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Title: Reaching beyond the 'worried well': Pre-adoption characteristics of

participants in 'Men on the Move', a community-based physical activity

programme.

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Abstract (200 Words)

Background; Issues surrounding gender and men's health have become an increasing focus of public health globally. Unhealthy lifestyles and lower engagement in health promotion initiatives contributed to lower life expectancy and higher mortality rates among men. This study presents the pre-adoption characteristics of men who registered for 'Men on the Move' - a community-based physical activity (CBPA) programme, to ascertain whether the programme reached its intended target group, i.e. 'at-risk' adult men who did not meet physical activity (PA) guidelines and were likely to have multiple risk factors for cardiovascular disease (CVD). Methods; Multiple recruitment strategies were adopted to engage the target group and baseline data collection included a range of demographic, self-report and outcome measures. **Results**; The recruitment strategy succeeded in reaching the target group, with the majority (n=927) presenting being previously inactive (89.0%), overweight/obese (89.7%) and having multiple CVD risk factors (53.1%≥2 risk factors). However, the strategy was less successful in engaging 'hard-to-reach' groups, with the majority being middle-aged, white, married/cohabiting, educated and employed. **Conclusions**; A gender-sensitised, partnership and community outreach recruitment strategy can maximise the reach and recruitment of an 'at-risk' cohort for CBPA initiatives, but more targeted approaches are needed to recruit marginalised groups of men.

Introduction:

Within Ireland, and indeed globally, issues surrounding gender and men's health have become an increasing focus of public health ^{1–3}. Whilst advancements in medical care and the treatment of chronic diseases are contributing to overall increases in life expectancy ⁴, significant disparities in health outcomes between the sexes remain. Contributing to lower life expectancy and higher rates of mortality among men are unhealthy lifestyles and lower engagement in preventative health or health promotion initiatives ^{1,5,6}. Modifiable health behaviours such as diet, exercise, substance use, use of social supports and safety practices have been identified as important 'lifestyle contributors' to health ⁷. Physical activity (PA) is a prophylactic to many chronic conditions associated with obesity and sedentary behaviour ^{8,9}. Given the low prevalence rates of PA, particularly among older and lower socio-economic groups ^{10,11}, it is imperative that interventions effectively promote the adoption and maintenance of active lifestyles within communities to those 'at-risk' population groups (i.e. men who are least active and have multiple cardiovascular disease (CVD) risk factors) ¹² and that these are monitored in terms of effectiveness and reach ¹³.

It has been well documented that whilst males may be more vulnerable to certain diseases and illnesses than females ¹⁴, such differences fail to account for more than a small proportion of overall sex differences in health outcomes and for any of the differences in health outcomes between different male population groups ⁶. The intersection of gender with other aspects of identity draws into focus those sub-populations of men for whom health outcomes are significantly worse than the general male population. There is a well-established social gradient in mortality ¹⁵ that has, within an Irish context, widened between the 1980s and 2000s, with a greater widening of the gap being evident among men ¹⁶. This has drawn attention in Ireland on disparities in health outcomes among so-called 'hard-to-reach' ¹⁷ population groups of men (i.e. lower socioeconomic and marginalised groups), and has important implications in terms of the targeting of health interventions to those most in need.

In practice, however, creating the right interventions in the right environments that can support men to change health practices has proved difficult ¹. Men's 'unwillingness' to engage in health promotion programmes also reflects a failure to account for gender as a key driver of health behaviours, including the need for gender-specific approaches to effectively engage men ^{18–20}. Gender-specific strategies related to community-engagement, programme

development and delivery, partnerships and capacity-building, are necessary in creating sustainable health promotion activities that appeal to men – both 'at-risk' and 'hard-to-reach' population groups of men ^{19,21,22}.

'Men on the Move' (MOM) is a gender-specific and community-based physical activity (CBPA) programme for adult, inactive men in Ireland – a cohort who are likely to be more 'at-risk' of CVD. The primary focus of this paper is to present the pre-adoption characteristics of men who registered for the MOM programme; to ascertain whether the programme reached those for whom it was intended, i.e. 'at-risk' adult men who did not meet PA guidelines and were likely to have multiple risk factors for CVD. A secondary consideration was to establish whether the programme succeeded in engaging 'hard-to-reach' men, such as lower socioeconomic or marginalised groups of men.

Methods

Ethical approval was obtained from Waterford Institute of Technology ethics committee [15/Dept-HSES/13]. This study has been registered with the 'International Standard Randomised-Controlled Trial Number' registry [ISRCTN55654777]. For details of full study protocol, refer to Carroll et al (2018) ²³. Written informed consent was provided by all study participants.

The Men on the Move Programme

In brief, MOM is a free 12-week community-based 'beginners' PA programme for inactive adult men. The programme design was informed by evaluating a pilot programme, reflective practice and reviewing effective practice elsewhere ^{24–27}. Men were recruited across 8 counties in Ireland by Local Sports Partnerships (LSPs – recreational sport providers) who coordinated and delivered the programme locally.

The Recruitment Strategy

A flexible recruitment strategy model was designed to reach beyond the 'worried well' ²⁸ and involved the input of multiple service providers. LSP co-ordinators partnered a variety of community organisations that hosted the MoM programme. In total, 13 sports clubs (9 Gaelic, 3 soccer, 1 rugby), 8 community sports facilities, 8 family resource/community centres, and 1

local men's shed were used as host venues. In some instances, local health promotion and primary care services providers supported the recruitment strategy and programme delivery.

