the earlier chapters by critically evaluating the existing research in relation to the practicalities of providing psychological services to injured athletes. More specifically, the chapter aims to clarify the role of chartered physiotherapists in the process of psychological rehabilitation from sport injury, particularly in using psychological interventions in their work with injured athletes. Along with presenting and evaluating existing research on the interventions in relation to physiotherapists existing knowledge, current perceptions on the usefulness, and experiences in utilising such skills in practice, research on athletes' experiences and opinions on these issues will also be assessed. By doing so, the chapter will provide an overall rationale for the research reported in this thesis, to which all of the four empirical studies will be founded upon.

#### **4.2. Integrating psychological rehabilitation into physiotherapy: A rationale**

A range of medical professionals hold an important role in ensuring athletes return back to full recovery, particularly through attending to the physical needs of the injured athlete. Injuries are primarily physical in nature, and as such will require treatment which will address the physical deficits that have either lead to, or are a result of, the occurred injury. However in order to ensure the success of any post-injury rehabilitation, it is important that the sport medicine professional working with injured athletes attend to the *person* as well as their physical needs (Petitpas & Danish, 1995). In essence, the fundamental underlying principle for

physiotherapists working in sport medicine is rather simple – making sure that the athlete's wellbeing comes first and that he/she is appropriately cared for:

At the heart of sports physiotherapists' thinking and behaviour lies *understanding* and *sensitivity* [italics added] towards the implications of injury for the athlete and the impact on others around them. They maintain independence in their decision-making, ensuring their duty of care to the athlete in the context of many potential conflicts of interest (Bulley et al., 2005, p. 26).

When interpreting the above, it is arguable that part of the physiotherapists' role is to attend to the emotional needs of the athletes. Ray et al. (1999) believe that medical professionals such as physiotherapists are an important source of emotional first aid to athletes during injury recovery, and should be utilising a range of psychosocial counselling techniques and strategies (e.g., goal setting and social support) with injured athletes. According to Harris (2005), physiotherapists should be skilled enough to recognise a range of psychological reactions experienced by injured athletes, and to have the skill-set to intervene (i.e., use basic psychological interventions), and in case of clinical issues (e.g., depression, substance abuse, and eating disorders), have the ability to recognise the need for referral. A number of researchers (e.g., Gordon et al., 1998; Gordon, Potter, & Hamer, 2001; Pearson & Jones, 1992; Wiese & Weiss, 1987; Wiese et al., 1991) have suggested that medical professionals in regular contact with the athlete during treatment are in an ideal position to inform, educate, and assist with both psychological and physical process of injury. Indeed, it appears that sport medicine professionals (e.g., physiotherapists, athletic trainers, and team physicians) are the first to attend to the injured athletes' needs (Wiese-Bjornstal & Smith, 1993), and are often present immediately after the injury has taken place, at the time when the levels of pain and confusion experienced by the athlete are at their worst.



Through analysing existing research, Kolt (2003) concluded that physiotherapists are best suited to provide psychological assistance for injured athletes for four main reasons: (1) physiotherapists are usually the primary caretakers who deal with injured athletes on a day-to-day basis (Larson et al., 1996), (2) it appears that psychological issues related to injury are often discussed in conjunction with physical aspects of rehabilitation (Kolt, 2003), (3) the techniques used in physiotherapy involve touch, and that can facilitate athletes opening up to their therapists about psychological issues in their recovery (Nathan, 1999), and (4) existing studies suggest that athletes themselves feel that physiotherapists are in an ideal situation to address the psychological aspects of injury (Larson et al., 1996; Wiese & Weiss, 1987; Wiese et al., 1991). Drawing from the above, it appears that physiotherapists should be well suited to provide psychological support to injured athletes due to their adjacent position with the athlete during the recovery process. As their job often involves working with injured athletes in one-to-one situations, the likelihood of building a strong rapport and effective communication with the athletes will be increased, which, as indicated in the earlier chapters, can facilitate greater levels of rehabilitation adherence and treatment compliance, increase motivation, and subsequently enhance the actual recovery process.

#### **4.3. Integrating psychological rehabilitation into physiotherapy: The dilemma**

As well as having an impact on athletes' rehabilitation adherence and motivation, sport medicine professionals are also a vital source of further knowledge, and part of their role should be to educate the athlete about the injury and rehabilitation process (Ray et al., 1999). Research to date as demonstrated that most rehabilitation professionals feel that they frequently have to deal with injured athletes' emotional disturbances associated with injury (Johnston & Carroll, 1998;

McDonald & Hardy, 1990), are required to address psychological aspects of sport injury, and have to use psychological techniques in their work in order for their treatment to be effective (Ford & Gordon, 1998; Hemmings & Povey, 2002; Larson et al., 1996). However, recent research findings indicated that UK governing body chartered physiotherapists reported conflicts concerning the nature and intensity of this responsibility (Jevon & Johnston, 2003).

Such discrepancies between research and practice are worthy of noting. According to Kolt and Andersen (2004a), if physiotherapists are to integrate psychological approaches and interventions to their existing physical therapy treatment, this must be conducted in a way that the patients (i.e., injured athletes) perceive the treatment as a usual and an expected part of the rehabilitation. That is, athletes are less likely to conform and comply with psychological interventions during rehabilitation physiotherapy, if they feel the physiotherapists are not entirely competent and confident in implementing such techniques and strategies. Mastering the use of psychological techniques can take time, and as such, will require in-depth training and practical experience.

However, during their professional training, very rarely do physiotherapists receive the level of training required in the use of psychological interventions (e.g., Kolt & Andersen, 2004b). In fact, during their studies, physiotherapists may receive very little or no training in terms of how psychological techniques can facilitate recovery processes and how to use these techniques in their work with injured athletes (Taylor & Taylor, 1997). More recent literature suggests that while virtually all university and college physical and manual therapy programmes do employ some psychology training, a high variation exists in the context and depth of the taught material (Kolt & Andersen, 2004b). In America for example, in order to gain an accreditation in physical therapy, all undergraduate athletic trainer students are currently required to demonstrate a competency in psychosocial intervention and

referral (Harris, 2005). However, to meet the required standards, the subject matter for psychosocial competency can be covered in one lecture within an established course, or addressed over an entire academic term. High variation across institutions worldwide exists, and often the extent to which training is provided depends on the person planning and delivering the training (Harris, 2005).

Prior to making firm suggestions as to how physiotherapists should be utilising psychological interventions as part of sport injury rehabilitation treatment, and how their training on these skills should be improved and developed, it is imperative to gain greater understanding on practising physiotherapists' existing knowledge on these issues. In doing so, the opinions and views of both the physiotherapists, and the injured athletes should be considered, since physiotherapy is a dual process in which the injured athlete and the therapist work collaboratively towards a common goal (e.g., Brewer, Van Raalte, & Petitpas, 2007; Petitpas & Cornelius, 2004). The chapter will now move on to present and evaluate the existing research on role of psychology as part of the physiotherapy process, as perceived by physiotherapists themselves.

#### **4.4. Evaluating existing research: The physiotherapists' perspective**

The existing research suggests that most sport medicine professionals all recognise the importance of addressing psychological factors in their work with injured athletes (e.g., Crossman, 1997; Francis et al., 2000). Sport injury rehabilitation professionals throughout the world have identified a range of psychological responses to athletic injuries amongst athletes, and reported using a variety of psychological techniques as part of their work. Based on the research evidence presented below, it appears that much of the research to date is relatively descriptive in nature and as such, does not provide much information on the

underlying reasons why physiotherapists are using/or not using specific techniques in their work.

In America for instance, Wiese and her associates (1991) were the first to document the attitudes and beliefs of certified athletic trainers (ATC) regarding the application of psychological strategies to sport injury rehabilitation. In their study with 115 athletic trainers, Wiese et al. developed a questionnaire requiring the ATC's to comment on their views on psychological aspects of their work with injured athletes. The findings from descriptive statistical analyses revealed that in general, athletic trainers believed psychological skills and strategies to be of importance during rehabilitation, and the top strategies employed by the physiotherapists were: effective communication skills, positive reinforcement, understanding of individual motivation and self-thoughts, and the use of goal setting. In contrast, athletic trainers in this study felt that using imagery and relaxation during rehabilitation were relatively unimportant (Wiese et al., 1991).

In a similar manner, a study by Fisher et al. (1993) used a questionnaire when seeking further information on ATC's attitudes and judgements concerning numerous factors presumed to influence sport injury rehabilitation. A total of 187 randomly selected ATC's in District 2 of the National Athletic Trainers Association (NATA) completed the Athletic Injury Rehabilitation Adherence Questionnaire. The findings from the frequency analyses revealed that all of the ATC's in this study perceived the rapport between the injured athletes and the ATC's themselves as vital in ensuring athlete's commitment to the rehabilitation programme. They also regarded the use of goal setting, encouragement, monitoring process, and social support systems as useful in enhancing rehabilitation adherence.

Larson et al. (1996) expanded on the Wiese et al. (1991) study with a sample of 482 ATC's in America. With the intention to survey the perceptions of practising

athletic trainers concerning their attitudes, beliefs, and an application of variety psychological techniques and strategies in their work with injured athletes, Larson et al. adapted the existing instruments developed by Wiese et al. (1991) and Brewer, Van Raalte, and Linder (1991) and devised The Athletic Training and Sport Psychology Questionnaire (ATSPQ), which was subsequently mailed to randomly selected ATC's listed in the NATA membership database. Based on the descriptive statistical analyses conducted, 90% of the ATC's surveyed felt that it was either "very important" or "relatively important" to treat the psychological aspects of athletic injury. In addition, the ATC's indicated that stress/anxiety, anger, and treatment compliance problems were the most frequently associated conditions amongst injured athletes, and that treatment compliance, motivation, and positive mood/attitude were the key determinants in defining athlete's coping ability with their injuries. Interestingly, similar to Wiese et al.'s findings, relaxation and imagery were perceived to be the least used techniques amongst athletic trainers surveyed.

Francis et al. (2000) replicated Wiese et al.'s (1991) study in Australia with both physiotherapists ( $N = 57$ ), and male professional basketball players ( $N = 28$ ). The aim of the study was to establish the physiotherapist's and athlete's personal views on the value of utilising psychological skills during rehabilitation, and to identify typical coping characteristics of an injured athlete, as perceived by both the athletes and physiotherapists. The results from the descriptive statistical analyses revealed similar findings to those of Wiese et al. (1991), as mutual communication and motivation were regarded as an important part of rehabilitation process by physiotherapists and male athletes alike. Further t-test analyses revealed few similarities in opinions in the importance of utilising psychological skills. Using goal setting was seen as important by both physiotherapists and athletes alike, and also the use of relaxation and imagery were not seen particularly useful during rehabilitation by either participant group. In contrast, physiotherapists believed

social support from parents and peers to be more important whereas for athletes, social support was not perceived as important.

A cross-cultural study by Gordon et al. (1991) in Australia and New Zealand also adopted the physiotherapists' perspective when examining the psychological aspects of recovery from sport injuries. In their two-part investigation, Gordon et al. interviewed 14 experienced physiotherapists with the purpose of gaining a greater understanding on four general areas of inquiry: responses to sport injury, rehabilitation from sport injury and return to competition, environmental/external factors affecting rehabilitation process, and therapists functions and the athlete/therapist relationship. Based on the findings from the content analyses, the authors then developed an inventory which was subsequently mailed to a randomly selected sample of 190 sport physiotherapists, of which a total of 66 were returned. The findings from the descriptive statistical and content analyses indicated that when injured, athletes experience emotions similar to a loss or grief, thus supporting the stage models (presented in chapter two). The extent of the response was determined by a range of factors, such as injury type, severity, timing, and athletes previous experiences (Gordon et al., 1991). In addition, the athlete-therapist relationship and existing social support systems were also seen as affecting the rehabilitation process and outcome.

A further cross-cultural study in Australia, New Zealand, and Canada by Ford and Gordon (1998) investigated the significance and frequency of emotions and behaviours displayed by athletes during sport injury rehabilitation, and the importance of utilising psychological interventions in sport injury management. A questionnaire survey was developed and mailed to sport trainers in Australia ( $N = 53$ ), New Zealand ( $N = 11$ ), and athletic therapists in Canada ( $N = 32$ ). The results from the descriptive statistical analyses revealed that sport injury rehabilitation professionals encountered a range of psychological responses amongst injured

athletes and that these responses and behaviours could have a detrimental effect on the rehabilitation process and the final rehabilitation outcome. The most frequently encountered responses were impatience, anxiety, and frustration, followed by a lack of understanding of the injury and the rehabilitation process. The sport trainers and athletic therapists in this study also indicated interest in learning more about the psychology of injury and how to apply psychological interventions in rehabilitation (Ford & Gordon, 1998).

With the intention of investigating the knowledge, and the attitudes toward, as well as the use of psychological strategies during injury rehabilitation, a convenient sample of eleven practising physiotherapists in Canada also completed an adapted version of the Wiese et al. (1991) instrument (Lamba, Crossman, & Crossman, 1997) Of all the interventions, the physiotherapists in this study rated goal setting as the most important psychological technique, followed by self-talk, relaxation training, and regarded mental imagery as the least important technique. The importance ratings were also reflected on the physiotherapists' use of the techniques as goal setting was used the most by all of the respondents, followed by positive self-talk, relaxation training, and mental imagery.

Ninedek and Kolt (2000) also adopted an adaptation of Wiese et al.'s (1991) original questionnaire and aimed to explore sport physiotherapists' views on psychological characteristics that distinguished athletes who cope/do not cope well with injury, and their opinions on the role of psychological skills as part of rehabilitation. The Sports Physiotherapists' Views on Psychological Strategies Questionnaire was developed and administered to 150 (male  $n = 78$ , female  $n = 72$ ) recent or soon-to-be graduates from a postgraduate sport physiotherapy programme. The findings from the descriptive statistical analyses revealed realistic goal setting, positive attitude, athletes' intrinsic motivation, and communication skills as important characteristics in determining how well athletes cope with their

injuries. Similarly to other studies discussed earlier in the chapter, the use of goal setting was also regarded as important when treating injured athletes, and the use of mental imagery, and relaxation techniques were rated amongst the three least important strategies for rehabilitation. Given the importance of acknowledging the role of psychology as part of sport injury rehabilitation, the authors concluded that physiotherapists should be further trained in managing the psychological aspects of athletic injuries, particularly in the form of implementing basic psychological interventions into the rehabilitation of injured athletes.

Hamson-Utley, Martin, and Walters (2008) investigated the attitudes of US athletic trainers and physiotherapists on the effectiveness of psychological skills within sport injury rehabilitation programmes. A total of 665 (athletic trainers  $n = 309$ , physiotherapists  $n = 297$ ) responded to the online Attitudes About Imagery (AAI) survey which includes both demographic questions and fifteen items on a 7-point Likert scale measuring attitudes about the effectiveness of goal setting, mental imagery, self-talk, and pain control on rehabilitation adherence and recovery speed on injured athletes. The findings from the ANOVA analyses revealed that overall; athletic trainers appeared to have more positive attitudes towards the use of psychological skills than physiotherapist. The authors speculated that such differences could be a consequence of the differing pressures resulting from the diverse working environments (i.e., athletic trainers in America work in college and university settings, whereas physiotherapists usually work in clinical outpatient setting), or as a result of obvious disparity in their existing training due to differing professional needs. The results also revealed a statistically significant ( $p < .05$ ) mean differences on attitudes about effectiveness of psychological skills for those athletic trainers and physiotherapists who reported formal training and those who reported interested in receiving formal training. Both professional groups viewed the use of mental imagery as effective during rehabilitation, which might suggest



that over the last decade, athletic trainers and physiotherapists perceptions on the usefulness of mental imagery as part of rehabilitation has changed.

The most recent study in this field employed qualitative methods with a sample of Canadian physical therapists ( $n = 17$ ) and athletic trainers ( $n = 1$ ) when investigating the health professionals' role in their clients psychological rehabilitation (Tracey, 2008). By using semi-structured interviews and interpretational analyses, Tracey aimed to explore the health professionals' perspectives as to the roles they play in the psychological recovery from injury as well as their perceptions on the influences a health professionals have on the psychological recovery from sport and physical activity related injury. The results revealed several first- and second order themes, from which three general dimensions themes were generated from. In essence, the health professionals in this study felt that despite lack of professional training in psychology, they had an important role in the psychological recovery of their clients, mainly in the form of rapport builder, educator, and communicator.

#### ***4.4.1. Narrowing the field: Existing research in the UK***

Despite the growing research on these issues worldwide, very little research has taken place in the UK. In fact, with the intention to explore physiotherapists' views on using psychological techniques and strategies in practice, only four studies to date have been conducted. Hemmings and Povey (2002) adopted a quantitative approach by replicating the Larson et al.'s (1996) study. McKenna, Delaney, and Phillips (2002) and Jevon and Johnson (2003) on the other hand opted for qualitative methods to investigate physiotherapists working with elite athletes, with regard to their views on psychological rehabilitation. Heaney (2006) used the PSPQ instrument devised by Hemmings and Povey (2002) with sport injury rehabilitation professionals working in professional football and aimed to seek further detail to

the questionnaire responses through semi-structured interviews with selected participants.

With the intention to survey the views of UK chartered practising physiotherapists with regard to the psychological content of their practice, Hemmings and Povey (2002) conducted a preliminary study in the eastern region of England. The original ATSPQ instrument developed by Larson et al. (1996) was modified (the Physiotherapists and Sport Psychology Questionnaire; PSPQ) to reflect the differences in the occupational title used by the British participants. The survey package was mailed to 179 chartered physiotherapists, and of those, 90 chartered physiotherapist (male  $n = 23$ , female  $n = 67$ ) returned the completed the PSPQ. In general, it was found that the chartered physiotherapists in England have similar experiences to that elsewhere. The findings suggested that the most commonly encountered responses to injury by athletes were stress and anxiety, followed by exercise addiction. In addition, treatment compliance, attitude, motivation, and patience were the most commonly listed characteristics that were believed to be present in determining whether athletes' cope/do not cope successfully with their injuries. Chartered physiotherapists also reported using a range of psychological intervention techniques as part of their work, with the most frequently used techniques being creating variety in rehabilitation exercises and using short-term goals. Furthermore, chartered physiotherapists indicated the desire to obtain further training in using psychological techniques in their work. A specific module in sport psychology was also seen as useful, and less than ten percent of the respondents indicated having access to an accredited/chartered sport psychologist (Hemmings & Povey, 2002). Furthermore, the implications from the study suggested that in the UK, more detailed research in this field on a national level would be needed in order to gain better understanding of these issues.

A qualitative study into physiotherapists "lived experiences" while treating elite athletes in southwest England aimed to deviate from traditional research methods by providing practice-based evidence on the physiotherapy experience (McKenna et al., 2002). In their study McKenna et al. used a purposive sampling to identify ten information-rich practising physiotherapists suitable for in-depth interviews. The findings from the data analyses revealed that although using psychological interventions during injury rehabilitation were beyond physiotherapists professional competencies, they were placed in a position to take responsibility for, and deal with a range of physical, psychological and sociological problems brought to them by injured elite athletes. Indeed, they saw themselves as being in a "vortex of strong influences" (McKenna et al., 2002, p. 72), which did not necessarily always work in the athlete's best interests. Furthermore, physiotherapists felt that on occasions, the norms of their professional practice were conflicting. A predicament between athletes work ethics and physiotherapists professional ethics was at occasions seen as problematic, especially when the recovery time did not match the competitive calendar (McKenna et al., 2002). Thus, the physiotherapists were in a situation where they were offering both "real" (i.e., what they were trained for) and "service" (i.e., what was requested by the athletes) treatments in order to satisfy all of their clients needs. The authors further suggest that educating future physiotherapists with practice-based evidence and perhaps teaching them how to use a range of psychological interventions would be useful and could be included in continuing professional development sessions.

In a similar manner, Jevon and Johnston (2003) employed qualitative methods when investigating the knowledge and attitudes of governing body chartered physiotherapists in the UK ( $N = 19$ ) towards psychological aspects of rehabilitation. Their findings concur with previous research, highlighting the physiotherapists' role in psychological rehabilitation as unequivocal and important (Jevon & Johnston, 2003). Physiotherapists also reported that in order for the treatment to be

effective, the treatment needed to be based on effective communication, and the physiotherapists ability to enhance athletes' self-confidence and adherence to the treatment and rehabilitation programme was also noted as imperative skills physiotherapists needed to possess (Jevon & Johnston, 2003). In addition and similar to McKenna et al. (2002), the physiotherapists in this study also argued that physiotherapists appear to battle between informal and formal roles with regard to the use of psychological techniques as part of the rehabilitation process.

More recently a study by Heaney (2006) also used the PSPQ instrument (Hemmings & Povey, 2002) and aimed to elaborate the findings from the questionnaire survey ( $N = 39$ ) further by conducting semi-structured interviews with a selected sample of sport injury rehabilitation professionals ( $N = 10$ ) working in professional soccer in England and Wales. The sample consisted of a mixture of sport injury rehabilitation professionals, of which 79% were qualified physiotherapists. The findings indicated that on average, professional soccer players are affected by injury 73% of the time, and that similarly to Hemmings and Povey (2002), stress and anxiety were the most frequently identified responses to injuries (Heaney, 2006). However, dissimilar to Hemmings & Povey (2002), focus, concentration and attitude were seen as the most frequently listed characteristics that were believed to be present in determining whether professional soccer players cope/do not cope successfully with their injuries (Heaney, 2006). Sport injury rehabilitation professionals also reported using a range of psychological intervention techniques as part of their work, with the most frequently used techniques being those of creating variety in rehabilitation exercises, encouraging positive self-thoughts, and using short-term goals. The results from the survey and interviews also indicated that sport injury rehabilitation professionals in professional soccer felt the need for some form of training in psychological aspects of sport injury. A recommendation of further training in a form of workshops and postgraduate level courses was made (Heaney, 2006). As the study was limited to

investigating sport physiotherapists working in professional soccer only, the results should not be generalised to all chartered physiotherapists.

#### ***4.4.2. Evaluating existing research: A summary of the findings***

When it comes to physiotherapists views on the psychological aspects of rehabilitation, research around the world tends to agree that: (1) sport injuries are seen as having emotional consequences to athletes, (2) goal setting is widely used and valued by the physiotherapists and ACT's alike, and (3) apart from recent study by Hamson-Utley and colleagues (2008), most physiotherapists and ACT's do not regard the use of mental imagery and relaxation during rehabilitation as beneficial. Most of the research presented has been conducted using quantitative measures, often developed and modified from the work by Wiese et al (1991), making it relatively simple to compare findings across studies. Utilising quantitative survey measures have also allowed the researchers to obtain relatively large sample sizes (on average,  $N = 149$ ), and subsequently provided data which to an extent, can be generalised to a larger population. However, the chosen methods of data collection and analysis have also limited the extent to which the primary meanings and reasons as to why physiotherapists tend to favour some intervention techniques over others have been left unclear. With the intention to provide training suggestions in sport psychology for physiotherapists, further research with more in-depth focus on the underlying factors affecting physiotherapists decision making in using psychological interventions is needed.

It appears that UK physiotherapists have views and perceptions similar to their professional counterparts worldwide. Alike to their colleagues in Australia, Canada, New Zealand and USA, physiotherapists in the UK recognised a range of characteristics as having the potential to determine athletes' coping success and showed preference for using goal setting as part of rehabilitation physiotherapy treatment. However, such findings should be treated with caution, as the majority

of UK based research has focused on physiotherapists treating professional and elite athletes (i.e., Heaney, 2006; Jevon & Johnston, 2003; McKenna et al., 2002), and only one preliminary study conducted in a small geographical region in England included physiotherapists working with athletes of all levels (Hemmings & Povey, 2002). To gain a better and more ample understanding of these issues, further exploration of these views with chartered physiotherapists treating athletes of all levels nationally in the UK would be beneficial.

With regard to further training, physiotherapists around the world (including the UK) have expressed the need for further training in selected psychological interventions. A course in sport psychology has also been regarded as useful, and as a result, a number of researchers have suggested further training in the form of continued professional development (e.g., Francis et al., 2000; Heaney, 2006; Hemmings & Povey, 2002; Larson et al., 1996; Wiese et al., 1991). However, all of the researchers fail to provide any evidence on how this continued professional training could be delivered in practice, and details on the particulars of when, where, how, and by whom the further psychological intervention training for physiotherapists' should be implemented.

In comparison to North America and Australasia, British researchers have demonstrated greater variation in their chosen research methods. Despite the low number of studies conducted, existing research in the UK has employed a range of research methods, which has enabled the movement away from describing physiotherapists' views, towards more in-depth knowledge on physiotherapists' thoughts and experiences on these issues. For example, both Jevon and Johnston (2003), and McKenna et al. (2002) highlighted the discrepancy between the "trained for" treatment and the "required" treatment, information which would not have been revealed through the use of standardised questionnaire measures. In light of an apparent lack of consistent professional training in psychology (Kolt &

Andersen, 2004b), understanding more about physiotherapists' personal experiences in utilising psychological interventions is important.

Thus far, research has focused on what interventions are used/not used during rehabilitation, rather than investigating the reasons *why* an intervention is considered to be useful/or not useful by the physiotherapist. For example, it seems that imagery during injury rehabilitation is largely underutilised by coaches, athletes, and physiotherapists alike (Jedlic, Hall, Munroe-Chandler, & Hall, 2007), and that much research has disregarded the importance of using imagery (Driediger et al., 2006). Yet, it is believed that medical professionals responsible for the treatment of injured athletes are in best position to facilitate the use of imagery in practice, and should therefore understand the benefits of using imagery during rehabilitation (Driediger et al., 2006). Despite research suggesting that imagery is not effective during rehabilitation, very little is understood about the reasons why imagery not used more frequently by the physiotherapists in their work with injured athletes.

To gain further clarification to the ways in which psychological interventions are utilised by physiotherapists during sport injury rehabilitation, new research should be undertaken to explore alternative means of approaching the subject matter. The emphasis of further research should be placed on exploring physiotherapists' experiences of using psychological interventions in practice. By allowing the participants to tell their own experiences of using such skills, the researchers would be more likely to unravel some of the underlying reasons why such skills are employed or, for example in case of imagery, not employed during sport injury rehabilitation. Only through understanding *why* certain skills are used/not used in rehabilitation physiotherapy, can suggestions for the content of further training be made in more detail.

With the purpose of seeking further clarification on the role of chartered physiotherapists in providing psychological care during sport injury rehabilitation, it is also imperative to understand what physiotherapists know and perceive to be of importance. Equally important are the injured athletes views and perceptions, as after all, no rehabilitation will be successful, or indeed take place without the presence and active involvement from the injured athletes themselves. The chapter will now focus on evaluating existing research on role of psychology as part of physiotherapy process, as perceived by the recipients of such services, i.e., the injured athletes.

#### **4.5. Evaluating existing research: The athletes' perspective**

When it comes to attending to the needs of the injured athlete (be it physical or psychological), it is often the interaction between the injured athlete and their physiotherapist that is identified as the key predictor of patient adherence and positive treatment outcomes (Ray & Wiese-Bjornstal, 1999). At the start of any rehabilitation alliance, both parties will enter the relationship with some expectations of the rehabilitation process and outcomes, which, during the course of rehabilitation, are likely to change and evolve (Brewer et al., 2007). However, the research examining the injured athlete's expectations of, and experiences on psychological aspects of rehabilitation physiotherapy is limited. In fact, few studies to date have examined the athletes' views on role of the physiotherapists in providing psychological support during sport injury rehabilitation, and thus far, the findings have been equivocal.

In an investigation into emotional effects of sport injuries, Pearson and Jones (1992) used a combination of qualitative and quantitative methods with injured athletes. In their first study, 61 injured volunteer athletes, and 61 non-injured athletes completed the Sportsmen's Feelings after Injury Questionnaire (SFAIQ), The Sporting Details Questionnaire (SDQ), and the Bipolar Mood States (POMS-BI).



The results revealed that frustration was the most frequently listed emotion amongst injured athletes, and that overall, injured athletes displayed significantly lower mood than their non-injured counterparts, thus providing support for injuries as having psychological effects on injured athletes. In study two, Pearson and Jones aimed to expand on the findings from study one by selecting six participants from study one for an interview.

The results from the thematic analyses revealed that the athletes felt that the physiotherapists and other healthcare professionals had not consciously considered the emotional effect of injuries. Some of the athletes felt that the healthcare professionals had not made any direct difference to them emotionally, whereas others thought they had. With regard to having a psychologically trained physiotherapist adding a psychological element to the rehabilitation, the athletes had mixed feelings and opinions. Two of the six athletes interviewed felt that it would have been helpful and acceptable for the physiotherapist to employ psychological interventions, and one of them felt that of all of the healthcare professionals, physiotherapists would be in the best position to utilise psychology in their work. However, others displayed some uncertainty as to how much physiotherapists would be able to be emotionally, and one athlete suggested that the treatment of emotional and physical aspects of injury should be separated, as he considered them as two distinct parts of treatment. Such disparity in the physiotherapists' role in providing emotional support during injury rehabilitation can be perceived as individual differences and personal preferences, which, to a large extent should be considered during any physiotherapy treatment. In addition, as the findings represented the views and opinions of six injured athletes, the sample is too small for generalisation.

Fisher and Hoisington (1993) examined formerly injured and rehabilitated athletes attitudes and judgements about factors presumed to influence sport injury

rehabilitation adherence. In their study with 36 athletes, Fisher and Hoisington aimed to compare athletes results to those obtained from ATC's in an earlier study. In general, the athletes' responses were generally similar to those of ATC's, in that the importance of good rapport and communication between the athletes and the ATC's, and having social support were seen as significant for rehabilitation adherence. Similarly their views on using goals and incentives were very alike; both groups recognised that knowledge of long-term benefits of rehabilitation enhances rehabilitation adherence. With regards to self-motivation, pain tolerance, level of realistic feedback, and education about the injury and rehabilitation processes, differences in perceptions were found. For example, athletes regarded their level of self-motivation as having a higher impact on adherence than did the ATC's.

A study by Brewer, et al. (1994) aimed to evaluate college students and injured athletes' perceptions on the use of goal setting, imagery, and counselling. In the first study, college student's perceptions on the above mentioned techniques as an adjunct to physical therapy for hypothetical injured athlete were assessed. Along with the Treatment Acceptability Questionnaire (Husley, 1992, cited in Brewer et al., 1994, p. 178), the authors designed the Intervention Perceptions Questionnaire (IPQ), both of which were then completed by 161 college students. The findings from the analyses of variance revealed gender differences in students' perception on the intervention techniques, females being more positive about all three interventions than males. A preference for the use of goal setting was perceived as the most favourable techniques across genders. The second experiment consisted of 20 injured athletes who were receiving physiotherapy treatment for their sport related injuries. The participants received a brief intervention session in goal setting, imagery, and counselling intervention, and at the end of each session, the athletes were asked to complete the IPQ, as well as several open-ended items assessing their overall perceptions on the three intervention techniques. The

findings from the multivariate analysis of variance and t-tests revealed that athletes showed preference for the use of goal setting, and that all three interventions were seen as positive during sport injury rehabilitation.

One of the only studies investigating the injured athlete's views on psychological skills in rehabilitation was conducted with professional male basketball players ( $N = 28$ ) in Australia. Along with assessing physiotherapists' perceptions on these issues, Francis et al. (2000) replicated Wiese et al. (1991) study and aimed to establish their personal views on the value of utilising psychological skills during rehabilitation, and identifying successful coping characteristics in an injured athlete. Significant differences between the physiotherapists' and athletes' responses were found for all but three psychological interventions. More specifically, physiotherapists rated using positive communication style ( $p < .02$ ), encouraging positive thoughts ( $p < .001$ ), understanding stress/anxiety ( $p < .001$ ), understanding individual motivation ( $p < .005$ ), and enhancing self-confidence ( $p < .001$ ) as more important than did the athletes. Enhancing listening skills ( $p < .02$ ), teaching concentration skills ( $p < .02$ ), and reducing depression ( $p < .01$ ) were all seen as important by the physiotherapists, whereas athletes felt that the importance of physiotherapists having knowledge on these skills was neutral. Despite some methodological flaws identified by the authors (e.g., the number of T-test conducted without dropping the alpha level to .01), the findings from the study are of great value. By investigating both the physiotherapists and athletes' views on the role of physiotherapists in providing psychological support to injured athletes during rehabilitation, Francis et al. made a significant contribution to the literature by clarifying expectations on both sides of the patient-therapist relationship.

Recently a study by Bricker Bone and Fry (2006) investigated a possible relationship between injured athletes' beliefs about rehabilitation and their

perceptions of social support from athletic trainers (ATC's). A total of 57 division I athletes who had sustained an injury that had caused them to miss sport participation for a minimum of five days completed the Social Support Survey (SSS) and the Sport Injury Rehabilitation Beliefs Survey (SIRBS). The findings revealed that to an extent, athletes beliefs about rehabilitation are explained by their beliefs about their perceptions of the social support received from the ATC's. In particular, when severely injured athletes perceived strong social support from their ATC's, they were more likely to have a high level of trust and confidence in their rehabilitation programmes. As the study was not directly exploring the athletes' expectations on, and experiences of physiotherapists utilising psychological interventions during sport injury rehabilitation, the need for further research on these issues is clear. In order to understand what expectations athletes bring to sport injury rehabilitation, further research is needed.

In a general physiotherapy environment, Potter, Gordon, and Hamer (2003a, 2003b, 2003c) published a succession of studies in which they aimed to gain an insight into the role of physiotherapists in providing psychological support to their patients. With the intention of identifying the qualities of a 'good' physiotherapist and ascertaining 'good' and 'bad' characteristics from the patient's perspective in private practice physiotherapy, Potter et al. (2003c) used the nominal group technique (Delbecq et al., 1975; cited in Potter et al., 2003a, 2003b, 2003c) in a study with purposive sample of 26 current and former physiotherapy patients. A total of six nominal group meetings were held with three to six participants in each group. The data from the meetings was audio taped and subsequently transcribed verbatim. The results from the qualitative analyses revealed that physiotherapist's communication ability, professional behaviour, and organisational ability were identified as the main "good" qualities as recognised by the patients. In essence, good physiotherapy experience was related to excellent communication between the patients and the therapists, whereas bad communication skills were often

linked with dissatisfaction with the service received. Based on the findings, the authors proposed further training in communication skills as beneficial, and promoted the adaptation of patient-centred approach to physiotherapy in private practice settings.

Along with the above, Potter and her associates conducted a further study in which they used the nominal group technique to identify a typology of the difficult patient in private practice physiotherapy as perceived by physiotherapists (Potter et al., 2003a). A total of 37 physiotherapists took part in the study, and found patient behavioural problems and patient expectations as the most difficult to manage. In particular, physiotherapists reported that patients with unrealistic expectations or preconceived ideas about the nature of their injury and the rehabilitation treatment required were perceived as difficult to manage. Based on the findings, authors highlight the importance of clarifying patient expectations before a treatment takes place.

