Title: The impact of a gender-specific physical activity intervention on the fitness and fatness profile of men in Ireland.

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Abstract

Background: Amid increasing concerns about rising obesity rates and unhealthy lifestyle behaviours, physical activity (PA) is seen as a prophylactic to many chronic conditions affecting men. Men respond best to community-based PA programmes, using gender-specific promotional and delivery strategies. 'Men on the Move' (MOM) was developed on this basis and targeted inactive adult men in Ireland.

Methods: Sedentary men (n=927; age=50.7±10.9yr; Weight=92.7±16.0kg; METS=6.06±2.13) were recruited across 8 counties; 4 'intervention group' (IG; n=501), and 4 'comparison-in-waiting group' (CG; n=426). The MOM programme involved structured group exercise twice weekly for 12 weeks, along with health-related workshops with the groups maintained up to 52W. Primary outcome measures (aerobic fitness, bodyweight and waist circumference (WC)) together with self-administered questionnaires were used to gather participant data at baseline, 12, 26 and 52 weeks (W).

Results: Results show a net positive effect on aerobic fitness, bodyweight and WC, with significant ($p<0.05$) net change scores observed in the IG compared to the CG (METS: 12W=+2.20, 26W=+1.89, 52W=+0.92; Weight: 12W=-1.72kg, 26W=-1.95kg, 52W=-1.89kg; WC: 12W=-4.54cm, 26W=-2.69cm, 52W=-3.16cm). The corresponding reduction in cardiovascular disease risk is particularly significant in the context of a previously inactive and overweight cohort. The high 'dropout' (42.7% presenting at 52W) however, is of particular concern, with 'dropouts' having lower levels of aerobic fitness and higher bodyweight/WC at baseline.

Conclusions: Notwithstanding dropout issues, findings address an important gap in public health practice by informing the translational scale-up of a small controllable gender-specific PA intervention, MOM, to a national population based PA intervention targeting inactive men.

Key Words: Men's Health, Gender, Community, Physical Activity

Introduction

Globally, concerns about men's health have come under increased public health scrutiny (1–4); across the western world, men have a lower life expectancy than women (4,5) and have higher death rates for most of the leading causes of death and at all ages (4,5). The emerging obesity 'epidemic' on international public health agendas (4), is also evident in Ireland, particularly among men (6). Male obesity has more than tripled since 1990 (7) with just 30% of men in Ireland of 'normal' weight (8). Obesity is linked to cardiovascular and metabolic disease, musculoskeletal problems, decreased physical function, and cancers (9). Notably, central adiposity, which is specific to men (10,11), is more relevant than total body fat in assessing obesity and in predicting associated health risks (12,13). There is also an important gendered-dimension to obesity; unlike women, overweight/obese men tend to be unconcerned about excess weight until it has reached obesity proportions or has become associated with obesity-related co-morbidities (14).

Physical activity (PA) is a prophylactic to many chronic conditions affecting men (15,16). However, a high percentage of men in Ireland become less physically active with age and lead inactive lifestyles (8). Ireland's PA guidelines (17) follow those defined by the World Health Organisation (WHO). Whilst not accounting for gender, there is increasing support for gender-specific approaches to increase PA levels among men. Notably, Ireland's National Men's Health Policy stresses the importance of PA as a hook in the development of 'gender-sensitive' health promotion initiatives for men (18), whilst the recent WHO men's health strategy identifies recreational and sports settings as part of 'gender-transformative' health promotion approaches to engaging men (3).

Evidence suggests that gender-specific strategies related to community-engagement, programme development & delivery, partnerships and capacity-building (19–21), are necessary in creating sustainable health promotion activities that appeal to 'hard-to-reach men' (22), or 'hard-to-engage-men' (23). Specifically, community-based interventions work best when they; use sports related stadiums/venues and associated branding as a hook; consult with men in setting out clear and tangible goals; create a safe, positive group dynamic that prioritises individual needs; use incentives; provide programmes free of charge or at minimal cost; and offer programmes outside of regular work hours (which enables unemployed men to engage without facing the stigma associated with being unemployed) (24).