The recruitment strategies used were diverse and consistently used imagery of 'real men' to whom the target group could relate and language that was gender sensitised and health literacy proofed (see Figure I). Recruitment strategies included; (i) In-person text and email invitations via existing databases (including women's groups as 'gatekeepers' to healthcare for men), using messages consistent with the branded materials produced e.g. that the programme was for inactive men who wanted to become active, free, for men only and locally based. Notably, General Data Protection Regulations (GDPR) did not apply given the timing of recruitment; (ii) advertising using branded materials on service websites and social media; (iii) a local media campaign that involved a local press release targeted at both the local and regional print and radio media. Air time was typically given to promote the programme, and; (iv) GP referral. Men who expressed an interest were invited to a formal registration evening one week before the programme began. All men measured at registration were provided with a MOM health information booklet that included information on PA, diet, stress management, a PA log book and contact numbers for potential referral options.

The recruitment strategy and programme itself, including the initial registration evening, were also gender-sensitised in relation to approach (using PA as 'a hook'), context (e.g. men only groups, community based settings that appealed to men), and adopted strengths-based approaches based on creating safety, trust, rapport, and meaningful relationships with men ^{18,24,29,30}. All staff involved in MOM attended men's health training (ENGAGE) focused on developing gender competency in the provision of health services for men ³⁰. The format of the registration evenings was standardised across sites. The LSP Co-ordinator and local service providers were present to welcome the men, before a local medical professional spoke to the group about the benefits of PA. The men were then invited to have their baseline assessments completed, as well as providing self-reported outcomes via self-administered questionnaires. Men were individually and privately provided with details of their recorded measurements. At the end of the registration evening, service providers sought out opportunities to speak to all of the men in person over tea/coffee.

The Participants

Men were eligible for inclusion in the study if they were aged at least 18 years, did not meet the recommended PA guidelines, completed the PA readiness questionnaire (PAR-Q) and provided written consent.

Data Collection

Participants were assessed at baseline and outcome measures included height, weight, body mass index (BMI), waist circumference (WC) and time-to-complete one mile. In the context of this study (a CBPA programme), BMI and WC were the preferred methods of measuring and classifying an individual's weight as both are universal, replicable, cost-effective, and easy to administer methods of measurement suitable for community-based health assessments. Self-administered questionnaires were used to gather data on participant demographics (date of birth, ethnic origin, educational attainment, relationship status, housing and employment status), self-reported outcomes (PA, consumption of fruit and vegetables, smoking, consumption of alcohol, use of primary care services and prescription medicine, perception of health, mental well-being and social integration), and how participants had heard about the programme.

Data Analysis

Questionnaire data were computed in accordance with defined protocols ¹. All data were checked for normality and presented as mean±SD or median (IQR) accordingly. Frequency data is also presented. Inferential statistical analysis was undertaken using SSPS version 22.0 (Chicago, Illinois, USA).

Results:

The results presented report on the effectiveness of the recruitment strategy for the programme, and present data for the men who were assessed at registration. The efficacy of the intervention will be presented in a follow-up manuscript.

In total, 927 men completed the MOM baseline assessments across 25 community sites. The profile of participants (Table I) was that of a middle aged (50.7±10.9 yr), predominantly white (97.7%), married/cohabiting (77.6%), in full-time work (64.8%) population, with almost half (47.7%) having completed third level education. These characteristics are indicative of the

general population in Ireland ³¹. The vast majority (81.6%) were aged between 40–70 years of age.

Table II reports baseline self-reported health status and lifestyle characteristics. A small minority (5.2%) reported their health as poor. Approximately a third reported a health problem (34.9%) and having visited a GP in the past 12 weeks (32.9%). The most common reported health problems were BP, overweight/obesity, diabetes, cholesterol and asthma. Almost half (47.4%) reported taking prescription medication in the previous 12 weeks, with 16.5% reporting doing so for chronic conditions (8.9% BP; 7.6% cholesterol). Over half (54.5%) reported hearing about the programme through word of mouth (31.2%) or newspaper/media/social media (23.3%) with just 5.8% (n=53) hearing about the programme through health services.

Baseline health indicators show that the programme was attended by predominantly overweight/obese men (Table III). Mean measurements for BMI and WC were 30.2±4.9 (n=926) and 105.1±13.0 (n=918) respectively. Overall, 45.5% of men were in the 'obese' BMI categories (31.6% class 1, 9.5% class 2, 4.4% class 3), with an additional 44.2% classified as 'overweight'. Only 10.2% of men were in the normal BMI category. Waist circumference results placed 54.5% (n=500) and 29.4% (n=270) in the 'high-risk' and 'increased-risk' categories respectively for metabolic complications ^{32,33}. Just one in six (16.1%) were within the 'healthy' WC range. The mean time-to-complete 1 mile was 13.27±3.54 min:dec-min, range 6:17-30:77 min:dec-min. Aerobic fitness was estimated 34 and the mean VO_{2max} (ml/kg/min) was 21.21±7.45 ml/kg/min (range 5.62–46.91), which corresponds to a 6.06±2.13 METS (1.60–13.40) approximation. Baseline ACSM age-standardised fitness levels ³⁵ placed the majority (89.0%, n=709) in the 'poor' category (expressed in VO_{2max}; ml/kg/min). The vast majority (84.0%, n=755) did not meet National PA Guidelines criteria; at least 30 mins on 5 or more days per week ³⁶. Similarly, 84.1% (n=765) did not meet recommended daily consumption of 5 or more portions of fruit and vegetables, whilst 13.3% (n=122) were current smokers (with 37.2% reporting as former smokers).