Following on, Potter et al. (2003b) published an additional paper in which the nominal group technique was used to identify the physiotherapists and patient expectations in private practice physiotherapy. Using the samples (physiotherapists  $n = 37$ ; and patients  $n = 26$ ) from the two studies presented above, Potter et al. aimed to collate the findings and match expectations across the two groups. Based on the findings, the most important expectations among the physiotherapists related to patient behaviours were: show respect and trust, be punctual and compliant, and take an active role in rehabilitation. In contrast, the patient's expectations were more to do with the actual physical side of the rehabilitation, as symptomatic relief, self-management strategies, and "hands on" treatment were viewed as the most important expectations. When matching the expectations, it appeared that physiotherapists placed higher importance on how they behave with their patients (i.e., providing professional and ethical care), whereas patients

valued the nature of the actual physical treatment as most important. Drawing from the above three studies, Potter and associates highlighted the importance of identifying patient needs and expectations as part of private practice physiotherapy. They also emphasised the adoption of patient centred approach to care, as it can assist in ensuring active patient involvement, and subsequently enhance the physiotherapy experience and outcome. However, as the studies by Potter et al. were conducted with general physiotherapy patients, the findings may not be directly comparable to an athletic population.

#### **4.6. Conclusions**

A large body of literature into the psychological aspects of sport injury rehabilitation exists, however very little of it has been conducted outside North America, Australia, and New Zealand (Hemmings & Povey, 2002). In fact, in the UK, few studies have directly investigated the role of physiotherapists in providing psychological support to injured athletes, and to date, no comprehensive national studies have been published. Research into physiotherapists' preferred methods for receiving further training in sport psychology, and studies examining physiotherapists past experiences in using specific psychological interventions with athletes is also nonexistent. Furthermore, it appears that thus far, very few studies are directly investigating the role of physiotherapists in providing psychological support during injury rehabilitation as perceived by the injured athletes themselves, and no studies appear to have specifically investigated injured athlete's expectations of psychological aspects of sport injury rehabilitation physiotherapy. Due to the importance of athlete-therapist relationship in ensuring complete recovery to pre-injury level of performance, this seems surprising, and therefore further research is warranted before specific recommendations can be made.

Based on the literature reviewed, four areas have emerged as areas for further research. With the intention to explore issues in the training and development of chartered physiotherapists in sport psychology, a national survey encompassing physiotherapists working with athletes of all competitive levels is warranted to gain an understanding of physiotherapists' current knowledge on psychological aspects of their work. From reviewing the literature it was also evident that, thus far, a number of researchers have suggested continued professional development training, but no details on how further training could be implemented for practising physiotherapists. Furthermore, as the research designs used to date have been largely descriptive in nature, further exploration of chartered physiotherapists personal experiences by using qualitative methods is needed. By gaining greater understanding physiotherapists' personal views on the role of psychological interventions in sport injury rehabilitation, the existing research trends may move towards clearer suggestions to what should be included in the training programmes. Finally, due to the importance of patient-athlete and physiotherapist interaction during sport injury rehabilitation, it is also imperative to gain an understanding of the injured athlete's views and experiences on psychological aspects of rehabilitation physiotherapy.

By addressing these four areas of research, a better understanding of physiotherapists existing knowledge on psychological impact of injuries and their current practice on utilising psychological interventions could be obtained. In addition, insights into physiotherapists' personal perceptions of further training needs and, injured athletes views on the issues could be acquired. Based on the information gained, suggestions to successfully integrate further training into physiotherapists existing working practices could be made.

#### **4.7. Aims and objectives of the research**

The research presented in this thesis aims to investigate, document, and explore UK chartered physiotherapists past experiences, existing views, and current state of knowledge in using psychological interventions as part of sport injury rehabilitation. Based on the knowledge gained, it is anticipated that the knowledge gained will provide sufficient information for which a further training programme on psychological interventions could be developed, implemented, and later evaluated. Therefore, the purpose of this research is to establish the role of UK chartered physiotherapists in the psychological rehabilitation from sport injuries. In particular, the research has four main objectives:

1. to investigate on a national level, the views of chartered physiotherapists on the psychological content of their practice;
2. to investigate physiotherapists' preferred methods of delivery for further training in psychological interventions;
3. to explore chartered physiotherapists personal experiences of dealing with psychological issues in rehabilitation;
4. to explore injured athletes experiences of, and their views on, psychological aspects of rehabilitation physiotherapy.



## **CHAPTER 5**

### **CHARTERED PHYSIOTHERAPISTS' VIEWS ON PSYCHOLOGICAL CONTENT OF THEIR PRACTICE: A NATIONAL SURVEY**

#### **5.1. Introduction**

It has been recognised that some athletes experience emotional difficulties during injury, and that the incidence of sport injury can lead to a range of negative psychological reactions such as anxiety, depression, loss of personal identity, reduced self esteem, and in some cases, feelings of isolation (Leddy et al., 1994; Petitpas & Danish, 1995). Past research has indicated that psychological issues can have a significant impact on the quality and speed of the sport injury rehabilitation process (Brewer, 1994; Ievleva & Orlick, 1991; McDonald & Hardy, 1990; Pearson & Jones, 1992). In other words, athletes with similar injuries can react differently to the rehabilitation process, thus recovering at different rates (Ievleva & Orlick, 1991). In addition, research has also indicated that not only do psychological factors influence injury recovery and athletes' emotional responses to injury, but adherence to the injury treatment processes is also affected (Brewer et al., 2000).

When evaluating the rehabilitation literature, it becomes evident that the primary aim of the treatment process is to heal the injury and to ensure athletes' full recovery to functional fitness as rapidly and safely as possible (CSP, 1999). When combined with the knowledge on how psychological factors can affect the athlete when injured, it is apparent that not only biomechanical and physical aspects of the injuries need to be addressed and treated, but the psychological effects of the injury need to be dealt with.

Current knowledge in this field suggests that sport medicine professionals recognise the importance of addressing psychological factors in their work with injured

athletes (e.g., Crossman, 1997; Francis et al., 2000). Ideally, when an athlete is injured, a team of professionals (e.g., medics, physiotherapists, sport psychologists, coaches, and managers) are looking after the athlete during the recovery process. According to Wiese-Bjornstal and Smith (1999), this is usually a common practice in professional sports; however lower level athletes seldom benefit from this type of service. Therefore for some athletes, the working relationship with the treating physiotherapist may well be the only professional contact during the entire duration of the rehabilitation process.

As demonstrated in chapter four, research findings to date seem to suggest that medical professionals in regular contact with the athlete during treatment are in an ideal position to inform, educate, and assist with both the psychological and physical process of injury (Gordon et al., 1998; Pearson & Jones, 1992; Wiese & Weiss, 1987; Wiese et al., 1991). Reiterating from chapter four, Kolt (2003) concluded that physiotherapists are best suited to provide psychological assistance for injured athletes for four main reasons: (a) physiotherapists are usually the primary caretakers who deal with injured athletes on a day-to-day basis (Larson et al., 1996); (b) it appears that psychological issues related to injury are often discussed in conjunction with physical aspects of rehabilitation (Kolt, 2003); (c) the techniques used in physiotherapy involves touch; and that can facilitate athletes to open up to their therapists about psychological issues of their recovery (Nathan, 1999); and (d) existing studies suggest that athletes themselves feel that physiotherapists are in an ideal situation to address the psychological aspects of injury (Larson et al., 1996; Wiese & Weiss, 1987; Wiese et al., 1991).

Although research has suggested that physiotherapists are in an ideal position to address psychological issues with injured athletes, during their professional training, their formal training on psychological interventions may be limited, and at times, nonexistent (Taylor & Taylor, 1997). More recent literature proposes that

while virtually all university and college physical and manual therapy programmes around the world do employ some psychology training, a high variation exists in the context and depth of the taught material (L. Harris, 2005; Kolt & Andersen, 2004b). This can be seen as problematic, as rehabilitation professionals may feel that they frequently have to deal with the injured athletes' emotional disturbances associated with injury (Johnston & Carroll, 1998; McDonald & Hardy, 1990). In other words, physiotherapists feel that they are required to address psychological aspects of sport injury, and have to use psychological interventions in their work in order for their treatment to be effective (Ford & Gordon, 1998; Hemmings & Povey, 2002; Larson et al., 1996).

Sport injury rehabilitation professionals throughout the world have identified a range of psychological responses to athletic injuries amongst athletes, and reported using a variety of psychological interventions as part of their work. A body of literature containing large national studies (e.g., Larson et al., 1996) into the psychological aspects of rehabilitation exists worldwide (e.g., Ford & Gordon, 1998; Francis et al., 2000; Gordon et al., 1991; Lamba et al., 1997; Larson et al., 1996; Tracey, 2008; Wiese et al., 1991), and in the UK, four studies to date have investigated the role of physiotherapists in providing psychological support to injured athletes. One of the studies was preliminary in nature and exclusive to physiotherapists working in a specific region of England (Hemmings & Povey, 2002), and the others investigated physiotherapists working with elite athletes (Heaney, 2006; Jevon & Johnston, 2003; McKenna et al., 2002), thus not accounting for the views of those working with lower level athletes.

Hemmings and Povey (2002) used the Physiotherapists and Sport Psychology Questionnaire (PSPQ; Hemmings & Povey, 2002) when investigating the views of chartered physiotherapists ( $N = 90$ ) treating athletes in wide range of competitive levels with regard to the psychological content of their practice, and articulated the

need for a comprehensive national survey. Their study was later replicated amongst physiotherapists working in professional football (Heaney, 2006), thus adding to the literature, yet not accomplishing the initial suggestions put forward by Hemmings and Povey (2002). With the intention of being able to address some of the proposals put forward by Hemmings and Povey (2002), in this study it seemed appropriate to utilise the original PSPQ instrument.

With the intention to provide an insight into the views of chartered physiotherapists as to the psychological content of sport injury practice on a national level in the United Kingdom, the aim of the study reported in this chapter was to assess, on a national level, the views of chartered physiotherapists with regard to the psychological content of sport injury practice.

## **5.2. “Methods are tools of the researcher’s trade” (Moore, 2000, p. 101)**

When approaching any topic with the aim to discover, explore, and gain insight into the phenomenon, Moore (2000) stated that it is important to consider the ways in which the research topic should be approached. The perfect researcher is equipped with a substantial knowledge with the widest possible range of research methods and will use them carefully to meet the requirements of different circumstances (Moore, 2000). In essence, knowledge about which methods to use is equally important to the knowledge of how to use any particular methods.

The problem with any research is the researchers desire to be able to speak about populations as a whole (Henry, 1998). Unfortunately, in most instances collecting data from entire populations is not achievable as there are participant access, time, and cost limits to such inquiry. The purpose of sampling is to provide organised boundaries and methods for the research, particularly allowing researchers to estimate how well the selected sample can represent the reality of the phenomenon under investigation (McCready, 1996). In essence, the word representation can be

regarded as fundamental, as by no means is any research capable of viewing the whole reality in a single glance. McCready (1996) argues that one of the most powerful tools for obtaining successful representation of the phenomenon under investigation is the actual experiment. The key to successful research fluctuates depending on the type of research, and the challenge lies in appropriate selection of sample size, the general representativeness of the sample, and in the research's ability to be replicated (McCready, 1996).

The purpose of the method section is to provide a detailed account on how the study was performed (Clark-Carter, 1997; P. Harris, 1986), and with any research, there is always a starting point from which to commence. Identifying one aspect at the time whilst weighing alternate options, can and will provide a coherent and ordered outline for the research. Not always does this follow the traditional scientific order of appearance, that is, how quantitative research is conventionally written up and presented. In this study, the predetermined variable was the instrument (PSPQ), from which the characteristics of the other variables would be investigated, explored and identified. Hence it seems reasonable to present the information in the order of the logical development and reality, i.e., what really happened and how the research evolved.

### **5.2.1. Instrument**

The Physiotherapist and Sport Psychology Questionnaire (PSPQ; Hemmings & Povey, see Appendix 5.1.) was identified as a useful tool in assessing the views of chartered physiotherapists on the psychological content of their work with injured athletes. The PSPQ questionnaire is a modified version of the Athletic Trainer and Sport Psychology Questionnaire (ATSPQ: Larson et al., 1996), and it aims to measure physiotherapists' perceptions on psychological content of their working practice. The questionnaire is concerned with four main facets of psychological aspects of sport injury rehabilitation process: (a) extent, characteristics, and

gravity of psychological impact of sport injuries to injured athletes, (b) specific characteristics that physiotherapists perceive as being central in defining athletes success in coping skills with the injuries, (c) physiotherapists personal experiences in using a range of psychological interventions as part of their work and possible needs for further training in such interventions, (d) physiotherapists current state of access, and possible past experiences in referring athletes to an accredited sport psychologist.

The questionnaire consists of 11 questions (9 closed, and 2 open-ended). Question 1 requires the physiotherapist to rate on a five point Likert scale (1 = *never*, 5 = *very often*) how often they have come across explicit psychological conditions connected with sport injuries. The subsequent two questions are open ended, asking the physiotherapist to identify the top four behaviours/characteristics that they believe are present in athletes who do (question 2) /do not (question 3) cope with the injury successfully. Questions 4, 5, and 6 are concerned with physiotherapists' access to accredited sport psychologists and their possible referral structure, and all three questions require Yes or No answers.

Question 7 consists of a list of 13 psychological interventions that existing literature propose as being important in facilitating injured athletes' recovery process. The physiotherapists are asked to use a five point Likert scale (1 = *never*, 5 = *100% of the time*), to indicate how often they have used each particular intervention in their work with injured athletes. Question 8 asks physiotherapist to judge how often (1 = *never*, 5 = *100% of the time*) athletes are affected psychologically by an injury. Additional space is also provided for any further comments. Question 9 consists of a list of 14 psychological interventions and the physiotherapists are asked to rate (1 = *not important*, 5 = *very important*) the skills/techniques they feel it would be beneficial to learn more about. In both questions 7 and 9, additional space is

provided for the physiotherapist to add any psychological skills they believe to be important that are not included in the original lists.

Question 10 is concerned with physiotherapists' own perceptions about the importance of treating psychological aspects of athletic injury. Question 11 requests physiotherapists' insights about the importance of a sport psychology module in the existing physiotherapy training. Both questions are rated on a five point Likert- scale (1 = *not important*, 5 = *very important*).

For the purposes of this study, it was decided that further information about participants' demographic details (gender, age, and geographic location, professional qualifications, employment status, years of physiotherapy experience, number of athletic injuries treated on average per month, and injured athletes' level of competition) would be of value in ensuring full representation of physiotherapists working with athletes of all levels. For the purposes of possible withdrawal, participants were also asked to provide a memorable ID through which they could be identified.

#### 5.2.1.1. Questionnaire validity and reliability of the PSPQ

According to Cook and Campbell (1979) the best method to scrutinise a questionnaire is to examine the content in relation to its validity. It is imperative to determine the extent to which the questionnaire is measuring what is intending to measure (Rust & Golombok, 1989), as otherwise the results obtained might not be representing the particular aims of the research. According to Rust and Golombok, considering the concepts of face-, content-, and construct validity are seen as vital, as otherwise the researcher might be lead astray from the fundamental purpose of the research. Similarly estimating the repeatability of a questionnaire, (i.e., reliability of the measure) can be deemed to be of importance in questionnaire designs. However, when combining qualitative and quantitative items in a

questionnaire, a researcher is immediately faced with a concurrent problem. The concept of obtaining formal experimental levels of psychometric reliability and/or validity becomes an unattainable task.

With regards to the PSPQ, neither Hemmings and Povey (2002) or Larson et al. (1996) report any psychometric properties for the instrument. The original ATPSQ is an adaptation from instruments developed by Wiese et al. (1991) and Brewer, et al. (1991), both of whom carried out a pilot study on their instruments. Similarly, Larson, et al. (1996) conducted a pilot study with 18 athletic trainers, in which the athletic trainers were given an opportunity to provide comments about the questionnaire and on which subsequent amendments and clarifications were later founded. Both of the studies conducted in the UK by using the PSPQ (Heaney, 2006; Hemmings & Povey, 2002) have yielded comparable findings to the original ATPSQ, and none of the authors have reported any emerging comments from the respondents or identified any other core problems arising with the measure.

### **5.2.2. Participants**

#### 5.2.2.1. Gaining access to the participants

When developing research designs, an open mind with regard to sampling decisions is imperative (Lincoln & Guba, 1985). In an ideal world, the researcher would have all the necessary resources available and participants would be enormously enthusiastic and eager to participate in any particular research. Alas to say, this is rarely, if ever, accurate and thus associations with prominent organisations (e.g., government) has been found to produce higher response rates (Heberlein & Baumgartner, 1978; Cialdini, 1984; both cited in Dillman, 1999, p. 306). In reality, the researchers are often faced with situations in which they require personal contacts from external sources to gain participant access for the research.



When this research commenced, few personal contacts and subsequently their existing personal contacts had been identified as vital sources to gain access to potential participants. From the onset, collaborations with physiotherapists involved with the British Olympic Association (BOA), and prominent members of the Association for Chartered Physiotherapists in Sports Medicine (ACPSM) were established. With their assistance, further collaborations with National Sports Medicine Institute (NSMI), Football Association (FA) and other relevant professional bodies such as English Institute of Sport (EIS), Scottish Institute of Sport (SIS), Sports Institute of Northern Ireland (SINI), and Welsh Institute of Sport (WIS) were pursued, to ensure rich and versatile access to chartered physiotherapists working in sports medicine.

The response to proposed collaborations varied considerably. It became evident that not all organisations were willing to support the proposed research. An affirmative response to assist with the research was obtained from the organisations in principle; however in reality ACPSM was the only collaboration that proved to be viable, but conditional. That is, the ACPSM would not be able to provide access to the traditional mailing database, but it was willing to assist in distributing the research materials electronically, mainly through the ACPSM electronic mailing list. In addition, it offered to place an advertisement for encouraging chartered physiotherapists to take part in the research could also be placed in the ACPSM newsletter.

The ACPSM member database had already been identified as one of the vital sources of potential participants as it consisted of a large number of suitable subjects. However it had to be acknowledged that not all of the ACPSM members were qualified chartered physiotherapists, as some ACPSM members were physiotherapy students and others were medical professionals. In addition, it was recognised that not all chartered physiotherapists treating injured athletes were

necessarily members of the ACPSM, especially those treating only occasional sport injuries at a recreational level.

When conducting any research, it is important to ensure that the selected sample will represent the reality under investigation (McCready, 1996), namely serving the purpose of the research. Dillman (1999) argues that an essential first step in any research is to identify whether the sample consists of all of the survey population. Consequently, prior to any sampling, the question of purpose and aims need to be clarified. A clear understanding of the intentions is paramount; the researcher need to possess awareness of the *what's*, *who's* and *where's* of the research. In this instance, the aim was to assess, on a national level, the views of chartered physiotherapists working in sport medicine as to the psychological content of their practice. Specifically, the '*what*' being the views on psychological issues as part of common physiotherapy practice with injured athletes, the '*who*' being the chartered physiotherapists' treating injured athletes of all levels, and the '*where*' being on a national level in the whole of the UK. By relying on the ACPSM member database only as a means of participant access, the researcher was faced with a problem, as if used alone, the ACPSM members list would not be seen as sufficiently comprehensive to represent the views of chartered physiotherapists treating injured athletes of all levels on a national level.

As a result, the researcher was faced with a critical question: either the aims were to be reassessed, or alternative means of participant access needed to be explored. From the options available, the Experian Ltd Data Management Services appeared to be the most comprehensive, appropriate, and convenient for the purpose. Experian Ltd is a company specialised in providing a range of customer management service solutions to consumers, businesses, and the public sector. Obtaining access to the traditional Experian Ltd database would be fairly effortless and clear-cut. Being a commercial corporation devoted to providing databases for

their clients, a conclusive sample of all listed physiotherapy and sport injury clinics printed on self-adhesive address labels would be instantly accessible in exchange for an appropriate fee for the services.

However it had to be acknowledged, that in spite of retaining the most up-to-date databases of a range of physiotherapy and sport injury clinics, the limitations of the Experian Ltd database was clearly its inability to differentiate between physiotherapy clinics treating athletic injuries from other types of injuries. Some chartered physiotherapists on the list might not treat sport and exercise related injuries at all, but injuries of a different nature (e.g., major illness related injuries or injuries amongst animals). In addition, not all chartered physiotherapists work in private practices; some might be employed by a national governing body, or by a professional sports team, and consequently would not be on the list. Moreover, some of the populace on Expedia Ltd list might not even be chartered physiotherapists, but massage- and sport therapists, or chiropractics and osteopaths working with injured athletes.

Notwithstanding the limitations, both the ACPSM and the Expedian Ltd databases were seen as useful. It became evident that when combined, the ACPSM and the Expedia Ltd databases could produce the most comprehensive list of all physiotherapists working with injured athletes in the United Kingdom.

#### 5.2.2.2. Sample size

As the sources of possible participants were identified, the question of sample size became paramount. With the aim to conduct a national study, the question of sample size and population definition becomes one of the principal issues to contemplate. The concept of population estimation can be considered to be of particular importance when selecting a sample for a study such as the one in question, which is not particularly interested in testing a theory, but aiming to

determine certain views and stances amongst a larger population (McCready, 1996).

Moore (2000) argues that the sample size itself is imperative. Ordinarily, it can be assumed that the bigger the sample, the more likely the results are to be representative of the whole population. McCready (1996) states that the most important question in sampling is not necessarily the size, but how the elements of sample are selected. At the time of the sampling, The Chartered Society of Physiotherapy (CSP) consisted of 45,000 members, including chartered physiotherapists, physiotherapy students, and assistants (The Chartered Society of Physiotherapy, 2005). The Association of Chartered Physiotherapists in Sports Medicine (ACPSM) consisted of slightly over 1,000 chartered physiotherapists and student members (Association of Chartered Physiotherapists in Sports Medicine, 2004). A national list of physiotherapy and sport injury clinics from Experian Ltd Data Management Services consisted of approximately 3,300 entries.

It was important to ensure that the sample selected would represent the whole population, and it became evident that no one source was able to determine the total number of practising chartered physiotherapists in sport medicine, as no database consisting purely of chartered physiotherapists working with injured athletes at all levels of participation existed. The ACPSM member database consisted of a large number of suitable participants; however it had to be accepted that not all of the ACPSM members would fit the inclusion criteria. Similarly, the Experian Ltd list of physiotherapy and sport injury clinics was by no means conclusive. It was evident that while the ACPSM and Experian Ltd databases would complement one another with regards to sample representativeness, when combined, they would contain a significant, yet unknown percentage of participants who would not fit the inclusion criteria, i.e., could be classified as chartered physiotherapists treating injured athletes. It was also essential to acknowledge that

a certain level of overlap in databases was inevitable. A quantity of ACPSM members were likely to be working in a physiotherapy or sport injury clinic and vice versa, thus increasing the total number of possible participants when in fact this was not correct.

#### 5.2.2.3. Awareness of possible sampling errors

Dillman (1999) argues that with the intention of conducting good research, the researcher must consider several possibilities of errors and subsequently aim to minimise the occurrence of such errors. One of the factors to consider is the sampling error. Sampling error occurs when research is conducted only on some, and not all specific units of the population (Dillman, 1999). In this instance, it was evident that neither the ACPSM nor the Experian Ltd databases when employed alone could be claimed to be a nationally representative sample of all chartered physiotherapists in sport medicine, as some units would be deliberately been excluded. Equally, the incidence of coverage error should also be curtailed. A coverage error can transpire when the sample does not include all elements of the population (Dillman, 1999) thus not giving all of the population an equal opportunity of being included in the study. In essence, if only one source of register was to be used, the likelihood of both sampling and coverage error would be significantly increased.

So as to obtain the best possible representation of the views of the entire population of chartered physiotherapists working with injured athletes, it proved to be apparent that more than one source of participant register needed to be employed. The CSP database contained all the listed chartered physiotherapists in the UK, thus representing the entire population of chartered physiotherapists in the UK. However, as the entire population does not serve as a sample frame (McCready, 1996), more careful thought needed to be placed on the sample selection. Both the ACPSM and the Experian Ltd databases contained population

with requisite characteristics for the sampling frame, and when combined, would probably provide the best representation of the chartered physiotherapists working in sport medicine in the UK.

Consequently, it needed to be acknowledged that by using a combination of ACPSM and Experian databases, the true number of approached participants would remain unknown or at least, merely an educated estimate. Thus, the task of monitoring the response rate became complicated, if not practically impossible. If the researcher is not able to calculate the response rate, the ability to monitor the likelihood of non-response error is diminished. In some types of research, this can be problematic, however Dillman (1999) argues that non-response error is only problematic when those with significantly differing characteristics are crucial to the study. It is therefore important to consider the possible positive and negative aspects of each possible error. On this occasion, the benefits of avoiding both sampling and coverage error were considered to be far greater than the disadvantages of the inability to establish an accurate sample size and thus being able to monitor the response rate. However it was desired that the obtained responses should include a representation of chartered physiotherapists with a breadth of physiotherapy experience and resources available in treating a wide number of injured athletes of all levels (recreational, regional, national, and international) on a geographically relevant area (England, Northern Ireland, Scotland, and Wales).

### ***5.2.3. Procedure and analysis***

#### **5.2.3.1. Selecting appropriate procedures**

As stated by Henry (1998), the problem with any research is the researcher's aspiration to speak about entire populations of interest. In order to obtain a national sample, owing to the above is of importance. Such desire can and will be challenging, and thus the method of data collection must be carefully planned and

thought through. A researcher can not, and should not ignore the impediments of the resources available (Henry, 1998). Factors such as opportunity for participant access and cost implications should be regarded as priorities when designing an experiment. An outstanding research can be easily undermined by an inadequately executed method of data collection (Vaux, 1996).

Thus, with the intention of gaining knowledge of UK chartered physiotherapists personal views on the psychological contents of their work when working with injured athletes, it can be safely argued that in the aim of gaining an extensive picture of individuals personal opinions on a particular topic, a self-completion questionnaire such as the PSPQ (Hemmings & Povey, 2002) is a useful and justified means of data collection (Moore, 2000). How the questionnaire is to be effectively distributed can be regarded as another matter to embark upon, and depends largely on the existing access to participants.

#### 5.2.3.2. Surveys

A range of methods can be used for questionnaire distribution (Moore, 2000). These include postal- and online surveys, in person, group, or delivery through publications (Dillman, 1999). Vaux (1996) argues that surveys are particularly useful in large scale field experiments, such as obtaining data from a geographically wide area. Goddard and Villanova (1996) state that if the aim is to request information about individuals opinions and beliefs on a particular topic, surveys can be regarded as acceptable means of data collection. In essence, a survey should not be aiming to explore issues in depth, but rather building up a broad picture of a particular topic (Moore, 2000).

##### 5.2.3.2.1. *Postal surveys*

The most commonly used method of self-completion questionnaire survey distribution is undoubtedly a postal survey (Mangione, 1998; Vaux, 1996). Salant &

Dillman (1994) state that postal questionnaires and surveys are “unique because they stand on their own” (p. 102) and the respondents are not influenced by interviewer’s presence. Mangione (1998) claims that postal surveys can be considered to be a good option when the researcher has limited human resources to help in conducting the study, the questions are written in a closed-ended style, the research sample has either moderate or high investment in the subject matter, and the research objectives are not too exhaustive in length. Furthermore, conducting a postal survey has several major advantages: (a) they can be regarded as relatively inexpensive, (b) they allow access to a large number of participants in a wide geographical area in a relatively short period of time, (c) they allow participants privacy, and ability to choose the convenient time for responding, (d) they allow participants to view the full context of the questions and to take their time in responding, (e) in comparison to interviews or telephone surveys, the input is visual rather than merely auditory, and (f) they insulate participants responses from the expectations of an interviewer (Mangione, 1998).

#### *5.2.3.2.2. Online surveys*

In many areas of psychology, replacing postal surveys with Internet-based surveys has become an increasingly popular method of data collection (see Birnbaum, 2004, for a review). Several studies have explored whether participants respond differently to online-based surveys than to traditional postal surveys. For the greater part, existing published research evaluating of potential survey format in psychology has produced similar results (i.e., mean scores, reliability coefficients, and factor structures) amongst the respondents in both traditional and online survey group (e.g., Buchanan & Smith, 1999), and few studies have reported small mean differences between the experimental groups (e.g., Fouladi, McCarthy, & Moller, 2002). These slight differences have been regarded as being outweighed by similarities, thus in general, one can conclude that people tend to respond similarly



to both traditional postal and online-based surveys (Lonsdale, Hodge, & Rose, 2006).

In general, it was seen that an online survey has all of the same major advantages (as outlined by Mangione, 1998) as a postal survey, and some of the advantages can be seen as superior (Lonsdale et al., 2006). With regards to missing data, online surveys are more advanced than postal surveys, as the researcher can set certain questions as compulsory, and, in the case of Likert-scale type questions, the system would only allow one response option for each question. The costs of an online survey are minimal, as the cost of posting, photocopying, and reminders are virtually nonexistent. The likely incurred costs (if any) are mainly to do with internet access, questionnaire design and in some instances, research homepage designs. Similarly to the postal surveys, online surveys allow access to a large number of participants in a wide geographical area. However, online surveys do exclude people with limited or no access to the Internet, and may therefore not be suitable for all populations (Lonsdale et al., 2006). In the field of sport psychology, a noticeable trend toward a better response rate in online survey in contrast to the traditional postal group was apparent amongst eighteen New Zealand Academy of Sport athletes (Lonsdale et al., 2006). The speed of responses was also increased, and the responses contained fewer missing data. Thus, even though online surveys may not be relevant to all populations, it can be assumed that when used with appropriate populations, online surveys can have great advantages over traditional postal survey methods.

#### **5.2.4. Procedure**

After identifying the instrument, participants, and possible procedures for data collection, it was evident that if both ACPSM and the Experian Ltd databases were to be used, different methods of data collection needed to be employed. In essence, access to the ACPSM database required an online survey whereas the

Experian Ltd database required a more traditional means of distribution, i.e., the use of postal survey.

#### 5.2.4.2. Conducting a postal survey: Procedure

A postal survey to a national list of sport injury and physiotherapy clinics (Experian Ltd) was carried out. The postal survey package contained a printed version of the PSPQ, a response reply envelope, and an introductory letter (see Appendix 5.3.). The introductory letter consisted of a brief introduction to the research, information on the ethical issues, and links to the online version of the PSPQ and the research website, from which further information could be found. Furthermore, a follow-up postcard was sent out to all of the participants three weeks after the initial mailing.

#### 5.2.4.1. Conducting an online survey: Procedure

The traditional printed version of the PSPQ was converted into an electronic version (<http://oldweb.northampton.ac.uk/cgi-bin/rws3.pl?FORM=Physiotherapist>) of the questionnaire. The Remark Web Survey-software was used to produce, and to collect the data from the participant responses. The software allowed the questionnaire to be accessed online and to be completed and submitted electronically. Furthermore, specific questions (e.g., consent, participant ID) could be classed as "required question". That is, without completing these questions, final submission of the questionnaire would not be permitted. In addition, in certain questions (e.g., Likert-scale type questions 7 and 9) the system would only allow one response option for each psychological technique listed, minimising possible completion errors.

In order to inform participants about the particulars of the research, a research website (<http://psychologicalrehabilitationfromsportinjury.northampton.ac.uk/>) was also set up by using the Macromedia Dreamweaver MX. The research website contained a link to the PSPQ, as well as some additional information regarding the

research, the researchers, ethical issues, and links to past research (see Appendix 5.2.). Both the research website and the online questionnaire were then uploaded on the University of Northampton server, where the Remark Web Survey software was used to convert the questionnaire as a Web Base Questionnaire and added with a Web Link.

An email survey to ACPSM member's database was subsequently employed. The email sent to the ACPSM members contained a brief introduction to the research and links to the research website and the online questionnaire. A follow-up email was sent to all of the participants two weeks after the initial email, and an advert for encouraging ACPSM members to participate in the research was placed in the ACPSM newsletter 4 weeks after the initial contact.

After the data collection, the raw data collected from the online survey stored at the University of Northampton server was exported, and the raw data collected from the postal responses was imported into SPSS and combined with the online responses for data analysis.

#### ***5.2.5. Ethical considerations***

The study followed the ethical guidelines set by the British Psychological Society (2000). Prior to the commencement, the participants were notified about the true purpose of the research, and consent was obtained from all of the participants. For those participants who completed the PSPQ online, an informed consent was required prior to the access to the questionnaire. Those who completed a paper copy of the PSPQ returned an informed consent form along with their questionnaire responses through the post. The participants were briefed on the true purpose of the research, and no intentional deception took place.

In order to assure participants' anonymity, the research did not require participants to disclose their true identities (names), and the participants were assured that any other identifiable demographic information was to be treated with absolute confidentiality throughout the research project. The participants took part in the research voluntarily. Those who completed their questionnaires online were given an opportunity to withdraw their data prior to submission, as no questionnaire responses were registered without participants' approval. All of the participants were given an opportunity to withdraw their data at any time within one month of the study's completion without specific reason. In such cases, participants were asked to contact the researcher (phone, mail, or email) and provide the researcher with their personal ID. Participants were also given an opportunity for an individual debriefing either in person or via email. No such requests were made by any of the participants. Prior to commencement, the study was approved by the University of Northampton Research Ethics Committee.

### **5.3. Results**

#### **5.3.1. Participants**

A total of 463 questionnaires were returned, of which 55 participants completed the PSPQ online and 408 returned their responses by mail. All of the participants who completed the PSPQ online fit the inclusion criteria as they identified themselves as chartered physiotherapist treating injured athletes, and were subsequently included in the final analyses. From the postal responses, only 306 participants fit the inclusion criteria, thus reducing the total number of participants to 361. The vast majority of the respondents ( $M \pm SD/R$  age =  $42.46 \pm 9.78/21-70$ ) were female (68.7%,  $n = 248$ ) leaving the total number of male respondents to 113 (31.3%). The majority of respondents came from England (85%), followed by Scotland (5.8%), Wales (5.5%) and Northern Ireland (3.0%).

The respondents had an average of  $M(SD)$  19.04 (9.89) years of experience as physiotherapists, of which 12.98 (8.52) years were as specialised sport physiotherapists. In total, 56% of the respondents ( $n = 202$ ) reported holding a postgraduate qualification. Of these, 22.2% ( $n = 80$ ) had a postgraduate qualification in sport injury or sport medicine, and 1.9% ( $n = 7$ ) had postgraduate qualifications in psychology. All of the participants included in the final analyses were employed outside the National Health Services (NHS), i.e., in a sport injury or physiotherapy clinic, private practice, professional sports team, national governing body, or in a national sport institute.