Despite this evidence, creating the right interventions in the right environments that engage men has proved difficult (1). A Lancet report highlights that the effectiveness of PA interventions hinges upon more holistic approaches that address the determinants of PA at individual, behavioural, social, environmental, and policy levels (25). However, this ideal can be challenging to translate within the realities of public health practice, particularly when engaging 'at-risk' sub-groups.

Building upon these guiding principles and strategies, 'Men on the Move' (MOM), was funded by the Health Service Executive (HSE) in Ireland as a gender-specific community-based 'beginner' PA programme for inactive adult men. This paper reports on the findings of a large pragmatic controlled trial of the MOM programme; primarily in terms of its impact, up to 52 weeks, on fitness and fatness variables, and also on participants' general health and well-being. Findings have informed the recent decision by the HSE to support the national roll out of MOM. This paper will support others seeking to a) engage men in their health via PA interventions and/or b) translate gender-specific PA intervention trials to 'real-world' population-based intervention programmes.

Methods

The efficacy and replicability (26) of MOM were investigated across 8 counties with a view to disseminating the programme nationally. The full MOM study protocol is available elsewhere (24). Briefly, MOM is a free 12-week (W) programme targeting men who do not meet PA guidelines, are likely to be 'at risk' of CVD (27) and is delivered through Local Sports Partnerships (LSPs – recreational sport providers). It comprises of structured group exercise for 1 hour twice weekly, along with health-related workshops (diet and mental well-being). The core components of the structured group exercise are cardiovascular fitness and strength and conditioning training; however, in keeping with good practice, some flexibility is catered for between programmes to ensure that core components were achieved in a way that best suited participants' needs. Post 12W, groups are maintained by LSPs as per their regular practice. Notably, ~70% [n=342] of the 501 men who presented at baseline attended over 50% of the programme i.e. they attended weekly. The study received ethical approval from Waterford Institute of Technology Research Ethics Committee and has been registered with the 'International Standard Randomised-Controlled Trial Number' registry [ISRCTN55654777].

Group Allocation

A pragmatic controlled trial was adopted for this study. Eight LSPs were selected for inclusion in the study; 4 in the 'Intervention Group' (IG) and 4 in the 'Comparison-in-Waiting Group' (CG). Each LSP had a target to recruit 104 men across 3 community settings; the programme was delivered at 12 IG sites with 13 CG sites. Randomisation of sites was not done because of the risk of contamination, particularly in rural areas. Group allocation occurred at LSP level and was not randomised; allocation was based on the point at which LSPs committed to the project.

Data Collection

All variables were assessed at baseline, 12W, 26W and 52W and were undertaken at designated group meeting times. Rescheduling of assessments was not possible. To minimise missing data, men were contacted by the LSP co-ordinator in the days before data collection and the absence of data for an IG participant does not necessarily indicate dropout. Dropout was defined as an IG participant who attended baseline data collection only. Participant flow through the programme is presented in figure 1. Of those presenting at baseline, 63% of the IG and 73% of the CG had at least one follow-up assessment. At 12W, 50% of the IG and 61% of the CG were retested. At 52W 35% of the IG and 51% of the CG were retested.

All frontline MOM staff underwent data collection training to ensure standardised measurement and questionnaire administration across sites. To safeguard against inter-tester errors, the same personnel conducted weight, height and waist circumference (WC) measures across sites. The three primary outcome measures for this study were aerobic fitness, percentage bodyweight and WC. Aerobic fitness was assessed using the one-mile walk/run test and participation was lower for this variable than for others. Fitness scores were estimated using the Daniels and Gilbert equation (29). Mental well-being was assessed via the Warwick-Edinburgh Mental Well-being Scale (WEMEBS) (30), with social well-being was assessed via the Berkman-Syme (31) social network index at all time-points. Self-reported lifestyle behaviours were recorded via self-administered questionnaires, including PA, consumption of fruit and vegetables, smoking, consumption of alcohol and perception of health.