Based on international guidelines ³⁷, six self-reported modifiable CVD risk factors were identified; 'inactive (<3 days PA per week), 'obese' (WC >102cm), 'current smoker', 'excess alcohol consumption' (>14 units per week), 'on BP medication', 'on cholesterol medication'. Data were analysed to establish incidence and prevalence of CV risk factors (Table IV). Age

was considered, but as a non-modifiable risk factor was not included. Over half were found to be 'at-risk' by being 'inactive' (59.2%) and/or 'obese' (57.3%). Some 19.5% were 'at-risk' based on 'excess alcohol consumption'. Approximately one in ten were 'at-risk' by being current smokers (13.3%), on blood pressure (8.9%) or on cholesterol (7.6%) medication. The vast majority (85.5%) presented with at least one risk factor, whilst over half (53.1%) had two or more risk factors (Table IV).

The dataset was examined to determine if level of educational attainment, marital status, home status or employment influenced any CVD risk factor. Men with a third level education had a higher level of fitness compared to those who did not (METs; Primary or Secondary Education = 5.7, Third Level Education = 6.4, p<0.001), men who lived alone had a lower level of fitness (METs; Living Alone = 5.4, Living with others = 6.2, p=0.002). These sociodemographic factors did not influence any other risk factor.

Discussion

Main findings of this study / What is already known on this topic

The aim of this paper was to outline the pre-adoption characteristics of men who registered for a CBPA programme ('MOM') in Ireland. A key priority was to recruit 'at-risk' men who did not meet national PA guidelines ³⁶ and were likely to have multiple risk factors for CVD. The programme succeeded in reaching its main target population, with 84.0% not achieving 30 mins or more of PA on at least 5 days per week – a figure far greater than the 66% reported among the adult male population in Ireland ³⁸. Not surprisingly, the physical fitness level of the vast majority of men in this study (89.0%) was classified as 'poor'. The absence of the prophylactic effect that being sufficiently active offers ^{9,39} coupled with their poor fitness levels, exposes these men to increased risk of adverse health outcomes including all-cause mortality ⁸, CVD ⁸, diabetes ⁴⁰, cancer ⁴¹, and dementia ⁴².

The proportion of 'normal' weight men (10.2%) was considerably less than the national average for adult males (31%) ⁴³, while the proportion in the 'at-risk' categories for BMI (45.5% 'obese') and WC (54.5% 'high risk') is a cause for considerable concern. Men are more likely to accumulate adipose tissue in the trunk/abdomen ⁴⁴, with central

adiposity/abdominal obesity now considered more important than overall obesity in the evaluation of CVD and coronary heart disease risk ^{45,46}. Indeed, a waist-reduction of 5-10cm can result in improvements in several CVD risk factors ⁴⁷, and reaffirms the relevance of recruiting this 'at-risk' cohort in a PA programme.

Results show that 80.5% consumed alcohol which is in-line with national figures for adult males, (79%) ⁴⁸, while 9.1% reported that they drank 17 or more units per occasion, which is considerably lower than the national average of 33% reported for adult males ⁴⁹. Notably, the comparatively low proportion of current smokers (13.3% v 21.6% national average for males ⁵⁰), might imply that smokers are less likely than non-smokers to self-select for a PA programme and that other strategies might be necessary to reach those men. Additionally, 47.4% of men who presented were on prescription medication (19.6% for chronic conditions). It is well established that an increase in PA can reduce the prevalence of chronic diseases, such as hypertension and diabetes; thus reducing the reliance on prescription medication ^{51–56}

Data from this study is in keeping with that reported elsewhere ⁵⁷ in terms of attracting men with high CVD risk, including key areas of risk such as PA, consumption of fruit and veg, smoking, weight, and alcohol consumption. Indeed, the majority of men recruited were 'atrisk' of CVD as evidenced by high BMI and WC results and low fitness and PA levels. In fact, some 53.1% of men who presented at baseline had two or more CVD risk factors, highlighting a paradox between how men rated their health and the health-indicators. Despite their largely unhealthy profile, almost two-thirds of participants (62.9%) rated their health as 'good'/'excellent' with only 5.2% reporting their health as 'poor'. This paradox is not unique to this study ^{57,58} and may be indicative of the need for an increased focus on health literacy being integrated into future public health interventions for men. Whilst it was noteworthy that two-thirds (67.1%) had not visited their GP in the 12 weeks prior to baseline, a distinction needs to be made between being 'at-risk' of ill-health versus suffering from ill-health - with a CBPA programme perhaps being a more appropriate place to address the former.

A secondary consideration was to establish whether the community-based outreach nature of the programme could succeed in engaging 'hard-to-reach' men. Disappointingly, this proved not to be the case, with the vast majority who presented being 'White Irish (97.7%)', in shared living accommodation (86.4%) and in a relationship (83.0%). The programme was

not successful therefore in reaching more marginalised groups, such as migrants, ethnic minority groups, or Travellers ⁵⁹. Recruitment for future programmes should incorporate more specific and targeted strategies directed at these 'hard-to-reach' groups.