On average, the physiotherapists reported treating 36.21(48.63) sport-related injuries per month, ranging from 1 to 350. The treated athletes ranged between recreational and international levels of competition.

### **5.3.2. Psychological impact of injury**

In order to establish the physiotherapists' perceptions on the extent of the psychological impact of injury, questions about the frequency of psychological effects (question 8), possible negative psychological conditions encountered (question 1), and the importance of treating psychological aspects of injuries (question 10) were employed. The descriptive statistical analyses (means, standard deviations, and frequencies where appropriate) were calculated on the questionnaire responses.<sup>8</sup>

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<sup>8</sup> In regard to the use of means and standard deviations, which assumes interval data, with ordinal Likert scale item, in a review of the literature on this topic, Jaccard and Wan (1996) summarise: " For many statistical tests, rather than severe departures from intervalness do not seem to affect Type I and type II errors dramatically" (p. 4). For that reason, and to ensure comparability with previous research using same measures and means of analysis, the use of means and standard deviations in this study was deemed appropriate.

### 5.3.2.1. The extent of the psychological effect of injury

For question 8, “*how often do you believe an athlete is affected psychologically by injury*”, the results from the descriptive statistical analyses revealed that 99.7% of the physiotherapists ( $n = 359$ ) believe that to some extent, all athletes are psychologically affected by their injuries. On average, the results indicate that athletes are psychologically affected 83% of the time ( $M \pm SD = 4.15 \pm 0.92$ ) when injured. Furthermore, 43.9% ( $n = 158$ ) of the respondents believed that injury has a psychological impact on the athlete 100% of the time.

### 5.3.2.2. Possible negative conditions encountered

Question 1 “*how often do you encounter the following conditions associated with athletic injuries*” was concerned with physiotherapist experiences with explicit psychological conditions associated with sport injuries. As shown on Table 5.1., the analyses revealed that the most commonly encountered psychological conditions amongst injured athletes by physiotherapists were stress/anxiety and exercise addiction, followed by treatment compliance problems, anger, depression, and problems with attention and concentration.

*Table 5.1. Psychological conditions encountered by physiotherapists when working with injured athletes*

| Psychological responses                              | Mean | SD   |
|--|------|------|
| Stress/anxiety                                       | 3.75 | 0.87 |
| Exercise addiction                                   | 3.39 | 0.92 |
| Treatment compliance problems                        | 2.81 | 0.85 |
| Anger  | 2.75 | 0.87 |
| Depression   | 2.74 | 0.82 |
| Attention/concentration problems                     | 2.38 | 0.82 |
| <i>1 = never encounter; 5 = very often encounter</i> |      |      |

#### 5.3.2.3. The importance of treating psychological effects of injury

With the intention of establishing whether physiotherapists felt that treating the negative psychological aspects of injuries to be important, the descriptive statistics and frequencies were calculated for question 10 (*"how important do you feel it is to treat the psychological aspect of an athletic injury"*). The analyses revealed that all of the respondents acknowledged the need to treat psychological aspects of injuries. In effect, 83.1% of the respondents ( $n = 299$ ) believed that dealing with psychological facets of sport injuries was either important or very important ( $M \pm SD = 4.29 \pm 0.91$ ).

The results from questions 1, 8, and 10 revealed that the vast majority of the physiotherapists believed that athletes are psychologically affected by their injury, and that it is important to treat these psychological issues. In addition, physiotherapists reported encountering a range of psychological conditions amongst injured athletes, and stress/anxiety and exercise addiction were reported as the most frequently encountered negative dispositions.

#### **5.3.3. Athletes' coping characteristics**

In an attempt to identify any particular coping behaviours/characteristics present in injured athletes, two separate open-ended questions asking the physiotherapists to identify the four top behaviours/characteristics they believed to be present amongst injured athletes who cope (question 2), or do not cope (question 3) successfully with injuries. The data obtained was analysed by using a thematic analysis. For both questions 2 and 3, the findings from equivalent questions from previous research (Hemmings & Povey, 2002) were used as a guideline for the forming of the conceptual categories and coding to which further categories were added when appropriate.

#### 5.3.3.1. Successful coping characteristics

For question 2 which required the physiotherapists to identify the top four characteristics they believed to be present in athletes who cope successfully with injury, a total of different 107 behaviours/psychological characteristics emerged from the initial coding of physiotherapists responses. The characteristics were then grouped into categories reducing the final number of particular behaviours/psychological characteristics to 70. As shown in Table 5.2., the results from the frequency analyses revealed that during their work, physiotherapists detected a variety of psychological characteristics in athletes who effectively cope with their injuries. The most frequently identified characteristics were "positive and proactive attitude towards injury" (43.2%) followed by "compliance with the treatment and rehabilitation programme" (39.6%) and "understanding of the injury" (24.9%). Approximately 20% of the respondents also listed "realistic expectations", "motivation" and "athletes' patience with themselves and the rehabilitation programme" as defining characteristics amongst athletes who deal with their injuries in a successful manner.



Table 5.2. Top 10 characteristics of athletes who cope successfully with athletic injury

| Characteristic   | Frequency (%) |
|--|---------------|
| Positive and proactive attitude towards injury   | 43.21         |
| Compliance with the rehabilitation/treatment programme   | 39.61         |
| Understanding of injury  | 24.93         |
| Realistic expectations   | 21.88         |
| Motivation   | 19.67         |
| Patience with themselves and the injury programme  | 17.45         |
| Determination  | 14.13         |
| Confidence and trust in the therapist and rehabilitation programme   | 12.74         |
| Commitment   | 12.47         |
| Good social, emotional and medical support   | 9.70          |
| <i>This was an open-ended question in which the physiotherapists were asked to list the top four observed characteristics.</i> |               |

#### 5.3.3.2. Less successful or non-successful coping characteristics

Question 3 required the physiotherapists to identify the top four characteristics they believed to be present in athletes do not cope successfully with injury. As a result of the initial coding, a total of different 95 behaviours/psychological characteristics emerged from the physiotherapists responses. The characteristics were then grouped into categories reducing the final number of particular behaviours/psychological characteristics to 81. As shown on Table 5.3., the results from the frequency analyses revealed that during their work, physiotherapists detected a range of psychological characteristics in athletes who experience difficulties in coping with their injuries successfully. The most frequently identified

characteristics were poor or non-compliance with the treatment and rehabilitation programme (34.9%), followed by depression (27.7%) and impatience (22.1 %).

*Table 5.3. Top 10 characteristics of athletes who cope less successfully with athletic injury*

| Characteristic   | Frequency (%) |
|--|---------------|
| Non/poor compliance with the rehabilitation programme  | 34.90         |
| Depression   | 27.70         |
| Impatience   | 22.16         |
| Anxiety  | 18.01         |
| Negative attitude towards injury   | 17.17         |
| Anger  | 14.40         |
| Unrealistic goals and expectations   | 13.85         |
| Exercise addiction   | 13.30         |
| Stress   | 10.80         |
| Lack of/poor understanding of the injury and rehabilitation process  | 10.25         |
| <i>This was an open-ended question in which the physiotherapists were asked to list the top four observed characteristics.</i> |               |

#### **5.3.4. Availability and previous use of an accredited or a chartered sport psychologist**

In order to establish physiotherapists' current working relationships with an accredited or a chartered sport psychologists, questions about the physiotherapists previous experiences of referrals (question 4), current access to an accredited sport psychologist (question 5), and the existence of specific written referral procedures (question 6) were employed. Only 90 (25.3%) of the physiotherapists indicated

that they had access to a qualified sport psychologist, and 87 (24.3%) of those had referred athletes for counselling for circumstances associated with their injury. Out of these, 23 (7.5%) reported using a specific written procedure for such instances.

### **5.3.5. The use of psychological interventions and further training needs**

#### 5.3.5.1. Psychological interventions used by physiotherapists

The physiotherapists were asked to assess the extent in which they personally used a range of different psychological interventions in an attempt to facilitate athletes' injury recovery process (question 7). They were presented with a list of psychological interventions and asked to indicate on a scale from 1 (never) to 5 (100%) how often they used each of the interventions presented. Physiotherapists reported using a diverse range of psychological interventions as part of their work with injured athletes. The most used psychological interventions were "using short-term goals" ( $M \pm SD = 4.56 \pm 0.71$ ), "creating variety in rehabilitation exercises" ( $4.52 \pm 0.73$ ), and "encouraging athletes to employ positive self-thoughts" ( $4.43 \pm 0.90$ ). The least used interventions were "using mental rehearsal/visualisation" ( $2.50 \pm 1.40$ ), "improving social support" ( $2.48 \pm 1.21$ ), "reducing depression" ( $2.46 \pm 1.38$ ), and "teaching emotional control strategies" ( $2.30 \pm 1.24$ ). Table 5.4. shows the list of psychological interventions physiotherapists employed as part of the rehabilitation programmes.

Table 5.4. *Psychological interventions used by physiotherapists as part of the rehabilitation programme*

| Psychological technique                        | Mean | SD   |
|--|------|------|
| Using short-term goals                         | 4.56 | 0.71 |
| Creating variety in rehab exercises            | 4.52 | 0.72 |
| Encouraging positive self-thoughts             | 4.43 | 0.90 |
| Other techniques (not specified)               | 4.08 | 1.44 |
| Encouraging effective communication skills     | 4.07 | 1.20 |
| Enhancing self-confidence                      | 3.86 | 1.13 |
| Keeping the athlete involved with the team     | 3.81 | 1.16 |
| Reducing stress or anxiety                     | 3.31 | 1.22 |
| Teaching muscular relaxation techniques        | 2.94 | 1.25 |
| Using relaxation techniques                    | 2.62 | 1.21 |
| Using mental rehearsal/visualization           | 2.50 | 1.40 |
| Improving social support                       | 2.48 | 1.21 |
| Reducing depression                            | 2.46 | 1.38 |
| Teaching emotional control strategies          | 2.30 | 1.24 |
| <i>1 = never use; 5 = use 100% of the time</i> |      |      |

#### 5.3.5.2. Need for further training in using psychological interventions

When asked about the importance of having a course in sport psychology as part of physiotherapy training, the results revealed that 96.4% ( $n = 348$ ) of the physiotherapists felt that such a course in sport psychology during physiotherapy was important (question 11). Further comments supplied by the physiotherapists revealed that a specific module, particularly at postgraduate level, was seen as a potential addition to the future training/education of physiotherapists.

For question 9, the physiotherapists were asked to evaluate their personal need for further training in a range of psychological interventions. They were presented with a list of psychological interventions and asked to indicate on a scale from 1 (not important) to 5 (very important) how important they felt it would be for them personally to learn more about the psychological interventions. As presented in Table 5.5., physiotherapists felt that further training in the following psychological interventions would be useful: "goal setting" ( $4.34 \pm 1.00$ ), "variety in rehabilitation exercises" ( $4.17 \pm 1.09$ ), "encouraging positive self-thoughts" ( $4.23 \pm 1.02$ ), "understanding motivation" ( $4.21 \pm 0.96$ ), "enhancing physiotherapists listening skills" ( $4.13 \pm 1.06$ ), and "increasing athletes' self-confidence" ( $4.19 \pm 0.99$ ).

Table 5.5. *Psychological interventions in which further training was regarded as important*

| Psychological technique                       | Mean | SD   |
|---|------|------|
| Setting realistic goals                       | 4.34 | 0.99 |
| Encouraging positive self-thoughts            | 4.23 | 1.01 |
| Understanding individual motivation           | 4.21 | 0.96 |
| Enhancing self-confidence if injured athlete  | 4.19 | 0.99 |
| Creating variety in rehab exercises           | 4.17 | 1.09 |
| Enhancing listening skills of physiotherapist | 4.13 | 1.06 |
| Reducing stress or anxiety                    | 4.01 | 1.04 |
| Using effective communication                 | 3.94 | 1.08 |
| Reducing depression                           | 3.62 | 1.16 |
| Teaching emotional control strategies         | 3.6  | 1.09 |
| Teaching concentration skills                 | 3.56 | 1.15 |
| Teaching the use of mental imagery            | 3.43 | 1.18 |
| teaching muscular relaxation techniques       | 3.41 | 1.22 |
| Improving social support for athlete          | 3.08 | 1.25 |
| <i>1 = not important; 5 = very important</i>  |      |      |

#### 5.4. Discussion

The study participants were a sample of chartered physiotherapists nationwide, who treated athletes at various competitive levels. It can be concluded that the study is a good representation of the views of chartered physiotherapists treating injured athletes in the UK concerning the psychological content of their practice.

Similar to previous research (e.g., Brewer, 1994; Heaney, 2006; Hemmings & Povey, 2002; McDonald & Hardy, 1990; Pearson & Jones, 1992) the physiotherapists in this study acknowledged that all injured athletes are psychologically affected to some extent. Parallel to findings by Hemmings and Povey (2002), stress and anxiety, followed by exercise addiction, were the most frequently detected psychological responses to injuries by athletes (see Table 5.6. for more details). The current findings also support those of Heaney (2006), whose research with physiotherapists working in professional football indicated stress and anxiety as being the most frequently occurring conditions amongst injured footballers.

Table 5.6. Comparison table of research findings in the UK

|  | Hemmings & Povey, 2002 | Heaney, 2006 | Current Study |
|--|------------------------|--------------|---------------|
| Psychological responses                    | Mean(SD)               | Mean(SD)     | Mean(SD)      |
| Stress/anxiety                             | 3.67 (0.78)            | 3.67 (1.08)  | 3.75 (0.87)   |
| Exercise addiction                         | 3.54 (0.87)            | 2.74 (0.97)  | 3.39 (0.92)   |
| Treatment compliance problems              | 2.70 (0.94)            | 2.51 (0.79)  | 2.81 (0.85)   |
| Anger                                      | 2.74 (0.94)            | 3.10 (0.94)  | 2.75 (0.87)   |
| Depression                                 | 2.77 (0.94)            | 2.72 (0.92)  | 2.74 (0.82)   |
| Attention/concentration problems           | 2.25 (0.80)            | 3.05 (1.07)  | 2.38 (0.82)   |
| <i>1 = never; 5 = very often encounter</i> |                        |              |               |

The above findings are also supported in general medicine, as it has been suggested that anxiety and depression can be regarded as the most prevalent disorders seen in medical practice as a whole (DiMatteo, Lepper, & Croghan, 2000).

In this study, the majority of the surveyed physiotherapists felt that treating psychological facets of sport injuries was either important or very important. The findings concur with other similar research, as several studies have emphasised the importance of acknowledging the various psychological components as part of successful rehabilitation (e.g., Bricker Bone & Fry, 2006; Crossman, 1997; Francis et al., 2000; Heaney, 2006; Hemmings & Povey, 2002). In essence, it has been suggested that without addressing the psychological aspect of injuries, some athletes are not able to recover to their full potential (Taylor & Taylor, 1997). These findings are indisputably of value; nevertheless it appears that such information has brought not only important knowledge but also further research questions in the field. The key question is how much of the responsibility of treating psychological aspects of sport injuries should fall on physiotherapists' shoulders. That is, how much of an expert should chartered physiotherapists be in identifying, assessing, and treating a wide range of psychological conditions that emerge amongst injured athletes?

In addition to recognising the importance of treating psychological aspects of injuries, the physiotherapists also identified numerous psychological characteristics which they believed to be present in athletes who cope/do not cope with injuries. Positive attitude, treatment compliance, and understanding of injury were rated as the top three characteristics amongst athletes who cope successfully with injuries, whereas non-compliance, depression, and impatience were believed to be most frequently present amongst athletes who do not cope successfully with injuries.



These findings bear similarities to the findings from the preliminary study by Hemmings and Povey (2002), however in this study physiotherapist reported that depression seemed to be more frequently present in athletes who do not cope successfully with injuries. Moreover, a study by Heaney (2006) has yielded similar trends, as sport rehabilitation professionals (of which 79% were physiotherapists) working in professional soccer in England and Wales, felt that depression was one of the top three characteristics among the athletes who do not cope successfully with their injuries.

The results from the survey reported in this chapter also indicated that using depression-reducing techniques was the least used psychological technique among chartered physiotherapists. Also physiotherapists felt that it was fairly important to learn more about different ways to reduce depression. These findings might suggest that the majority of the physiotherapists are able to recognise the key symptoms of depression and acknowledge the importance of treating these symptoms; but, due to lack of knowledge, they are unable to address these issues. The above findings can be worthy of noting, as currently the World Health Organisation classifies depression as a major health problem and considers it to be one of the leading causes of disability worldwide (WHO, 2005). Since the occurrence of depression in general population has significantly increased over the past decades (WHO, 2005) it is likely that it has also become more prevalent amongst the athletic population. Moreover, around 15-20% of depressive patients end their lives with suicide (Goodwin & Jamison, 1990), and in sport setting, evidence in support of the relationship between depressed mood associated with long-lasting sport injury and attempted suicides among young athletes in the United States has also been found (Smith & Milliner, 1994). It would therefore be important to gain further insights into physiotherapists existing knowledge on depression, and the possible need to train physiotherapists further in identifying

the key symptoms of depression and the establishment of working collaborations with appropriate professionals.

Despite the inconsistency between the physiotherapist perception of the frequency of depression amongst athletes who do not cope successfully with their injuries and their use of depression reducing techniques, a word of caution is needed when interpreting such results. The meaning of terminology may vary amongst individuals, and the physiotherapists' perceptions about what they would consider to be categorised as depression might be very different to the actual medical (clinical) definition of the word. To date, all of the studies have documented what appears to be the physiotherapists own perceptions of different psychological conditions displayed by athletes during the injury rehabilitation process (e.g., Francis et al., 2000; Heaney, 2006; Hemmings & Povey, 2002; Larson et al., 1996). As a result, this provides only limited information on the physiotherapists' awareness on the actual definition of depression. If physiotherapists' understanding of the term depression was known, it would be easier to draw further conclusions on the significance of treating depression as part of rehabilitation programmes. Furthermore, the information could also be regarded as vital when examining the importance of training physiotherapists further in identifying the key symptoms of depression. Such knowledge could also assist physiotherapists in identifying the extent of their own competencies in this area. This in turn could help increase confidence in referring athletes to other relevant professionals (e.g., clinical psychologist/accredited or chartered sport psychologist) when necessary. Given the possible unfamiliarity of physiotherapists' personal understanding of depression and its appropriate definition in clinical settings, it would be of importance to identify physiotherapists' existing knowledge on depression in more detail before drawing additional conclusions and expanding on any possible implications.

The findings from this study also indicated that merely a quarter (25.3%,  $n = 90$ ) of all of the physiotherapists (i.e., treating athletes of all levels, and not merely elite athletes) had access to an accredited or chartered sport psychologist; however of those, 96.7% ( $n = 87$ ) had used their services by referring athletes for counselling. In comparison to the findings by Hemmings and Povey (2002), more physiotherapists had access to an accredited/chartered sport psychologist, and more had referred athletes to counselling. This could suggest that the collaborations between physiotherapists and sport psychologists may be on the increase, and therefore further information on the nature of that relationship would be useful when establishing collaborations between sport psychologist and physiotherapists.

In contrast, the findings by Heaney (2006) were different to both Hemmings and Povey (2002) and this study. Amongst physiotherapists working in professional football, over two-thirds of the physiotherapists had access to an accredited sport psychologist, and half of those had referred athletes to counselling. This would suggest that physiotherapists working with elite footballers have more privileged access to sport psychologists than chartered physiotherapists in general. This is not surprising, as Wiese-Bjornstal and Smith (1999) claim that elite level athletes often have teams of individuals working with them when injured, while lower level athletes seldom benefit from this type of service.

In order to improve rehabilitation process of athletes at all levels of competition and to assist physiotherapists in providing a better service to their clients, establishing continuous relationships between physiotherapists and sport psychologists should be encouraged. If more physiotherapists have pre-arranged working relationships with sport psychologists, the probability of referring athletes to counselling when necessary could be increased, therefore enhancing the athletes' likelihood of returning back to pre-injury level of performance. Thus the

usefulness of establishing the more common practice of working collaborations with appropriate healthcare professionals should also be explored.

Support for the above suggestions can be found in recent literature. According to Bulley et (2005) all competent sport physiotherapists will work as a part of multidisciplinary team. The authors state that one of the core standards for physiotherapists working with injured athletes is to be able to recognise the broad scope of practice and to appropriately refer athletes to other members of the team when necessary. If an athlete requires psychological support during the rehabilitation process in order for the treatment to be successful, then it would seem logical that establishing professional links with appropriate professionals should be a priority at all levels of practice.

In addition, parallel to previous findings, the physiotherapists also reported employing a wide range of psychological interventions with injured athletes and emphasised the need to treat psychological aspects of the injuries. The most used interventions were setting short-term goals, creating variety in rehabilitation exercises, and encouraging the athletes to use positive self-thoughts. Similar to other existing research in the UK (Heaney, 2006; Hemmings & Povey, 2002), using imagery as part of the rehabilitation process was among the four least used psychological interventions among the physiotherapist (used less than 50% of the time).

Despite the lack of popularity by the physiotherapists, support for the use of imagery as part of rehabilitation has been found in the literature. For example, the findings from Handegard et al. (2006) suggested that injured athletes themselves felt that engagement in guided imagery for 25 minutes a day (on two occasions) "helped a lot". Support for the use of cognitive, motivational, healing, and pain-

management functions of imagery have also been established (Evans et al., 2006; Milne et al., 2005; Sordoni et al., 2000).

It has been suggested that the current underutilisation of imagery during rehabilitation is largely due to a lack of knowledge of its uses and functions by athletes and rehabilitation professionals (Brewer et al., 1994; Walsh, 2005; Wiese et al., 1991). Many researchers have now started to advocate further training for physiotherapists in this area, yet the extent of physiotherapists' current knowledge on imagery is still unclear. In order to make recommendations for appropriate training in the use of imagery for rehabilitation, further knowledge of physiotherapists' current knowledge on imagery would be useful. With such knowledge, researchers could be more specific in tailoring the training to meet the trainees needs, and the physiotherapists would benefit from imagery training addressing the 'hows' and 'whys' of imagery specifically tailored to their needs.

Like imagery, the use of relaxation techniques as part of rehabilitation process was also found to be among the least used interventions by the physiotherapist. As relaxation techniques has been found to be useful in reducing depression (Crossman, 1997), and the findings from the study indicated fairly frequent existence of depression among injured athletes, it might be beneficial to educate athletes and physiotherapists further in this field. Nevertheless, prior to making any tangible plans for further training, it would be imperative to establish physiotherapists' current knowledge on the different relaxation techniques, and to document their existing experiences in using a range of rehabilitation techniques in detail. With such knowledge, any possible further training needs could be more easily identified.

The findings from the study are also consistent with previous research in the UK (i.e., Heaney, 2006; Hemmings & Povey. 2002), suggesting that physiotherapists

have aspirations towards further training in using psychological interventions in their work. Realistic goal setting, encouraging positive self-thoughts, understanding motivation, enhancing athletes' self-confidence, creating variety in rehabilitation exercises, enhancing physiotherapists listening skills, and how to reduce stress and anxiety were rated as interventions in which further knowledge was seen as important. In contrast, gaining further knowledge on how to use imagery and relaxation as part of the rehabilitation process on the other hand was seen as only fairly important.

The research findings appear to suggest a clear pattern: those skills which the physiotherapist employ the most are the ones which they viewed further education as being useful, and the skills physiotherapist employ the least were the ones seen as least useful to learn more about. This could be due to various reasons. Existing research indicates that amongst athletic trainers, the reluctance to advocate the use of imagery as part of the injury rehabilitation process could be due to trainers not feeling qualified to use imagery and/or lack of confidence in the effectiveness of this technique (Heaney, 2006; Wiese et al., 1991). In addition, lack of knowledge about the possible benefits and uses of the interventions could play a role in explaining why some psychological interventions are currently underused amongst sport injury professionals. For the same reasons, physiotherapists might not view seeking further training the field as being very important.

The results from the survey also indicated that reducing depression was the least used psychological intervention amongst chartered physiotherapists, and physiotherapists felt that it was merely fairly important ( $M = 3.62$ ,  $SD = 1.16$ ) to learn more about different ways to reduce depression. These findings might suggest that majority of the physiotherapists are able to recognise the key symptoms of depression, and acknowledging the importance of treating those symptoms, however may not see treating depression as part of their role, or due to

existing lack of knowledge they are unable to address these issues. Previous research suggests physiotherapists in the UK appear to experience a lack of role clarity with regards to psychological rehabilitation (Jevon & Johnston, 2003; McKenna et al., 2002). Therefore it makes sense to train them further in these issues in order to help them gain confidence as to how far they are skilled to treat psychological aspects of sport injuries and when to refer an athlete to counselling.

The suggestion about a specific module in sport psychology was seen as constructive, particularly at postgraduate level. These propositions are similar to previous research conducted in the United Kingdom and elsewhere, as it has been suggested that integrating psychological content of professional training programmes for physiotherapists should be extended and developed even further (e.g., 1998; Gordon et al., 1998; Heaney, 2006; Hemmings & Povey, 2002; McKenna et al., 2002). Kolt and Andersen (2004b) advocate that psychology should be integrated with more physical-based coursework. If physiotherapists are to incorporate psychological interventions with physical rehabilitation procedures, they need to be able to employ skills in a way that clients will regard as an expected and integral part of rehabilitation (Kolt & Andersen, 2004b). As the current physiotherapy training is highly variable both in context and depth (Kolt & Andersen, 2004b), further research in this field is necessary in order to establish convenient, effective and practical ways of educating both training and practising physiotherapists in the psychological aspects of sport injuries and rehabilitation process.

The present state of physiotherapy training in universities and colleges worldwide is highly varied in both depth and breadth of the taught material (Kolt & Andersen, 2004b). It would therefore be erroneous to assume that all physiotherapists are equally equipped to deal with psychological aspects of sport injuries. This sentiment can be regarded as paramount in advocating continuous professional training in the

field. In order to maximise the usefulness and benefits of training, we need to identify how it should be implemented. In order for teaching and guidance to be effective, information on the practicalities (i.e., when, where, how, and by whom) should be assessed. By establishing such knowledge, the research can move forward from fairly ambiguous statements such as 'further training in the field of sport psychology is required', and as a consequence could provide some practical suggestions on which to base the actual training programmes.

These findings provide clear information on the overall status of physiotherapists' present knowledge on psychological issues related to their work. Drawing from previous research and from the findings from this study, it can therefore be concluded that in general, athletes are more often than not psychologically affected by their injuries. Chartered physiotherapists in this study acknowledged and reaffirmed, previous research findings on the significance of psychological aspects as part of the sport injury recovery process, and the need to address psychological aspects of injuries. Specific psychological conditions were identifiable amongst injured athletes, and the physiotherapists identified a range of characteristics they believed to be present in athletes who cope/do not cope successfully with their injuries. Furthermore, physiotherapists agreed that these psychological conditions needed to be recognised and treated. As with previous research, physiotherapists felt that further learning and a better understanding of psychological principles and interventions could improve their work with injured athletes.

### **5.5. Research limitations**

Despite a number of meaningful findings, the research was not without its limitations. While the PSPQ was considered as the most appropriate measure for the purpose by allowing direct comparisons with previous studies worldwide, by no means was it faultless. As discussed earlier, by using PSPQ the meaning of terminology was open to number of interpretations. As none of the psychological



interventions were defined further in the survey, it was possible that the physiotherapists surveyed might have misinterpreted some of the techniques simply due to lack of formal training in psychology. For example, physiotherapists indicated using a lot of goal setting in their work with athletes, but whether or not such goal setting was following the sport injury rehabilitation goal setting principles was left unclear. In a similar manner, by using the PSPQ the findings from this study were very descriptive in nature. Due to the nature of the questions, some of the vital and meaningful information may have been lost in the process (Hayes, 2000), and understanding of the underlying reasons (e.g., why use goal setting and not imagery, and what is preventing them from having access to a chartered/accredited sport psychologist) for their responses was left unclear.

Another major limitation of the study emerged during sampling. As no comprehensive national list of all chartered physiotherapists working in sports medicine in the UK existed, the study employed a combination of online and postal surveys as a means of data collection. As a result, some overlap between the databases was evident, subsequently limiting the possibility of calculating the response rate.

## **5.6. Conclusions**

The research presented in this chapter has provided useful information on the role of physiotherapists in providing psychological support to injured athletes during rehabilitation. In order to provide suggestions as to how physiotherapists should be further trained in using psychology in their work, few emergent themes from this study should be considered as noteworthy. Documenting the physiotherapists' personal experiences in using different psychological interventions as part of their work can be regarded as one of the primary issues to address. When the "whys and why nots" of the practical uses of the different interventions (e.g., goal setting, imagery, relaxation, self-talk, and social support) has been identified, the content

of additional training can be tailored to suit the already practising physiotherapist more efficiently. Gaining more in-depth information on physiotherapists' current knowledge on depression can also be regarded as vital. Prior to drawing any further conclusions about the role of depression as part of the rehabilitation process, it would be useful to ensure that the term depression is correctly defined and used in its appropriate form amongst physiotherapists.

As a result, the following suggestions and implications can be regarded as worthy of further investigation: (a) the best method of delivery for further training in the psychological aspects of sport injuries for physiotherapists should be surveyed, (b) physiotherapists' personal experiences in using different interventions should be established in more detail, (c) physiotherapists' current knowledge on the definitions of, and the role of depression as part of the rehabilitation process amongst injured athletes should be explored, (d) gaining an insight into athletes views on the physiotherapists' role in providing psychological support during rehabilitation process should also be explored in more detail. In addition, further working collaborations between physiotherapists and sport psychologists should be examined, and good practice in these relationships should be explored. Furthermore, as a result of such investigations along with the current findings, the broader implications of the results may include the following: the potential need for an intervention study assessing the value of training physiotherapists to use particular psychological interventions in their work should be explored, and the possible need for a specific applied modules in sport and exercise psychology to physiotherapists at under- and/or post-graduate training should be investigated.

## **5.7. Chapter summary**

The purpose of this chapter was to present the research process, and the findings from study one. As there are only a few studies in the UK to date investigating chartered physiotherapists' views on the psychological content of their practice,

and no studies on a national level representing physiotherapists treating athletes of all levels exists, the aim of this study was to assess, on a national level, the views of chartered physiotherapists on the psychological ( $n = 87$ ) content of their practice.

After assessing available options with regards to appropriate methodology, this chapter then provided a rationale for, and explained the chosen research paradigms. A combination of an online and postal survey containing the Physiotherapist and Sport Psychology Questionnaire (PSPQ; Hemmings & Povey, 2002) was employed to the ACPSM members' database and a comprehensive list of all sport injury and physiotherapy clinics in the UK.

The results from the analyses revealed that physiotherapists believe that most athletes are psychologically affected when injured, and they believe that there are explicit psychological characteristics present in athletes who cope/do not cope successfully with their injuries. Physiotherapists also reported using a range of psychological interventions as part of their work and indicated aspirations towards further training in the field. Furthermore, only 24.1% of the physiotherapists indicated that they had access to an accredited sport psychologist.

Most of the findings from this study are in support of the wider literature. As such, the research can move forward from merely asking physiotherapists to *report* their views on psychological issues, to explore the underlying meanings and their personal experiences in utilising psychological interventions in their work.

## CHAPTER 6

# CHARTERED PHYSIOTHERAPISTS' VIEWS ON PREFERRED METHODS OF SPORT PSYCHOLOGY TRAINING: A PRELIMINARY SURVEY

### 6.1. Introduction

As presented in chapter five, the findings from study one indicated that on a national level, the majority (56%;  $N = 202$ ) of chartered physiotherapists working with injured athletes today hold postgraduate level qualifications of which 22.2% ( $n = 80$ ) had qualifications in sports injury or sports medicine, and 3.5% ( $n = 7$ ) had masters level credentials in psychology. Such a trend is encouraging, as compared to the findings of Hemmings & Povey (2002), merely 35.6% ( $n = 32$ ) of the chartered physiotherapists working in sports medicine in the Eastern region of England reported holding a postgraduate qualification in sports injury or sports medicine, and 2.2% ( $n = 2$ ) had similar qualifications in psychology.

It is encouraging to realise that the percentage of physiotherapists working in sports medicine holding a postgraduate qualification has increased. However, as highlighted in the earlier chapters, the taught framework for the psychology of injuries varies greatly across the institutions worldwide (Kolt & Andersen, 2004b), which may suggest professional disparity in knowledge. This can be regarded as problematic as, in order for physiotherapists working with injured athletes to provide treatment which meets the minimum threshold of professional performance, incorporating psychological care to treatment process is regarded as essential (Bulley et al., 2005).

Despite the apparent increase in the physiotherapists' level of education, the findings from study one also highlighted physiotherapists' aspiration towards

further training in using a range of psychological interventions in the work with injured athletes. More specifically, 96.4% ( $N = 348$ ) of the surveyed physiotherapists felt that a specific course in sport psychology at postgraduate level would be beneficial for the future training/education of physiotherapists. Similar findings have also been found amongst physiotherapists working in professional football in England and Wales. In their opinion, delivering sport psychology at an undergraduate level may not be suitable, since not all physiotherapy graduates wish to specialise in sports physiotherapy (Heaney, 2006). Instead, it was also suggested that a need for further psychology training for those already practising in the field exists, particularly at postgraduate level.

Most of the similar studies have advocated further training in the field, and numerous possible proposals on how further training on psychological skills could and should be implemented have been made (e.g., Francis et al., 2000; Heaney, 2006; Hemmings & Povey, 2002; Larson et al., 1996; Wiese et al., 1991). In the United States, Wiese et al. (1991) stated that educational presentations on psychological interventions should be part of foundation coursework for future professionals. Wiese and colleagues also recommended incorporating such training into professional sports medicine meetings. Larson et al. (1996) called for including applied sport psychology training as part of all education programmes for physiotherapists. In Australia, Francis et al. (2000) suggested that further psychological training for physiotherapists should be delivered by sport psychologists in the form of conference seminars and continuing education classes. With regard to UK based research, Hemmings & Povey (2002) also recommended future training, but did not specify any possible means for such training. Heaney on the other hand (2006) proposed that it might be appropriate to deliver psychological skills training through postgraduate level courses or on a workshop basis. The findings from study one provided informative and useful information about physiotherapists' future training needs in terms of the content of the

training. The physiotherapists desired further training in the use of goal-setting, encouraging positive self-thoughts, understanding motivation, enhancing athletes' self-confidence, creating variety in rehabilitation exercises, enhancing physiotherapists listening skills, and in how to reduce stress and anxiety. However, as the purpose of study one was to build on the earlier work by Hemmings and Povey (2002) and to establish UK chartered physiotherapists' views on psychological aspects of their work on a national level, the question of *how* this type of training could or should be delivered was not included in the survey.

