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| <b>Institution:</b> University of Glasgow (UofG)  |  |  |
| <b>Unit of Assessment:</b> UoA 2 (Public Health, Health Services and Primary Care)  |  |  |
| <b>Title of case study:</b> Harnessing the draw of professional sports clubs to deliver improvements in health and wellbeing among at-risk groups   |  |  |
| <b>Period when the underpinning research was undertaken:</b> 2009–2018  |  |  |
| <b>Details of staff conducting the underpinning research from the submitting unit:</b>  |  |  |
| <b>Name(s):</b><br>(1) Prof Cindy Gray;<br>(2) Prof Sally Wyke;<br>(3) Prof Kate Hunt;<br>(4) Dr Chris Bunn.  | <b>Role(s) (e.g. job title):</b><br>(1) Research Fellow; Lecturer in Health Behaviour Change; Senior Lecturer; Interdisciplinary Professor of Health and Behaviour;<br>(2) Interdisciplinary Professor of Health and Wellbeing;<br>(3) Professor of Gender and Health;<br>(4) Postdoctoral Research Associate; Research Fellow; Lecturer in Sociology. | <b>Period(s) employed by submitting HEI:</b><br>(1) 2011–2016; 2016–2017; 2017–2019; 2019–present;<br>(2) 2011–present;<br>(3) 1985–2018;<br>(4) 2013–2017; 2017–2020; 2020–present. |
| <b>Period when the claimed impact occurred:</b> August 2013–present   |  |  |
| <b>Is this case study continued from a case study submitted in 2014?</b> Yes (submitted to Panel C; Social Work and Social Policy)  |  |  |
| <b>1. Summary of the impact</b><br>Rising obesity levels challenge public health, with men particularly at risk yet underserved by traditional weight-loss interventions. UofG researchers developed and evaluated Football Fans in Training (FFIT), a 12-week weight management and healthy lifestyle programme delivered through professional football clubs. FFIT provides health benefits, is cost-effective and reaches high-risk groups. In 2016, UofG concluded a franchise-model agreement with the Scottish Professional Football League Trust (SPFLT). Together, this franchise, UofG research and non-governmental organisation collaborations has resulted in adaptation of FFIT to three additional sports, and over 10,000 men in 11 countries benefitting from franchise programmes (average weight loss $\geq 3$ kg). The population health impacts (expressed as net monetary benefits) were GBP128.6 million for this cohort and GBP118.3 million for the NHS.  |  |  |
| <b>2. Underpinning research</b><br><b>The problem</b><br>Rising levels of obesity are a major challenge to public health. Estimates in 2011 suggested there would be 11 million more obese adults in the UK by 2030, accruing up to 668,000 additional cases of diabetes mellitus; 461,000 cases of heart disease and stroke; 130,000 cases of cancer; and up to 6.3 million quality-adjusted life years (QALYs) lost [source]. Associated medical costs for these preventable diseases were predicted to increase by GBP1.9–2.0 billion each year by 2030. Men are particularly at risk but underserved by existing weight management services. Tailored programmes that attract men, support them to lose weight and keep weight off long term are urgently needed.<br><br><b>Football Fans in Training</b><br>During 2010–2013, with funding from the Chief Scientist Office (CZG/2/504), a team led by UofG researchers <b>Prof Cindy Gray</b> , <b>Prof Kathryn Hunt</b> and <b>Prof Sally Wyke</b> developed FFIT as a novel group-based weight management programme for men [3.1]. FFIT is delivered over 12 weekly sessions in professional football clubs by trained club coaches. Each session combines an educational ‘classroom’ discussion with a group physical activity session; participants learn to use effective behaviour change techniques through interaction, ‘banter’ and mutual learning. FFIT works by first attracting men through their interest in football and then supporting them to lose weight by incorporating small, incremental physical activity and dietary changes into daily life to support long-term maintenance of the benefits gained. UofG holds the intellectual property for FFIT, which has now been successfully adapted for women (2018; <b>Dr Christopher Bunn, Wyke, Hunt, Gray</b> ) [3.2]. |  |  |