What this study adds

Findings clearly show that the gender-sensitised recruitment strategy (as described earlier) was effective in reaching an 'at-risk' group of men for whom this public health intervention was intended. The strategy also succeeded in reaching 'older' men (81.6% aged between 40–70 years), possibly due to the non-competitive nature of the programme. Although not modifiable, age is one of the most critical CVD risk factors. Indeed, any increase in PA, regardless of age, can help reduce the risk of CVD; particularly amongst those previously inactive.

The community-based partnership driven nature of this study, allied to the gender-sensitive approaches that were used, appear to have been successful in overcoming previously identified difficulties ^{18–20} in engaging 'at-risk' men. The success of word-of mouth and newspaper/media/social media recruitment strategies is consistent with previous work by Robertson et al. (2013) ²⁹. This highlights the importance of partnering with and anchoring recruitment strategies with local community groups to maximise the reach of community-based health promotion initiatives. However, MOM did not appeal to all men. Despite the gender-sensitive, partnership and community outreach recruitment strategies that were adopted, these were not enough to recruit more marginalised or 'hard-to-reach' groups of men.

Limitations of this study

One of the key strengths of the MOM programme was that it was delivered by LSPs as part of a unique partnership network under 'real world' conditions. However, this approach brings some limitations. Firstly, much of the data was self-reported, and while every effort was taken to ensure that a trained practitioner/research team member assisted with data collection, this was not always possible due to the large sample size. Secondly, all objective data were gathered by trained practitioners, but reliability was not assessed. To overcome this 'limitation', the complexity of the objective measures gathered were considered at the design stage to allow for ease of replication. Thirdly, baseline data collection took place on a specified

evening (up until the end of the second week) in each location which might not have suited all men interested in the programme. Fourthly, a high percentage of the baseline data collection took place in sports clubs which may not have appealed to men who do not identify with 'sport'.

Conclusion

Findings demonstrate that the recruitment strategy was highly effective in reaching the 'atrisk' group of men for whom it was intended, with the majority of men presenting as inactive, overweight/obese and having multiple CVD risk factors. This demonstrates that gender-specific programmes, such as MOM, can support service providers to effectively engage inactive men in public health interventions. Findings suggest that service providers can maximise the reach and recruitment of an 'at-risk' cohort for community-based health promotion initiatives through partnership-based and gender-sensitised recruitment strategies anchored within community groups. Results also highlight, however, that a one-size-fits-all recruitment strategy is not enough to reach more marginalised cohorts and that more targeted approaches are needed to engage 'hard-to-reach' groups of men.

Table I; Participant Baseline Demographic Characteristics

Physical Measures	Mean±SD (N)
Age (years)	50.7±10.9 (916)
Height (m)	175.2±6.6 (927)
Weight (kg)	92.7±16.0 (927)
Age Year Bands (years)	% (N)
15 – 19	0.4 (4)
20 – 24	0.6 (5)
25 – 29	2.3 (21)
30 – 34	2.0 (18)
35 – 39	8.7 (80)
40 – 44	14.8 (136)
45 – 49	18.2 (167)
50 – 54	17.8 (163)
55 – 59	14.7 (135)
60 – 64	9.7 (89)
65 – 69	6.4 (59)
70 – 74	2.2 (20)
75 – 79	1.4 (13)
80 – 84	0.5 (5)
85 – 89	0.1 (1)
Ethnicity	% (N)
White ■	97.7 (887)
Other ■	2.3 (21)
Education Attainment	% (No)
Primary education only	9.6 (88)
Some or completed secondary education	42.7 (392)
Some or completed Third Level education	47.7 (438)
Marital Status	% (N)
Married/Cohabiting	77.6 (712)
Separated/Divorced	4.7 (43)
Widowed	2.0 (18)
Single	10.3 (95)
In a relationship	5.4 (50)
Housing Status	% (N)
Live Alone	13.4 (122)
Live with family/wife/partner	85.2 (776)
Live with friends	1.4 (13)
Employment Status	% (N)
Employed (full time)	46.9 (431)
Self-employed	17.9 (164)
Looking after home/family	2.1 (19)
Student	1.6 (15)
Unable to work due to long term illness/disability	3.6 (33)
Employed (part time)	8.2 (75)
Unemployed and looking for work	7.2 (66)
Retired from paid work	12.0 (110)
Volunteer	0.5 (5)
Paid Employment Only	
Time off work in last 12 weeks	15.0 (140)
	grams, - White - Irish Irish Travellar Any other white

Key: SD = Standard Deviation; N = number; m = metres; kg = kilograms; ■ White = Irish, Irish Traveller, Any other white background, Other = Any other African, Asian, black or mixed background.