Despite the broad range of suggestions, it appears that all of the studies above have not provided detailed information on the real-life practicalities of delivering psychological skills training to chartered physiotherapists. More specifically, the questions of *when, where, how, and by whom* this further training for physiotherapists' should be put into practice have not been covered in detail. Whilst researchers in the field have made recommendations about possible delivery, these recommendations have not been based on physiotherapists' own opinions on the practicalities of such training is limited. This can be seen as problematic, as according to Siddons (1997), in order for training to be effective it is important to investigate the participants and their preferred thinking and learning styles. In recent years, technology has enabled the development of various new training systems such as e-learning, simulation, and distance learning (Salas & Cannon-Bowers, 2001). The use of the above methods in training is rapidly increasing, despite the lack of scientific research underpinning their usefulness (Salas & Cannon-Bowers, 2001). Since research on the usefulness of the above methods is relatively limited, it is impossible to affirm the convenience and popularity of these methods amongst physiotherapists. It is also important to design training which suits the population in question. That is, as most training is voluntary (and often funded by the individuals themselves), it is essential to make sure that the training fits the trainee's needs (Siddons, 1997).

In addition, chartered physiotherapists are highly skilled professionals in their own right and hold a substantial amount of proficiency and experience. They already have knowledge and understanding on issues that are relevant in the practical field, which, when designing training programs for physiotherapists themselves should not be ignored. Consequently, it would be useful to survey physiotherapists and ask for their preferences with regard to the practicalities of training methods and mode of delivery.

In conclusion, the findings from studies in the field (e.g., Francis et al., 2000; Hemmings & Povey, 2002; Larson et al., 1996; Tracey, 2008; Wiese et al., 1991) along with the findings of study one have demonstrated that chartered physiotherapists working in sports medicine feel the need to address psychological aspects of injuries during the treatment process. They have also expressed the need for further training in psychological aspects of injury rehabilitation, and subsequently a range of suggestions for further training for chartered sports physiotherapists in psychological skills has been made in the literature. However to date, no literature exists on the practicalities of delivering such training to physiotherapists. By surveying chartered physiotherapists working in sports medicine, the purpose of this second study was to explore the existing suggestions made in the literature with regard to physiotherapists preferred methods delivery for sport psychology training.

## **6.2. Delving into the methodology**

As previously stated, each research process has a starting point from which to commence. During study one, the predetermined variable was undoubtedly the instrument, which provided the foundation for the other features to be explored and identified. On this occasion, no single set variable from which to commence (i.e., the instrument, or clear access to participants) existed. What was apparent was the area of investigation, which was to gain more detailed information on

*when, where, how, and by whom* further training in sport psychology for physiotherapists' could be delivered.

### **6.2.1. Participants**

#### 6.2.1.1. Selecting the participants

After recognising the area under investigation, identifying potential participants became one of the principal areas to consider. Thus far, this research had used two different sources of participants when collecting data. The ACPSM electronic database consisted of a wide range of qualified chartered physiotherapists working in sports medicine. However, it also entailed a number of entities irrelevant to the study (e.g., physiotherapy students and other medical professionals). In contrast, the Experian Ltd database included all the listed physiotherapy and sport injury clinics in the UK, yet not all were treating injured athletes, but a range of other types of injuries. In addition, some individuals on the list were not chartered physiotherapists, but other sports medicine professionals (e.g., massage therapists).

By analysing the responses from the study one, it was apparent that the statistics for the questionnaire returns depended on the mode of delivery. Although merely 11.9% ( $n = 55$ ) of the responses overall came from the online survey (ACPSM electronic database), all of the participants did fit the inclusion criteria (i.e., chartered physiotherapists working in sports medicine). The traditional postal returns (Experian Ltd database) produced very different results, and 25% ( $n = 102$ ) of the responses had to be excluded from the final analyses because they did not meet the required characteristics. These statistics might suggest that the ACPSM sample had the potential for more suitable participants for the subsequent research. The aim of the study two was not to obtain a national sample of all chartered physiotherapists working in sports medicine, but rather to gain an insight into practising physiotherapists' preferred methods for further training in sport



psychology. Therefore it was deemed logical to seek information from those most actively involved in sports physiotherapy, i.e., investigating the opinions of the members of the ACPSM in more detail.

#### 6.2.1.2. Gaining access to the participants

Study one had produced valuable collaborations with prominent members of ACPSM; however the difficulty of this partnership was that no access to the traditional mailing database could be granted. When an opportunity to collect data in person at the ACPSM/International Federation of Sport Physiotherapists (IFSP) annual conference (Birmingham, July 7-8, 2006) was presented through existing contacts in the ACPSM, it was decided that integrating data collection within the ACPSM/IFSP annual conference would be a practical way of accessing participants, and collecting data in their own environment. It was estimated by the conference organisers and the ACPSM representatives that the conference would attract approximately 200 delegates, and in theory, vast majority of them would be members of the ACPSM, and potentially chartered physiotherapists working in sports medicine. Considering the experiences in gaining access to participants during study one, the prospect of being able to collect data in person over a set period of time was not only tempting but also logical.

### **6.2.2. Instrument**

#### 6.2.2.1. Developing the instrument: A rationale

Whilst acquiring knowledge on a range of methodologies during study one, it became clear that when the intention is to gain information about individuals' opinions and beliefs, surveys are considered to be practical (Goddard & Villanova, 1996). Surveys can enable obtaining opinions from a particular population, and thus help in building a broad picture of a specific topic (Moore, 2000). With the intention of meeting the aim for study two, conducting a survey was seen as the most appropriate means for the research questions under investigation. To date,

although research in the area had advocated further training in using psychological skills (e.g., Francis et al., 2000; Heaney, 2006; Hemmings & Povey, 2002; Larson et al., 1996; Wiese et al., 1991), no information on the detailed practicalities of such training existed. Given that study two aimed to seek further information on the practicalities of future training in psychological interventions, and that the possibility to approach a large sample of chartered physiotherapists working in sports medicine had been granted, designing a survey to gain insight into chartered physiotherapists preferred method of sport psychology training was deemed appropriate.

#### 6.2.2.2. The instrument

With the above in mind, following the review of available training and survey development literature, a questionnaire survey focusing on the practicalities of delivering sport psychology to physiotherapists was developed. The aim of the survey was to provide further information on the physiotherapists' favoured interventions and practicalities of future training on psychological aspects of sport injuries.

Question 1 was closed-ended, and concerned about physiotherapists' personal need to obtain further knowledge on a range of psychological interventions. The purpose of the question 1 was to introduce a range of psychological skills to the physiotherapists, and to get them thinking about their training needs and how such training should/could be delivered. Based on the psychological interventions identified in the PSPQ (Hemmings & Povey, 2002), 14 different psychological interventions were presented. The physiotherapists were asked to rate the five most important psychological interventions in the order of their personal importance.

Question 2 was also closed-ended, and asked the physiotherapists to identify what they thought to be the best type of training for their chosen psychological skills. Drawing from a range of sources e.g., (e.g., Business Link & Department of Trade and Industry, 2006; Salas & Cannon-Bowers, 2001; Siddons, 1997) a total of 10 types of training were presented. The list of training methods consisted of coaching, e-learning, workshops, job shadowing, mentoring, seminars, distance learning, evening classes, project work, and simulation. In addition, space for including any additional methods was provided.

Questions 3 – 7 were concerned with the practicalities of receiving training. Question 3 was partially closed-ended, with unordered response choices, and was concerned with the intensity of training. The choices presented were based on existing formats currently employed in a range of training across disciplines. Questions 4 and 5 were also concerned with intensity and timing. Question 6 focused on physiotherapists' opinions on suitable organisations for training delivery. The different options for question 6 were selected based on providers who currently are, or have been in the past, been offering further training to physiotherapists. In addition, question 7 required the participants to note their personal preferences with regard to training proximity.

The feedback from the pilot study with three practising chartered physiotherapists highlighted areas for improvement, and minor changes were made to question 4, by changing originally a close-ended question with ordered response choices (Salant & Dillman, 1994) into an open-ended question. This provided the participants with a better opportunity to express their own opinions/preferences on their realistic time available for further training on psychological issues. As a result, the final Best Method of Sport Psychology Delivery (BMOSPD) survey (see Appendix 6.1.) consisted of seven questions. A further space for any additional comments regarding the topics covered was also provided. In addition, nine questions on

personal demographic information (gender, age, and geographic location, professional qualifications, employment status, years of physiotherapy/sport physiotherapy experience, number of athletic injuries treated on average per month, and injured athletes' level of competition) were added.

### **6.2.3. Procedure**

The survey package was distributed to all of the conference delegates in the conference delegate bags at the ACPSM/IFSP annual conference (July 7-8, 2006). The survey package consisted of the following: a printed version of the Best Method of Sport Psychology Delivery (BMOSPD) survey, including the demographic information, an informed consent form, and an introductory letter (see Appendix 6.2.). The introductory letter contained a brief introduction to the research, information on the ethical issues, and details on how to complete the survey. In addition, the researchers contact details were provided. On the second day of the conference, reminder flyers were placed in the conference venue to encourage delegates to take part in the survey. The participants were asked to return the completed surveys to the locked research mailbox provided at the conference.

### **6.2.4. Ethical considerations**

Similar to study one, the study followed the ethical principles set by the British Psychological Society (2006). Prior to the commencement, the study was approved by the University of Northampton Research Ethics Committee.

## **6.3. Results**

### **6.3.1. Participants**

Of the 94 conference delegates, 41 had identified themselves as practising chartered physiotherapists during registration and were therefore regarded as potential respondents in the study. A total of 22 questionnaires were returned and included in the final frequency analyses, thus giving a response rate of 53.7%. The

vast majority of the respondents ( $M \pm SD/R$  age =  $39.44 \pm 6.85/23.00$ ) were female (63.6%,  $n = 14$ ) leaving 8 (36.4%) male respondents. The majority of respondents came from England (54.5%,  $n = 12$ ), followed by Scotland (13.6%,  $n = 3$ ) and Ireland (13.6%,  $n = 3$ ), Australia (9.1%,  $n = 2$ ), and Wales (4.5%,  $n = 1$ ), and Northern Ireland (4.5%,  $n = 1$ ).

The respondents had  $M(SD) = 14.53 (7.3)$  years of experience as physiotherapists, of which 9.81(6.16) years was as specialised sport physiotherapists. In total, 59.1% of the respondents ( $n = 13$ ) reported holding a postgraduate qualification. Half of the respondents ( $n = 11$ ) were in part-time employment holding several simultaneous part-time positions, and 10 were employed full time. All of the participants were employed outside the National Health Services (NHS), i.e., in a sports injury or physiotherapy clinic, private practice, university, self-employed, professional or non-professional sports team, National Governing Body (NGB), Olympic Medical Institute, or in a National Sports Institute.

The physiotherapists reported treating  $M(SD) = 53.53 (46.87)$  sport-related injuries per month, ranging from 10 to 150. The treated athletes ranged between recreational and international levels of competition.

### **6.3.2. Further training needs**

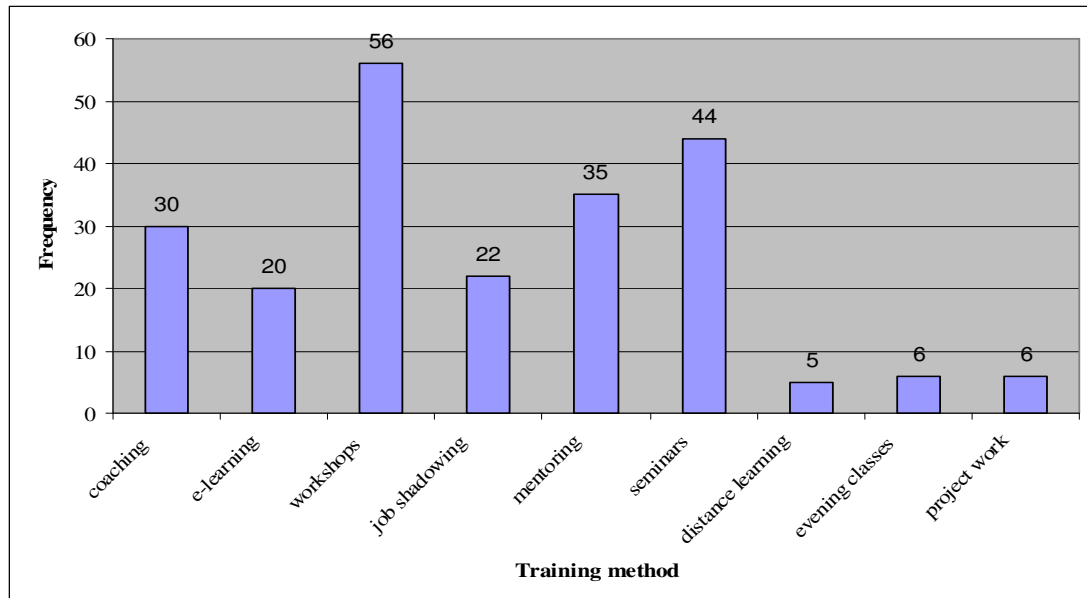
In order to instigate physiotherapists' thinking about their training needs, physiotherapists were asked to rate the five most important psychological interventions in which they desired further training (Question 1). Frequencies were calculated for all of the responses, and based on the results of these analyses the most commonly listed psychological interventions in which further training was seen as useful amongst the participants were: setting realistic goals ( $n = 16$ ; 72.7%), using effective communication ( $n = 15$ ; 68.2%), reducing stress and anxiety ( $n = 15$ ; 68.2%), understanding individual motivation ( $n = 13$ ; 59.1%),

enhancing self-confidence of the injured athlete ( $n = 9$ ; 40.9%), and creating variety in rehabilitation exercises ( $n = 8$ ; 36.4%). The least used interventions were teaching concentration skills ( $n = 1$ ; 4.5%) and teaching muscular relaxation techniques ( $n = 1$ ; 4.5%). Two of the participants (9.0%) felt that further training in reducing depression, improving the athletes' social support and teaching emotional control strategies and concentration skills was not applicable.

### **6.3.3. Best method of delivery**

In question 2, the physiotherapists were able to select multiple formats for the chosen interventions (for further details, see Appendix 6.1.). The frequencies for each of the different types of training methods were calculated. The analyses showed that most of the physiotherapists felt that several different methods would be suitable for delivering further training in the field. Regardless of the psychological skill to be taught, the training method most frequently reported as preferred included workshops, seminars, mentoring, and coaching. The least preferred training methods were distance learning, evening classes, and project work. Figure 6.1. displays the overall frequencies for all of the training methods.

Figure 6.1. Preferred training methods for further psychological intervention training



#### 6.3.4. Preferred geographical distance

Question 7 required the physiotherapists to state the preferred geographical distance which they would be willing and able to travel in order to receive supplementary training in psychological interventions. The vast majority of participants (68.2%;  $n = 15$ ) were willing to travel over 50 miles for such training, of which 36.4% ( $n = 8$ ) were willing to travel over 100 miles. A total of 18.2% ( $n = 4$ ) indicated that a distance of 20-50 miles was reasonable, whereas 13.6% ( $n = 3$ ) of the participants reported they would like to receive such training within 20 miles of their residence.

#### 6.3.5. Preferred level of intensity and time available for future training

Question 3 asked the physiotherapists to rate their preferred level of intensity for further training. The frequencies to the questionnaire responses were calculated, and a total of 45.5% ( $n = 10$ ) of the participants indicated that intense training days would be most suitable to meet their needs. A total of 18.2% ( $n = 4$ )

preferred training weekends. In addition, nearly a quarter of the participants (22.7%;  $n = 5$ ) indicated that they would prefer training that would be distributed over one calendar year.

In order to establish the time available for physiotherapists' to spend on auxiliary learning, an open-ended question (question 4) asked the physiotherapists to state the realistic amount of time they would be willing and able to spend on further training (e.g., daily, weekly, monthly, and yearly). A total of 95.5% of the physiotherapists chose to answer this question, reducing the final number of participants to 21. The results from the frequency analyses revealed that the vast majority (40.9%;  $n = 9$ ) of the respondents indicated that they would prefer to spend a few days a year (1-3) on psychological skills training. Five participants indicated that they would be capable of spending time monthly on these matters, and two respondents indicated that, depending on the time of the season, they were willing to spend time either monthly or weekly on psychological training. In addition, three physiotherapists would be able to spare a couple of hours a week on these issues, and two respondents stated that they could spend time on psychological training on a daily basis.

Question 5 aimed to elaborate on the most suitable time of the year during which the further training would most conveniently fit into their schedules. The frequencies for each of the options available were calculated. A total of nine (40.9%) participants reported no preference for any particular month. Other participants all indicated some preference (ranging from 2 to 9 suitable months) for the most suitable time in the year. Overall, the most preferred months for further training were November (72.7%;  $n = 16$ ), June (68.2%;  $n = 15$ ), and October (63.6%;  $n = 14$ ). In addition, apart from December, all of the other months would be suitable for at least 50% ( $n = 11$ ) of the participants.



### **6.3.6. Preferred organisation for training delivery**

The frequency analyses conducted revealed that in total, 72.7% ( $n = 16$ ) of the physiotherapists indicated that the most suitable faction to plan, organise, provide and deliver psychological skills training (question 6) would be professional bodies and associations (e.g., ACPSM, BASES, BASEM). National Sports Institutes (31.8%;  $n = 7$ ) and the CSP (18.2%;  $n = 4$ ) were also regarded as potentially suitable organisations for training delivery.

### **6.4. Discussion**

The purpose of study two was to explore some of the existing suggestions on how further training in sport psychology for chartered physiotherapists working in sports medicine could be provided. Similar to previous findings, physiotherapists did desire further training in a range of psychological interventions. Unsurprisingly, and parallel to study one and other studies conducted in the UK (Heaney, 2006; Hemmings & Povey, 2002), learning how to set realistic goals was rated as the most important psychological skill in which further training was seen to be useful.

With regard to delivering further training, a variety of training technologies were seen as fitting for the purpose. The most preferred training methods were workshops and seminars, followed by monitoring and coaching. The majority of the physiotherapists also indicated their willingness to travel more than 50 miles to receive such training, and a third of the participants were willing to travel over 100 miles. As distance learning was rated as one of least preferred training methods, it appears that more traditional "going-to" (Salas & Cannon-Bowers, 2001) training methods were seen as the most favourable amongst the physiotherapists.

In general, the physiotherapists also felt that intense training days and/or weekends would be suitable for delivering psychological skills training. In support, they felt that spending a few days on psychological skills training annually would

suit their working schedules. With regard to the time of year when the training should take place, June, November, and October were seen as most appropriate. Physiotherapists felt that such training should be planned, organised, provided, and delivered by professional bodies and associations (e.g., ACPSM, BASES, BASEM, and IFSP).

In light of the above, some conclusions and recommendations can be made. It appears that planning further psychological skills training for chartered physiotherapists working in sports medicine would be most beneficial if the professional bodies were able to offer 2/3-day courses in several regions around the country. As the physiotherapists preferred relatively short travelling distances (less than 100 miles), it might be sensible to alternate locations from time to time. This is a formula that the ACPSM is currently employing when delivering training in other aspects of physiotherapy. In 2007, the physiotherapy related courses available through ACPSM include massage, performance stability, taping and medical law. No courses in sport/rehabilitation psychology are currently made available through the organisations website (Association of Chartered Physiotherapists in Sports Medicine, 2007). BASES, on the other hand offers a selection of sport psychology related workshops (e.g., counselling, applied sport psychology, cited in British Association of Sports and Exercise Science, 2004), however, physiotherapists may be hesitant to attend such course if the relevance to their profession is equivocal. Given the above, it may therefore be beneficial to design further training in psychological interventions tailored to meet the physiotherapists' needs by offering physiotherapy specific training in the use of psychological interventions.

### **6.5. Research limitations**

With regards to sampling, the current study had some limitations. As the data was collected during the annual ACPSM/IFSP conference, the participants in this study

may not be a true representative of the sport physiotherapy profession as a whole. By merely attending the conference, the physiotherapists have instigated their willingness to keep themselves up-to-date with current developments within the field. Thus, they may well be more likely to acquire further training, and are more aware of their training preferences.

By attending the conference, physiotherapists in this study had also demonstrated willingness to travel, as all of them had decided to attend the conference (within UK, and from abroad), which might not be the case with all physiotherapists. In addition, since the participants represented different countries (i.e., Australia, United Kingdom, and New Zealand), some variations due to geographical locations could have been expected. However, no significant differences were found. It is believed that this could be due to the small sample size, thus future research with a larger sample would be warranted.

In addition to the above, the sample size can also be seen as a limitation. The small sample obtained may not allow generalisation of the findings to a wider population. As a consequence the results should be used with caution when planning further training in psychological interventions for physiotherapists.

As the researcher also presented the findings from study one at the ACPSM/IFSP conference, her presentations may have influenced the participants' views prior to completing the questionnaire. A poster from the study one was on display during the duration of the conference, and approximately 20 people were present at the oral presentation in which the researcher highlighted the need for addressing psychological issues during injury rehabilitation. It is unclear whether or not those who attended the oral presentation completed the questionnaire, however as an abstract was also published in the conference handbook, it is likely that the

conference delegated did have some exposure to the topic prior to questionnaire completion.

The content of the question concerned with possible organisations for delivering further training (question 6) can also be seen as a limitation. As the IFSP recommends continued professional development training at a postgraduate level, the option for choosing higher education institutions as a preferred organisation for training delivery would have been expected to be identified. However, it seemed that practising physiotherapists showed preferences for professional bodies and associations as being suitable for delivering further training in sport psychology. In order for such training to be recognised by the IFSP, it can be recommended that such professional bodies should work in co-operation with local higher education institutes. Designing courses together would assist in assuring that they would fulfil IFSP expectations (i.e., the procedure would be more rigorous in relation to the critical analysis and reflection regarding the course). Simultaneously, the course would be delivered in a manner that is preferred by the physiotherapists.

## **6.6. Conclusions**

Organising psychological skills training and encouraging physiotherapists to take part can be regarded as important for several reasons. As Bulley et al. (2005) rightfully defined "at the heart of sports physiotherapists' thinking and behaviour lies *understanding* and *sensitivity* [italics added] towards the implications of injury for the athlete and the impact on others around them" (p. 26). By learning to use a range of psychological interventions, physiotherapists may be more equipped to address the psychological implications of injury for the athlete and others around them. Physiotherapists could use the knowledge to identify any possible psychological factors that may predispose an athlete to injury. The knowledge would also enable them to suggest and implement a range of interventions to avoid injury occurrence. Being aware and knowledgeable about psychological

interventions could also assist physiotherapists in achieving better *understanding* of the injury on the individual athlete's mental state. It could also help them to become more *sensitive* towards the repercussion of injury, thus enabling them to work more efficiently towards their main aim – getting athletes back to their pre-injury level of performance. In essence, often the knowledge about *what* methods to use is equally important to the knowledge on *how* to use any particular methods.

Support for the above proposals can be found within previous research conducted in the UK. As Jevon and Johnston (2003) indicated, UK National Governing Body physiotherapists have a general knowledge base on the psychological effects of injury on the athlete. According to the authors, this knowledge is not based on formal training or education, but founded on experiential learning. They also noted that despite the lack of formal training, physiotherapists do presume some responsibility for dealing with psychological aspects of injuries, and experience conflict with regard to the nature and intensity of this role. Providing physiotherapists with a fair amount of theoretical knowledge on psychological interventions could enable them to identify the extent of their own competencies in this area. This could help increase confidence in their ability to refer athletes to other relevant professionals (e.g., clinical psychologist/accredited or chartered sport psychologist) when necessary.

In conclusion, with the intention to investigate the practicalities of providing further training in psychological interventions for physiotherapists, the current study provided some confirmation of the existing suggestions made in the literature (Francis et al., 2000; Heaney, 2006; Hemmings & Povey, 2002; Larson et al., 1996; Wiese et al., 1991). Since it has been argued that continuing professional development has become a professional responsibility for all sport physiotherapists so as to maintain service standards (Donaghy & Gosling, 1999), and some

limitations within the study were identified, further research on these issues with a larger sample is perhaps warranted.

### **6.7. Chapter summary**

The purpose of chapter six was present the research process, and the findings from study two. As no studies to date had been investigating the particulars of delivering further training in sport psychology to physiotherapists, the purpose of the study presented in this chapter was to provide novel information with regard to the ways in which further training in sport psychology and psychological interventions could be delivered to chartered physiotherapists. By reflecting on the research process that took place during study one, the use of survey methods was chosen, and the Best Method of Sport Psychology Delivery Questionnaire was subsequently developed and distributed during the ACPSM/IFSP annual conference to the conference delegates.

The results from the analyses revealed that physiotherapists in this study identified a range of psychological skills in which they desired further training, and felt that several methods of delivery would be suitable. It appeared that physiotherapists preferred traditional "going-to" training over more contemporary learning styles (e.g., distance learning, e-learning), as their most preferred methods of delivery were workshops, seminars, mentoring, and coaching. A number of other practicalities (e.g., preferred geographical distance, time available for such training) were also identified by the participants.

Despite its limitations, the findings from this study are of importance. Despite being preliminary in nature, by addressing the practicalities of delivering sport psychology training for physiotherapists, the study highlights an important area in need of further research. By doing so, the research makes a novel contribution to the

knowledge by gaining information from the potential trainees themselves on how to integrate psychological training into their existing working schedules.

## **CHAPTER 7**

# **CHARTERED PHYSIOTHERAPISTS' PERSONAL EXPERIENCES IN USING PSYCHOLOGICAL INTERVENTIONS: AN INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS**

### **7.1. Introduction**

In study one; a national study was able to produce a large amount of quantitative information in relation to UK chartered physiotherapists current views on the psychological content of their practice. The results revealed that the interventions most used by the physiotherapists were goal setting, creating variety in rehabilitation exercises, and encouraging athletes to use positive self-talk. These were also considered to be the most important interventions to learn more about. Along with depression reducing techniques, the use of relaxation and imagery were used the least, and were also reported to be some of the least important psychological interventions that physiotherapists wanted to learn more about.

The findings from study one indicated a clear pattern in the use of, and desire for future training in a range of psychological interventions. The ways in which additional training in psychological interventions could be delivered to practising physiotherapists were explored further in study two. However, as study one used quantitative methods, (i.e., a questionnaire survey); the underlying reasons for the emergent patterns about the physiotherapists' current use of interventions were left unclear. It can be argued that closed survey questions of a descriptive nature cannot entirely explain any underlying phenomenon. In fact, when using quantitative research methods such as questionnaires as a measure, some of the richness of the data will be deliberately ignored (Howitt & Cramer, 2005). Thus, it can only be speculated if the results were due to either the physiotherapists' level of knowledge on the interventions (Crossman, 1997), the physiotherapists' past



experiences in using them in their work, or simply a reflection of the perceived characteristics of the individual interventions.

In addition to the use of psychological interventions, the findings from study one also highlighted a high frequency of depression amongst injured athletes who do not cope successfully with their injuries. Over a quarter (27.7%;  $n = 100$ ) of the physiotherapists reported depression as one of the key emotional responses amongst athletes with poor coping ability. In comparison to previous studies, the findings from study one appears to suggest an increase in athletes' depression during sport injury rehabilitation. For example, in 2002, the occurrence of depression amongst injured athletes as reported by physiotherapists was 19 percent ( $n = 17$ ; Hemmings & Povey, 2002). Four years later, physiotherapists working in professional football indicated the same figure to be 28 percent ( $n = 11$ ; Heaney, 2006), which, when compared to the findings by Hemmings & Povey (2002) also indicate an increase in prevalence of depression amongst injured athletes.

Some explanations why such a relatively rapid increase might have take place can be suggested. Currently depression affects 121 million people worldwide and has subsequently become the leading cause of disability (WHO, 2005). It is therefore likely that the occurrence of depression in the athletic population has also augmented. In comparison to other mood disturbance disorders (e.g., bipolar disorder), athletes appear to be more susceptible to depression (Burton, 2000), and existing research has demonstrated that many athletes have been reported as suffering from depressive disorders (Olney, 1997; cited in Burton, 2000, p. 65). In addition a link with attempted suicides and depressed mood amongst young athletes in America has also been found (Smith & Milliner, 1994), and more recently media reports on suicides amongst Olympic level athletes in Canada, Greece, and United States have suggested that considering athletes as a potential

group for suicide has been largely ignored (Henderson, 2007). In contrast, Swift (2006) has argued that athletes are less likely to consider suicide than non-athletes; however, they appear to be far more likely to succeed in their attempt or to be seriously injured: "in short, an emotionally troubled athlete is more dangerous to himself than an emotionally troubled non-athlete" (Swift, 2006, p. 60).

Another explanation why there appears to be an increase in the occurrence of depression amongst athletes could be a reflection on the ways in which society perceives depression. Over the past decades, depression has received greater media awareness, and subsequently resulting in higher levels of understanding and acceptance within society. This may have resulted in individuals (and athletes alike) being more likely to open up about mood disturbances and depressive feelings to their physiotherapist, and therefore physiotherapists may be more informed about the incidences of depression amongst the athletes they are treating. Equally it is likely that as a result of greater media awareness, the physiotherapists may also possess greater understanding of symptoms of depression and are therefore able to recognise if an athlete they are treating is suffering from depression.

Based on above, it appears that depression can have a significant impact on the injured athlete, and as such, has the potential to have an effect on the rehabilitation processes and outcome. In study one depression was regarded as one of the key characteristics amongst athletes who do not cope with their injuries. Despite the significance of depression in defining athlete's coping ability, the physiotherapists reported using very little depression reducing techniques and felt that further training in utilising them was also amongst the least important interventions to learn more about.

Despite providing an important foundation onto which to build, the emerging patterns from study one should be generalised with caution. When using Likert-scale type questionnaires, the concept of item meaning will be left completely to the individual respondent (Goddard & Villanova, 1996). This allows the respondents to use a broad scope of interpretations, which in turn can affect the participant responses. For example in study one, the term depression could have been interpreted differently by the participants, as a range of definitions for depression exist in the literature. Depression also manifests itself in a range of ways (e.g., major, dysthymic, bipolar depression) and in differing levels of severity (e.g., clinical depression or depressive phase in the form of lowered mood due to injury or rehabilitation). As a result of the method of data collection, relevant information on the type and severity of depression that the physiotherapists were referring to was not provided. In other words, although physiotherapists perceived depression as a frequently encountered condition amongst injured athletes, the seriousness of the depression was left unclear. When referring to depression, the physiotherapist might have considered depression as being a depressive phase, rather than clinical depression (symptoms lasting for a minimum of 1 month; Dishman, 1986). If the depression the physiotherapists were referring to was considered to be something that is part of the rehabilitation process an athlete will go through in order to recover, then the implications and appropriate treatment may vary greatly from that of clinical depression. Nevertheless, as the repercussions of depression on the athlete can be serious, building on the findings from study one by gaining further understanding of the role of depression as part of sport injury rehabilitation is of importance.

The past research concerned with the physiotherapists' role and opinions on the psychological aspects of sport injuries has used both qualitative and quantitative research methods. In addition to study one, the existing quantitative work to date in this area in the UK has included two surveys. Hemmings & Povey (2002)

administered a self-completion questionnaire survey (PSPQ; Hemmings & Povey, 2002) to the chartered physiotherapists in the Eastern region of England ( $N = 90$ ). A few years later, Heaney (2006) replicated Hemmings & Povey's research with a sample of physiotherapists working in English professional football ( $N = 39$ ), and complemented the questionnaire responses with content analysed semi-structured interviews with conveniently selected chartered physiotherapists ( $N = 10$ ). All three studies provided useful insights; however due to the nature of data collection and research aims, the physiotherapists' personal experiences of using psychology in their work with injured athletes was not investigated in detail.

To date, two qualitative studies investigating physiotherapists' role in the psychological rehabilitation from injury in the UK have been published. A study by Jevon & Johnston (2003) was concerned with governing body chartered physiotherapists' ( $N = 19$ ) perceived knowledge and attitudes towards psychological aspects of sport injury rehabilitation and used the constructionist revision of the Grounded Theory Approach (Glaser & Strauss, 1967). Their findings suggested that the physiotherapists had built a wealth of knowledge on the psychology of injury through experiential learning. In addition, despite the lack of formal education in psychological theory and relevant interventions, physiotherapists had also accepted the role of providing psychological support to the injured athletes. Physiotherapists' accounts on providing psychological support (i.e., their experiences of using psychological interventions) were not included in the research aims, thus warranting more research.

Similarly, a study into physiotherapists 'lived experiences' with 10 'information-rich' chartered physiotherapists working with elite athletes deviated from the trend for evidence-based research by seeking practice-based evidence on the topic (McKenna et al., 2002). The study used a phenomenological approach, and aimed to describe the physiotherapists' lived experiences of treating elite athletes. In this

study the physiotherapists felt that they had a major role in making sure that rehabilitation worked for elite athletes. Physiotherapists also possessed understanding of different psychological interventions; however applying such knowledge in their work was not demonstrated. As the focus of McKenna et al.'s research was on the physiotherapists' accounts of the *processes* of treating elite athletes, and not specifically in the physiotherapists' *experiences* of using psychological interventions on a practical level, further research is justified.

In conclusion, despite gradual growth in sport injury literature, thus far no studies appear to have investigated physiotherapists' personal experiences in using psychological interventions in detail. Therefore, the aim of this study was to provide physiotherapists with a "voice", i.e., to give them an opportunity to tell their stories in relation to their personal experiences in using psychological interventions in their working with injured athletes.

## **7.2. From quantitative to qualitative? Contemplating a shift in methodology**

With the research aim for study three clarified, the focus of the research shifted to selecting appropriate methodologies for the purpose. As Moore (2000) stated, a perfect researcher will have substantial knowledge on what methods to use, and how to use them to meet the requirements of different circumstances. For example, quantifying open-ended questions (e.g., questions 2 and 3 in study one) can assist the researcher in making comparisons between different responses. However, such procedures can also mean that the responses given are very descriptive in nature, and on occasions, some of the vital and meaningful information may be lost in the process (Hayes, 2000). Howitt and Cramer (2005) argue that quantitative research instruments can at times be crude and alienating, and can create depersonalised distance between the subject matter under investigation and the research participants. That is, some participants may feel that

the research is not about them, but about broad generalisations on a superficial level.

Notwithstanding the benefits of using quantitative measures, it appears that a way to obtain in-depth information on issues previously covered in quantitative research is through qualitative methods (Jayaratne, 1993). During the course of this research, it became clear that using quantitative methods for study three would not be able to provide answers to the research questions arising from study one. Instead, using qualitative methods to elaborate on earlier findings was seen as a way forward. Such methods involve procedures that result in rich, descriptive and contextually situated data (King, 1996), and the data collected is analysed through describing, interpreting, and exploring meanings, rather than categorising and coding the data in a quantitative manner. It is therefore probable that by using qualitative methods, study three could gain more detailed accounts on individual experiences of psychological rehabilitation process from sport injury could be achieved.