**Long-term benefits of FFIT**

During 2011–2014, with funding from the National Institute for Health Research (NIHR; PHR/09/3010/06), **Hunt, Wyke, Gray, and Bunn** led an evaluation of FFIT in the world's first randomised controlled trial (RCT) of a healthy lifestyle programme delivered in professional sports clubs [3.3]. The rigorous study design eliminated any potential bias arising from the same team developing and evaluating the programme. The RCT enrolled 747 men aged 35–65 years who were overweight or obese (body mass index [BMI]  $\geq 28\text{kg/m}^2$ ). The intervention group undertook the FFIT programme in 13 Scottish football clubs, with measures of health and wellbeing assessed at baseline, 12 weeks and 12 months. The comparison group received no weight-loss intervention during this period but could participate in FFIT from month 13. The intervention group showed statistically significant improvements in weight and other measures of health and wellbeing upon completing the 12-week programme, which were maintained to 12 months. Outcomes of the RCT and a 3.5-year follow-up are described below [3.3–3.6].

*Weight loss and cardiovascular disease risk reduction:* At 12 months, the mean between-group difference in weight loss was 4.94 kg (95% confidence interval [CI] 3.95–5.94), equivalent to a 4.36% (95% CI 3.64–5.08) reduction in favour of the intervention group [3.3]. This value is in line with 2013 US guidance on management of overweight and obesity in adults, which indicates that 3%–5% weight loss reduces cardiovascular disease risk [source]. Other cardiometabolic risk factors that improved in the intervention group included reductions in waist circumference (5.12 cm); BMI (1.56  $\text{kg/m}^2$ ); body fat (2.15%); and blood pressure (2.27 mmHg for systolic, 1.36 mmHg for diastolic) [3.3].

*Improved health behaviours and wellbeing:* At 12 months, the intervention group demonstrated improvements in self-reported physical activity; dietary intake; alcohol consumption; self-esteem; positive and negative affect; and physical health-related quality of life [3.3].

*Cost-effectiveness:* Economic modelling demonstrated that FFIT is cost-effective compared to no intervention, with average gains of 0.43 life-years (95% CI 0.32–0.56); 0.38 quality adjusted life years (QALYs; 95% CI 0.25–0.55); and an incremental cost-effectiveness of GBP2,810 per QALY gained (GBP2,535 per life-year gained) [3.4].

*Appeal across the socioeconomic spectrum:* Most lifestyle programmes attract people from affluent areas; however, 262 (34%) of the RCT participants lived in areas of high-to-moderate deprivation [3.4].

*Long-term health benefits of FFIT:* In 2015–2017, with funding from NIHR (PHR/13/99/32), 488 (65%) men who had participated in the RCT [3.3] were followed-up 3.5 years after baseline measurements [3.5]. This cohort included men from both the intervention group and the comparison group (who had taken part in non-trial 'routine' deliveries of FFIT after the RCT). At 3.5 years, the intervention and comparison groups had sustained a mean weight loss of 2.90 kg (95% CI 1.78–4.02) and 2.71 kg (95% CI 1.65–3.77), respectively [3.5]. Overall, 156 (32%) participants still weighed at least 5% less than at baseline, with improvements in most behavioural and psychological outcomes also maintained at 3.5 years. The programme continued to be highly cost-effective, with an estimated gain of at least 0.68 QALYs. The finding that routine deliveries of FFIT produce excellent long-term outcomes provided additional evidence to support widespread roll-out of the intervention [3.5, 3.6].