Table II; Participant Baseline Self-reported Health Status and Lifestyle Factors

Health Status
Very Good 23.3 (213) Good 34.8 (319) Average 31.8 (291) Poor 5.2 (48) Health Problems % (N) Yes 34.9 (326) No 56.7 (530) Health Services (attended in the last 12 weeks) % (N) General Practitioner Yes 32.9 (286) No 67.1 (582) Physiotherapist ** Yes 12.1 (91) No 87.9 (663) Other Health Related Services ** Yes 13.6 (103) No 86.4 (656) Prescription Medication (in the last 12 weeks) % (N) Yes 47.4 (427) No 52.6 (473) Active Participation in Groups % (N) Yes 53.0 (424) No 45.4 (363) Unknown 1.6 (13) How often do you attend religious services? % (N) Never or almost never 25.0 (199) Once or twice a year 13.9 (111)
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()
Once a week 27 (215)
More than once a week 4.0 (32)
Unknown 1.9 (15)
How participants found out about MoM % (N)
Word of mouth 31.2 (286)
Referred 3.8 (35)
Health Professional 2.0 (18)
Local service club 16.2 (148)
Newspaper/Media/Social Media 23.3 (213)
Local Sports Partnership 10.3 (94)
Family 8.4 (77)
Other 4.9 (45)

Key: N = number

Table III; Participant Baseline Health Indicators

Table III; Participant Baseline Health Indicators	Manual CD (NI) / Manua (IOD)
Physical Measures	Mean±SD (N) / Mean (IQR)
Weight (kg)	92.7±16.0 (927) 105.1±13.0 (918)
Waist Circumference (cm) BMI (kg/m²)	` ,
	30.2±4.9 (926)
Time-to-complete 1 mile (min:dec)	13.3±3.5 (797)
VO _{2max} (ml/kg/min)	21.2±7.4 (797)
METS Number of days Physical Activity per week totalling 20	6.1±2.1 (797)
Number of days Physical Activity per week totalling 30 minutes or more	3.0 (1.0 – 4.0)
Portions of Fruit and/or Vegetables consumed day prior to	4.0 (3.0 – 5.0)
Health Check	4.0 (3.0 – 3.0)
Number of Cigarettes per day	15.0 /5.0 - 20.0\
Number of Alcohol Units consumed on average	15.0 (5.0 – 20.0) 9.0 (6.0 – 12.0)
Number of days per week Alcohol consumed	2.0 (1.0 – 12.0)
Waist Circumference (cm) (WHO, 2010)	% (N)
Healthy (<94cm)	16.1 (148)
Increased Risk (94 – 102cm)	29.4 (270)
High Risk (>102cm)	54.5 (500)
BMI (kg/m²) (WHO, 2010)	% (N)
Underweight (<18.50)	0.1 (1)
Normal (18.50 – 24.99)	10.2 (94)
Overweight (25.00 – 29.99)	44.2 (409)
Obese Class 1 (30.00 – 34.99)	31.6 (293)
Obese Class 2 (35.00 – 39.99)	9.5 (88)
Obese Class 3 (>40.00)	4.4 (41)
Baseline level of fitness; Estimated VO2max (ml/kg/min)	% (N)
Poor	89.0 (709)
Fair	5.0 (40)
Average	2.9 (23)
Good	1.5 (12)
Excellent	0.0 (0)
Other	1.6 (13)
Number of days Physical Activity per week totalling 30	% (N)
minutes or more	
Never	25.7 (231)
1 Day	17.5 (157)
2 Days	15.9 (143)
3 Days	17.2 (155)
4 Days	7.7 (69)
5 Days	5.9 (53)
6 Days	2.8 (25)
7 Days	7.2 (65)
Portions of Fruit and/or Vegetables consumed day prior	% (N)
to Health Check	1- 13
None	5.9 (54)
1	12.2 (111)
2	22.4 (204)
3	25.2 (229)
4	18.4 (167)
5	9.6 (87)
6	3.5 (32)
7+	2.8 (25)
Smoking Status	% (N)
Never Smoked	49.5 (454)
Former Smoker	37.2 (341)
Current Smoker	13.3 (122)
If current smoker, how many per day?	
1-10 cigarettes per day	11.9 (54)
11-20 cigarettes per day	12.1 (56)
20+ cigarettes per day	2.7 (12)
Weekly Alcohol Consumption	% (N)
Yes	80.5 (737)

No	19.5 (179)
Number of days per week alcohol consumed?	
0	2.0 (13)
1	45.2 (298)
2	26.7 (176)
3	15.6 (103)
4	4.1 (27)
5	3.2 (21)
6	1.1 (7)
7	2.1 (14)

Key: SD = Standard Deviation; N = number; kg = kilograms; cm = centimetres; BMI = Body Mass Index; m^2 = metres squared; yrs = years; ACSM = American College of Sports Medicine; VO_{2max} = maximal oxygen consumption; ml/kg/min = millilitres per kilogram per minute. BMI & WC based on World Health Organisation Classifications ³³

Table IV; Most prevalent modifiable cardiovascular disease risk factors presented at baseline

Risk Factor	% (N)
<3 Days Physical Activity	59.2 (532)
Waist Circumference >102cm	57.3 (526)
Alcohol Consumption ≥14 Units (Europe)	19.5 (141)
Alcohol Consumption ≥17 Units (Ireland)	9.1 (66)
Current Smoker	13.3 (122)
Blood Pressure Medication	8.9 (83)
Cholesterol Medication	7.6 (71)
Prevalence of Risk Factors	% (N)
Zero Risk Factors	14.5 (135)
1 Risk Factor	32.4 (303)
2 Risk Factors	35.7 (333)
3 Risk Factors	13.2 (123)
4 Risk Factors	3.7 (35)
5 Risk Factors	0.5 (5)

Key: N = number; cm = centimetres. WC based on World Health Organisation Classifications ³³.