### ***7.2.1. The use of qualitative research in sport psychology***

Qualitative research has a long history in mainstream psychology. For instance, phenomenology was developed around the same time as psychology as a scientific discipline, and both shared a common nominator: they were both classified as the 'study of consciousness' (Giorgi & Giorgi, 2003). Historically, the majority of early psychological research involved individual case studies, in which the researchers aimed to provide detailed descriptions of the psychological characteristics of one person. Indeed, some of the most famous studies in the field of mainstream psychology were case studies involving qualitative descriptions of the data (Hayes, 2000). Despite the early rise of qualitative methods in psychology, the use of such methods failed to spark interest amongst the researchers. In the past, one of the principal critiques against mainstream psychology has been the predicament

between the essential characteristics of human phenomena as they instinctively develop in everyday life, and the natural scientific agenda (Giorgi, 1995). As a consequence, in order for psychology to be considered to be a science, many psychological researchers have been overly concerned with the aim of providing hard-fact scientific evidence.

As the general discipline of psychology failed to recognise the importance of qualitative methods, it comes as no surprise that until very recently, the use of qualitative methods was practically nonexistent within the sport psychology domain. It was not until the late 1980's, that a call for more research with diverse means (e.g., case studies, clinical reports, and other reflective methods) of data collection in sport psychology was made (Martens, 1987). In Martens' opinion, such studies could significantly increase the applied sport psychology knowledge base. At present, qualitative research in sport has been acknowledged as a credible and useful means of conducting research, and during the last decade, a growing interest in conducting qualitative research in sport sciences has taken place (Hunger & Thiele, 2000).

Between 1985 and 1994, merely 6% ( $N = 31$ ) of the published papers in Journal of Sport and Exercise Psychology (JSEP), and International Journal of Sport and Exercise Psychology (IJSEP) employed qualitative methods (Biddle, 1997). Similarly Morris (1999) analysed publication trends between 1979 and 1998 in both JSEP and IJSEP, and concluded that alternative (i.e. non-quantitative) methods received very little support in the literature. In the 1990's, only 17.3% ( $N = 84$ ) of the published research in three leading sport psychology journals (Journal of Applied Sport Psychology, Journal of Sport and Exercise Psychology, and The Sport Psychologist) was undertaken using qualitative methods (Culver, Gilbert, & Trudel, 2003). Out of this 17.3%, 38% ( $N = 32$ ) used a combination of qualitative and quantitative techniques, i.e., using open-ended questions as part of a written test

or survey, or combining tests with interviews. Only six studies used participant/non-participant observation as a means of data collection. Although interviews were used on 67 occasions, it was unclear how the interview schedules were formatted. The majority of interviews in qualitative research in sport psychology have been highly structured (Biddle, Markland, Gilbourne, Chatzisarantis, & Sparkes, 2001), thus the results are more similar to an oral questionnaire than to a qualitative in-depth interview (Culver et al., 2003). In addition, it has also been argued that much of the qualitative sport psychology research to date can be regarded as descriptive and quantitative in nature – “only under the guise of qualitative research” (Culver et al., 2003, pg., 7).

### ***7.2.2. Qualitative research: Defining the concept and approach***

The idiom “qualitative research” in itself is an ample concept, and covers a broad scope of research methods and approaches. According to Banister, Burman, Parker, Taylor, and Tindall (1994), qualitative research is “the interpretative study of a specified issue or problem in which the researcher is central to the sense that is made” (p. 2). Denzin and Lincoln (1994) provided a general, yet comparatively comprehensive definition for qualitative research. They proposed that qualitative research is “multimethod in focus, involving an interpretive, naturalistic approach to its subject matters’ (Denzin & Lincoln, 1994). In essence, Denzin and Lincoln (1994) argue that researchers who engage in qualitative methods are involved in studying the populace in their ordinary environment.

In common with other research paradigms, qualitative research in psychology encompasses a number of different approaches. According to Smith (2003), such approaches overlap, but have different theoretical and/or methodological emphases. One such approach is phenomenology. In phenomenology, the process of gaining knowledge begins with the notion of ‘looking into oneself’. According to the phenomenological approach, it is crucial for each individual to gain an apposite



understanding of the nature and meaning of things as they appear in the real world (Husserl, 1970). In essence, phenomenology is concerned with exploring the lifeworld of the participant, and/or with understanding how participants make sense of their personal and social world (Smith, 2003). As the aim of study three was to give physiotherapists an opportunity to tell their stories in relation to their personal experiences in using psychological interventions and dealing with depression in their work with injured athletes, adopting a phenomenological approach for the study was considered to be justifiable and fitting for the purpose.

### ***7.2.3. Choosing the methodology: Interpretative phenomenological analysis***

Study three aimed to gain an insight into participants' personal experiences and views on the issues under investigation. By choosing a phenomenological approach, this could be obtained. As a result, the research process then centred on finding suitable methodologies for the research approach. After researching and contemplating a range of methodologies within and outside phenomenology (e.g., Phenomenological Methodology; Giorgi, 1997; and Grounded Theory; Glaser & Strauss, 1967), the use of Interpretative Phenomenological Analysis (Smith, 1996; Smith & Osborn, 2003) was seen as appropriate: "if a researcher is interested in exploring participants' personal and lived experiences, then IPA is a likely candidate for consideration as a research approach" (Smith, 2004).

IPA has roots in phenomenology, as it involves a detailed examination of the participants' lifeworld (Smith & Osborn, 2003). IPA also draws from hermeneutics, in relation to the theory of interpretation and understanding texts. In addition, IPA is influenced by symbolic-interactionism, in which the meanings that are assigned for events by the individuals are a central part of the process of understanding, and those meanings are only obtained through a process of social engagement and a process of interpretation. IPA uses an inductive (i.e., bottom up) approach to a

research question (Reid, Flowers, & Larkin, 2005), and the participants are the experts of their own thoughts, perceptions, and feelings, which are presented through telling stories and talking about their experiences. According to Reid and her colleagues (2005); "IPA offers psychologists the opportunity to learn from the insights of the experts – research participants themselves" (p. 20).

IPA assumes that any researcher will aim to avoid previous assumptions on the issues. It also recognises that the research exercise is a dynamic process. It explores the participants' world and aims to provide their personal account on events, i.e., to let the participants tell their stories. At the same time, IPA also recognises that in order to produce an account of an event, a process of interpretative activity is necessary (Smith, 1996). That is, whilst the researcher is trying to get as close to the data as possible, this cannot be done without the researchers' own personal conceptions of the issues. In order to make sense of the participants' personal world, the researchers past knowledge will be required for interpretation.

IPA has been specifically developed within psychology, and has its roots in health psychology. So far, the majority of IPA studies have been published within the health psychology domain (Reid et al., 2005), however it has also been applied in clinical and social psychology. Some of the main areas for IPA research to date include new genetics (e.g., Kay & Kingston, 2002; Senior, Smith, Michie, & Marteau, 2002; Smith, Michie, Stephenson, & Quarrell, 2002), sexual identity and sexual health (e.g., Flowers, Smith, Sheeran, & Beail, 1998), and living with chronic pain/or illness (e.g., Chapman, 2002; Osborn & Smith, 1998). IPA has also been used in research on health professionals/therapists (e.g., mental health nurses; Carradice, Shankland, & Beail, 2002).

Smith (2004) argues that despite the strong roots in health psychology, IPA is suitable to use in a wide array of disciplines. Thus far, many of the IPA research conducted could easily fit into several traditional sub-disciplines. For example, a study investigating women's experiences of brain injury (Howes, Benton, & Edwards, 2005) could easily be described as health psychology, as well as clinical or cognitive psychology. According to Smith (2004) such lack of ability to categorise IPA under typical quantitative psychology sub-headings, should not be considered as a weakness of the methodology. In fact, Smith argues that rather than thinking of sub-disciplinary boundaries, it makes more sense to check the match between a posited research question and the epistemological underpinnings of IPA.

#### ***7.2.4. IPA in sport psychology***

In sport psychology, the use of IPA to date is sparse, and thus far, only three published studies exist. A study by Russell (2004) was concerned with the development of body image amongst female rugby, cricket, and netball players. The research focused on the athletes' experiences of playing sport, and the impact sport had had on their bodies. A study by Lavalley and Robinson (2007) examined the factors that might facilitate or hinder artistic gymnasts self-identity formation and adaptation to athletic retirement. The most recent study in sport was a longitudinal study amongst Scottish international golfers, in which IPA was used to explore the golfers' coping effectiveness (Nicholls, 2007). In the sport injury rehabilitation field, no articles employing IPA appear to have been published.

Despite a lack of published studies using IPA in sport psychology, using IPA to elaborate the quantitative findings from study one was considered justifiable. "A study employing IPA might enrich the literature of an area previously only studied quantitatively" (Smith, 1996, p. 264). One of the greatest assets of IPA is the ability to reveal unanticipated phenomena (Shaw, 2001). Due to the bottom up

nature of the process, the aim of IPA is not to test an existing hypothesis, but rather to allow the captured themes to emerge from the data (Reid et al., 2005). As this study was concerned with the physiotherapists' personal experiences in using psychological interventions and dealing with depression in their work with injured athletes, the research aims and questions fell within the underlying principles of IPA. With the suitability of IPA as a means of analysis for the study clearly established, the chapter will now move on to discussing various factors in relation to the practicalities of the research process, the issues in relation to method of data collection, sample size, and participant access will be subsequently considered.

#### ***7.2.5. Collecting data***

When analysing how participants make sense of their world, how they perceive the world, and their experiences in the world, a flexible form of data collection is required (Chapman & Smith, 2002). A number of different qualitative data collection methods have been put forward, and these include participants' personal accounts, observations of people's lives, range of written texts, focus group discussion, and different types of interviews (i.e., structured interview, semi-structured interview, unstructured interview, and group interview), all of which can be regarded as useful in gaining access to individual's personal experiences (May, 2001).

It is feasible to obtain data suitable for IPA analysis through a range of methods. Diaries and personal accounts can produce significant and meaningful individual tales. Similarly the use of interviews can enable an insight into the participants' life-world. The underlying principle behind all different types of interviews is the belief that asking individuals about their perceptions and experiences will most likely produce accurate and meaningful information about the individuals. In other words, merely asking someone about their thoughts about a particular topic is seen

as one of the most effective and elaborative ways of obtaining information about them (Gratton & Jones, 2004).

For the purposes of IPA, the use of a semi-structured interview is proposed as being the most suitable data collection method (e.g., Smith & Osborn, 2003). In a semi-structured interview, the interview schedule is used as a guide for the interview (Smith, 1995). Semi-structured interviews allow the researcher and the participant to engage in a mutual dialogue, where initial questions envisaged by the researcher are adjusted and re-structured during the course of the interview in light of the responses from the participants (Chapman & Smith, 2002; Smith & Osborn, 2003). In other words, using a semi-structured interview schedule as the means of data collection allows both the researcher and the participant to 'deviate from the plan', thus providing more possibilities to obtain a detailed account on the anticipated and novel issues arising. In addition, when using semi-structured interviews as a means of data collection, an attempt to establish rapport and empathy between the researcher and the participant can be made (Smith, 1995). As the order of questions is subordinate, the researcher is freer to explore interesting areas and follow the participant's interests and apprehensions. As a result, semi-structured interviews tend to produce rich data (Smith, 1995).

#### ***7.2.6. Constructing the interview schedule***

Based on the recommendations by Smith (1995), a semi-structured interview schedule was developed for the study. The interview schedule was constructed following the guidelines set by Smith (1995), and Smith & Osborn (2003). In IPA, the aim is to give a voice to the participant and to explore their view on the world (Smith, 1996). Subsequently all of the interview questions were framed in an open and broad manner, and designed to give a "gentle nudge from the interviewer" (Smith & Osborn, 2003) to the participant, rather than leading the interview toward a pre-determined direction. A general question "tell me about your personal

experiences in working as a chartered physiotherapist?" was used to start off the interview. All of the subsequent questions followed a similar arrangement: "what is your opinion on..." "could you describe...", "what are your experiences in...", and "how do you feel about..." were used in each of the questions, thus enabling further insight into the participants personal experiences and thoughts on the subject matter.

The first part of the interview focused on the physiotherapists' personal experiences and views on the process of psychological rehabilitation of the injured athlete. These included questions in relation to their opinions on the importance of treating psychological aspects of injuries, their views on rehabilitation success, and experiences of working with athletes with a range of psychological conditions. The second part of the interview schedule had an emphasis on the physiotherapists' personal experiences of using psychological interventions (i.e., goal setting, imagery, self-talk, relaxation, social support) in their work. Questions in relation to their personal views about the effectiveness, and their level of comfort in using such methods were also employed. The third section focused on the physiotherapists' perceptions of depression as part of sport injury rehabilitation. Physiotherapists were first asked to describe depression in their own words, and to recount their personal experiences in dealing with depressed athletes.

Following the pilot interview with a chartered physiotherapist, the interview lasted for approximately 90 minutes, and was later transcribed verbatim and subsequently analysed. As a result, the repetition of questions was noted and therefore minor changes to the wording of the questions were made (see Appendix 7.1.).

### **7.2.7. Moving towards sampling**

With the method of data collection now devised, tested, and clarified, focusing on the appropriate participants and gaining access to them became the next prominent issue to consider. In qualitative research, and subsequently in IPA, the traditional view of a linear relationship between the number of participants and value of research has been challenged (Reid et al., 2005). Thus far, the sample sizes used in IPA research have varied greatly. For example, a study into gay men's thoughts about HIV risk-related behaviour used 20 participants (Flowers et al., 1998). An investigation of female candidates risk perception and decision making processes in genetic testing involved five participants (Smith et al., 2002). Another study on risk perception in relation to heart disease consisted of seven participants (Senior et al., 2002). An investigation of the experiences of a male partner of a woman going through a termination of pregnancy for foetal abnormality (Robson, 2002) used a single case study approach. Amongst the IPA studies conducted in sport, a great variation exists. When examining the body satisfaction of female rugby players, cricketers, and netballers, the sample consisted of 10 participants from each sport ( $N = 30$ , Russell, 2004). A more recent study into the female artistic gymnasts' experiences during retirement from sport (Lavallee & Robinson, 2007), and a study investigating Scottish golfers' coping effectiveness (Nicholls, 2007) both used five participants.

In 2005, the existing IPA research seemed to have an average of 15 participants (Reid et al., 2005). It has been recommended that the sample sizes should not exceed 10 participants (Smith, Jarman, & Osborn, 1999). More recently, the recommended number of participants has been reduced even further, and the use of case studies has also been suggested for IPA (Smith, 2004). Based on the existing research and recommendations, for the purposes of study three, it seemed justifiable that the final sample of the study should not exceed 10 participants. It was anticipated that a smaller sample (i.e., 5-7 participants) would be able to

produce a meaningful accounts on the participants' views on using psychological interventions in their work with injured athletes. Providing that such a number would produce coherent themes and are able to produce a sufficient evidence to support the researcher's interpretations of the respondent's discourses, using lower sample sizes than 10 was therefore warranted.

### **7.2.8. Participants**

During study one, a total of 81 physiotherapists had expressed their initial interest and willingness to participate in any further research. When commencing study three, these physiotherapists were emailed with an information sheet containing the details of the research, a summary of the previous research, and a personal information sheet and asked to confirm their willingness to participate. Of the 81 emails, 21 were undelivered and returned to sender. A total of twelve chartered physiotherapists working with injured athletes responded to the email. The twelve participants were then approached by phone or email as preferred, and after further clarification of the research, five chose not to participate. A mutually convenient location, date, and time was then pre-arranged and selected for the interview with those who agreed to take part in the study.

A total of seven physiotherapists (4 female, 3 male,  $M \pm SD/R$  age =  $41.00 \pm 8.99/28-56$ ) were interviewed for study three. All of the participants were full time chartered physiotherapists working in sport medicine in the United Kingdom (private practitioners, freelance physiotherapists, and national governing body physiotherapists). On average, they reported treating  $37.14 \pm 32.13$  sport-related injuries per month, ranging from 10 to 100. The treated athletes ranged between recreational and international levels of competition.



### **7.2.9. Procedure**

The physiotherapists were interviewed at various locations in the UK, and the one-to-one interviews were carried out either in the treatment rooms at the physiotherapist's clinic, or in a private office setting convenient for both parties. All of the interviews were audio-taped, and on average, the interviews lasted 52 ( $R = 35-70$ ) minutes. Although the interviews followed the topic guidelines, both the participant and the researcher had an opportunity to deviate and expand on any issues they felt to be of importance.

### **7.2.10. Ethical considerations**

Similarly to studies one and two, this study also followed the ethical principles set by the British Psychological Society (2006). Prior to the commencement, the study was approved by the University of Northampton Research Ethics Committee.

### **7.2.11. Analysis**

All of the interviews were tape recorded and subsequently transcribed verbatim. First, an in-depth familiarisation of the data was conducted by reading and rereading the transcripts several times. One of the participants, Amanda<sup>9</sup> was then selected to inaugurate the more detailed analysis. On the left margin, the transcript was annotated to ensure the researchers' understanding of the participants' accounts. In addition, preliminary comments, associations and summaries were also noted on the left margin. Using the preliminary notes as a guide, the emergent associations and themes were then documented on the right margin. Once completed, a master file of the emergent themes from the transcript was created by using the MindGenius Education Enterprise 2005 programme. This computerised formation of the master list of themes enabled a clear visual display of the emerged themes.

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<sup>9</sup> Pseudonyms were used for all of the participants to ensure anonymity

The above procedure was repeated for all of the remaining transcripts. The master list generated from Amanda's transcript was used as a template for all of the subsequent transcripts. The template was modified to take account of any differences between the original themes that emerged from Amanda and the other participants. The themes identified were then collated and combined with actual quotes from the transcripts. Such procedure enabled the clustering of the subordinate themes into the overarching superordinate themes. Some superordinate and subordinate themes were dropped due to lack of support from the majority of the transcripts. During the course of the analysis and to ensure inter-rater reliability, the transcripts and emerging themes were read and verified by research supervisors, and as a result of discussions, the final themes were mutually agreed upon. In addition, the participants were given a chance to review their personal interview transcripts and to comment on the emergent themes, but none of the participants decided to take on the opportunity.

#### ***7.2.12. Reflexivity***

IPA acknowledges the role of the researcher in the research process. Access to an individuals' personal account is both "depended on, and complicated by, the researcher's own conceptions which are required in order to make sense of that other personal world through a process of interpretative activity" (Smith, 1996, p. 264). During the interview process conducted for this study, "an outsider's perspective" was adopted as much as possible. It was emphasised (in some cases, during the actual interview as well) that I, the researcher was not trained as a chartered physiotherapist and therefore had no experiences of providing physiotherapy treatment. It was also highlighted that the participants were the experts, and that it was their personal opinions and experiences that were of value. During the analysis, an "insiders" view was adopted, as the aim was to get as close to the data as possible. This was then interpreted through using the pre-existing information and knowledge on the issues. In another words, after understanding

the data, my personal experiences as a coach working with injured athletes and my academic knowledge gained during the course of the PhD had an impact on how I, the researcher made sense of the data.

### 7.3. Results

The physiotherapists' personal experiences in using psychological interventions with injured athletes were influenced by a range of factors. This section presents the emergent themes from the physiotherapists' interviews. In total, four superordinate themes emerged, each of which contained a number of sub themes. Table 7.1. displays the sub themes in each of the superordinate themes.

*Table 7.1. Master table of the emergent themes: Physiotherapists' accounts*

| Superordinate Themes                             | Sub Themes   |
|--|--|
| Acquired Knowledge                               | <ul style="list-style-type: none"> <li>• Limited formal training</li> <li>• Awareness of athletes' emotional process</li> </ul>  |
| Understanding psychological interventions        | <ul style="list-style-type: none"> <li>• Setting goals is vital</li> <li>• Imagery misunderstood</li> <li>• Misconceiving relaxation techniques</li> <li>• "We are massively positive" – but not encouraging positive self-talk</li> <li>• Recognising the importance of social support</li> </ul> |
| Experiences on using psychological interventions | <ul style="list-style-type: none"> <li>• Role of personal perceptions and attitudes</li> <li>• Intuition – "I go on my gut"</li> <li>• The athlete in the process</li> <li>• Notion of time</li> </ul>   |
| Physiotherapists' role in the process            | <ul style="list-style-type: none"> <li>• Recognising the importance of psychological rehabilitation</li> <li>• Role clarity</li> </ul>   |

### **7.3.1. Acquired Knowledge**

With regards to the physiotherapists existing knowledge on sport psychology, two themes emerged as dominant. It appeared that amongst the physiotherapists in this study, all of the participants had received very little formal training. Despite such formal training, physiotherapists demonstrated a good understanding of the emotional process that might be prevalent amongst injured athletes during rehabilitation process.

#### 7.3.1.1. Limited formal training

All of the physiotherapists interviewed were explicit about their level of formal training. For example, when asked about his previous psychological intervention training, Martin indicated having had a couple of lectures of psychology as part of his physiotherapy degree. Isobel responded with laughter and stated: "I only had three weeks in the three years of my training... of psychology... mm... a... to do with the... .. what can I say... something with which means structure of the setting... a dabble". Amanda stated that she had not any psychological intervention training at all.

#### 7.3.1.2. Awareness of injured athletes' emotional process

Despite the lack of formal knowledge, all of the physiotherapists were very explicit about the emotional process athletes tend to go through during injury. When describing the psychological process during rehabilitation, James stated: "when injured, athletes will go through the grieving process from sort of denial to euphoria, through to depression, or acceptance, all those different stages there that you find they are there". Correspondingly all of the other physiotherapists interviewed provided similar responses. For instance Ben indicated that "different psychological elements of things will come at different stages, how you would bracket them, no I am not sure".

### **7.3.2. Understanding psychological interventions**

When talking about their experiences of using different psychological interventions in their work, great disparity in the physiotherapists existing knowledge on the interventions was apparent. In particular, physiotherapists appeared to possess a good level of knowledge on the use of goal setting and social support, whereas their understanding of imagery, relaxation techniques, and positive self-talk varied.

#### 7.3.2.1. Setting goals is vital

All of the physiotherapists regarded goal setting as an integral part of rehabilitation. When asked about her experiences of using goal setting in rehabilitation, Isobel stated: "yeah, I can tell you about my experiences, others not using goal setting, there; there is no question that you cannot use it". According to Ben:

Goal setting is vital... mm... and very useful, very effective... because it is certainly for something where they can measure it themselves and see how they are doing Monday, Tuesday, Wednesday, Thursday and then by Friday they are getting the results that they want, so I think that's, that's certainly vital.

Some of the physiotherapists demonstrated great understanding of the different levels of goals employed during rehabilitation: "I set short-term goals and long-terms goals all the time. Long term goals will always be return to play with athletes. Short term goals will be... decreasing pain, increasing the range of movement, increasing the physical strength." (James)

However, the goal setting procedure seemed to be very much unidirectional and in parts, unplanned. During the initial assessment, the overall aims and long-term recovery goals for the rehabilitation were very much discussed with the athlete. On

a short-term day-to-day level, the rehabilitation-process goals appeared to be very much controlled by the physiotherapists:

I think I use it very much in my own on... for my own treatment techniques, in other words I, I set out assessing somebody I decide well I want to achieved a better... I use goal setting right throughout my whole treatment with them, you know whether that would be half an hour with them or up to three hours... (Allison)

On occasions, the physiotherapists explained how they set targets for the rehabilitation process; however such was not formally labelled as goal setting: "I don't sort of formally think it is goal setting it is just; well first; it is just that... that's... probably what it is... I set out standard to say this... once you can do this, then we will go onto this next stage so they know where they are..." (Amanda). All of the physiotherapists also indicated that rather than focusing on the absolute attainment of a goal, their main focus was on the degree to which a physical had been reached. For instance Allison stated:

even though you haven't necessary achieved the goal... you say well, you know, we got eighty percent of the way there, it may be for the last twenty percent you manage to achieve on your own before I see you again next time, so, mm... and, and I think that is a very important thing, you never send an athlete out with an assumption that the goal was never reached. Even if, even if it wasn't, you still, you still have to... you still have to build it up as being, well we got eighty per cent of it there.

#### 7.3.2.2. Imagery misunderstood

In relation to imagery, the physiotherapists' knowledge and understanding varied. Martin, who had an A-level psychology background demonstrated excellent understanding on what imagery is: "I perceive the classical psychological imagery in terms of imagining yourself getting better". Others displayed some confusion on what imagery entailed. Allison indicated "I use pictures and models to show people what I have just done". For Gemma, imagery was about thinking about the performance and applying these thoughts to the rehabilitation setting: "I do get them to try and think what it might be like in their, in their performance setting".

#### 7.3.2.3. Misconceiving relaxation techniques

The understanding of relaxation techniques also varied greatly. When talking about her experiences in using relaxation, Isobel indicated using acupuncture: "... I use... quite a lot of acupuncture for... pain modification and relaxation". For Gemma, relaxation techniques included massage: "I use it loads. It is a key to a rehab. So it isn't necessary something... I def... I would not stand over somebody and do... but I would facilitate it, so, for instance we use massage a lot". Similarly James indicated using relaxation, and in that he included the use of Pilates. Merely resting and generally relaxing for the purposes of allowing the injury to heal was also seen as relaxation. To Martin, relaxation was about making sure "you rest properly with this or relax so that you allow things to heal". Of all the physiotherapists interviewed, only Amanda indicated occasional use of what appeared to be Progressive Muscular Relaxation technique (PMR; Jacobson, 1938): "I will do it for individual muscles if I thought that a certain muscle is tense".

#### 7.3.2.4. "We are massively positive" – But not encouraging positive self-talk

Experiences of using positive self-talk were mainly seen from the physiotherapists' perspective, i.e., how they talk to the athletes. This was evident for all of the physiotherapists, as for instance James stated: "Mm... we are massively positive..."

In a similar manner, Isobel indicated having relatively restricted experiences of using self-talk: "I think my experiences are very limited in that... mm... other than... my... with positive attitude to rehabilitation I think". In another words, the phrase 'positive self-talk' was seen as communicating positively to the athletes during rehabilitation.

#### 7.3.2.5. Recognising the importance of social support

Understanding the concept of social support was demonstrated clearly by the physiotherapists. They identified different sources of social support (e.g., family, friends, coach, medical professionals, team-mates, and other people with similar injuries who have now recovered). For example, Isobel and James felt that including other agents (e.g., coaches, families, athletes' partners, and team members) in the rehabilitation process was important. On occasions physiotherapists had also introduced athletes to other athletes with similar previous injuries:

I had an older guy the other day who tore his Achilles tendon, I put him in touch with another guy who, who also tore his Achilles tendon, so they could... sort of discuss about it, and I think that is quite a positive way... mm... helping them to see light at the end of the tunnel at a very very early stage... (Ben)

#### **7.3.3. Experiences of using psychological interventions**

Along with existing acquired knowledge, the extent to which any of the interventions were utilised by the physiotherapists depended on several factors. A range of aspects such as role of personal perceptions and attitudes, intuition, the individual athlete characteristics, and the notion of time were all seen as influencing the decision making, all of which will now be presented and discussed.



#### 7.3.3.1. Role of personal perceptions and attitudes

Physiotherapists' personality, and personal perceptions and attitudes played a role in the process of deciding which intervention technique to use. The physiotherapists appeared to favour goal setting, and this was partly seen as a reflection of themselves and their personality. For example, Martin stated:

I think it probably just comes down to... what I am like as a person. Mm... I'm more of a... I write lists of jobs that I gotta do, and I go through them and I tick them off, and that's, I'm that sort of... that's the way I run my life... everything I do is hands on with stuff... so my, my stuff is to that kind... of practical, this is what we're gonna do, and bang, bang, bang... ... so I think that's probably... it's a reflection on me, rather than the techniques I am sure.

#### 7.3.3.2. Intuition – “I go on my gut”

When deciding on the psychological treatment of the athlete, the use of gut-feeling (i.e., intuition or decisions on a subconscious level) was clearly demonstrated by the physiotherapists. For Ben, choosing psychological interventions was about feeling what was right for each patient: “I don't know. I think is probably just a... almost a... almost a gut feeling with what you feel is the right thing to do with the right client”. Allison indicated that she too had no idea how she chose what technique to use with each patient, and she replied with laughter:

...well, you know what I have no idea. And, and... (laughs)... ... If I am really honest, I probably just go on my gut. My gut feeling. But then... if am really honest that's what I do with physio anyway... I would without a doubt say that I use my gut most of the time... ...and, and... so far it hasn't let me down so many times so I am quite happy to rely on it (laughs).

#### 7.3.3.3. The athlete in the process

For all of the physiotherapists, acknowledging the needs of the individual athlete in question was a vital part of the rehabilitation. The injured athletes' personality and situational factors were seen as determinants when deciding what methods to use, with whom, and when. For example, the individual athlete's personality characteristics, type of sport, and time of season factors were also regarded as important when considering the use of psychological interventions. For example according to Allison, some athletes will respond well to goal setting, as it gives them understanding of the rehabilitation: "...they need to know how many... repetitions of an exercise they need to do today... and they need to know how many they are going to do tomorrow... and if they achieve that, then they start improving." Allison also states that for others, knowing how much to do may not be relevant, as long as they are healing: "you know there are other people who... who don't want, they are not that fussed about how many, they just want to know... mm... that it's getting better..." She also indicated the importance of individual differences between the athletes in relation to the use of the team as a means of social support: "some people will respond better to an environment where they are... where they are not with their teammates. And other people need to rehabilitate in an environment where they are with their team mates."

Other physiotherapists shared Allison's views. Martin indicated that the type of sport played a role, as in his opinion athletes involved in track and field tend to have a more "delicate frame of mind in terms of what they will train with and what they will put up with" than those involved in rugby. Ben believed that the individual's state of mind, and previous experiences would have an impact on whether or not they would need to have psychological issues addressed: "...I do believe that there is natural different sorts of people that respond very differently to the same sets of circumstances and situations anyway..."

#### 7.3.3.4. The notion of time

Along with the above, the “notion of time” also emerged as a determinant for decision making when choosing and using psychological interventions. The time available was seen as central when planning the rehabilitation timelines and setting goals for recovery, and often such was dictated by the next important game, competition or event: “the only thing that I would look at in long term goals is if there is... what is your next important competition.” (Amanda)

Often physiotherapists felt that time available for rehabilitation was not sufficient. As a result, physiotherapists have to prioritise different aspects of rehabilitation and often in such cases using psychological interventions become inconsequential:

I have been meaning to use relaxation techniques plenty of times... and if I am honest with myself, I haven't got time, to actually do it, I am too busy doing this and doing that, but I think it would very important thing to apply it... (James)

Having enough time available was also seen as an important part of rehabilitation outcome success. A general consensus amongst the physiotherapists was that the more time they were able to spend with each patient; the higher was the likelihood of more successful recovery. For Ben, constantly working to a diary had an effect on what he was able to do with his patients:

it would be nice that we could spend a... three hours with every patient that we see... then I am sure we could think of lots of other things to do other than to actually... mobilize, manipulate...soft tissue work... strength, and whatever...

Similarly Allison indicated that the more time you spend with the athlete, the better the compliance will be:

there is no doubt in my mind that rehabilitation is far more successful if you can spend a lot of time doing it. ...you know, because again, your compliance is greater if you would see athletes doing it instead of sending them away asking them to do it...

#### ***7.3.4. Physiotherapists' role in the process***

The final superordinate theme emerging from the interviews was concerned with the physiotherapists' perceived role in addressing psychological aspects of sport injuries. In particular, physiotherapists' felt that recognising the importance of psychological rehabilitation was important, and that role clarity in relation to knowing one's own competencies and being able to refer on were reported as essential qualities for physiotherapists.

##### **7.3.4.1. Recognising the importance of psychological rehabilitation**

Despite the differing levels of knowledge on underlying principles of different intervention methods and perceptions of the usefulness of the methods, the physiotherapists were very explicit about their role in the psychological rehabilitation the athlete. Addressing psychological aspects of injuries were considered as an integral part of a successful physiotherapy treatment. For Gemma, such was seen as "crucial. It is got to be done; it is got to be dealt with". In addition, she also felt that physiotherapists had a central role in the psychological rehabilitation: "I think physio is... part of the basket that we can facilitate an awful lot of things or we can be the cambric to allow those other things to come into rehab".

#### 7.3.4.2. Role clarity

In essence, physiotherapists' role in psychological treatment was seen as two-fold: (1) to be aware of their own personal competencies and professional boundaries, and (2) to be able to refer an athlete on to a sport/clinical psychologist when necessary. This was evident in all of the transcripts. For example, Isobel stated: "If I can't cope with that in my... own then I have to get the sport psychologists or, whatever to, to... and they will be referred on... because I know my limitations." Amanda agreed with the above and stated that physiotherapists should have an appreciation of the different interventions available, and to know when and to whom to refer on. Similarly Allison stated: "the better physiotherapist are the ones who can identify what they can affect... and know who to refer to if they can't."

In this study, physiotherapists reported very little experiences of referring athletes to counselling. When reflecting on their experiences of treating athletes with depression, the physiotherapists indicated that this was something they had not really thought about in great detail: "... I don't know... I suppose I haven't... I don't think I have... really had a... a really bad case..." (James). Only two of the physiotherapists recalled experiences of working with athletes with severe depression, and even for them such cases were rare:

It was a, it... the patient became so self-doubtful, that either the simple stretching rehab regime... was a problem... with them... so they weren't compliant at all... and a... they gradually withdrew... from their team, you know from their friends and team... and it was quite, it was very difficult to get them back on board, in, in the end we had to get referrals on... (Isobel)

Mm... I had a... mm... a guy in Birmingham who was a, he was a good sprinter... mm... actually having a kick-about play in football, ruptured his ACL, and that pretty much put his sprinting career on hold, and he went all

the way down the spiral, and was proper miserable, really let himself go during his rehab phase... ...mm... so that was quite an interesting one, he is probably the one that stands out the most... (Ben)

#### **7.4. Discussion**

Based on the findings from this study, it seemed that teaching physiotherapists about psychological interventions and how to use them in practice had not been integrated into the participants' previous physiotherapy training. This was not surprising, as many physiotherapists today are aware of their lack of formal training in psychology and much of their work is solely focused on the physical aspects of recovery and rehabilitation. The findings are also in an agreement with previous research, as it has been suggested that physiotherapists may receive very little or no training in psychological interventions (Hinderliter & Cardinal, 2007; Taylor & Taylor, 1997), and that a great disparity between the depth and context of the taught material exists (Harris, 2005; Kolt & Andersen, 2004b). Such can be seen as a problem, as in order for physiotherapists to obtain an appropriate level of competency in their work, it has been argued that adequate training is needed in the recognition, evaluation, and treatment of psychological factors associated with athletic injury (Cramer Roh & Perna, 2000). Therefore it would be beneficial to train physiotherapists further in the psychological aspects of injuries, and to ensure such is effectively integrated into the existing training of future physiotherapists.