Data Analysis

The intervention targeted a 1 MET increase in aerobic fitness, a 5% reduction in bodyweight and a 5cm reduction in WC. Numbers achieving those targets at 12W, 26W and 52W are presented as a percentage of (a) those tested at these time-points (best-case scenario) and (b) those (n=628, n=548 for fitness) who participated in the programme to 12W and beyond (worst-case scenario). Missing data were not relevant for the best-case scenario analysis as only those present were included in the denominator at each time-point. All those with one post-baseline assessment were included in the denominator for this worst-case analysis (n=628), with imputation for missing data. The intervention effect on aerobic fitness, bodyweight and WC values was also determined by comparing the change scores from baseline at 12W (n=428-508), 26W (n=286-378) and 52W (n=269-390) between the groups using a one-way Analysis of Variance (ANOVA), without imputation for missing data. The ANOVA was undertaken using SPSS Complex Samples, which adjusts confidence intervals for the nesting of participants within 25 community groups.

Of the 501 men who were tested at baseline and allocated to the IG, 315 (programme participants) were present for at least one further assessment, with the remainder (n=186) classed as early dropouts. Baseline differences between the IG participants and early dropouts and baseline differences between the IG and CG were determined using independent t-tests, Mann-Whitney U tests and Chi-Square analysis as appropriate. Significance was set at $p<0.05$.

Results

In total, 927 men registered for MOM; IG (n=501) and CG (n=426). The comparative demographic group means were as follows; IG: age = 52.0±10.7yr, height = 174.6±6.5cm, weight = 94.2±16.0kg; CG: age = 49.3±11.4yr, height = 176.0±6.6cm, weight = 91.0±15.9kg. Key baseline characteristics are published elsewhere (27).

Intervention effect - mean differences

There was a positive intervention effect on aerobic fitness, bodyweight and WC, with significantly greater change scores from baseline in the IG compared to the CG at 12W, 26W and 52W (table 1). Mean METS values were increased ($p<0.05$) by ~2 METS at 12W and 26W and still higher ($p<0.05$) than baseline (1.3 METS) at 52W. Bodyweight was reduced by 1.67, 1.92 and 2.07kg in the IG at 12W, 26W and 52W respectively. Waist circumference was reduced by 4.7cm, 4.5cm and 3.9cm in the IG at 12W, 26W and 52W respectively. There was some evidence of small CG changes in aerobic fitness and WC at 26W and 52W (table 1). There was a positive intervention effect ($p<0.05$) on PA frequency and mental well-being at 12W and 26W but not 52W. There was no intervention effect on fruit and vegetable intake, alcohol consumption or social integration.

Intervention effect – percentage success rates

The 1 MET increase in aerobic fitness targeted in the intervention was achieved by 73%, 71% and 51% of the IG men who presented for testing (best case scenario) at 12W, 26W and 52W respectively (table

2). The 5% reduction in bodyweight targeted in the intervention was achieved by 13%, 16% and 22% of the IG men who presented for testing (best case scenario) at 12W, 26W and 52W respectively (table 2). The targeted 5cm reduction in WC in the intervention was achieved by 48%, 45% and 42% of the IG men who presented for testing (best case scenario) at 12W, 26W and 52W respectively (table 2). When all IG programme participants are included in the denominator with imputation for missing data, the percentage success rates are reduced, particularly at the 52W time-point (table 2). A small percentage of the CG also achieved the targeted changes at specific time-points, though the probability of achieving the 5cm reduction in WC was considerably higher in the IG (table 2).

Comparison of programme IG participants (n=315) vs early dropouts (n=186)

At baseline, those allocated to the IG who went on to participate in the programme were slightly older, had higher levels of aerobic fitness and PA with a lower bodyweight and WC, compared to those who were classified as early dropouts (all $p<0.05$) (table 3). Compared to early dropouts, fewer programme participants self-reported health problems and more were in full-time employment or self-employment ($p<0.05$) (table 3).

