

Physical activity interventions impacting health in the community

BROOM, David <<http://orcid.org/0000-0002-0305-937X>> and FLINT, Stuart

Available from Sheffield Hallam University Research Archive (SHURA) at:

<http://shura.shu.ac.uk/22147/>

This document is the author deposited version. You are advised to consult the publisher's version if you wish to cite from it.

Published version

BROOM, David and FLINT, Stuart (2018). Physical activity interventions impacting health in the community. In: WILSON, Robert and PLATTS, Chris, (eds.) *Managing and Developing Community Sport*. London, Routledge, 47-66.

Copyright and re-use policy

See <http://shura.shu.ac.uk/information.html>

CHAPTER 4

Physical activity interventions impacting health in the community

David Broom and Stuart Flint

Summary

This chapter will introduce you to and define physical activity and sedentary behaviour. It will highlight the low levels of the population meeting the recommendations of physical activity in the UK. Thus, interventions are needed to increase physical activity levels. Using a lifespan approach, we will introduce you to key interventions. Case studies will highlight the key components of these interventions as well as what community sports managers need to consider when developing their own approaches through the highlighting of good practice.

Aims

By engaging with this chapter, you will be able to

- Define physical activity and sedentary behaviour;
- Highlight the physical activity recommendations and the percentage of children and young people, adults and older adults meeting those recommendations;
- Identify good practice from previous physical activity interventions; and
- Provide key considerations for community sports managers when developing physical activity initiatives.

Introduction

Physical Activity is defined as ‘any bodily movement produced by skeletal muscles that results in energy expenditure’ (Caspersen et al. 1985). It is a broad term that describes bodily movement, posture and balance all requiring energy. It includes different types of sports,

physical education and dance activities, as well as indoor and outdoor play and work-related activity. It also includes outdoor and adventurous activities, active travel (e.g., walking, cycling, rollerblading and scooting) and routine, habitual activities such as using the stairs, doing housework and gardening. Exercise was initially defined by Caspersen et al. (1985) as ‘a subset of physical activity that is planned, structured, and repetitive and has as a final or an intermediate objective the improvement or maintenance of physical fitness’. A new definition is offered by Winter and Fowler (2009) as ‘a potential disruption to homeostasis by muscle activity that is either exclusively, or in combination, concentric, eccentric or isometric’ (p. 447). This definition applies to exercise and physical activity that encompasses elite-standard competitive sport, activities of daily living and clinical applications in rehabilitation and public health.

On the opposite end of the activity continuum is sedentary behaviour, which is defined as ‘any waking behaviour characterized by an energy expenditure ≤ 1.5 metabolic equivalents while in a sitting, reclining or lying posture’ (Tremblay et al. 2017). Sedentary behaviour is not the same as being ‘inactive’, which is an insufficient physical activity level to meet present physical activity recommendations. In the UK, according to the Chief Medical Officers (2011), adults (aged 19–64 years) should aim to be active daily. Over a week, activity should add up to at least 150 minutes of moderate-intensity activity in bouts of 10 minutes or more. One way to approach this is to do 30 minutes at least five days a week. Alternatively, comparable benefits can be achieved through 75 minutes of vigorous-intensity activity spread across the week or a combination of moderate and vigorous-intensity activity. In addition, adults should also undertake physical activity to improve muscle strength at least two days a week as well as minimise the amount of time spent being sedentary such as sitting for extended periods.

In 1994, the epidemiologist Jeremy Morris described physical activity as the “best buy” in public health (Morris 1994) because undertaking moderate-intensity physical activity has numerous health benefits. This includes the prevention and treatment of non-communicable diseases (i.e., chronic diseases that cannot be passed from person to person) including cardiovascular disease, obesity, Type 2 diabetes and some cancers and can reduce the risk of premature death, improving mental health and quality of life (Lancet Physical Activity Series 2016). Despite numerous organisations promoting the health benefits of physical activity and encouraging more people to be active, over the last 60 years, there has been a large shift towards less physically demanding work, which has been accompanied by an increasing use of mechanised transportation, a greater prevalence of labour-saving technology in the home and fewer people participating in active hobbies. Using historical data on time spent on occupational and domestic work, travel and leisure activities, Ng and Popkin (2012) estimated that between 1961 and 2005, physical activity levels dropped by around 20 per cent in the UK. The greatest reduction in physical activity was observed in occupational and domestic activity, and although voluntary active leisure or recreational activities have increased slightly, this was insufficient to account for the shortfall. Ng and Popkin (2012) also predict that by 2030, time spent in sedentary behaviour will exceed 50 hours per week.

The Health Survey for England reports 67 per cent of adult men and 55 per cent of adult women met the Chief Medical Officers (2011) physical activity recommendations in 2012 (Joint Health Surveys Unit 2013). However, due to the introduction of these new recommendations, there are no long-term trends. Health Survey for England (2008) data has been reanalysed to measure physical activity against the 2011 recommendations, which shows that there was no overall change between 2008 and 2012. However, these statistics should be interpreted with caution since they measured physical activity using self-report,

which is prone to over reporting, as this is a subjective measure. It should be noted that an objective measure of physical activity was used in a sub-sample of adults who wore an accelerometer for a week in the Health Survey for England in 2008 (Health and Social Care Information Centre 2009). Only 6 per cent of adult men and 4 per cent of adult women met the Department of Health (2004) recommendations, which is alarming, as this demonstrates that a large proportion of the population are not achieving the recommended levels of physical activity to benefit health.