One of the unexpected findings of the research was the physiotherapist's apparent understanding of the grieving process and its application to sport injuries. All of the physiotherapists in this study were describing the recovery as being a "stage-like" process, albeit the term 'grieving process' or 'stage models' was not formally utilised by the physiotherapist. In this study, the physiotherapists identified initial shock, denial, depression, and acceptance as typical emotions that athletes may go through once injured, subsequently providing some support for the stage models.

Similarly to the findings by Udry et al (1997), in this study the bargaining stage was not reported by any of the physiotherapists.

Drawing from the Kübler-Ross's (1969) original stage theory, five main stages have been proposed as applicable to sport injuries: denial, anger, bargaining, depression, and acceptance (e.g., Evans & Hardy, 1995). Thus far the existing research has been able to provide merely partial support for the grief response models (Gordon et al., 1991; Udry et al., 1997), and the findings from this study are no exception. According to Crossman (1997) experiencing emotional distress and grief as a result of sport injury is predictable and normal amongst athletes, thus identifying different emotional stages amongst injured athletes should be relatively simple and an integral part of the rehabilitation process. After all, in order for any treatment to be effective, physiotherapists (regardless of being trained in psychology or not) should be in a position to recognise/understand and appropriately address number of emotional responses an athlete may experience during the course of the rehabilitation and on a day-to-day basis. Since the development of the integrated model (Wiese-Bjornstal et al., 1998) very little emphasis on the significance of stage models during injury rehabilitation has taken place. Given the importance of addressing emotional aspects of sport injuries, it might be appropriate to revisit the stage models and re-evaluate the usefulness of stage models during sport injury rehabilitation from a physiotherapist's perspective.

With regard to the physiotherapists' current understanding of the different psychological interventions, the results were inconsistent across the sample depending on the intervention technique discussed. Despite lack of appropriate "labelling", the physiotherapists were relatively knowledgeable on goal setting. It became apparent that physiotherapists were relatively proactive in setting daily physical goals, as well as setting overall recovery goals for both physical and performance outcomes. These goals were, however, very much physiotherapist-

mandated and as a result, the athlete had very little or no ownership of the actual goal setting process. It was also evident that inadequate emphasis was placed on setting psychological goals. Similarly setting goals for different stages of rehabilitation and life-style goals were relatively non-existent.

According to Hardy et al. (1996) goals should identify specific targets that lie within performers' control. When setting goals for rehabilitation, they should be specific, challenging, realistic, and attainable (e.g., Flint, 1998b; Gould, 1986; Taylor & Taylor, 1997). Research findings to date have suggested that setting goals during rehabilitation can have a positive effect on the athletes' physiological and psychological healing, and it has also been suggested that integrating goal setting into the physiotherapy process is not only profitable, but also easily transferable (Taylor & Taylor, 1997).

It appears that for most athletes, goal setting forms an integral part of the athlete's everyday training programmes. Despite many athletes using goals in hope of improving their performance, during injury rehabilitation such skills are often ignored and/or underutilised for a number of reasons. As the physiotherapists are the experts in relation to the physical aspects of healing process, their knowledge and opinion in relation to the above should be one of the primary matters to consider. In order for goal setting to be successful, it is also imperative for the athlete to be an active part of the process. If the goals are not accepted by the athlete (i.e., goal commitment), the goal setting programme is likely to be ineffective. Thus, it can be recommended that physiotherapists should place greater emphasis on including the athlete in the process of goal setting, and further training on how to effectively integrate goal setting into rehabilitation programme could be useful.



With reference to mental imagery, the findings were conflicting. Within sport, mental imagery has been defined as the “creation or re-creation of an experience generated from memorial information, which may occur in the absence of the real stimulus antecedents normally associated with the actual experience” (Morris et al., 2005). In another words, imagery in sport involves an athlete drawing a mental picture about something that is not currently present. When interpreting the participant accounts, it became clear that what both Allison and Gemma described as imagery does not directly correspond with the formal definition. Presenting pictures as reinforcement for physiotherapists’ manual work could be classed as modeling, not necessarily imagery. Similarly, getting athletes to *think* about their performance might not directly be classified as imagery.

The findings from this study appear to confirm the notion that imagery is, and continues to be underutilised in sport injury rehabilitation. To a large extent, this is due to a lack of understanding of the benefits of imagery for rehabilitation, and possibly a result of physiotherapists’ erroneous perceptions on what an imagery intervention involves. Considering the findings from studies one, two, and three, it appears that opportunities for further training in rehabilitation related imagery interventions should be made available for practising physiotherapists. However due to existing erroneous perceptions (e.g., Walsh, 2005), the findings from studies one, two, and three may suggest that such training would be more beneficial when integrated with other intervention (e.g., goal setting, relaxation) training. If delivered as standalone training, physiotherapists may not feel that taking part in such training is beneficial to them as an individual, especially if it involves a personal financial contribution and/or long distance travelling.

Along with imagery, using relaxation during rehabilitation also appeared to be underutilised by the physiotherapists. More specifically, it became evident that physiotherapists in this study had few experiences of using specific relaxation

techniques during injury rehabilitation. Whilst acupuncture, having a “down time”, massage, and Pilates can be considered to be relaxing activities, they are not specifically considered to be relaxation techniques for rehabilitation as understood by sport psychologists.

According to Taylor and Taylor (1997), there are two types of relaxation strategies that can be seen as effective for injured athletes: passive relaxation (Taylor, 1996) and PMR (Jacobson, 1938). Passive relaxation can assist athletes who experience low levels of muscle tension. In order for passive relaxation to work, the athletes should be aware of this tension and interested in releasing it. For athletes who are unaware of the muscle tension and the muscle tension is a source of general discomfort and increased levels of pain, the use of PMR is recommended (Taylor & Taylor, 1997). In addition deep breathing as been found to be an effective way to control pain and anxiety during rehabilitation (Taylor & Taylor, 1997, 1998), as it facilitates oxygen to the injured area and therefore facilitates healing, as well as relaxing the muscles.

Based on the participants’ accounts, it appeared that none of the above mentioned techniques were actively utilised by the physiotherapists. As the benefits of using relaxation techniques are often amplified when used with imagery (and vice versa), providing physiotherapists with further training in relaxation techniques in conjunction with imagery would be favourable. In addition, as physiotherapists did feel that relaxation was “part of physio anyway”, gaining physiotherapists interest in attending such training could be increased. However, based on previous findings, integrating relaxation and imagery training with goal setting would have the potential to attract more participants to take part in the training.

Like imagery and relaxation techniques, physiotherapist’s understanding of self-talk also varied. Positive self-talk as a psychological tool has been defined as “a

multidimensional phenomenon concerned with athletes' verbalizations that are addressed to themselves, which can serve both instructional and motivational functions" (Hardy et al., 2005). In other words, self-talk is about intrapersonal communication, and does not involve any outside influences (e.g., physiotherapists). In light of the above definition, it appears that the type of talk physiotherapists were referring to was not self-talk as defined by sport psychologist, but rather motivational talk from the practitioner to a client. The physiotherapists were generally very positive, informative, and talkative during the rehabilitation process, but based on their accounts, it was unclear whether or not they encouraged the athletes to use positive self-talk during the process.

Educating physiotherapists on self-talk and how to encourage athletes to use it during rehabilitation would be profitable. Physiotherapists in this study displayed high level of understanding of the importance of staying positive, yet failed to initiate athletes' own personal self-talk. According to Brown (2005), injury often causes athletes to lose confidence and experience negative and sometimes catastrophic thoughts. By using a reframing technique, such negative thoughts could be turned into positive ones, and thus would enhance athletes' motivation and confidence during rehabilitation. For example, in a study by Gould et al. (1997) on skiers who had encountered season-ending ankle and knee injuries, the athletes who had successfully recovered from their injuries all indicated that "managing emotions and thoughts" was one of the key coping strategies they had used.

However, when designing such training, one needs to be careful of the extent to which this technique (as well as any of the other techniques) can be considered to be a part of a physiotherapist's role. After all, if an athlete does not perceive encouraging positive self-talk as part of physiotherapists natural remit, it is likely that it will hinder the rehabilitation process rather than facilitate recovery. For that

reason, further research in identifying the physiotherapists' role from the athletes', coaches' or even other medical professionals' perspective is warranted.

With regard to the use of social support, physiotherapists in this study demonstrated that over years of practice, they have accumulated a wealth of the understanding of different types of social support useful to injured athletes during the recovery process. In addition, physiotherapists appear to have built an excellent network of people around them to whom, if necessary, they were able direct injured athletes for social support.

The findings from this study corroborate those of previous research, as a wealth of evidence exists to support the importance of using social support from family and friends as part of the rehabilitation process (Brown, 2005). Research has also found the coach to be a useful person to assist an injured athlete to deal with a range of stressors that have taken place as a result of an injury (Bianco, 2007). The relationships between different medical professionals and the athlete are also very likely to have a significant impact on the recovery, as well as the use of teammates as a form of social support have also been found to be useful, provided that the injured athlete feels comfortable with the arrangements (Andersen, 2007). In addition, support for using peer modelling (i.e., having interactions with athletes who have successfully recovered from similar injuries) has also been found to be an excellent source of social support for injured athletes (Wiese & Weiss, 1987).

In light of above, possessing understanding of their personal role in the process of providing social support to injured athletes can be considered vital. If the physiotherapist has an understanding of his/her role as a source of social support to the athlete, they are more likely to be aware of the ways in which their behaviour, knowledge, and understanding can influence athletes emotional and behavioural responses to the injuries. Whether or not physiotherapists should be acting as a facilitator for the athletes to seek social support from other sources

(e.g., family, friends, team mates, and coach), depends on the individual athlete. Nevertheless, just by merely "being there" for the athlete can have a significant impact on the recovery process.

Overall, it appeared that the majority of the decisions in regards to using psychological interventions with injured athletes were based on intuition and gut feeling. More specifically, choosing psychological interventions was mainly based on experiences gained through experiential learning and trial and error, rather than systematic procedures based on knowledge acquired through formal learning. For example, Allison appeared to base a lot of her decisions on previous experience and how through experience, she had learned to recognise different characteristics of an athlete. The above findings are also in agreement with findings from studies one, two, and previous research (e.g., Hinderliter & Cardinal, 2007; Kolt & Andersen, 2004b) by highlighting the importance of providing further training to the practising physiotherapists.

It was also encouraging to see that despite a lack of formal training in psychology, all of the physiotherapists in this study were very much aware of the importance of recognising athletes' individual differences during rehabilitation. All of the physiotherapists placed importance on treating each athlete on a case-by-case basis, and to avoid direct comparisons to other athletes. These findings are also in support of the wider literature, as the role of personality traits as mediators in the athlete's responses to sport injuries have been well documented in the literature. According to the integrated model (Wiese-Bjornstal et al., 1998), personality traits will have an impact on athletes coping tendencies, perceived levels of stress, and cognitive appraisal processes. These will then influence the athletes' rehabilitation behaviour, which in turn will have an effect on the rehabilitation outcomes.

Another significant finding from the analyses was the importance of time available as a determinant for the use of psychological and/or physical interventions. Often the time available for rehabilitation is mandated by the competitive calendar (Jevon & Johnston, 2003) and the question of "when am I fit to play" appears to be one of the most important questions an athlete wants an answer to. Indeed, according to Taylor and Taylor (1997), for most injured athletes, knowing how long it will take them to get back to full fitness is paramount. Such pressures are often imposed on the athlete (and consequently on the physiotherapists) by other external influences such as the team, managers, and coaches. Conversely, athletes themselves often impose unrealistic timescales on themselves and on their rehabilitation process. Using systematic goal setting and involving the athlete (and in some cases, coaches, and managers) in the process can assist in alleviating any negative psychological responses the athletes might be experiencing due to such pressures.

As a result, acknowledging the timing of the injury in relation to the competitive calendar and planning realistic goal setting around it and the actual physical healing time would be useful. Not only would systematic goal setting benefit the athlete, but setting clear rehabilitation goals could also alleviate any pressures placed on the physiotherapists. External pressures in relation to unrealistic timescales can often lead physiotherapists *feeling* that they do not have enough time to address several issues, and as a result, different aspects of rehabilitation need to be prioritised, and more often than not, it is the psychological rehabilitation that is ignored.

According to the existing literature, such need not to be the case. It has been proposed by Taylor and Taylor (1997) that psychological rehabilitation can be done collectively with physical recovery. In order for psychological rehabilitation to be successful, it would be imperative not to view psychological rehabilitation as diminishing time available for physical recovery, but rather see it as a facilitator for

speedy recovery. For example, using pain management techniques at the early stages of rehabilitation (e.g., with range of motion exercises), or addressing anxiety related issues when rebuilding strength can assist the athlete in staying positive and focused on the rehabilitation, which could then lead onto successful rehabilitation.

The notion of time was also perceived as important in relation to building a good rapport with the participants, findings which are also in support of earlier views from physiotherapists (Gordon et al., 1991), and the injured athletes themselves (e.g., DeFrancesco, Miller, Larson, & Robinson, 1994; cited in Pargman, 2007). The physiotherapists in this study felt that more time available for each patient enabled better working relationships and subsequently better communication between the athlete and the physiotherapist. Having enough time with each patient is important, as good working relationships and effective communication between the athletes and the physiotherapists can facilitate better compliance and trust, ultimately leading to better results.

Considering the importance of sufficient amount of time available for successful rehabilitation, it might be useful to review current practices within physiotherapy settings on an individual basis. Currently physiotherapists working in private practice tend to see each patient approximately 30-90 minutes each session. Often the time spent with each athlete is partly dictated by financial reasons and the general practicalities of running a clinic. In comparison to those physiotherapists working in a professional sports team, national team or national governing body, time available for each patient maybe more flexible or greater and thus not an issue.

In addition to the above, knowing when to refer an athlete on was also perceived as important by the physiotherapist. Having the ability to recognise possible

psychopathologies and being aware of personal professional competencies was regarded as vital part of physiotherapy process. This was also in an agreement with previous research (Fisher & Wrisberg, 2006). In a similar manner, Harris (2005) highlighted the importance of knowing when to refer on and acknowledging your personal competencies in using psychological interventions as crucial. According to Burton (2000) on average, athletes tend to experience fewer mental disorders than the general population; however the incidence of depression, eating disorders, and substance use can be relatively common amongst injured athletes. Some injured athletes do suffer from meaningful levels of clinical psychological distress (Leddy et al., 1994), and as a result, referring such athletes to mental health professionals (i.e., clinical/sport psychologist) is important as it can assist in injury recovery.

When it comes to successfully using psychological interventions in sport injury rehabilitation, it appears that the athlete needs to feel that the intervention they are receiving is credible and useful (Brewer et al., 1994). If the athlete feels that a physiotherapist is implementing something outside their natural remit, they are likely to be non-compliant and intervention will be unsuccessful. However, as psychological difficulties are common amongst many injured athletes (e.g., Heaney, 2006; Hemmings & Povey, 2002), to an extent, it is important for physiotherapists to be able to provide psychological support to the injured athletes. As a consequence, being aware of personal competencies and having the ability to refer on when necessary can facilitate the rehabilitation process and the injured athlete as a whole.

### **7.5. Research limitations**

Similarly to studies one and two, this study was not without its limitations. As the study used qualitative methods, and a small sample, the findings cannot be generalised to the physiotherapy profession as a whole. Due to the methods of participant recruitment, the sample might have been exclusive, as all of the



participants had put themselves forward as being interested in participating in the research. Such could imply that prior to the interviews the physiotherapists interviewed in this study had developed an interest in the role of psychological interventions as part of sport injury rehabilitation. They might also have greater levels of experience in utilising such skills in practice, and therefore possess clear opinions on their usefulness in their work.

Another limitation of the study was the length of the interviews. On average, the interviews lasted 52 minutes, ranging from 35 to 70 minutes. It is therefore arguable if the data gathered was as rich and detailed as it could have been if the interviews would have been longer and more in-depth. In a similar manner, the lack of follow-up interviews and having the participants' comment on the interview transcripts can be seen as limitation for the study. All of the participants were offered an opportunity to read their transcripts prior to the analysis, but all of them declined.

## **7.6. Conclusions**

The purpose of this study was to provide chartered physiotherapists with an opportunity to tell their personal experiences in using psychological interventions in their work with injured athletes. Overall, the physiotherapists in this study were very open about the lack formal training in psychology, demonstrated a good understanding of athletes' emotional responses to injuries, and subsequently provided support for stage models. Their knowledge and understanding of using different psychological interventions varied greatly, as did their experiences of utilising them in practice. This was determined by the range of factors, and great prominence was placed on "gut-feeling" and experiential learning when making decisions related to using psychology as part of the physiotherapy processes.

Similar to study one, it also appeared that the physiotherapists believed it was necessary to use psychological skills in their work with injured athletes. The findings from this research is in support of existing research which tends to suggest that physiotherapists are required to address psychological aspects in relation to the injury and recovery in order for their treatment to be effective, and many physiotherapists have also reported using range of psychological interventions as part of their work (e.g., Ford & Gordon, 1998; Heaney, 2006; Hemmings & Povey, 2002; Larson et al., 1996) However, as evident in this study, formal training in these issues has been minimal, thus providing support for earlier claims made by Harris (2005), Hinderliter and Cardinal (2007), Kolt and Andersen, (2004b), and Taylor and Taylor (1997) suggesting that physiotherapists may receive very little or no training on how to use psychological interventions in their work.

The existing disparity with actual training and the practical world would indicate a great need for post-qualification training, and possibly some modification of the existing physiotherapy degree programmes. The findings from this study provide some insights into the ways in which physiotherapists have experienced using psychological interventions in their work with injured athletes. When combined with the findings from studies one and two, some practical suggestions on how to further train existing physiotherapists in the use of psychological interventions can be made. However, in order to ensure its successful delivery, it would also be important to seek clarification into injured athletes' views on the physiotherapists' role in providing psychological support during sport injury rehabilitation. After all, no physiotherapy treatment takes place without the athletes.

## **7.7. Chapter summary**

The purpose of this chapter was to present the research process that took place when designing, planning, and carrying out study three. By adopting a qualitative approach, study three aimed to elaborate on some of the quantitative findings from

study one by giving seven chartered physiotherapists an opportunity to tell their experiences in using psychological interventions with injured athletes. The results from the IPA analyses (Smith, 1996) revealed a number of superordinate and sub themes that represented the physiotherapists' experiences of psychological interventions as part of injury rehabilitation. The physiotherapists spoke openly about their lack of formal training in sport psychology, and appeared to be very knowledgeable and comfortable in using goal setting and encouraging social support. Familiarity with, and experiences of using other interventions (i.e., imagery, relaxation techniques, and positive self-talk) seemed to be less apparent.

A number of factors were seen as important in deciding which technique to use with individual athletes. Physiotherapists also placed great importance on 'gut-feeling' and experiential knowledge, and had strong opinions on their own role in the process of psychological rehabilitation. It appeared that the physiotherapists believed they should be aware of their personal competencies/professional boundaries, have the ability to refer an athlete on to a sport/clinical psychologist when necessary, to address the psychological aspects of sport injuries, and to utilise psychological interventions when appropriate.

Despite its limitations, the findings from this study provide useful and novel information about physiotherapist's personal experiences in using psychological interventions in their work with injured athletes. The study highlights the need for further training in the use of psychological interventions, particularly in the form of increasing physiotherapist's awareness of the different techniques available and the ways in which such interventions can be successfully integrated into physiotherapy process.

## **CHAPTER 8**

# **INJURED ATHLETES' VIEWS ON PSYCHOLOGICAL ASPECTS OF REHABILITATION PHYSIOTHERAPY: AN INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS**

### **8.1. Introduction**

Chapters five, six, and seven presented the empirical evidence on physiotherapists' knowledge, views, and perceptions on the role of psychology as part of sport injury rehabilitation. As a result of the information gathered, some practical suggestions on how to further train practising physiotherapists in using psychological interventions in their work have been made. It appears that physiotherapists have had limited formal training in how to utilise psychological interventions during sport injury rehabilitation, and as a consequence, often decisions on using such skills have been based on intuition (i.e., "gut-feeling") and experiential learning. The findings from studies one, two and, three also seemed to suggest an apparent contention between the 'desired' and the 'required' further training in psychological interventions. However, prior to any conclusive recommendations on the particulars of designing, planning, and delivering further training in sport psychology for physiotherapists can be made, obtaining the athlete's perspective on the issues would also seem to be of importance.

When entering the rehabilitation alliance, both injured athletes and the physiotherapists will hold some impressions and expectations of the rehabilitation process and outcomes which, during the course of rehabilitation, are likely to change and evolve (Brewer et al., 2007). If such impressions and expectations are not aligned, it is possible that the rehabilitation process and outcome will be unsuccessful or not as effective. According to Ray and Wiese-Bjornstal (1999) for example, physiotherapy is a dual process in which both the therapist and the

patient have to work together towards a common goal. The quality of this relationship can have a major impact on rehabilitation adherence and positive treatment outcomes, and if managed ineffectively, can have a negative effect on the overall rehabilitation experience (Ray & Wiese-Bjornstal, 1999). As a result, focusing on the quality of the patient-therapist relationship is important, particularly in the form of identifying patient expectations of the rehabilitation process and outcomes.

Despite the early attempts to examine athletes' views on the physiotherapists' role in providing psychological support to injured athletes, there are few studies investigating injured athletes expectations of sport injury rehabilitation physiotherapy. Pearson and Jones (1992) conducted a two-phase investigation into the emotional effects of sport injuries from the athletes' perspective, and concluded that in general, athletes tended to be in an agreement that the physiotherapists and other healthcare professionals had not consciously considered the emotional effect of injuries. The findings from six case studies (study two) revealed that the participants held mixed feelings about psychologically trained physiotherapists adding a psychological element to the rehabilitation; some regarded such addition as helpful and acceptable, whereas others displayed some uncertainty as to how much of a help a physiotherapist could be emotionally. However, due to the small sample size ( $N = 6$ ) these findings should not be regarded as a good representation of the views of all injured athletes worldwide.

Likewise, investigations into injured athletes' opinions on integrating specific psychological interventions into rehabilitation have been sparse. Brewer et al. (1994) evaluated college students' ( $N = 161$ ) and injured athletes' ( $N = 20$ ) perceptions on the usefulness of goal setting, imagery, and counselling during injury rehabilitation. It appeared that females were more positive about all three interventions than males, and the use of goal setting was considered as the most

favourable psychological intervention by all, regardless of gender. The results also revealed that as a result of receiving an intervention in goal setting, imagery, and counselling techniques, the participants viewed all three interventions as useful elements of injury rehabilitation, thus supporting the notion of further education in psychological interventions for physiotherapists.

Only two studies appear to have attempted to compare injured athletes views on psychological aspects of in relation to rehabilitation adherence with those of physical therapists. Fisher and Hoisington (1993) compared the results from 36 previously injured athletes to those obtained from certified athletic trainers (ATC's). In general, the athletes' responses were similar to those of the treating ATC's in that having social support, good rapport, and good communication between the athletes and the ATC's were seen as significant factors in ensuring rehabilitation adherence. Equally both groups recognised the importance of goal setting and having knowledge of long-term benefits of rehabilitation. Differences in views were found for the role of self-motivation, pain tolerance, level of realistic feedback, and education about the injury and rehabilitation process. For example, athletes regarded their level of self-motivation as having a higher impact on adherence than did the ATC's.

In Australia, Francis et al. (2000) also aimed to compare physiotherapists ( $N = 57$ ) and male athletes' ( $N = 28$ ) views on psychology as part of rehabilitation physiotherapy. Francis et al. found significant differences in athlete-physiotherapist views on the importance of physiotherapists' knowledge of twelve psychological interventions when dealing with injured athletes. The physiotherapists in this study rated using positive communication style, encouraging positive thoughts, understanding stress/anxiety, understanding individual motivation, and enhancing self-confidence as more important than the athletes did. Enhancing listening skills, teaching concentration skills, and reducing depression were all seen as important

by the physiotherapists, whereas athletes felt that the importance of physiotherapists having knowledge on these skills was rated as neutral. However due to using an exclusive sample of Australian elite level basketball players and physiotherapists, the results should be generalised with caution. That is, the views of Australian elite basketball players and physiotherapists may not represent the views of other athletes' and physiotherapists' worldwide, and indeed, those involved in other sports at lower levels of competition. Despite its limitations, the study by Francis et al. made a significant contribution to the literature by making an attempt to compare expectations from both sides of patient-therapist relationship.

More recently, Bricker Bone and Fry (2006) investigated injured athletes beliefs about rehabilitation and their perceptions of social support from ATC's. In total, 57 injured athletes completed the Social Support Survey (Richman, Rosenfeld, & Hardy, 1993) and the Sport Injury Rehabilitation Beliefs Survey (Taylor & May, 1996). It appeared athletes' perceptions and beliefs about rehabilitation were explained by their beliefs about their perceptions of the social support received from the ATC's. More specifically, amongst severely injured athletes, strong social support from the ATC's was found to be linked with high levels of trust and confidence in the rehabilitation programmes. However, as the study was only concerned with athletes' views and perceptions of social support from the ATC's, and did not explore the athletes' expectations, and wider experiences of physiotherapist's utilising psychological interventions during sport injury rehabilitation, the need for further research is warranted.

Despite a lack of research in the sport domain, the importance of exploring patient expectations and focusing on patient-centred care has been recognised in general private practice physiotherapy in Australia. Potter, Gordon, and Hamer (2003a, 2003b, 2003c) published a succession of studies with the aim of exploring both

patient and therapist perspectives on the role of the physiotherapists in providing psychological support to patients during rehabilitation. More specifically, Potter and her colleagues used the nominal group technique (Delbecq et al., 1975; cited in Potter et al., 2003c) with a purposive sample of 26 current and former physiotherapy patients (not injured athletes) and 37 practising physiotherapists.

Summarising the three studies, Potter and her associates highlighted the importance of clarifying patient expectations *before* a treatment took place, as those patients with unrealistic expectations or preconceived ideas about the nature of their injury and the rehabilitation treatment required were perceived as difficult to manage (Potter et al., 2003a). They also promoted the adaptation of a patient-centred approach to physiotherapy in private practice settings, and highlighted the importance of good communication between the patient and the therapist to ensure patient satisfaction with the treatment (Potter et al., 2003c). Furthermore, the final paper by Potter et al. (2003b) collated responses and compared expectations across the two groups and found a clear discrepancy between therapist and patient expectations. The most important expectations among the physiotherapists were all related to patient behaviours (e.g., show respect and trust, punctuality, and compliance), whereas the patient's expectations were more to do with the physical aspects of rehabilitation (e.g., symptomatic relief, self-management strategies, and "hands on" treatment). However, as all of the above studies were conducted within the general physiotherapy, more research is needed to understand how physiotherapist and athlete expectations are related in sport injury rehabilitation.

In conclusion, it appears studies investigating injured athletes' expectations of physiotherapists' role in providing psychological support during sport injury rehabilitation have been limited. Physiotherapy is largely based on the interaction between the injured athlete and their therapist, and therefore understanding both the athletes' and the physiotherapists' views on the issues are important. Therefore



the purpose of research presented in chapter eight was to document injured athletes experiences of, and their views on, psychological aspects of rehabilitation physiotherapy.

## **8.2. Focus on the methods: The process of data collection**

Parallel to study three, the purpose of study four was to gain an insight into the participants' personal experiences and views on the role of psychology during sport injury rehabilitation physiotherapy. More specifically, the aim of study four was to give injured athletes an opportunity to 'tell their stories' and give their views on receiving psychological support from physiotherapists during injury rehabilitation. Given that the focus of both studies three and four was on the participant experiences, using Interpretative Phenomenological Analysis (IPA; Smith, 1996) for both studies was deemed appropriate (Smith, 2004). As the rationale for the use of IPA in sport psychology was presented to the reader in chapter seven (for more details, see chapter 7, p. 199-201); chapter eight will focus on presenting the process of data collection that took place during study four.

### ***8.2.1. Constructing the interview schedule***

Similar to study three, a semi-structured interview schedule following the guidelines and recommendations put forward by Smith (1995) and Smith and Osborn (2003) was devised for study four. All of the interview questions were framed in an open and broad manner, and were designed to provide the participants with an opportunity to tell their stories, rather than guiding the interview toward any pre-determined direction. The first part of the interview focused on the athletes' past experiences of sport involvement and provided an opportunity for the athletes to provide some background information regarding their sporting career. The questions of "could you tell me how you got involved in your sport", and "what are your most memorable sporting moments" were used as ice breakers to commence the interview. These were then followed by questions

about the athletes' past injury experiences, and the ways in which the injury had affected their lives. The second part of the interview schedule had an emphasis on the athletes past experiences of physiotherapy, and all of the questions were concerned with the athletes' personal expectations and experiences of psychological aspects of sport injury rehabilitation physiotherapy.

A pilot interview was carried out with an international level female football player who had fully recovered from a severe sport related injury. The player had chosen not to return back to the sport at an international level, and instead, had decided to focus on final year studies at a university and continued to play recreationally. The interview lasted forty minutes, was later transcribed verbatim, and subsequently analysed. As a result of the analysis, some of the questions required rewording to ensure participants' full understanding of the questions, and these were subsequently tested in a second interview lasting 25 minutes. Based on the pilot interviews, a few alterations to the interview schedule were made, mainly in the form of paraphrasing questions to make them more 'participant friendly' (see Appendix 8.1.).

### ***8.2.2. Contemplating the sample size***

Consistent with the IPA tradition and current recommendations (Smith, Jarman, & Osborn, 1999), it was determined that the sample size should not exceed ten participants. Based on the existing research recommendations, and the experiences gained during study three, it was therefore anticipated that the final number of participants could be between seven and ten, depending on the "richness of data" obtained, and the extent to which the data obtained was able to produce sufficient evidence to support the researcher's interpretations of the emergent themes.

### **8.2.3. Participants**

The officials of professional football and rugby union clubs in the East Midlands were contacted and asked to pass information onto their players. As a result, several previously injured players contacted the researcher and agreed to take part in the study. A convenient sample of ten professional football ( $n = 4$ ) and rugby union ( $n = 6$ ) players ( $M \pm SD/R$  age =  $22.4 \pm 3.44/9.00$ ) were then interviewed. All of the participants were employed full time within their sport, had past history of sport related injuries (minor to severe), and had recently recovered from severe (injury restricting sport participation for more than 21 days) sport related injuries. On average, the injuries encountered had restricted subsequent sport participation for 19 weeks, ranging from 6 weeks to 10 months. The most recent injuries amongst the athletes included hamstring injuries ( $n = 2$ ), broken thumbs ( $n = 2$ ), discectomy ( $n = 2$ ), broken leg ( $n = 2$ ), an operation on knee cartilage ( $n = 1$ ), and a hernia operation ( $n = 1$ ). At the time of the interview, all of the participants had recently returned back to their sport (within the last few weeks), and continued to receive physiotherapy treatment to ensure successful transition back to playing.

### **8.2.4. Procedure**

All of the athletes were interviewed at the premises of their sport club. With the football players, the one-to-one interviews took place in the private physiotherapy treatment rooms, whereas the one-to-one interviews with the rugby union players were conducted in the private executive boxes located at the rugby grounds. All of the interviews were audio-taped, and on average, the interviews lasted 40 ( $R = 20-55$ ) minutes. Although the interviews followed the topic guidelines, both the participant and the researcher had an opportunity to deviate and expand on any issues they felt of importance.

### **8.2.5. Ethical considerations**

As with studies one, two, and three, this study also followed the ethical principles set by the British Psychological Society (2006). Prior to its commencement, the study was approved by the University of Northampton Research Ethics Committee.

### **8.2.6. Analysis**

All of the interviews were tape recorded and transcribed verbatim. As with study three, first an in-depth familiarisation of the data was conducted by reading and rereading the transcripts several times. One of the participants, Alex<sup>10</sup> was randomly selected and used to inaugurate the analysis. On the left margin, the transcript was annotated to ensure the researcher's full understanding of the participants' accounts. In addition, preliminary comments, associations and summaries were also noted on the left margin. Using the preliminary notes as a guide, the emergent associations and themes were then documented on the right margin. Once completed, a master file of the emergent themes from the transcript was created by using the MindGenius Education Enterprise 2005 programme. This computerised formation of the master list of themes enabled a clear visual display of the emergent themes.

The above procedure was repeated for all of the remaining transcripts. The master list generated from Alex's transcript was used as a template for all of the subsequent transcripts. The template was modified to take account of any differences between the original themes emerged from Alex and the other participants. The themes identified were then collated and combined with actual quotes from the transcripts. This procedure enabled the clustering of the subordinate themes into the overarching superordinate themes. Some

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<sup>10</sup> Pseudonyms were used for all of the participants to ensure anonymity

superordinate and subordinate themes were dropped due to lack of support from the majority of the transcripts. During the course of the analysis and to ensure inter-rater reliability, the transcripts and emerging themes were read and verified by research supervisors, and as a result of discussions, the final themes were mutually agreed upon. In addition, the participants were given a chance to review their personal interview transcripts and to comment on the emergent themes, but none of the participants decided to take on the opportunity.

### **8.2.7. Reflexivity**

As stated in chapter seven, IPA acknowledges the role of researcher in the research process, and recognises the access to participants' live-world as being both dependent on, and complicated by the researcher's own perceptions on the issues under investigation. In comparison to the interviews conducted with the physiotherapists, maintaining 'an outsider's perspective' during the interviews with the athletes was complicated by the researcher's own experiences of encountering sport related injuries. At the start of the interviews, having the ability to empathise with the participants' injury experiences allowed the development of good rapport between the interviewer and the interviewee. During the interview however, conscious awareness of the researchers own multiple empathies on the issues under discussion were considered to avoid personal involvement and influence during the interview. Every effort was made to ensure that participants' views were recorded, and taken forward without the views of the researcher unduly influencing the interview process. During the analysis, an 'insiders' view was adopted as it enabled close access to the data. This was then interpreted by the researcher through using the pre-existing information and knowledge on the issues. That is, when interpreting the data, my personal experiences of encountering a sport injury and existing academic knowledge gained during the research process had an impact on how I, the researcher made sense of the athletes' accounts of their injury experiences.

### 8.3. Results

As a result of the IPA analyses, commonalities in the athlete's expectations of, and experiences of psychological aspects of rehabilitation physiotherapy were found. A number of factors were seen as important in determining the extent to which physiotherapists should be utilising psychology in their work with injured athletes, and a general consensus on the skills physiotherapists should be able to demonstrate was evident. In total, five superordinate themes emerged, each of which contained a number of subthemes. Table 8.1. displays the subthemes in each of the superordinate themes.