¹ Note, the WHO (2016) criteria for 'inactive (<3 days per week) and therefore 'at risk' of CVD is different to National PA Guidelines (30mins or more at least 5 days per week; ³⁶)

Figure I; Examples of gender-sensitised branded promotional material



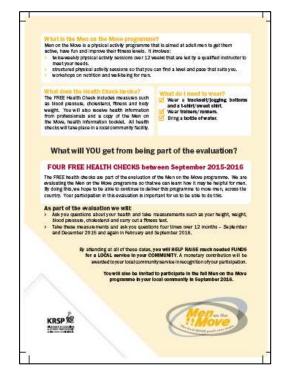
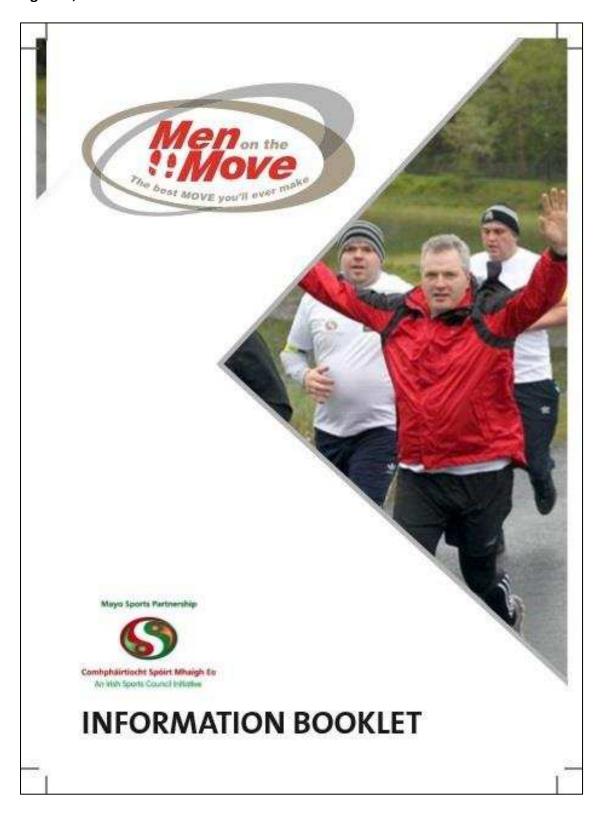






Figure II; Men on the Move Health Information Booklet Cover



References

- 1. White A, Sousa B De, Visser R De, et al. *EU 2011 . The State of Men's Health in Europe Report.*; 2011. doi:10.2772/60721.
- 2. Department of Health and Children. *National Men's Health Policy 2008 2013.*; 2013.
- WHO Regional Office for Europe. Health 2020 A European policy framework and strategy for the 21st century. In: Intergovernmental Panel on Climate Change, ed. Climate Change 2013 - The Physical Science Basis. Cambridge: Cambridge University Press; 2013:1-30. doi:10.1017/CBO9781107415324.004.
- 4. Lunenfeld B, Stratton P. The clinical consequences of an ageing world and preventive strategies. *Best Pract Res Clin Obstet Gynaecol*. 2013;27(5):643-659. doi:10.1016/j.bpobgyn.2013.02.005.
- 5. Healthy Ireland. *Healthy Ireland Survey 2015: Summary of Findings.*; 2015.
- 6. Courtenay WH. Key Determinants of the Health and Well-Being of Men and Boys. *Int J Mens Health*. 2003;2(1):1-30. doi:10.3149/jmh.0201.1.
- 7. Mahalik JR, Burns SM, Syzdek M. Masculinity and perceived normative health behaviors as predictors of men's health behaviors. *Soc Sci Med*. 2007;64(11):2201-2209. doi:10.1016/j.socscimed.2007.02.035.
- 8. Kodama S, Saito K, Tanaka S, et al. CLINICIAN 'S CORNER Cardiorespiratory Fitness as a Quantitative Predictor of All-Cause Mortality and Cardiovascular Events. *Am Med Assoc.* 2009;301(19):2024-2035.
- Soares-Miranda L, Siscovick DS, Psaty BM, Longstreth WT, Mozaffarian D. Physical Activity and Risk of Coronary Heart Disease and Stroke in Older Adults. *Circulation*. 2016;133(2):147-155. doi:10.1161/CIRCULATIONAHA.115.018323.
- 10. Hanson S, Cross J, Jones A. Promoting physical activity interventions in communities with poor health and socio-economic profiles: A process evaluation of the implementation of a new walking group scheme. Soc Sci Med. 2016;169:77-85. doi:10.1016/j.socscimed.2016.09.035.
- 11. O'Donoghue G, Perchoux C, Mensah K, et al. A systematic review of correlates of sedentary behaviour in adults aged 18-65 years: a socio-ecological approach. *BMC Public Health*. 2016;16(1):163. doi:10.1186/s12889-016-2841-3.
- 12. US Department of Health and Human Services. Healthy People 2010: Understanding and Improving Health. *Heal San Fr.* 2000;2nd.:62 p.