**3. References to the research**

1. **Gray C, Hunt K, Mutrie N, Anderson A, Leishman J, Dalgarno L, Wyke S** (2013) Football Fans in Training: the development and optimization of an intervention delivered through professional sports clubs to help men lose weight, become more active and adopt healthier eating habits. *BMC Public Health*;13(1):232 ([doi:10.1186/1471-2458-13-232](https://doi.org/10.1186/1471-2458-13-232)).
2. **Bunn C, Donnachie C, Wyke S, Hunt K, Brennan G, Lennox J, Maclean A, Gray C** (2018) Can professional football clubs deliver a weight management programme for women: a feasibility study. *BMC Public Health*;18:1330 ([doi:10.1186/s12889-018-6255-2](https://doi.org/10.1186/s12889-018-6255-2)).
3. **Hunt K, Wyke S, Gray C, Anderson AS, Brady A, Bunn C, et al.** (2014) 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*;383(9924):1211–1221 ([doi:10.1016/S0140-6736\(13\)62420-4](https://doi.org/10.1016/S0140-6736(13)62420-4)).
4. **Wyke S, Hunt K, Gray C, Fenwick E, Bunn C, et al.** (2015) 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 Health Research*;3(2) ([doi:10.3310/phr03020](https://doi.org/10.3310/phr03020)).
  5. **Gray C, Wyke S, [...], Bunn C, [...], Hunt K** (2018) Long-term weight loss trajectories following participation in a randomised controlled trial of a weight management programme for men delivered through professional football clubs: a longitudinal cohort study and economic evaluation. *Int J Behav Nutr Phys Act*;15:60 ([doi:10.1186/s12966-018-0683-3](https://doi.org/10.1186/s12966-018-0683-3)).
  6. **Gray C, Wyke S, [...], Bunn C, [...], Hunt K** (2018) Long-term weight loss following a randomised controlled trial of a weight management programme for men delivered through professional football clubs: the Football Fans in Training follow-up study. *Public Health Research*;6(9) ([doi:10.3310/phr06090](https://doi.org/10.3310/phr06090)).

#### **Grants (\*Co-PI)**

**Wyke S (PI)**, Gray C, Hunt K\*, et al. Chief Scientist Office (CZG/2/504), August 2010–June 2011, GBP49,862.

**Wyke S (PI)**, Hunt K\*, Gray C\*, et al. NIHR (PHR/09/3010/06), June 2011–December 2013, GBP808,980.00.

**Gray C (PI)**, Hunt K\*, Wyke S\*, Bunn C\*, et al. NIHR (PHR/13/99/32), January 2015–July 2016, GBP338,161.

#### **4. Details of the impact**

##### **Pathway to impact**

SPFLT was a key partner in supporting the development of FFIT for men [3.1]; the FFIT adaptation for women [3.2]; the FFIT RCT [3.3, 3.4]; and the 3.5-year FFIT follow-up study [3.5, 3.6]. In 2012, SPFLT took over responsibility for delivering FFIT using an easy access agreement, whereby anyone (not only SPFLT) could access the programme materials if they agreed to feedback their results to UofG. This relationship and the easy access agreement formed the basis of our REF2014 [case study](#) (Panel C; Social Work and Social Policy).

Every year since 2014, SPFLT has used UofG research findings and on-going monitoring data to successfully apply for Scottish Government funding to deliver FFIT across Scotland [5.A]. FFIT is promoted by club-based social media; men who are interested in taking part sign up via their club or the [SPFLT website](#), which provides information about the programme and its benefits. On-going deliveries of FFIT are facilitated by a formal coach training programme. This initiative was co-developed in 2014 by SPFLT and the UofG research team, with UofG Knowledge Exchange funding (GBP7,500). A total of 251 coaches were trained to deliver FFIT from the 2013/2014 to 2018/2019 Scottish football seasons [5.A].

In 2014, following requests from female fans and football clubs, SPFLT secured Scottish Government funding to pilot a version of FFIT for women. The UofG team supported SPFLT to adapt FFIT for this purpose [3.2] and led a pilot evaluation (Knowledge Exchange funding, GBP33,211). FFIT-for-women is now delivered alongside the original FFIT programme [5.A].

Since 2016, the UofG team has worked with SPFLT to transition from the easy access agreement to a single-licence FFIT franchise model, which allows SPFLT to oversee worldwide roll-out of the programme [5.A]. In addition, this franchise requires SPFLT to report monitoring outcomes from all FFIT deliveries to UofG annually.

##### **SPFLT as beneficiaries of FFIT**

The FFIT franchise has supported SPFLT to become an internationally recognised leader in corporate social responsibility within professional football [5.A]. Since 2014, SPFLT has increased its operational capacity, including a dedicated FFIT Development Officer [5.A]. In 2016, SPFLT won the [Football Business Award](#) for best non-match day use of a stadium for its work using FFIT. Scottish and international policy makers have also recognised the benefits of FFIT [5.B]. The Health and Sport Committee of the Scottish Parliament highlighted FFIT as a successful intervention to reduce obesity; furthermore, continued funding for FFIT is set out in

Action 3.8 of Scotland's national obesity strategy (A Healthier Future – Scotland's Diet & Healthy Weight Delivery Plan, 2018). Internationally, the Public Health Agency of Canada cited FFIT in their Best Practices Portal for health professionals and public health decision-makers (2016). A 2017 report from the Joint United Nations Programme on HIV and AIDS (UNAIDS) highlighted FFIT as an exemplar for reaching men in places of work or leisure [5.B].