*Table 8.1. Master table of the emergent themes: Athlete's accounts*

| Superordinate themes   | Sub themes  |
|--|---|
| Emotional responses to injuries                                  | <ul style="list-style-type: none"> <li>• Self-doubt</li> <li>• Frustration</li> </ul>   |
| Behavioural responses to injuries: Experiences of social support | <ul style="list-style-type: none"> <li>• ... From girlfriend, family, and friends</li> <li>• ... From team mates and injured players</li> <li>• ... From physiotherapists</li> <li>• ... And I expect it to be subtle</li> </ul>                  |
| Physiotherapist as the primary treatment provider                | <ul style="list-style-type: none"> <li>• Different is, different does... the significance of individuality</li> <li>• Diagnose me, treat me, and make me fit again</li> <li>• I want to tell you about my pain</li> <li>• I trust you.</li> </ul> |
| Experiences of psychology in physiotherapy                       | <ul style="list-style-type: none"> <li>• Psychological support? No, not for me thanks...</li> <li>• ..Yet having targets during rehabilitation is vital</li> </ul>  |
| Sport injury: "It is just part and parcel"                       | <ul style="list-style-type: none"> <li>• Take personal responsibility</li> <li>• Just get on with it!</li> </ul>  |

### **8.3.1. Emotional responses to injuries**

All of the athletes openly discussed the ways that sport injuries had impacted on their lives. When talking about his reactions to his injury, Robert a football player, replied: "Um initially I was shocked; I mean I'm a big guy and I think I'm superman so when I broke my leg I couldn't believe it, it took a while just to, just to... ..to sink in". Robert was not alone with his feelings, as all of the other athletes interviewed reported some emotional reactions to their injuries. Depending on the individual athlete, the emotional responses varied from feelings of initial "shock/disbelief" (3) and feelings of "sinking" (1) to "feeling low" (1) and "depression" (3), being "upset" (2), "gutted" (1), and "annoyed" (1). Four of the athletes saw the injury as an opportunity to assess and appreciate their career and skills in a realistic manner, and three of the athletes reported changes in their mood during the course of the injury. In addition to the above, the two most recurrent emotional responses identified by the injured athletes themselves were self-doubt (7) and frustration (8).

#### 8.3.1.1. Self-doubt

Many of the injured athletes recognised the increased levels of self-doubt and worry about their career and ability to play again as part of the process of rehabilitation. When asked about the impact of his injury on his life, Robert stated: "there was a stage where I never thought I'd be, where I would be same as I was prior to my injury you know." Duncan, a rugby player indicated that despite his recent recovery from disectomy, an element of self-doubt about the strength of his back was still evident: "I think with time it will definitely get a lot easier and over time I will forget about it, but you know at the minute there's that element of doubt."

### 8.3.1.2. Frustration

One of the most prominent sub themes that emerged from the data was the notion of frustration. One of the rugby players, Mark, did not see the purpose of being frustrated, but rather saw the relevance of focusing on getting better again:

“I don’t really get disappointed if... by injuries or anything if they happen they happen like there is no point in getting frustrated, or you’re watching a game and you want to be out there you’re a bit like, ah I wish I was playing, but its not that big of a deal if I’m injured then I’ll just get fit again, really”.

The majority of the players however did indicate frequent feelings of frustration as a result of their injuries. Some of the main causes of frustration were boredom with the repetitive rehabilitation exercises, being injured, and not being able to do what they wanted. Tony, a football player stated: “because you’re just doing the same old stuff you are just bored and frustrated and you think humph I’ve had enough of this you know.” Daniel who plays rugby and had undergone a hernia operation indicated: I knew it would be painful if I did anything, but I couldn’t do anything, so it was a bit frustrating.” In a similar manner, Joe, also a rugby player talked about his frustration in relation to his thumb injury:

It was very frustrating because the only thing it was stopping me from doing was from passing and catching a ball, and making tackles, but I could run, I could swim, I could bike, everything I just couldn’t you know, have that contact that sharp contact, so that was frustrating, unlike if you have a leg injury you can’t do anything you can’t run so obviously you’re not going to be able to get fit as quickly.

On occasions the length of recovery and setbacks during the recovery process were also seen as causes of frustration. “I would have been back quicker for a leg break



or something than I was from this, so it's quite frustrating, I get quite frustrated" (Alex, a rugby player). Jason, a footballer, explains how recurring operations on his knee had affected him emotionally:

... so its been really frustrating to be honest with you, because obviously from the specialist telling me at the beginning that I was only going to be off 4 to 6 weeks for it to then go... having another op and then another op and then being out for 10 months it was very frustrating, it really was frustrating.

### **8.3.2. Behavioural responses to injuries: Experiences of social support**

Based on all of the athletes' accounts, the use of social support during injury rehabilitation was regarded as integral. For example one of the ways in which athletes in this study appeared to cope with frustration was through the use of social support. For the most part, seeking social support was self-initiated by the athletes, and in doing so, several key agents were used as sources of social support. In particular, girlfriends, family, friends, team mates, other injured athletes, and physiotherapists were all used as a source of informational, motivational, and emotional support. In addition, girlfriends and family were also used as a tangible support, especially when the injury had a major impact on the athlete's everyday life.

#### 8.3.2.1. ... From girlfriend, family, and friends

When dealing with frustration, members of the athlete's immediate family were seen as important source of social support for a number of reasons. Jason found his significant others as important in helping him get through the frustration and recovery process: "Having another op and then another op and then being out for 10 months it was very frustrating it really was frustrating. But then obviously my family, my girlfriend, and my friends were there to... to help me get through it". For

Alex, after his hernia operation, having support from his family and friends was essential:

Um, well I suppose I had my family behind me, and my girlfriend as well, so... they help you an awful lot this um, cause it's a lonely time that you're in especially, I was in bed for two weeks I couldn't do anything just lying on my back for two weeks, so you've got a lot of time to think about things. Yeah I suppose, it can be a very depressing time and er, yeah you just need friends and family, it's essential, I think that you have that and without them you'd go mad, you'd go crazy you know

Along with Jason and Alex, Robert too gave credit to his family for helping him get through the injury: "I've been working hard, you know and praying you know, and my family has got me through it". Particularly, the role of fathers as a source of informational support was seen as very important in reassuring players' apprehensions about upcoming operations and injury rehabilitation. Daniel indicated that his father had a previous history of operations, and talking to him had helped Daniel to alleviate his apprehensions about the upcoming operation.

Due to the nature of their injuries, some of the athletes also relied on their families for tangible support. For example, when recovering from injuries which had a direct impact on athlete's everyday life (e.g., broken leg, disectomy, and hernia operation), the athletes often relied on their loved ones for physical support. For example Robert felt that being on crutches and not being able to carry a drink from one room to another made him appreciate "just the smaller things in every sense of the word". Jason described similar experiences when he stated: "I couldn't have a shower really, I had to wipe myself down with a flannel, it was really awkward and my missus like was basically like, getting me a drink and my food and being

really helpful". In support, Duncan described himself as a toddler who needed help with basic things:

Straight after the operation I was stuck at home, couldn't really do anything um, driving, couldn't drive anywhere, couldn't really do, do anything for myself, so it was, my life had to change significantly. Like where other people being like my parents and my brother helped me a lot more than they had done, you know I kind of went back to being like not a baby, but a toddler, that needed help with basic things like picking things up from the floor and stuff like that

In essence, many of the athletes regarded their girlfriends and family as an important source of emotional and motivational support. In addition, when the injury had major physical limitations, their role as a form of tangible support increased.

#### 8.3.2.2. ...From team mates and injured players

The athlete's opinions about the importance of seeking social support from team members varied greatly. Ryan, a footballer indicated that having someone else in a similar position as him around was good during injury recovery:

I think that having another person, another injured player with you is quite vital. It makes it real to motivate yourself into training... because some days you feel like, I can't, I can't do it, I'm really too tired, but then your mate's, your mate's fine and he gets you through it

On a similar note, Alex felt that team mates with a history of previous injuries had the potential to be excellent sources of informational support: "they know what they are talking about". Getting support from other non-injured players from the

team as a whole was also seen as vital. Duncan indicated that being included into the "squad environment" as much as possible can help an athlete not to go into "depressed state of mind". Despite many of the athletes recognising and seeking social support from their team mates, not all athletes considered this form of social support as beneficial during injury rehabilitation. For instance, despite talking about social support, Jason made no reference to the use of team mates as sources of social support. Mark was not keen on talking to other players, as he saw each injury experience as unique, and therefore comparing experiences would not be relevant.

#### 8.3.2.3. ...From physiotherapist

Further to above, athletes also explained how they used physiotherapists as a source of informational, motivational, and emotional support. Joe talked about how his physiotherapists would motivate and keep him informed after a hard session:

he keeps giving you the "no, you'll be fine", and then in order to back up the "yeah it will be fine" he'll give an example where "the bones are good under load and they enjoy having load and that helps them heal"... so as to encourage and putting more passion through it, "yeah its going to be sore, but it is getting better" and those kind of small things

On the other hand Ryan, who regarded the use of other injured players as vital source of social support, did not feel that physiotherapists were in a position to provide motivational support: "sometimes I have been, few times, and I feel like, oh God, the physios' are trying to motivate you, but you feel like they're having a go at you". In contrast, Christian was unsure about the usefulness of other injured players as a source of social support, but he did value the "telling-off" from his physiotherapists and his coaches when he showed signs of non-compliance by choosing to miss a rehabilitation session:

I was a bit half-arsed, but I got dragged in to a team meeting, and got a big bollocking, and the coaches were like, what are you doing, and I thought oh no, and then from then on end, it was sort of a bit more, I needed to know what was going on... .. so I snapped back into it from there on really...

Based on the findings, it appears that both football and rugby players generally agree on the usefulness of social support during injury rehabilitation. In fact, all but Mark discussed the relevance of social support when injured.

#### 8.3.2.4. ...And I expect it to be subtle

As demonstrated earlier, it appeared that much of the need for social support was self-initiated by the athletes, rather than instigated by the physiotherapist. In fact, physiotherapists were seen as a subtle and informal source of support. For Joe, the support from the physiotherapist was viewed as friend-like behaviour:

I think that, it's almost a friendly thing in as much as if a brother or sister would say come on, you can do it, or push it a bit harder, it's not seen by me anyway, as a psychological thing, I just see it as a friendly thing

Christian also felt that merely being interested in how the players were getting on was viewed as supportive, and having formal meetings to address psychological issues was seen as something not necessarily part of physiotherapists remit:

they are interested in the players and how we get on, like as to how we're doing... they don't necessarily come with a rugby background they are just used to treating injuries you know, but they are, you watch the others and they're intrigued as to how we are getting on, that's supportive but in terms

of like, er, sitting down and chatting about your injuries er, there's only so much they can do

It appears that social support is a vital part of the injury rehabilitation process; however more often than not the athletes appear to be in control of deciding whether or not to seek social support from those around them. Given the findings above, it seems that physiotherapists in the UK are not acting as facilitators of social support, nor are the athletes expecting them to be. Instead, physiotherapists are expected to be a direct source of motivational, emotional and informational support, if the athlete so wishes.

### ***8.3.3. Physiotherapist as the primary treatment provider***

As in the findings from study three with the physiotherapists, the athletes in this study also recognised that individual differences in both the physiotherapists' and the athletes' influenced the rehabilitation process. The athlete's appeared to have very clear expectations of what they perceived the physiotherapists role to be during injury rehabilitation, and many of these expectations were related to the physical aspects of the injury. It appeared that the communication between the physiotherapist and the athlete was mainly focused on pain. Overall, athlete's placed a lot of trust in their physiotherapists and regarded trust as an important part of rehabilitation process.

#### **8.3.3.1. Different is, different does... the significance of individuality**

The word "different" frequently emerged from the transcripts in a range of ways. With regards to the physiotherapists themselves, the athletes felt that all physiotherapists are different, and they work in different ways. "I have had quite a few physios and they're all different you know and one tells, seems to tell you one thing, and another tells you another thing you know" (Tony). Tony continued by stating that sometimes his ability to "get on with the physiotherapist" was also

linked to his perception of their level of expertise: "I have been to see physios that I've got on with and I have thought are good, and there has been other physios that I did not think were very good at and did not get on with".

According to Christian, physiotherapists have different personalities, and might get along better with some players than others, and ultimately their goal is to get every player back on the field to play:

there's different, there's all these different personalities, so kind of, you have this kind of, you may be more comfortable with some than others... ..I can say you know, like from in the whole grand scheme of things every player needs to get out on that field and play so they all have to be fit

Some appeared to use the differences in the physiotherapist's skills to their advantage. For example, Ryan's first experience of physiotherapy was in private practice settings, where he felt that the physiotherapist treating him was very good in educating him about sport injuries: "he looked after my ankle for those 4 months, just er, did simple things like er... massage, movement... he talked to me a lot... and I learnt a lot from that physio and I think that helped". At his second club, Ryan was treated by a lady physio who, in retrospect was very good in "knowing her stuff" and "knew how to treat the injuries", but when it came to massages she was not able to go deep enough and subsequently someone else was called in to perform massages. His most recent experiences include treatment from three different physiotherapists; all of whom he felt were good at different areas of physiotherapy. Ryan explained that due to his long experience, one of the physiotherapists was able to recognise individual athletes' emotional changes (e.g., feelings of depression and lack of motivation) very well and somehow "manages to get you through it". Ryan praised the other male physiotherapist as being "good

with rehab, great massages and stuff”, and the female physiotherapist “as being excellent in helping him to loosen up a problem in his glutes”.

However, experiences of several physiotherapists were not always positive. Indeed, during the course of his 10-month rehabilitation, Robert had changed clubs several times and as a consequence, also had four different physiotherapists treating him: “My rehab was scattered, cause you know I had used 4 different physios cause I was at 4 different clubs, so I’m taking all different information from all different physios, but all physios work differently”. When asked about any possible regrets about his physiotherapy experiences, Robert replied:

I would stay in one place and I would have one physio that’s the thing, I look back at it and say that the reason it took longer for me is because no physio really works the same and I’ve been taking advice from different physios. So in hindsight I’d have stayed with one physio so I could see the progression from when I started to when I finished, but every time I go to a different physio they don’t know where I’ve come from or how I was 8 weeks ago.

Athletes also felt that different physiotherapists should be able to recognise individual differences in athletes, and as a result, tailor the treatment to meet individual needs: “every physio has his own way, so I think that physios should be able to adapt to every individual player for, because, not everyone can handle it, and everyone handles it differently you know” (Robert). Christian also spoke about how physiotherapists are able to “realise that people are different”, and that you should not have “set rules for every injury” as “we (the injured players) react differently”.



### 8.3.3.2. Diagnose me, treat me, and make me fit again

Another expectation shared by both athletes in this study and the physiotherapists from study three was concerned with the actual process of physiotherapy. All the athletes expected to receive a correct diagnosis, followed by appropriate treatment, and for physiotherapists to do the best they could to ensure that the athletes return back to full fitness as soon as possible. Ryan indicated that for him, the key was to "diagnose it (*the injury*) early and do the right treatment straight away". Tony stated that physiotherapists should display "real interest in trying to find out what it is um... but they are determined to get me back right as soon as they can". Jason expected nothing less than "them (*physiotherapists*) to give 100%, you know", and Joe wanted to " get back on the field as quick as possible. It doesn't really matter how they do it...as long as they do it".

Joe's feelings were shared by Mark and Daniel, who just wanted treatment and for the physiotherapists to do what they could to get them back to full fitness as soon as possible. Alex also indicated that getting the right diagnosis and treatment was vital, but emphasised the importance of treating individual athletes case by case:

I'd expect a correct diagnosis first of all and then um, then um... taking each individual case as an individual case, and not just "well this person came back at this time and this person came back so technically it should be 4 weeks you know so back in 4 weeks", some people are back in 3 weeks but others might take 6 weeks, er, just to treat each person just got to take their time and you know, just the right diagnosis and the right treatment

Based on the findings from study three, it appears that the physiotherapists' perceptions of their role are the same as the athletes' views as expressed in this study. Both groups are expecting full recovery back to the pre-injury level of performance, as well as making sure that it happens as soon as possible. This is

not surprising, as for most athletes being able to play is one of the most important aspects of their lives, which, if taken away has the potential to have a range of adverse implications.

#### 8.3.3.3. I want to tell you about my pain

Despite having clear expectations about physiotherapy treatment, they were rarely voiced with the physiotherapists. In fact, when it came to discussing how they felt about the injury or rehabilitation, the reasons why their expectations were not discussed with the physiotherapist was due to the assumption that the physiotherapists knew already. For instance Alex stated: "Sometimes I'll say (*to the physio*), look I'm quite frustrated, but I suppose they know". Likewise Duncan stated: "I just I didn't discuss it (*his expectations*) with him I just kind of expected it, which sounds a bit arrogant now really, but that's kind of what I was thinking, thinking that I'm injured". Ryan stated that he too did not discuss his feelings with the physio, as "he (*the physio*) can just pick up on it, a lot of them just pick upon the way you feel, that you can't be asked, you can't be bothered because you're really struggling today".

Despite the apparent lack of communication between the physiotherapists and the athlete about personal expectations, feelings, and worries, all athletes believed that open and honest communication was vital for recovery. Much of this communication was based around discussions about pain, and how much a particular physiotherapy technique was hurting the athlete. For example Jason indicated that it was important to tell the physiotherapist about the pain you are feeling, "because you are the only person who knows". According to Christian, "I did give them quite a grill through the pain (laughter) so you know". Alex used verbal and nonverbal communication when informing his physiotherapists about his feelings of pain:

Yeah all the time... if he goes like, if he is is gonna press to hard or... then he might see my facial expression and how I'm reacting to it... some days it might be good, some days it might be really really bad, but fortunately I'll then say if I am having a bad day today, you come in... it might be sore or something... and then they'll react accordingly, and they do

And Daniel would voice his feelings about the levels of pain after the treatment session: "with my elbow, a lot of that was painful, so I'd I, you know, I said to the physio, because a lot of the treatment is very painful so I, I'd say after a session that you know...oh that really lot hurt or what ever, or... that did not hurt as much as last time".

The reasons why pain emerged as dominant topic for discussion during physiotherapy treatment may possibly be explained through athletes' perception of the physiotherapists' role in treating sport injuries. As demonstrated earlier, athlete's expectations of the physiotherapy were very physical in nature, and focused solely on the actual physical injury. According to Joe: "I don't think, I think that their role is to, is to have a hands-on approach in a physical way rather than a mental way." Another explanation for the difference could be due to athletes assuming that the physiotherapists know how athletes feel, and therefore they believed that discussing it would not be necessary.

#### 8.3.3.4. I trust you.

A further explanation for the lack of communication about individual feelings could be a result of trust in the physiotherapist. All of the athletes identified trust and a good working alliance as being the most important part of their working relationship with the physiotherapist:

Not many people do you know, you get your kit off in front of them and then they're massaging and putting thumbs and elbows into your legs and your arms and manipulating you in um, so it's a close relationship that you build up... ..and you trust their depth of knowledge and they can bring it out to you that yeah, they do know what they're talking about, or at least, give you an example that helps you deal with the pain, and that's great you are going to you know cause its sore, but you then try to push it harder so that you can get back to where you want to be (Joe)

On occasions the level of trust was based on previous experiences of working with the physiotherapists. Alex indicated that as a non-professional player in Ireland, he regularly visited a particular physiotherapist, and as a result of successful recoveries, he had learned to trust and value his opinion immensely. Several years later, when playing professional in England and faced with a possibility of a second operation on his back, he went back to his old physiotherapist for a second opinion, and as a consequence followed his advice instead of his club physiotherapists' advice and decided against the operation. Alex has since recovered, without having a second operation, thus reinforcing his trust in his old physiotherapist. Likewise, Robert indicated that he places trust in the physiotherapist's word, and so far all of the physiotherapists he has seen have been helpful:

Every physio I have come across has helped me, you know what I'm saying, to the best of their ability, you know, from what I can see but they know more than me so I do trust what they say, I don't believe that they'll steer me wrong

From the athletes' perspective, placing trust in the physiotherapist emerged as an important factor that influenced their perceptions of the physiotherapy process. However, sometimes such a level of trust can be disadvantageous to the athlete.

For example, when Joe broke his thumb, he trusted the physiotherapists' diagnosis and continued to play despite the aching thumb:

I think that um, given a different environment I just would have gone straight for x-rays, because it was sore you know, because they (*the physiotherapists*) are in the position of trust like that, and you trust their judgement, that you kind of say okay its sore but I'll play on with it because if you say its not broken, its not broken, so I think that's not necessarily a physios fault but that's the coaches putting pressure on to play really.

#### **8.3.4. Experiences of psychology in physiotherapy**

When asked about their experiences of receiving psychological support during rehabilitation, majority of the athletes reported having no experiences of psychological support from the physiotherapist during rehabilitation. They did however, acknowledge the importance of treating psychological and physical aspects of injury, but believed that addressing psychological issues was not something that they themselves required.

##### 8.3.4.1. Psychological support? No, not for me thanks...

The majority of the athletes in this study recognised the importance of combining psychological and physical rehabilitation. Athletes in this study recognised the importance of psychology as part of their game, and as such addressing issues related to the psychology of injury was seen as useful. However, when probed, many of the athletes felt that they had never had psychological support from the physiotherapist. For example, when asked about his experiences of getting psychological support during physiotherapy, Tony replied: "Er never for me, never anything from the physio". Jason replied by stating "Me personally, not really, me personally no, but I'm sure others may, but... but I haven't no".

Others were not sure if a psychological component existed as part of their rehabilitation, and attributed their lack of awareness of such support to it being very subtle. Joe, for instance, did not know whether or not he was receiving psychological support from the physiotherapists: "I don't think...no um... psychologically um, I don't see it um, I don't think there's any psychological back up but maybe it is or maybe it isn't, you kind of don't know..." Similarly Ryan did not recall any explicit psychological support:

I didn't think that Tom and Bob (the physiotherapists, names changed), they don't really do this psychology side, or you don't think of it in that way... um... they motivate you yes, so I suppose that's a part of it, but I never look at that aspect at all. You sort of look at your rehab and get on with it and I suppose the psychological thing is just to motivate you, there's not a lot else to it, you can't talk to them about it. You don't think about that side of it that's all I say, not really (Ryan)

Sometimes the lack of psychological support was explained as a result of their personality, and the notion of just getting on with the rehabilitation. Mark stated:

I'm not really that sort of person like needs um... I don't really get down over like things like that so I just look on the brighter side and don't worry about it really because its not the end of the world is it. It's a broken leg at the end of the day you'll be back fit and playing again as soon as possible you know what I mean, but um, no not really, but I don't really look for that stuff I just get on with it

Only two of the athletes talked about their experiences of receiving psychological support. Duncan felt that his physiotherapists helped him to stay positive by making jokes and highlighting the areas where he had made progress. Equally,

Daniel felt that he got a lot of support from one of the physiotherapists when he discovered his hernia:

I remember when I first found out about the hernia I was absolutely gutted, because I hadn't played in about 4, 5 weeks because of the elbow which had now healed so I was really looking forward to playing. When I found the hernia, I was absolutely gutted... because I knew how long, because the doctor had said I asked him what's the normal timeframe for this and he said about 6 weeks, and I remember I was just so gutted I was, I could not believe it, it was just after my elbow was better, this happened and um, and my physio came up to me and said oh um, come and have a chat with me afterwards... and I did not really say, oh, yeah, that would be brilliant, but I spoke to him and he is like, ... don't worry... this is what we'll do... we'll see the doctor then, we'll try and get you to see a surgeon, you know there is a possibility... and he just talked everything through...and I don't know, I went from being very upset, to kind of ... thinking more about getting better, but I am not sure whether he kind a... I think was kind of him being nice rather than him being like, I don't know... psychologically helping out... you know what I mean...

In light of the above, it appears that the stigma around the word "psychology" could be relatively strong and as such could have an impact on how an injured athlete might perceive the usefulness of psychology as part of rehabilitation. Equally, as demonstrated earlier in this chapter, athletes appear to view physiotherapy as being very physical in nature and highly focused on the actual physical injury. The athletes also appeared to hold high levels of trust towards their physiotherapist, and as a result, their opinions on the usefulness of psychology, or different techniques are valued and respected:

I think that if the physio thinks that he's got a method which will work a person, or help a person then I am all for it, you know, like if the physio offers something new then I'm all for it, you know, but I'm all up for trying something new you know what I'm saying (Robert)

#### 8.3.4.2. ... Yet setting targets during rehabilitation is vital

Despite the majority of the athletes not recalling any experiences of psychological support during injury rehabilitation, many of them described processes in which their physiotherapists would set them targets to work towards. Duncan found goal setting very useful because it gave him something to work towards. In his experience, it was the physiotherapist who set the dates for different physical parameters (e.g., running again, sprinting again, a date for his first game). Mark had experiences of setting physical and performance goals with his physiotherapist. Tony also regarded goal setting as important, but emphasised the importance of goal flexibility: "they're not the be all and end all, you know... .. it is not definite, if you've not reached that target, you have not failed that target, we will just adjust it then, hopefully we will might be able to do that, you know, hopefully maybe in a couple of weeks you maybe able to start running..."

The athletes in this study appeared to have knowledge on the importance of setting goals, yet the appropriate "labelling" of goals for rehabilitation was not evident. They also demonstrated an understanding of setting flexible goals (Gilbourne & Taylor, 1998; Gould, 1986), and how different physical parameters could be structured through the use of goal setting. It was also apparent that goal setting was often dictated by the physiotherapists, rather than being a mutual planning process between the injured athlete and their therapist.



### **8.3.5. Sport injury: "It is just part and parcel"**

Many of the above findings can also be explained through the ways in which the athletes perceived their injuries. As all of the injured athletes in this study were professionals, they expected to get injured and considered them as part of the job. For instance Joe simply stated: "being professional it's the job. And injury is part of the job." Tony viewed injury as "part and parcel of the game, you have just got to accept it, and get over it, and just... do what you have been told to do basically." In support, Alex elaborated this concept a bit further:

I don't know what the stats are but I'm sure every single player is going to have an injury at one stage or another whether it be small or big, people, not everyone is injury prone but whatever they call it it's just part and parcel of the game, it's the game we choose to play in and it's different for a job, in ours if we have to do it we do it. I'm still going to play it and if I get hurt, I get hurt.

As the occurrence of injury was seen as part of a professional athlete's job, the ways in which the injured athletes seemed to deal with their injuries was through two distinct responses: to take personal responsibility for the injury and the rehabilitation process and to "just get on with it".

#### 8.3.5.1. Take personal responsibility

Despite placing great levels of trust in the physiotherapist's knowledge, experience, and ability to treat the injury, the athletes in this study also regarded taking personal responsibility for their injury recovery process as vital, and indeed, as "part and parcel". Jason indicated that during rehabilitation, it is important to

get on with it, put your head down, get your head round it, you know what I mean. That you're going to be out for this long and just set your targets, ok

you're going to have to work hard for it for this amount until I'm injured and to get back on your feet like...

Robert also felt that taking ownership of the injury recovery process was important, especially when the treatment provided did not match ones expectations: "you as an individual should be able to say, look if you're not getting what you want to get I think you have to be able to say so, because its your career".

#### 8.3.5.2. Just get on with it!

Another distinct aspect of how the process of injury recovery was handled by the athletes was to "just get on with it". Many of those interviewed did not see the point in wallowing and feeling sorry for themselves, as after all, such would not ensure rapid recovery to full fitness. For Mark, having an injury was "not that big of a deal" and he felt that being injured mean that "then I'll just get fit again really". To illustrate his point further Mark carried on saying:

obviously I don't want to be injured but when you do get injured, everybody gets injured at some point, so there's no point in crying about it or getting upset, you just get on... you've just got to make the best out of it which is what I've done do you know what mean. I did what I needed to do and um, everything that I needed to do and I'm back fit and ready to play again

Demonstrating personal responsibility and "just getting on with it" suggests that the athletes in this study were able to adopt a very professional approach to their injuries. Injuries were seen as part of the job, and as such, athletes in this study did not really dwell on the repercussions of the injuries. Instead, it appeared that much of the focus was placed on getting better again.

#### **8.4. Discussion**

As demonstrated in the result section, it appeared that injured athletes often viewed their injuries as 'part and parcel' of the sport, and often psychological aspects of injury were not actively thought about. Amongst the athletes in this study, the concept of self-doubt was considered to be an important factor during the recovery process and appeared to have an impact on the ways in which they reacted to their injuries. It was clear from the athlete's accounts that feelings of self-doubt were a product of athlete's responses to the actual injury, and not something that they felt normally. These findings are in line with existing models, as the Integrated Model (Wiese-Bjornstal et al., 1998) acknowledges self-perception as an outcome of athletes' cognitive appraisal of the injury.

In comparison to studies one, two and three, the acknowledgement of self-doubt was unusual. Physiotherapists in study one identified a range of emotional responses amongst athletes who cope/do not cope with their injuries, but self-doubt was not one of them. Similarly in study three, the physiotherapists showed a clear understanding of the emotional process that athletes experience during injury, but self-doubt was not mentioned as a reaction to sport injury. However, being aware of athletes' feelings of self-doubt could be of importance, as such awareness could assist physiotherapists in addressing these thoughts through providing appropriate psychological support to the athletes. For example, by using cognitive restructuring/reframing, physiotherapists could help the athlete in overcoming feelings of self-doubt.

In addition to the feelings of self-doubt, it appears that the majority of the players had experienced feelings of frustration during rehabilitation. These findings are in line with earlier research (e.g., Quackenbush & Crossman, 1994) and existing models (e.g., Integrated model by Wiese-Bjornstal et al., 1998), thus suggesting frustration as a typical emotional response to sport injuries. In comparison to study

one however, the findings are contradictory. As with self-doubt, physiotherapists did not report frustration as a typical response amongst athletes who cope/do not cope with injuries (open-ended questions). This could be due to frustration having very little impact on athletes coping skills. However as it would seem to be a recurrent emotional response, physiotherapists should be aware of the athletes' emotional responses, and to be equipped to deal with issues related to frustration.

Of all the psychological interventions discussed, the role of social support during injury rehabilitation was highlighted as paramount, and in fact, all but Mark discussed the relevance of social support when injured. Many of the athletes perceived their girlfriends and family as a vital source of emotional and motivational support and in case of injuries encountered causing major physical limitations, their role as a form of tangible support amplified. This is not surprising, as the existing models recognise the injury type and severity as determinants for the need for tangible support (Taylor & Taylor, 1997). Equally, previous studies have also highlighted the importance of family and friends as a source of social support (e.g., Rosenfeld, Richman, & Hardy, 1989) during injury rehabilitation.

With regards to receiving social support from team mates and other injured players, the opinions about the importance amongst the athletes who participated in this study varied greatly. Those who perceived it to be beneficial (i.e., Ryan, Alex, Duncan) provided examples of experiences where team mates and other injured players had been a source of emotional, motivational, and informational support. However, not all everyone felt that other players were a useful source of social support during the rehabilitation process. For example, Jason made no reference to the use of team mates as sources of social support and Mark felt that since each injury experience was unique, comparing experiences with other players was not relevant. In contrast, all of the athletes in this study were in an agreement that physiotherapist can be a vital source of social support during injury

rehabilitation. In particular, physiotherapists were seen as a source of informational, motivational, and emotional support. It appeared that athlete's experiences of, and preferences towards different types of social support from the physiotherapist varied, depending on the individual athlete and their situation.

The above findings from this study are in support of the work by Udry (1997, 2002). According to Udry, there are four main types of social support applicable to sport injury rehabilitation: emotional, informational, tangible, and motivational. Also consistent with the findings from study three and other previous literature (e.g., Mitchell et al., 2007; J. Taylor & Taylor, 1997), it appears that the extent to which the different types of social support should be employed and by whom, was dependent on the individual athlete's personal and situational factors.

In order to make recommendations as to how physiotherapists should be further trained to use social support in their work, it is imperative to understand how both the physiotherapist and the injured athletes perceive physiotherapist role in the process. The findings from study one indicated that improving athletes' social support was rated as the third least used psychological intervention by the physiotherapists in the UK, and it was also regarded as the least important intervention to learn more about. The findings from study three however depicted physiotherapists as having a clear understanding of social support as a concept, and highlighted their understanding of the importance of girlfriends, family, friends, team mates, and themselves as possible sources of social support.

As a consequence, physiotherapists should be aware of different types of social support available and the roles different significant others may have in the process. They should also have the ability to integrate social support into their work in a way injured athletes perceive it to be a subtle and natural part of rehabilitation programme. Further training should therefore seek to provide physiotherapists with

an understanding of the concept of social support and how to acknowledge their personal role in providing such assistance. This could include training in the different types and sources of social support, and the ways in which these can influence the recovery process. Nevertheless, it appears that training physiotherapists to integrate social support into the physical rehabilitation should be a fundamental part of their professional training and continued professional development.

Similar to the physiotherapists in study three, the athletes in this study also recognised the role of individual differences in both the physiotherapists' and the athletes' behaviour and personality in the rehabilitation process. In comparison to previous research, such results are not surprising. Individual differences have been considered to act as moderators affecting the psychological responses to sport injuries (Brewer, 1994, 1998; Brewer et al., 1994). Likewise, physiotherapists possess individual personality characteristics which will have an impact on how they interact and work with the patients (Ray, Terrell, & Hough, 1999). The findings from studies one and three also support the concept of individual differences. The findings from study one for example listed a number of characteristics (e.g., level of compliance, and attitude towards injury and rehabilitation) as important factors in determining athletes injury coping ability, and in study three, the physiotherapists considered acknowledging the needs of an individual athlete as a vital part of the rehabilitation.

Drawing from the analyses, the athletes' expectations of what they perceived the physiotherapists role to be during injury rehabilitation were also very clear. Often such expectations were related to the physical aspects of the injury, and as a consequence, much of the communication between the physiotherapist and the athlete was mainly focused on pain. It appeared that athletes seldom talked about their feelings of self-doubt or frustration, or any other apprehensions they might

have had during the rehabilitation process with their physiotherapist. Instead, they were very explicit about how they would openly speak about their unhappiness on physical aspects of rehabilitation, such as if any particular rehabilitation exercise was too painful.