- http://www.healthypeople.gov/2010/%5Cnhttp://www.nih.gov/clearcommunication/healthliteracy.htm.
- 13. Kahn E, Ramsey L, Brownson R, et al. The effectiveness of interventions to increase physical activity: A systematic review. *Am J Prev Med*. 2002;22(4):73-107. doi:10.1016/S0749-3797(02)00434-8.
- 14. Kraemer S. Lessons from everywhere. *Br Med J.* 2000;321:1609-1612.
- 15. Marmot M. Social determinants of health inequalities. *Lancet*. 2005;365(9464):1099-1104. doi:10.1016/S0140-6736(05)71146-6.
- 16. Layte R, McCrory C. Growing Up in Ireland National Longitudinal Study of Children

 Overweight and Obesity among 9 Year Olds; Report 2; Growing Up in Ireland National

 Longitudinal Study of Children.; 2011.
- 17. Pra B, Dp F, Soares J, Al W, Foster C. Community wide interventions for increasing physical activity (Review) SUMMARY OF FINDINGS FOR THE MAIN COMPARISON. 2015;(1). doi:10.1002/14651858.CD008366.pub3.www.cochranelibrary.com.
- 18. Carroll P, Kirwan L, Lambe B. Engaging 'hard to reach' men in community based health promotions. *Int J Heal Promot Educ*. 2014;5240(June):1-11. doi:10.1080/14635240.2013.876185.
- 19. Lefkowich M, Richardson N, Robertson S. "If We Want to Get Men in, Then We Need to Ask Men What They Want": Pathways to Effective Health Programing for Men. *Am J Mens Health*. 2015:1-34. doi:10.1177/1557988315617825.
- 20. Robertson C, Archibald D, Avenell A, et al. Systematic reviews of and integrated report on the quantitative, qualitative and economic evidence base for the management of obesity in men. *Health Technol Assess (Rockv)*. 2014;18(35):1-424. doi:10.3310/hta18350.
- 21. Heath GW, Parra DC, Sarmiento OL, et al. Evidence-based intervention in physical activity: Lessons from around the world. *Lancet*. 2012;380(9838):272-281. doi:10.1016/S0140-6736(12)60816-2.
- 22. WHO. a Guide for Population-Based Approaches To Increasing Levels of Physical Activity: *Implement Who Glob Strateg Diet, Phys Act Heal*. 2007:24.
- 23. Carroll P, Harrison M, Richardson N, et al. Evaluation of a Gender-Sensitive Physical Activity Programme for Inactive Men in Ireland: Protocol Paper for a Pragmatic Controlled Trial. *J Phys Act Res.* 2018.

- 24. Hunt K, Wyke S, Gray CM, et al. A gender-sensitised weight loss and healthy living programme for overweight and obese men delivered by Scottish Premier League football clubs (FFIT): A pragmatic randomised controlled trial. *Lancet*. 2014;383(9924):1211-1221. doi:10.1016/S0140-6736(13)62420-4.
- 25. Bottorff JL, Seaton CL, Johnson ST, et al. An Updated Review of Interventions that Include Promotion of Physical Activity for Adult Men. *Sport Med.* 2015;45(6):775-800. doi:10.1007/s40279-014-0286-3.
- 26. Pringle A, Zwolinsky S, McKenna J, Robertson S, Daly-Smith A, White A. Health improvement for men and hard-to-engage-men delivered in English Premier League football clubs. *Health Educ Res.* 2014;29(3):503-520. doi:10.1093/her/cyu009.
- 27. Wyke S, Hunt K, Gray CM, et al. Football Fans in Training (FFIT): a randomised controlled trial of a gender-sensitised weight loss and healthy living programme for men end of study report. *Public Heal Res.* 2015;3(2):1-130. doi:10.3310/phr03020.
- 28. Smith RC. Minor Acute Illness: A Preliminary Research Report on the "Worried Well." *J Fam Pract*. 2002;51:6. doi:10.1249/MSS.0b013e31822cf71.
- 29. Robertson S, Zwolinsky S, Pringle A, McKenna J, Daly-Smith A, White A. "It is fun, fitness and football really": a process evaluation of a football-based health intervention for men. *Qual Res Sport Exerc Heal*. 2013;5(3):419-439. doi:10.1080/2159676X.2013.831372.
- 30. Lefkowich, M., Richardson, N. & Robertson S (2015). Engaging Men as Partners & Participants: Guiding Principles, Strategies, and Perspectives for Community Initiatives & Holistic Partnerships.
- 31. Central Statistics Office. Vital Statistics Yearly Summary 2015. 2015;(May).
 http://pdf.cso.ie/www/pdf/20160628033934_Vital_Statistics_Yearly_Summary_2015
 _summary.pdf.
- 32. WHO WHO. Global recommendations on physical activity for health. *Geneva World Heal Organ*. 2010:60. doi:10.1080/11026480410034349.
- 33. World Health Organization. Waist Circumference and Waist-Hip Ratio: Report of a WHO Expert Consultation. *World Heal Organ*. 2008;(December):8-11. doi:10.1038/ejcn.2009.139.
- 34. Daniels G. Human Blood Groups: 3rd Edition.; 2013. doi:10.1002/9781118493595.
- 35. Brubaker P, Otto R, Whaley M. American College of Sports Medicine: ACSM's