Discussion

This evaluation of a community-based, multiple site, group PA intervention (MOM), used a partnership model to target at 'at-risk' men (24), with a view to scaling up the programme for national roll-out. Results demonstrated a considerable increase in aerobic fitness, evident at 12W, maintained through 26W with values still elevated 52W. The effects on bodyweight and WC were more modest but the initial losses were maintained through 26W to 52W. Findings provide strong evidence of programme efficacy but do need to be considered in the context of the dropout that occurred in this real-world intervention.

Intervention efficacy was evaluated with reference to the change scores from baseline in the IG and CG but also in terms of the percentages that achieved the 1 MET fitness, 5% bodyweight and 5cm WC targets. The percentages achieving these targets were determined without and with imputation for missing data. The former approach reflects intervention efficacy in those who were part of the intervention at that time-point and available for testing, a likely best-case scenario, but indicative of results that can be achieved with ongoing participation in our MOM community groups. The latter approach, with imputation for missing data, reflects the successes that are likely to be achieved in a group of 'at-risk' men who were part of the MOM intervention at some post-baseline time-point. We considered this to be the most appropriate denominator when estimating the original participating group success rates as the economic costs of delivering the programme relate to the size of this group who continued beyond baseline. These best-case and worst-case scenarios were similar at 12W but differences widened at 26W at 52W, particularly for those variables for which the intervention had the greatest effect.

The aerobic fitness data at 12W and 26W represent the most notable intervention effect. The greater than 2 METS achieved post 12W in aerobic fitness equates to a potential 30% CVD risk reduction (32) and this was maintained to 26W. The 1 MET aerobic fitness target was achieved by over 70% of the 12W and 26W participants. There was a loss in fitness gains at 52W, potentially due to a summer break lag in programme momentum. Nevertheless, the average improvement of 1.3 METS at 52W equates to a potential 20% CVD risk reduction (32), and is particularly important in the context of a previously inactive and overweight cohort. Even with the worst-case analysis and allowing for the summer break, nearly one-third of the IG achieved the 1 MET target at 52W. In line with the fitness changes, there were increases in weekly frequency of PA participation in the IG through 52W. The intervention also achieved a positive mental well-being effect at 12W and 26W in ongoing participants, with a reduction in this effect at 52W. The mean change at 26W approximates the clinical meaningful score for the WEMWEBS tool (30).

The programme effects on bodyweight and WC were more modest; not surprising perhaps for a PA-focused intervention. If anything, the modest weight loss of ~2kg and targeted weight loss success rates were continuing to improve at 52W. It is unlikely that PA interventions will lead to a 5% change in bodyweight in the majority of participants. The significant reduction in WC at 52W (~4cm) equates to a CVD risk reduction of ~8% (33). This is particularly relevant to men who tend to accumulate adipose tissue in the trunk/abdomen (10). Waist circumference provides an accurate reflection of total and abdominal fat accumulation and associated health risks (34). At 52W, the 5cm waist reduction target was achieved by 42% of ongoing participants and 26% of the MOM participant group, which is likely to have a meaningful impact on population health if replicated in a national rollout.

There were small unexpected positive changes in the CG, particularly in WC and fitness at 26W and 52W. These changes might be attributed to a CG who were gearing up for the commencement of the intervention promised to them after their 52W assessments.

The numbers presenting for re-testing at 52W was the disappointing element of this programme. It was an unrealistic expectation that we would sustain the engagement of the large numbers who presented at baseline. Early dropout is more likely in a 'real-world' setting, but there will still remain a large cohort of 'at-risk' men for risk improvement with potential impact on population health and well-being. More concerning is the reduction in numbers between 12W and 52W which impacted on a widening of best and worst-case analysis differences between these time-points. Although MOM was modelled on FFIT, notably, FFIT was predominantly a weight loss intervention where participants were rewarded for undertaking assessments (35). Weight loss assessments were readily made and FFIT participants were sometimes assessed in their own homes (36). We were limited to conducting group-based assessments in community settings at designated times and not all missed assessments were lost to the programme. Nevertheless, strategies will be needed in a national rollout to retain men beyond 12W and to avoid a long summer break. Additionally, MOM would possibly require restructuring to give more emphasis to healthy eating and weight management if targeting a 5% reduction in weight.