### **Routine deliveries of FFIT for men and women in Scotland confirm the benefits**

From the 2013/2014 to 2018/2019 football seasons, FFIT was successfully delivered in 38 of the 42 professional Scottish clubs to 3,665 men and 1,567 women [5.C]. Mean weight loss at week 12 of the programme was 4.6% (men) and 3.7% (women). In addition, reductions were observed in waist circumference (men, 6.8 cm; women, 5.9 cm) and blood pressure (men, systolic 8.2 mmHg, diastolic 6.1 mmHg; women, systolic 3.9 mmHg, diastolic 3.1 mmHg), both of which are associated with lowered risk of cardiovascular disease. The values for men were comparable to 12-week outcomes in the FFIT RCT [3.3, 3.4], which led to beneficial changes retained at 12 months [3.3, 3.4] and 3.5 years [3.5, 3.6]. These data suggest that the results of post-research deliveries of FFIT will realise long-term benefits to health and wellbeing.

Participants also reported that FFIT had transformed their lives, both in terms of health and wellbeing [3.6, 5.D]. For example:

- *“My life was a bit of a mess. 59 years old, feeling at least 10 years older, grossly overweight and gaining daily. Six months later, I have turned 60 years old and now feel at least 10 years younger, 5 stones lighter and losing daily”* (Participant A).
- *“Four weeks ago I went and got some further blood tests done and my diabetes seems to have reversed itself. There was no sign of it. The doctor said it was remarkable what had actually happened”* (Participant B).
- *“I get such a buzz from the exercise, you see the weight is – it's two-pronged this, you lose the weight and you feel good and you look good. But then because you're exercising, you've got that extra buzz as well. And, you know, it's just a double whammy o' happiness”* (Participant C).

FFIT continues to attract hard-to-reach groups: 836 of 1866 (44.8%) men and 495 of 1137 (43.5%) women taking part in the routine deliveries, who provided their postcode, lived in areas of moderate-to-high deprivation. Participation in FFIT can also lead to community-level benefits. A 2018 UofG survey found that, after completing the programme, participants continue to meet up to play football together (26 teams set up); continue FFIT-style sessions (6 clubs); meet socially (7 clubs); and fundraise for local charities (9 clubs) [5.E].

### **Routine deliveries of FFIT rolled-out for men in England and Europe**

#### *England*

During 2014–2015, SPFLT contracted with eight English football clubs to deliver FFIT to 510 participants [5.F]. SPFLT has also supported the English Football League Trust to secure funding from Sport England for 10,000 men and women to take part in FFIT from 2020 onwards [5.F], with the initial deliveries continuing successfully (online) despite COVID-19.

#### *Europe*

SPFLT worked in collaboration with the Institute for Therapy and Health Research (Kiel, Germany) to train coaches from 15 German Bundesliga clubs to deliver FFIT to 477 men (2017–2018). Reach of FFIT in Germany has now grown to 1,597 men in 21 clubs [5.A]. Mean post-programme weight loss was 6.2 kg, with mean blood pressure reductions of 11.1 mmHg (systolic) and 4.8 mmHg (diastolic) [5.G].

In 2013, the UofG team obtained EU FP7 funding to use the FFIT model to inform the development of a football club-based programme ([EuroFIT](#)) to improve physical activity and sedentary behaviour among men in England, the Netherlands, Norway and Portugal. UofG led the evaluation of EuroFIT in an RCT involving 1,113 men aged 30–65 years, working in partnership with nine universities and three non-academic organisations, including the European Healthy Stadia Network (2015–2016) [5.G]. The positive outcomes reported at 12

months (e.g. objectively measured physical activity increased by 678 steps/day) led to an agreement between the Portuguese Football Federation and the Portuguese Directorate of Health to support roll-out of EuroFIT in Portugal (2017) [5.G]. SPFLT also supported the European Football for Development Network (EFDN) to deliver FFIT in eight European clubs as 'Active Fans', reaching 418 men and women in the Netherlands, Hungary, Belgium, Norway, UK and Germany (2018–2019) [5.G].