- guidelines for exercise testing and prescription. *Am Coll Sport Med*. 2006. http://scholar.google.co.uk/scholar?hl=en&q=whaley+brubaker+otto+american+&bt nG=&as sdt=1,5&as sdtp=#1.
- 36. Department of Health and Children, Health Service Executive. The National Guidelines on Physical Activity for Ireland. *Children*. 2009:1-32. doi:10.1152/japplphysiol.00137.2005.
- 37. WHO. Global action plan for the prevention and control of noncommunicable diseases 2013-2020. *World Heal Organ*. 2013:102. doi:978 92 4 1506236.
- 38. Department of Transport tourism and sport. The National physical activity plan for Ireland. *Heal Irel*. 2013.
- 39. Shook RP, Hand GA, Drenowatz C, et al. Low levels of physical activity are associated with dysregulation of energy intake and fat mass gain over 1 year 1, 2. *Am J Clin Nutr*. 2015;102(March):1332–8. doi:10.3945/ajcn.115.115360.1332.
- 40. Goodrich KM, Crowley SK, Lee D chul, Sui XS, Hooker SP, Blair SN. Associations of cardiorespiratory fitness and parental history of diabetes with risk of type 2 diabetes. *Diabetes Res Clin Pract*. 2012;95(3):425-431. doi:10.1016/j.diabres.2011.10.045.
- 41. Peel JB, Sui X, Matthews CE, et al. NIH Public Access. *Cancer Epidemiol Biomarkers Prev.* 2010;18(4):1111-1117. doi:10.1158/1055-9965.EPI-08-0846.Cardiorespiratory.
- 42. Liu R, Sui X, Laditka JN, et al. Cardiorespiratory fitness as a predictor of dementia mortality in men and women. *Med Sci Sports Exerc*. 2012;44(2):253-259. doi:10.1249/MSS.0b013e31822cf717.
- 43. Healthy Ireland. Healthy Ireland Survey 2015: Summary of Findings.; 2015.
- 44. Krotkiewski M, Bjorntorp P, Sjostrom L, Smith U. Impact of obesity on metabolism in men and women. Importance of regional adipose tissue distribution. *J Clin Invest*. 1983;72(3):1150-1162. doi:10.1172/JCI111040.
- 45. Larsson B, Svardsudd K, Welin L, Wilhelmsen L, Bjorntorp P, Tibblin G. Abdominal adipose tissue distribution, obesity, and risk of cardiovascular disease and death: 13 year follow up of participants in the study of men born in 1913. *Bmj*. 1984;288(6428):1401-1404. doi:10.1136/bmj.288.6428.1401.
- 46. Rexrode KM, Carey VJ, Hennekens CH, et al. Abdominal adiposity and coronary heart disease in women. *JAMA*. 1998;280(21):1843-1848. doi:joc72253 [pii].
- 47. De Koning L, Merchant AT, Pogue J, Anand SS. Waist circumference and waist-to-hip

- ratio as predictors of cardiovascular events: Meta-regression analysis of prospective studies. *Eur Heart J.* 2007;28(7):850-856. doi:10.1093/eurheartj/ehm026.
- 48. Healthy Ireland. Healthy Ireland Survey 2017; Summary of Findings. January 2017. doi:10.1080/000164702753671623.
- 49. Long J, Mongan D. Alcohol Consumption in Ireland 2013: Analysis of a National Alcohol Diary Survey.; 2013.
 http://alcoholireland.ie/download/reports/how_much_do_we_drink/Alcohol_Consumption in Ireland 2013 web version.pdf.
- 50. Gravely S, Giovino GA, Craig L, et al. Implementation of key demand-reduction measures of the WHO Framework Convention on Tobacco Control and change in smoking prevalence in 126 countries: an association study. *Lancet Public Heal*. 2017;2(4):e166-e174. doi:10.1016/S2468-2667(17)30045-2.
- 51. Mughal M, Alvi I, Akhund I, Ansari K. The effects of aerobic exercise training on resting blood pressure in hypertensive patients. *J Pak Med Assoc.* 2001;51(6):222-226. http://www.ncbi.nlm.nih.gov/pubmed/11475778.
- 52. Colberg SR, Sigal RJ, Fernhall B, et al. Exercise and type 2 diabetes: The American College of Sports Medicine and the American Diabetes Association: Joint position statement. *Diabetes Care*. 2010;33(12). doi:10.2337/dc10-9990.
- 53. Keith M. Diaz, and Daichi Shimbo. Physical Activity and the Prevention of Hypertension. *Curr Hypertens Rep.* 2013;15(6):659-668. doi:10.1007/s11906-013-0386-8.Physical.
- 54. Fernandez-Navarro P, Aragones MT, Ley V. Leisure-time physical activity and prevalence of non-communicable pathologies and prescription medication in Spain. *PLoS One*. 2018;13(1):1-13. doi:10.1371/journal.pone.0191542.
- 55. Viña J, Sanchis-Gomar F, Martinez-Bello V, Gomez-Cabrera MC. Exercise acts as a drug; The pharmacological benefits of exercise. *Br J Pharmacol*. 2012;167(1):1-12. doi:10.1111/j.1476-5381.2012.01970.x.
- 56. Pedersen BK, Saltin B. Exercise as medicine Evidence for prescribing exercise as therapy in 26 different chronic diseases. *Scand J Med Sci Sport*. 2015;25:1-72. doi:10.1111/sms.12581.
- 57. Pringle A, Zwolinsky S, Smith A, Robertson S, McKenna J, White A. The pre-adoption demographic and health profiles of men participating in a programme of men's

health delivered in English Premier League football clubs. *Public Health*. 2011;125(7):411-416. doi:10.1016/j.puhe.2011.04.013.

- 58. Richardson N. Getting inside men's health. 2004. www.healthpromotion.ie.
- 59. Nolan, B and Maitre B. A Social Portrait of Communities in Ireland. 2008;5:1-4.