Although not the primary purpose of this study, the comparison of ongoing participants to early dropouts reveals some noteworthy differences. Dropouts were more overweight, inactive and less fit with greater health problems. A national MOM roll-out will need to be sensitive to these factors. The impact of self-reported health problems on early dropout was considerable and, clearly, alternative approaches will be necessary for this cohort. Further work relating to barriers and self-efficacy is needed (37). Findings also draw attention to the wider question of what constitutes 'success' in terms of adherence by 'at-risk' groups to health promotion interventions in real-world settings (38).

The absence of randomisation is the other major limitation of this evaluation. Although differences at baseline between the IG and CG in fitness and fatness variables were small, they were, nevertheless, statistically significant in the contest of the large sample size. Randomisation at an individual level was not conducted within community settings because contamination was a major risk, especially in rural Ireland. We recognise the limitation of non-randomisation at group level but also assert that the decision regarding LSP group assignment, is often a natural occurrence in building successful community-based interventions of this type with multiple 'practitioner partners' (28). A number of LSPs were involved in the study's conception and funding application and were therefore allocated to the IG. The research team decided to accept the limitation of non-randomisation to safeguard against the potentially more negative impact that randomisation would likely have on the strong group dynamic within the network of partners and consequently the integrity of programme delivery.

In summary, the findings show that a gender-specific CBPA programme can enable previously inactive men to achieve, and sustain, significant increases in aerobic fitness as well as significant reductions in weight, waist measurements, and CVD risk. However, results highlight the challenges with maintaining adherence to CBPA interventions, particularly for 'at-risk' men. Against a backdrop of WHOs recent call for more 'gender-transformative' health promotion approaches to engaging men (4), findings address an important gap in public health practice by informing the translational scale-up of a small controllable gender-specific PA intervention, MOM, to a national population-based PA intervention targeting inactive men.

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Key Points:

- Findings show that a gender-specific CBPA programme can enable previously inactive men to achieve, and sustain, significant increases in aerobic fitness as well as significant reductions in weight, waist measurements, and CVD risk.
- Findings have prompted the national roll out of 'Men on the Move' in Ireland from 2019.
- The results presented highlight the challenges with maintaining adherence to CBPA intervention for men, particularly amongst those most 'at-risk'.
- Findings address an important gap in public health practice by informing the translational scale-up of a small controllable gender-specific PA intervention to a national population-based PA intervention targeting inactive men.

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Table 1: Change scores of the IG and CG between baseline and 12W, 26W and 52W