#### **Adaptation of FFIT to other sports**

The UofG team has collaborated with researchers and third-sector organisations internationally to adapt FFIT for delivery through other sports, including rugby, Australian Rules football and ice hockey (2015–2018). Over 500 men achieved positive weight, lifestyle and other health outcomes in these projects, which have attracted approximately GBP1.5 million in research funding [5.H]:

- Rugby in England and New Zealand (305 men: mean weight loss 3.7 kg)
- Australian Rules football in Australia (130 men: mean weight loss 3.4 kg). In addition, Curtin University (Perth, Australia) has received AUD149,503 from the Australian Heart Foundation to adapt this programme for delivery to men with heart disease (2020–2022).
- Ice hockey in Canada (80 men: mean weight loss 3.6 kg).

#### **Health economic benefits of the FFIT franchise**

Between 2014 and 2020, the FFIT franchise expanded to 11 countries and four sports. To determine the health economic benefits associated with increased reach of the programme, UofG researchers conducted modelling based on over 10,000 men who had participated in routine or RCT deliveries in football and other sports during this period [5.I]. FFIT delivered population health impacts, conservatively valued in net monetary benefits as GBP128.6 million for the FFIT participants and GBP118.3 million from an NHS perspective. A total of 6,428 incremental QALYs were gained, with a per-participant cost of GBP164 (GBP1.65 million for all participants). The net annual return on investment was 12.8%, which compares favourably with other health promotion interventions (2.2%). In addition, expansion of the FFIT franchise has prevented 101 deaths from cardiovascular disease (1% absolute risk reduction), 44 cases of non-fatal coronary heart disease and 38 non-fatal strokes.

#### **5. Sources to corroborate the impact [PDFs uploaded for all listed items]**

- A. Relationship with SPFLT: (1) Testimony from the SPFLT Chief Executive; (2) The licence agreement for delivery of FFIT via a franchise model.
- B. Policy documents citing FFIT: (1) Scottish Parliament Health and Sport Committee [Public Paper HS/S5/16/13/1](#) (2016); (2) Scottish Government [A Healthier Future – Scotland's Diet & Healthy Weight Delivery Plan](#) (2018). See Action 3.8, p.24; (3) Public Health Agency of Canada [Best Practices Portal](#) (2016); (4) UNAIDS [Addressing a blind spot in the response to HIV](#) (2017).
- C. FFIT outcomes monitoring data for 2013/2014 to 2018/2019 seasons (supplied by SPFLT).
- D. SPFLT FFIT Season 2015–2016 report.
- E. Survey of the [community benefits](#) of FFIT in Scotland (2018).
- F. FFIT in England: (1) Hunt *et al.* (2020) *Int J Environ Res Public Health*;17(2):E584, doi:[10.3390/ijerph17020584](#); (2) Announcement from the [English Football League Trust](#) (2019).
- G. FFIT in Europe: (1) Pietsch *et al.* (2019) *Eur J Sport Science* (published online 8 September), doi:[10.1080/17461391.2019.1660809](#); (2) Wyke *et al.* (2019) *PLOS Medicine*;16(2):e1002736, doi:[10.1371/journal.pmed.1002736](#); (3) Roll-out of EuroFIT to [Portugal](#) (2017) [English translation uploaded]; (4) EFDN Active Fans report (2020).
- H. FFIT adapted to other sports: (1) Rugby: Maddison *et al.* (2019) *BMC Public Health*;19:166, doi:[10.1186/s12889-019-6472-3](#); (2) Australian Rules football: Quested *et al.* (2018) *BMJ Open*;8:e022663, doi:[10.1136/bmjopen-2018-022663](#). (3) Ice hockey: Petrella *et al.* (2017) *Med Sci Sports Exerc*;49(12): 2506–2516, doi:[10.1249/MSS.0000000000001380](#).
- I. FFIT health economic modelling report (2014–2020).