It also appeared that the athlete's placed a lot of trust in their physiotherapists and regarded trust as an important part of rehabilitation process. On occasions the level of trust was based on previous experiences of working with the physiotherapists. As long as they felt that the physiotherapist was doing their best to facilitate speedy recovery, the athletes did not feel the need to question or doubt the physiotherapists. Placing trust in a physiotherapist is a vital part of an effective working alliance and often forms a foundation for good rapport (Ray et al., 1999; Ray & Wiese-Bjornstal, 1999). Therefore, identifying such high levels of trust from the athletes towards their physiotherapists is encouraging. However, this was not highlighted by the physiotherapists in studies one and three as no reference to the importance of trust was made. Acknowledging the significance of trust physiotherapists appear to have amongst athletes is useful and the impact of trust must not be underestimated. As a consequence, teaching physiotherapists about the development of trust as part of patient-therapist relationship should be an integral part of professional training for all physiotherapists. In particular, further training could focus on developing physiotherapists' awareness of the psychological and personal qualities that are essential for a good physiotherapist.

Given the findings in relation to the high levels of trust towards the physiotherapist, it might also be beneficial to allocate greater levels of ownership of the rehabilitation process to the athletes. Such could easily be implemented through the use of goal setting. Setting goals is a vital part of an athletes' everyday life, and a range of studies have highlighted the importance of setting goals during injury rehabilitation (e.g., Bassett & Petrie, 1999; Evans & Hardy, 1995, 2002a,

2002b; Evans et al., 2000; Gould et al., 1997; Ievleva & Orlick, 1991). In particular, it has been suggested that setting goals during injury rehabilitation can have a positive effect on the athletes' psychological and physical healing (Taylor & Taylor, 1997). Even though the goals should be primarily set by the physiotherapist, providing the injured athlete with greater involvement in the goal setting process (Kolt, 2004a), could promote effective communication. In addition, this could facilitate increased levels of goal commitment and rehabilitation adherence, which in turn has the potential to have a positive effect on the overall quality of the working relationship between the physiotherapists and the injured athlete.

In light of the above, it appeared that athletes in this study were in support of addressing psychological aspects of injuries during rehabilitation. However when asked, majority of the athletes reported having no experiences of psychological support from the physiotherapist during rehabilitation. They did however, acknowledge the importance of treating psychological and physical aspects of injury, but believed that addressing psychological issues was not something that they themselves required. When combined with the findings from studies one, two, and three, it might be beneficial to ensure that any psychological intervention should be implemented in a way that the athlete perceives it to be an integral and natural part of regular physiotherapy session.

### **8.5. Research limitations**

Despite the interesting findings, the study had its limitations. The main limitation of this study was undoubtedly the length of the interviews. On average, the interviews lasted 40 minutes, ranging from 20 to 55 minutes. As a result, it can be argued that the data obtained was not as rich as it could have been if more time would have been spent with each participant. However, it can also be argued that the data obtained was as rich as possible, as based on the personal reflection on the



interview processes, the researcher was confident that the participants had been able to express their views and tell their experiences as detailed as they wanted. Since psychological aspects of injuries were not really something the athletes in this study had consciously thought about, it may well be that they did not have anything else to say about the topic. That is, in their mind, the accounts given were a true reflection on what had happened to them, and how they had perceived the psychological rehabilitation process.

In a similar manner, the lack of follow-up interviews and not having the participants' comment on the interview transcripts can be seen as limitation for the study. All of the participants were offered an opportunity to read their transcripts prior to the analysis; however none of the participants chose to use this opportunity. Alike to the length of the interviews, this could be due to lack of conscious thought on the process of psychological rehabilitation, or merely a reflection on their lack of interest in the topic.

As the study used qualitative methods, and a small sample, the findings cannot be generalised to the injured athletic population as a whole. Likewise, using only professional football and rugby players as participants limits any possible comparisons to athletes who compete at lower levels of competition and in other sports. Due to the methods of participant recruitment, the sample might have been exclusive, as all of the participants had a financial interest in getting back to full fitness. Their experiences were also based on receiving physiotherapy treatment from a club physiotherapist on a daily basis, and therefore their experiences might be different to those attending private practice physiotherapy sessions twice weekly. In addition, being a professional athlete might also imply that their overall experiences of sport psychology varied from those at the lower levels of competition.

## **8.6. Conclusions**

The purpose of this study was to gain an insight into injured athletes' views on psychological aspects of rehabilitation physiotherapy. As a result of IPA analysis, it appeared that frustration was perceived as the main emotional response to injury. Athletes listed a number of causes for the frustration, ranging from boredom with the rehabilitation programme, the length of recovery, setbacks, and not being able to do what they wanted. One of the ways in which athletes appeared to cope with frustration and the injury process was through the use of social support from their girlfriends, family and friends, as well as their team mates, other injured players, and often the physiotherapist. The social support required varied from individual to individual; however it was mostly used for informational, motivational, and emotional purposes. Athletes also regarded their physiotherapists as a main treatment provider, with whom they shared their thoughts about pain, but not about their feelings related to injury or their expectations about the rehabilitation. They also held high levels of trust about their physiotherapist's knowledge, skill, and ability to "get them better", and essentially expected the physiotherapists to diagnose, provide the right treatment, and make them fit again as soon as possible.

It appears that the athlete's perceptions of rehabilitation were very much focused on the physical injury, and the issues related to possible psychological distress, worry, and frustration were not usually voiced to the physiotherapist. To ensure successful implementation of psychological interventions, they should be integrated into the physical rehabilitation in a way that athletes will perceive it to be 'a part of' rather than 'an addition to' the existing physiotherapy programme. It appears that such an approach has been adopted, as in this study, the majority of the athletes did not recall receiving any psychological support during injury rehabilitation, yet they talked about the ways in which their physiotherapists had motivated them by

talking to them and educating them about the injury, as well as setting them targets (goals) to work towards.

In comparison to the findings from studies one and three, it appears that thus far, the expectations of the athletes are relatively similar to those of the physiotherapists. Both groups are aware of their role in the rehabilitation process, and share a common aim: to ensure the athlete's recovery to full fitness, which includes addressing both the psychological and physical aspects of the injury. However, in order to do that, physiotherapists should be aware of possible psychological interventions available, and to have the ability to successfully integrate such skills into their existing physical rehabilitation treatment when necessary. After all, both physiotherapists and athletes alike are in an agreement that integrating the physical and psychological rehabilitation is vital, and an essential part of the recovery process.

In conclusion, athletes in this study were very optimistic about trying out new techniques (being it physical or psychological) if their physiotherapists felt that it could benefit the athletes' recovery process. Physiotherapists are therefore in an ideal position to inform, educate, and implement psychological interventions into their work with injured athletes. Thus far, the use of social support and goal setting have been found useful by physiotherapists and athletes alike, and equally these are the interventions the physiotherapists appear to know the most about. However, further research into the use of imagery, relaxation techniques and self-talk is needed, particularly to educate physiotherapists in dealing with athletes' feelings of self-doubt and frustration. Based on the findings from this research, it is recommended that it should be done by first training physiotherapists on how to apply such skills into their work in a way that it is perceived as part of the physiotherapy treatment, followed by an intervention to test the effectiveness of such training.

### **8.7. Chapter summary**

As very few studies to date have explored an athlete's perspective on the role of physiotherapists in using psychological interventions during sport injury rehabilitation physiotherapy (e.g., Bricker Bone & Fry, 2006; Francis et al., 2000), the study presented in this chapter aimed to give a voice to the injured athletes with regard to their personal experiences of these issues. First, a brief rationale for using IPA was presented, followed by a description of the process of constructing the interview schedule and the methods of data collection.

The results from the analyses revealed good insights into the ways in which athletes perceive physiotherapists role in using psychological interventions during rehabilitation. It appeared that athletes viewed their injuries as 'part and parcel' of the sport, and as such their attitude towards injury was about 'just getting on with it'. The athletes also spoke about their feelings of self-doubt and frustration, and how different agents (e.g., girlfriends, family, friends, team mates, other injured athletes, and the physiotherapists) were seen as an important source of social support during the recovery process. All of the athletes in this study placed a huge amount of trust in their knowledge, expertise, and ability to treat the injury, and considered their physiotherapist as the primary treatment provider. In addition, the athletes also talked about their expectations on the physical aspects of the physiotherapy (i.e., diagnose, treat, and fix the injury), however such expectations were not effectively communicated to the physiotherapists. Instead, much of the communication between the athletes and the physiotherapists were focused on the levels of physical pain, and not on the athletes' thoughts and emotions during the rehabilitation process.

The athletes in this study were also very willing to try new techniques (being it physical or psychological) if their physiotherapists felt that it could benefit the athletes' recovery process. When combined with the findings from studies one, two,

and three, it seems that designing, developing, and offering further training for practicing physiotherapists in the use of psychological interventions would be beneficial. In order to ensure successful delivery and implementation of psychological intervention training, it is recommended that any training should be very much applied in its focus. In particular, the training should consider the ways in which physiotherapists could utilise psychological interventions their work so that it is perceived as a natural part of the physiotherapy treatment, rather than an 'addition' to it.

## **CHAPTER 9**

# **CONTEXTUALISING THE RESEARCH: CONTRIBUTION TO EXISTING KNOWLEDGE, IMPLICATIONS, APPLICATIONS, AND FUTURE RESEARCH**

### **9.1. Summary of the research programme**

The aim of the research presented in this thesis was to establish the role of UK chartered physiotherapists in the psychological rehabilitation from sport injuries. More specifically, the research presented in this thesis investigated, documented, and explored UK chartered physiotherapists past experiences, existing views, and current state of knowledge in using psychological interventions as part of sport injury rehabilitation. In particular, the research addressed the following objectives:

1. to investigate on a national level, the views of chartered physiotherapists on the psychological content of their practice;
2. to investigate physiotherapists' preferred methods of delivery for further training in psychological interventions;
3. to explore chartered physiotherapists personal experiences of dealing with psychological issues in rehabilitation;
4. to explore injured athletes experiences of, and their views on, psychological aspects of rehabilitation physiotherapy.

Through using a combination of online and postal surveys, study one extended the preliminary study of Hemmings and Povey (2002) and investigated the views of chartered physiotherapists on the psychological content of the practice on a national level in the UK. The findings from the study were congruent with existing research (e.g, Heaney, 2006; Hemmings & Povey, 2002), as physiotherapists ( $N = 361$ ) in the UK believed that all athletes are psychologically affected by their injuries. Stress and anxiety were identified as the most common responses to injuries, and the athletes' attitude,

treatment compliance, and understanding of the injury were listed as key characteristics in determining their coping ability. The physiotherapists also reported using a range of psychological interventions as part of the rehabilitation process, and considered that further training in such skills was important.

Study two investigated physiotherapists' preferred methods of training delivery for further education in psychological interventions. The results from the preliminary survey revealed that physiotherapists ( $N = 22$ ) appeared to prefer intense training days/weekends in the form of traditional 'going-to' training methods (e.g., workshops, seminars) over distance learning methods. The majority were willing to travel over 50 miles to receive such training and the most suitable organisations to arrange training were professional bodies and associations.

Study three adopted a qualitative approach and aimed to elaborate on some of the quantitative findings from study one. Seven chartered physiotherapists participated in semi-structured interviews which aimed to give physiotherapists a 'voice' in telling their stories in relation to using psychological interventions with injured athletes. Analysis by Interpretative Phenomenological Analysis (IPA; Smith, 1996) revealed a number of superordinate and sub themes that represented the physiotherapists' experiences of psychological interventions as part of injury rehabilitation. The physiotherapists spoke openly about their lack of formal training in sport psychology, and appeared to be very knowledgeable and comfortable in using goal setting and encouraging social support. Familiarity with, and experiences of using other interventions (i.e., imagery, relaxation techniques, and positive self-talk) seemed to be less apparent.

Furthermore, a number of factors such as personal perceptions and attitudes, the athlete in the rehabilitation process, and the notion of time were seen as important in deciding which technique to use with individual athletes. Physiotherapists placed much importance on 'gut-feeling' and experiential knowledge and had strong opinions on their

own role in the process of psychological rehabilitation. It appeared that the physiotherapists believed they should be aware of their personal competencies/professional boundaries, have the ability to refer an athlete on to a sport/clinical psychologist when necessary, to address the psychological aspects of sport injuries, and to utilise psychological interventions when appropriate.

The aim of study four was to explore the role of physiotherapists in providing psychological support from an injured athlete's perspective. Ten professional football and rugby players took part in semi-structured interviews in which they were given an opportunity to talk about their past experiences of rehabilitation physiotherapy. The findings from the IPA analyses highlighted several superordinate and sub themes. Overall, athletes viewed their injuries as 'part and parcel' of the sport, and as such felt that taking personal responsibility and 'just getting on with it' were regarded as an appropriate way of dealing with injury rehabilitation. The athletes also spoke about their feelings of self-doubt and frustration, and how the social support received from the girlfriends, family, friends, team mates, other injured athletes, and the physiotherapists was considered to be an important part of the recovery process.

The athletes also regarded the physiotherapist as their primary treatment provider, and placed a huge amount of trust in their knowledge, expertise, and ability to treat the injury. In addition, athletes had very clear expectations on the physical aspects of the physiotherapy (i.e., diagnose, treat, and fix the injury), yet these expectations were rarely discussed with the physiotherapists. Instead, the communication was very much focused on the levels of physical pain athletes were experiencing, rather than their thoughts and emotions during the rehabilitation process. With regard to psychological support, only two of the athletes acknowledged having received such provision. It appears that physiotherapists are providing psychological support, but athletes are not aware of it, or do not consider it explicitly as psychological support. For example,



athletes gave clear examples of the use of goal setting, yet did not make a connection between goal setting and psychological support.

Based on the knowledge gained from all four studies, the research presented in this thesis makes a contribution to the literature by making suggestions as to how existing psychology of sport injury theories and models could be further developed. In addition, the findings from studies one, two, three, and four also allows the researcher to make recommendations for sport injury practitioners with regards to the feasibility of using psychological interventions in their practice, and the sport psychology training providers some suggestions as to how further training in psychological interventions for chartered physiotherapists could be delivered. Moreover, when considering the limitations of this research, some issues for consideration when designing further research can also be made.

## **9.2. Theoretical contributions**

All of the four studies examined the notion of injuries as having psychological consequences on the individual athlete, and that the individual's cognitive appraisal of the injury, as well as their emotional and behavioural responses (e.g., the use of psychological interventions) are influenced by a range of personal and situational (e.g., influences from the sports medicine professionals) factors. Based on the empirical findings presented (i.e., studies 1-4), the research contributes to the psychology and sport injury literature in a range of ways. Consistent with the existing theoretical models, the findings highlight the importance of integrating psychology to sport injury rehabilitation. Based on both the physiotherapists' and athletes' accounts, sport injuries were seen as having a number of psychological consequences to the injured athlete. A number of emotional (e.g., initial shock, frustration, self-doubt, depression) and behavioural (e.g., non-compliance) responses to sport injuries were indentified by the physiotherapists and the injured athletes, and the implications of these responses were

dependent on range of personal (e.g., injury and individual differences) and situational (e.g., sport, social, and environmental influences) factors.

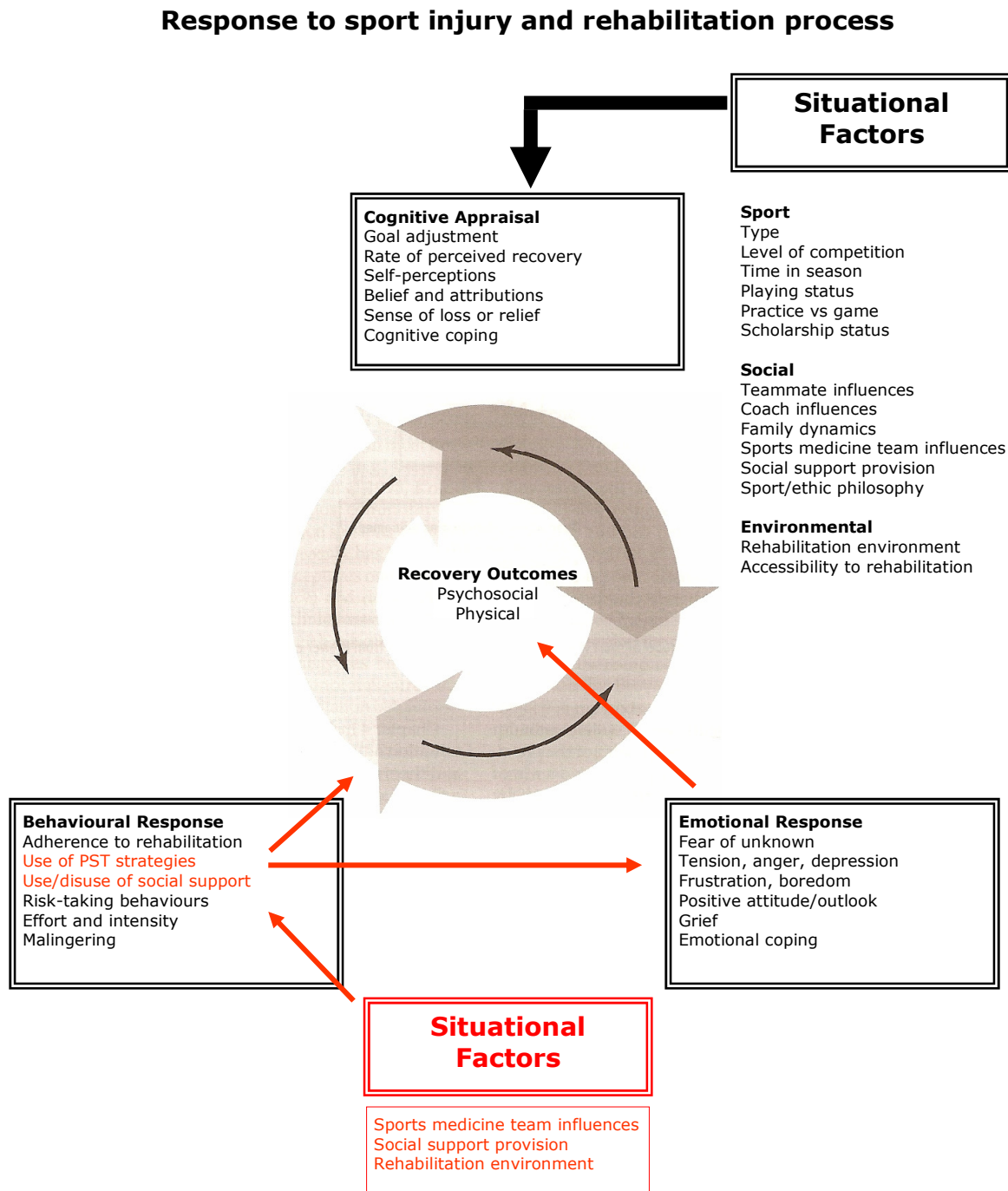
With regard to the athletes emotional responses to injuries, the findings from this research provided support for both the integrated model (Wiese-Bjornstal et al., 1998) and the stage models (eg., Evans & Hardy, 1995), and. On a national level, study one revealed that 99.7% ( $n = 359$ ) of the physiotherapists believed that to some extent, all athletes are psychologically affected by their injuries. Physiotherapists also identified stress and anxiety as the most commonly encountered psychological conditions amongst injured athletes. In support of Wiese-Bjornstal et al.'s model, a positive and proactive attitude was identified as the key emotional response amongst those athletes who cope well with their injuries, whereas depression and impatience were the two most commonly encountered emotional responses amongst athletes who cope less successfully with their injuries. Similarly study three also highlighted the importance of addressing psychological aspects of injuries. The findings provided partial support for stage models, as the physiotherapists identified initial shock, denial, depression, and acceptance as emotions that athletes may go through during injury and referred to the emotional process during injury as 'stage like'.

Based on the physiotherapists past experiences in dealing with depression, it appeared that only two of the physiotherapists recalled having experiences of working with athletes with severe depression. The word depression was often used to describe a depressive phase athletes go through during the recovery process, and not necessarily severe or clinical depression. Study four also provided some support for stage models, as the injured athletes themselves reported feelings of initial shock/disbelief and feelings of lowness and depression as some of the emotional responses they experienced during their injuries. Furthermore, and consistent with the Wiese Bjornstal et al.'s model (1998), the athletes also highlighted frustration and feelings of self-doubt as the most recurrent emotional responses during the course of an injury.

The findings from studies one, three, and four also provided support for the behavioural responses identified in the integrated model (Wiese-Bjornstal, 1998). The findings from study one provided support for the role of rehabilitation adherence and compliance with the rehabilitation and treatment. More specifically, compliance was listed as the most important factor in determining injured athlete's coping success. All four studies also provided support for the use of psychological interventions as part of the rehabilitation, mainly in the form of goal setting and the use of social support.

By exploring the role of physiotherapists in providing psychological support to injured athletes, the findings from this research also provided useful insights into the proposed interaction between the situational factors (e.g., sport and social influences) and an athlete's behavioural and emotional responses. As shown in Figure 9.1., and in contrast to the Wiese-Bjornstal et al.'s (1998) model, a number of social and environmental situational factors (e.g., use of social support, sports medicine professional influences, and the rehabilitation environment) were found to have an influence over athlete's behavioural responses to the injuries, rather than influencing cognitive appraisal of the situation. It appeared that physiotherapists were using psychological interventions such as goal setting and social support with the athletes, but often such support was not cognitively appraised by the injured athletes during the rehabilitation. Indeed, most of the athletes in study four believed they had never received psychological support from their physiotherapists, yet they talked about the ways in which their physiotherapists had set them targets for rehabilitation. In a similar manner, the athletes also explained how their physiotherapist had helped them with various emotional aspects of rehabilitation, but did not explicitly perceive it to be psychological support.

Figure 9.1. Visual display of the proposed additions to the integrated model (Wiese-Bjornstal et al., 1998) with regards to the role of chartered physiotherapist in using psychological interventions during sport injury rehabilitation



Red: Proposed additions

In addition to the contributions to the theories and models of psychology of sport injuries, the findings from studies three and four also appear to provide some support for the optimal matching hypothesis of social support (Cutrona & Russell, 1990), however the extent to which such is the case, should be explored further in future research. Similarly it appears that the importance of trust in the physiotherapist-injured athlete relationship is in support of sociological theories of trust and credibility (e.g., Gass & Seiter, 1999; Sztompka, 1999), as the participants in this research highlighted the importance of trust as an essential part of successful working relationship and rehabilitation outcome.

### **9.3. Recommendations for sport injury practitioners**

Whilst the research makes an important theoretical contribution by exploring the relationship between the physiotherapist (situational factor) and the use of psychological interventions (behavioural response), the findings from this research also identified several areas that are of importance to physiotherapists and other sport injury practitioners in the applied setting. Based on the findings from studies one and three, physiotherapists appeared to have limited or no training in the psychology of injury, and in particular, previous training in psychological interventions appeared to be non-existent. Based on the findings, further training in the use of interventions techniques (e.g., goal setting, imagery, relaxation techniques, positive self-talk, and social support) can therefore be recommended.

Although physiotherapists appeared to possess relatively good general knowledge on goal setting, in-depth understanding of the usefulness of different levels and types of goals (see Figure 3.1., p. 44) was limited. Existing research to date has suggested that having the ability to consider different types of goals (i.e., physical, psychological, and performance goals) at different levels (daily, stage, and recovery goals) along with identifying important lifestyle goals for the injured athlete can facilitate greater levels of communication between the physiotherapist and the athlete. Heightened levels of

communication can in turn have an effect on athlete's sense of ownership of the rehabilitation process, subsequently having an effect on rehabilitation adherence and rehabilitation programme compliance. When done in co-operation with the injured athletes themselves, systematic goal setting can also provide a sense of direction and a purpose, which can in turn assist athletes in dealing with frustration, boredom, and feelings of self-doubt (e.g., Taylor & Taylor, 1997; Kolt, 2004, Flint, 1998b).

In comparison to goal setting, the findings from all four studies indicated that the physiotherapists' use of imagery, relaxation techniques, and positive self-talk during rehabilitation with injured athletes was at best minimal and infrequent. Studies one and two also revealed physiotherapists as having very little interest in seeking further training in these skills, and based on the findings from study three, it appeared that this was largely due to a lack of understanding of the usefulness and application of the techniques to the sport injury rehabilitation settings. Research to date has provided support for the usefulness of such techniques as part of sport injury rehabilitation (see chapter three for more details); however it appears that physiotherapists themselves are not aware of the benefits of such interventions for rehabilitation. For that reason, training physiotherapists to use imagery, relaxation techniques, and positive self-talk would be beneficial. Only then could physiotherapists confidently integrate imagery, relaxation techniques, and positive self-talk interventions into rehabilitation physiotherapy, and based on such experiences, to be in a position to form educated opinions on its usefulness.

Similar to goal setting, the physiotherapists appeared to be relatively knowledgeable on the different sources of social support available for injured athletes during rehabilitation, and discussed the ways in which they had utilised social support in their work. However, greater understanding of the different types of social support beneficial to the athletes could be useful. As the athletes in study four provided extensive examples of using girlfriends, family, friends, team mates, other injured athletes, and physiotherapists as

important sources of social support in a range of ways (e.g., esteem/emotional, informational, tangible, and motivational support), ensuring physiotherapists understanding of the role of social support as part of injury rehabilitation is of importance. Further training in using social support could assist physiotherapists in understanding their role as being both a source and a facilitator of the athletes use of social support during injury rehabilitation, as well as providing an opportunity to enhance physiotherapists' awareness of the role of significant others (e.g., family, coach, and team mate influences) as a means of such support.

In addition to recommending further training for physiotherapists in psychological interventions, physiotherapists should also seek to facilitate greater levels of communication with injured athletes. It appeared that within the physiotherapy setting, athletes in study four were happy to discuss their levels of physical pain with the physiotherapists, yet they were more reluctant to divulge information related to their emotions, apprehensions, and their feelings of self-doubt and frustration. The physiotherapists should continue to educate and inform the injured athletes about the nature of their injury, and the rehabilitation process, but could also encourage and facilitate conversations related to the emotional aspects of the injury. Having knowledge of the athletes' levels of self-doubt and frustration, for example, could have the potential to assist physiotherapists in understanding the needs of an individual athlete better, which in turn could have an effect on the process of planning future treatment activities, and subsequently enabling greater levels of care.

It is also recommended that physiotherapists should acknowledge their personal role in the process of psychological rehabilitation. Previous research has highlighted that physiotherapists are in the best position to educate and inform athletes about the psychological aspects of injuries (e.g., Gordon et al., 1998; Gordon et al., 2001; Pearson & Jones, 1992; Wiese & Weiss, 1987; and Wiese et al., 1991). In addition, the current findings also suggest that, due to the level of trust athletes place on physiotherapists'

knowledge, expertise, and ability to treat the sport injury, physiotherapists are also in an ideal position to integrate psychological interventions into sport injury rehabilitation. The results from study four suggested that athletes are likely to 'have a go' at new techniques if the physiotherapist believes an intervention to be beneficial for the athlete. Providing that the physiotherapists are confident and competent in utilising the proposed techniques, athletes are more likely to engage in the intervention and accept it as part of the rehabilitation treatment process than if it was offered to them as an 'addition to' the existing programme.

#### **9.4. Recommendations for sport psychology training providers**

Gaining information about physiotherapists' existing knowledge on the psychology of injury and their personal role in using psychological interventions with injured athletes continues to be of importance. Not only does such exploration provide support and further insights into the existing theoretical frameworks and allow suggestions to those working in the applied field, but the benefits of such knowledge can also be of value when designing, planning, and delivering further training in sport psychology to chartered physiotherapists in the UK.

Merely 25.9% ( $n = 90$ ) of the physiotherapists in study one reported having access to an accredited or a chartered sport psychologist, and 96.4% ( $n = 348$ ) believed a course in sport psychology during physiotherapy training would be important. Further comments supplied by the physiotherapists revealed that a specific module in sport psychology, particularly at a post graduate level, was seen as a potential addition to the future training/education of physiotherapists. As no studies to date had investigated the training issues in sport psychology for physiotherapists, study two aimed to explore the ways in which further training in sport psychology and psychological interventions could be delivered to chartered physiotherapists. The results from the analyses revealed that physiotherapists' preferred traditional 'going-to' training over more contemporary learning styles (e.g., distance learning, e-learning), as their most preferred methods of



delivery were workshops, seminars, mentoring, and coaching. A number of other practicalities (e.g., preferred geographical distance, time available for such training) were also identified by the participants.

Based on the findings presented in this thesis, it can be recommended that further training in sport psychology should be offered to practising physiotherapists. More specifically, practical training on how to successfully combine psychological interventions with existing rehabilitation physiotherapy could be beneficial. Similarly, an introduction to sport psychology and the use of psychological interventions should perhaps be a compulsory part of general physiotherapy training, particularly at postgraduate level.

It appears that for practising physiotherapists, professional bodies and associations were considered to be the most suitable organisations to deliver further training in physiotherapy. Given that the International Federation of Sport Physiotherapists (IFSP) is currently seeking to gain worldwide specialist recognition for sport physiotherapists and is promoting training at a master degree level (Bulley et al., 2005), the development of further training should be a collaboration between professional bodies and associations, and local higher education institutes. Establishing such collaborative links could possibly be made through the Health Professions Council (HPC), an organisation which as of July 1<sup>st</sup>, 2009, will regulate both the physiotherapy and sport and exercise psychology professions to ensure they meet the set standards for their training, professional skills, behaviour, and health.

Further training in sport psychology and psychological interventions could also be offered as shorter courses or as individual master level modules as part of continued professional development. The training offered should be made available in a way that the physiotherapists perceive it to be of importance, and would subsequently choose to attend. As the physiotherapists are acknowledging the importance of combining psychological and physical rehabilitation, it might be beneficial to present further training

as a visible and a compulsory part of continued professional development training programme by the Association of Chartered Physiotherapists in Sport Medicine (ACPSM) or IFSP.

With regard to the content of the continued professional training in sport psychology and psychological interventions, the focus of the training programmes should be placed on the practical application of such skills to physiotherapists' existing work. Based on the findings from this research, any implementation of psychological interventions would be more beneficial if delivered in a way that both the physiotherapists and the athletes perceive it to be a natural part of the rehabilitation process. The physiotherapists in study three highlighted the notion of time as an important determinant when deciding whether or not to use psychological skills. Similarly athletes appear to be very much focused on the physical side of the rehabilitation and a certain levels of apprehension toward the use of psychology still exists. Educating physiotherapists about the ways in which psychology can form an integral part of rehabilitation without sacrificing the physical aspects of the process could inspire practising physiotherapists to try new psychological interventions in their work, and hopefully be able to witness the benefits of such practice in their work with the injured athletes they are treating.

In addition to the above, it is recommended that physiotherapists should also be further trained in understanding the role trust and rapport plays in their interactions with injured athletes. Both the physiotherapists in study three and the athletes in study four identified trust as an integral part of a successful working relationship, and more importantly, as essential in ensuring successful recovery. Therefore educating physiotherapists further about patient-therapist relationships would be beneficial. More specifically, increasing physiotherapists understanding of 'what makes an effective physiotherapist' or 'what are the characteristics of a good physiotherapist' could facilitate physiotherapists awareness of their own personal role in the process of psychological rehabilitation. After all, "at the heart of sports physiotherapists' thinking and behaviour

lies *understanding* and *sensitivity* [italics added] towards the implications of injury for the athlete and the impact on others around them" (Bulley et al., 2005, p. 26).

The current study provided some indication into the physiotherapists' views on their needs for further training in psychological interventions. It appeared that the interventions most used by the physiotherapists (i.e., goal-setting and use of positive self-talk) were also the most important interventions to learn more about. Similarly the least used techniques (i.e., imagery and relaxation techniques) were also reported to be some of the least important psychological interventions to learn more from. In order to ensure successful training delivery, gaining greater understanding on physiotherapists readiness towards such training would of importance. For example, the Transtheoretical Model (Prochaska, Norcross, & DiClemente, 1994) could be used as a theoretical framework when assessing physiotherapists personal perceptions and readiness for further training in psychological interventions. In a similar manner, the use of Diffusion Theory (Rogers, 1983, 1995) could be a useful framework when introducing the sport psychology interventions to physiotherapists.

#### **9.5. Research limitations**

Despite the current research overcoming some boundaries by utilising diverse means of data collection, it is not without its limitations. These are discussed in conjunction with the relevant sections in each of the empirical chapters; however, the main limitations and problems encountered are re-stated here. During study one the objective was to obtain a national sample which would be a representative of all of the chartered physiotherapists working in sports medicine in the UK. As a result, a combination of online and postal survey was employed, subsequently limiting the possibility of calculating the response rate. In study two, the small sample obtained may not allow generalisation of the findings to a wider population. As a consequence the results should be used with caution when planning further training in psychological interventions for physiotherapists. Studies three and four used qualitative methods, and despite small

participant numbers, the findings can be regarded as credible, transferable, dependable, and confirmable to the population interviewed, although the experiences articulated by the participants were unique to them as individuals. However as all of the participants in study four were professional team sport players and their experiences of physiotherapy were largely based on treatment from their 'club' physiotherapists; further research with different samples (e.g., individual athletes, those receiving private practice or NHS physiotherapy treatment) would be beneficial.

### **9.6. Issues for further consideration**

The current research has highlighted a number of areas in need of future research. These areas are discussed and outlined in the relevant empirical chapters (namely chapters five, six, seven, & eight); however a summary of the key recommendations is also presented here. Providing further training in sport psychology for physiotherapists would be beneficial and should be an integral part of continued professional development for physiotherapists working with injured athletes. In addition, psychology provision within existing physiotherapy training (particularly at postgraduate level) should be expanded and the importance of using psychological interventions as part of rehabilitation physiotherapy should form an essential part of the curriculum.

As stated earlier, the IFSP aims to gain worldwide specialist professional recognition for sports physiotherapists (Bulley et al., 2005). According to Bulley et al., and based on the general competencies and standards for sports physiotherapists, knowledge on psychological components forms an essential part of sport physiotherapists' professional competence. In essence, underlying the technical, physical, biomechanical, and anatomical knowledge is the understanding of the injury and the individual athlete on a psychological level. Without the ability to think and behave in a receptive manner the physiotherapy treatment is likely to be less successful. Bulley et al. argue that in order to meet the minimum threshold of professional performance, competent sports physiotherapists should possess a number of skills and attributes (some of which include

sport psychology), all specifically attained at Masters degree level. By providing systematic continuous learning opportunities (including sport psychology) for practising physiotherapists, the professional bodies and associations can ensure that they are working towards the IFSP mission for specialist recognition.

Therefore, it is recommended that further research should seek to explore the following: (1) gaining further insights into physiotherapists preferred methods of training delivery in sport psychology, (2) as the research into athletes' expectations of rehabilitation physiotherapy appears to be limited, identifying athlete's expectations of such services would enable greater understanding of the role of the physiotherapists in providing psychological support to the athletes and subsequently enabling greater understanding of the particulars of further training needs, (3) conducting a comparative study into athletes and physiotherapists expectations of physiotherapy would be of importance, and (4) based on some of the findings from this research, an intervention study testing the effectiveness of designing and educating practising physiotherapists in using psychological interventions in their work with injured athletes would be beneficial.

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