	Baseline	Baseline to 12W	Baseline to 26W	Baseline to 52W
		Mean±SE (N)		
Fitness (METS)				
IG	5.61±1.75 (435)	2.27±0.28* (216)	2.34±0.29* (124)	1.32±0.13* (119)
CG	6.60±2.41# (362)	0.07±0.14 (212)	0.45±0.17 (162)	0.40±0.14 (150)
Waist Circumference (cm)				
IG	107.71±12.44 (495)	-4.67±0.62* (246)	-4.51±0.87* (171)	-3.88±0.64* (170)
CG	102.12±13.08# (423)	-0.13±0.43 (255)	-1.82±0.47 (197)	-0.72±0.42 (211)
Weight (kg)				
IG	94.12±16.04 (501)	-1.67±0.29* (250)	-1.92±0.32* (178)	-2.07±0.27* (174)
CG	91.01±15.87# (426)	0.05±0.19 (258)	0.03±0.19 (200)	-0.18±0.19 (216)
BMI (kg/m^2)				
IG	30.83±4.67 (501)	-0.55±0.09* (250)	-0.64±0.11* (177)	-0.68±0.09* (174)
CG	29.40±4.96# (425)	0.02±0.06 (258)	0.01±0.806 (200)	-0.06±0.06 (216)
Number of days Physical Activity per week totalling 30 minutes or more				
IG	3.02±1.97 (485)	1.03±0.11* (237)	1.04±0.14* (170)	1.49±0.77* (170)
CG	3.61±2.19# (410)	0.11±0.10 (246)	0.33±0.12 (192)	0.40±0.19 (202)
Previous day Fruit and Vegetable intake (portions)				
IG	3.93±1.5 (496)	0.46±0.13 (244)	0.43±0.13 (175)	0.19±0.13 (173)
CG	3.97±1.7 (410)	0.08±0.06 (248)	0.21±0.09 (189)	0.36±0.05 (202)
Weekly Alcohol Consumption (units)				
IG	9.69±5.4 (385)	0.06±0.17 (182)	-0.02±40.39 (121)	-0.66±0.29 (133)
CG	9.92±5.1 (333)	-0.22±0.20 (201)	-0.38±0.28 (155)	-0.49±0.05 (156)
Mental Well-Being (WEMWBS)				
IG	50.90±8.1 (466)	2.23±0.52* (204)	2.90±0.50* (151)	1.88±0.42 (150)
CG	52.06±8.0# (393)	0.30±0.37 (226)	0.35±0.56 (182)	0.89±0.45 (186)
Social Integration (BSSNI)				
IG	16.41±6.1 (418)	-0.28±0.28 (187)	0.38±0.31 (125)	0.28±0.31 (123)
CG	16.45±6.0# (361)	-0.53±0.24 (201)	-0.48±0.28 (150)	-0.28±0.29 (161)

Key: W = week; SD = Standard Deviation; N = number; METS = 1 metabolic equivalent (1 MET) = 3.5ml/kg/min; IG = Intervention Group; CG = Comparison-in-waiting Group; cm = centimetre; kg = kilogram; BMI = Body Mass Index; m^2 = metre squared; WEMWBS = Warwick-Edinburgh Mental Well-being Scale; BSSNI = Berkman-Syme Social Network Index. # = statistical significance (p<0.05) compared to change score in CG. * = statistical significance (p<0.05) compared to group baseline score. The analysis takes into account the change between groups from baseline.

Table 2: Best- and worst-case scenario for the percentage of men who achieved targeted changes in fitness and fatness at 12W, 26W and 52W

	N = without imputation (N = with imputation)	IG	CG	Relative Risk of achieving target in IG
FITNESS (METS)				
1 MET increase in fitness @ 12W	428	73.1%	18.4%	3.98 (95% CI 2.96 – 5.34)
	(548)	(68.5%)	(18.3%)	3.74 (95% CI 2.85 – 4.91)
1 MET increase in fitness @ 26W	286	71.0%	24.7%	2.87 (95% CI 2.15 – 3.85)
	(548)	(43.5%)	(19.5%)	2.23 (95% CI 1.68 – 2.97)
1 MET increase in fitness @ 52W	269	51.3%	20.0%	2.56 (95% CI 1.78 – 3.69)
	(548)	(31.4%)	(13.9%)	2.00 (95% CI 1.61 – 3.19)
WAIST CIRCUMFERENCE				
5cm reduction in waist circumference @12W	501	48.4%	10.4%	4.66 (95% CI 3.19 – 6.81)
	(624)	(44.3%)	(10.6%)	4.19 (95% CI 2.94 – 5.88)
5cm reduction in waist circumference @26W	375	45.4%	20.4%	2.23 (95% CI 1.62 – 3.06)
	(624)	(30.6%)	(15.2%)	2.02 (95% CI 1.48 – 2.75)
5cm reduction in waist circumference @52W	389	42.0%	15.8%	2.65 (95% CI 1.86 – 3.78)
	(624)	(26.1%)	(12.6%)	2.08 (95% CI 1.47 – 2.94)
WEIGHT				
5% reduction in bodyweight @12W	511	13.5%	1.5%	8.81 (95% CI 3.17 – 24.45)
	(628)	(13.0%)	(1.3%)	10.19 (95% CI 3.69 – 28.10)
5% reduction in bodyweight @26W	378	16.3%	4.5%	3.62 (95% CI 1.76 – 7.44)
	(628)	(12.1%)	(3.8%)	3.15 (95% CI 1.68 – 5.91)
5% reduction in bodyweight @52W	391	21.8%	5.5%	3.95 (95% CI 2.13 – 7.32)
	(628)	(13.7%)	(4.8%)	2.85 (95% CI 1.62 – 5.02)

Note: N = number; IG = Intervention Group; CG = Comparison-in-waiting Group; METS = 1 metabolic equivalent (1 MET) = 3.5ml/kg/min; W = week; CI = Confidence Interval; cm = centimetre; % = percentage.

Percentages have as the denominator those who presented for retesting at each time-point and also (in parenthesis) all those who engaged with the programme beyond the baseline assessments with imputation for missing data

Table 3: Baseline characteristics of Intervention Group Participants (n=315) and Early Dropouts (n=186)

	Participants (PT)	Dropouts (DO)	
	Mean±SD (N) / Mean (IQR) / % (N)		p-value
Age, Fitness and Fatness			
Age (years)	52.7±10.2 (311)	50.7±10.9 (182)	p=0.040
Weight (kg)	92.2±14.1 (315)	97.3±18.5 (186)	p<0.001
Waist Circumference (cm)	105.9±10.8 (310)	110.7±14.3 (185)	p=0.003
BMI (kg/m^2)	30.1±4.1 (315)	32.1±5.3 (186)	p=0.010
METS	5.7±1.8 (294)	5.3±1.7 (139)	p=0.022
Mental well-being and social integration			
Mental Well-Being (WEMWBS)	51.61±7.8 (297)	49.64±8.6 (169)	p=0.140
Social Integration (BSSNI)	16.43±6.1 (272)	16.38±6.1 (146)	p=0.623
Perceived health status and self-reported health behaviours			
% self-reporting health problems	32.9 (96)	50.6 (86)	p<0.001
Physical activity >30minutes (days/week)	3.0 (1.0 – 4.0)	2.0 (1.0 – 4.0)	p=0.033
Previous day fruit and veg intake (portions)	4.0 (3.0 – 5.0)	4.0 (3.0 – 5.0)	p=0.359
% who are current drinkers	79.2 (248)	75.4 (138)	p=0.323
Weekly Alcohol Consumption [a]	8.0 (6.0 – 12.0)	10.0 (7.5 – 14.0)	p=0.086
% who currently smoke	9.3 (29)	13.5 (25)	p=0.144
Education, martial and employment status			
% reporting some third level education	43.7 (136)	39.9 (73)	p=0.404
% married/co-habiting [b]	79.9 (250)	74.7 (139)	p=0.180
% in full time employment or self-employed [c]	65.0 (204)	53.3 (98)	p=0.010

Key: PT = Participants (participant in intervention group who attended baseline and at least one other data collection); DO = Dropouts (participant in intervention group who attended baseline data collection only); SD = Standard Deviation; IQR = Inter-Quartile Range; % = percentage; N = number; kg = kilograms; cm = centimetres; BMI = Body Mass Index; m^2 = metres squared; METS = 1 metabolic equivalent (1 MET) = 3.5ml/kg/min; WEMWBS = Warwick-Edinburgh Mental Well-being Scale; BSSNI = Berkman-Syme Social Network Index; Statistical Significance p<0.05.

a Alcohol Units; Pint = 2 units, ½ Pint = 1 unit, Glass of wine (large) = 2 units, Spirit measure = 1 unit.

b Other categories; separated/divorced, widowed, single, in a relationship

c Other categories; looking after family home, student, employed (part-time), unemployed, retired, volunteer, unable to work due to long-term illness

Figures Legend

Figure 1: Participant flow through the MOM programme