In England, a higher proportion of boys (21 per cent) than girls (16 per cent) reported meeting recommendations aged between 5 and 15 years in 2012 (Joint Health Surveys Unit 2013). In boys, the most activity was reported between the ages of 8 and 10 years (26 per cent), whilst for girls, most activity was reported in 5–7 years (23 per cent). In both boys and girls in England, the proportion of children aged 5–15 years meeting recommendations fell between 2008 and 2012. The largest declines were aged 13–15 years for both sexes. Globally, physical activity levels decline with age, and men are more active than women in 137 of the 146 countries for which data are available (Sallis et al. 2016). There is a large decrease in activity, particularly in sport participation once young people leave school (Telama et al. 2005). Due to the prevalence of health inequalities associated with physical inactivity and increasing sedentary behaviour, there is a clear need to develop effective interventions that will lead to population level increases in physical activity.

A physical activity intervention encourages participants to make their own choices about how to increase their physical activity (Foster et al. 2005). Laboratory-based research and experiments reporting increased physical activity are largely ineffective in real-world settings. The concern of many health and physical activity promotion specialists is which interventions are effective for getting people to change their behaviour in the community. Thousands of physical activity interventions exist, but the remainder of the chapter will focus

on a case study approach to introduce the reader to some that have been successfully implemented in the community. These successful approaches can be considered by sport-development coaches when designing and implementing new strategies to engage people across the life course in physical activity.

Case study: young people – Sheffield Let’s Change4Life

In November 2008, Sheffield City Council and NHS Sheffield were awarded £5 million from the Department of Health’s obesity unit, which they match funded to develop the Sheffield Let’s Change4Life programme. The £9.6 million programme, which commenced in April 2009, aimed to prevent obesity in children, young people and families by modifying attitudes and culture in Sheffield by delivering a range of universal and targeted interventions on all levels and, thus, a Whole Systems Approach: individual, families, children’s centres, schools and communities within the city (See Figure 4.1).

<COMP: Place Figure 4.1 Here>

Specifically, Sheffield Let’s Change4Life programme aimed to increase support for breastfeeding across communities, public places and workplaces; support parents to be positive role models; and support schools to empower children and families to live healthier lives. It was also essential to remove barriers to healthy living within communities, create well-being promoting environments as well as increasing opportunities for children and families to enjoy safe, active recreation in parks and green spaces. Finally, they developed effective marketing campaigns using the Change for Life brand (see Figure 4.2) to achieve positive behaviour change as well as establish networks of local volunteers to support their local community. The programme benefitted from using the Theory of Planned Behaviour (Ajzen 1991), which states that attitude towards behaviour, subjective norms and perceived behavioural control, together, shape an individual’s behavioural intentions and behaviours.

This programme has been recognised as a model of good practice across the region and nationally.

<COMP: Place Figure 4.2 Here>

Sheffield Let's Change4Life programme has provided a platform in Sheffield for tackling obesity that, over time, the effectiveness and buy-in of the city's communities, organisations and stakeholders can be assessed against. The aim of Sheffield Let's Change4Life programme was to reduce childhood obesity in Sheffield by 2012. The programme did report a slight decrease in childhood obesity prevalence for those aged 4–5 years and 10–11 years (Copeland et al. 2011); specifically, halting the rise in the prevalence of obesity and observing a reduction in childhood and longer-term adult obesity. Importantly, the families reported that participating in the programme was enjoyable and easy to participate in, which is likely to lead to sustained engagement with the programme.

The programme had an impact on many people across the city, engaging a diverse community and partnership approaches. It was reported that the programme led to an increase in children walking to school from 56 per cent to 57 per cent and cycling from 16 per cent to 24 per cent, with a drop in children driven to school between 2008 and 2011 (from 22.9 per cent to 20.7 per cent). The largest reduction in sedentary travel was in the use of school buses, which reduced by 5.7 per cent, compared with 1.6 per cent for car use. This is likely to have contributed to the increased physical fitness and increased steps per day (typically 12,000–15,000 steps) of children that was observed. Copeland et al. (2011) also reported that there was an improvement in attitudes towards physical activity in children accessing targeted, physical activity, growing clubs and those receiving a bike. The impacts on children as part of the programme were influenced by the role of parents who engaged and supported the children, acting as positive role models. Health care professionals attending training and awareness programmes reported improved confidence and intention to influence the

management of obesity; a group that is clearly needed for the Sheffield Let's Change4Life programme to be effective. In schools, the stay-on-site policies and modifications to the dining environment led to several beneficial changes; more children dined in school, social interaction was enhanced and children's behaviour improved. These improvements were attributed to promoting effective communication between kitchen staff and children.

The programme initiatives led to improvements in breastfeeding attitudes and behaviours. Mothers who received peer support reported favourable attitudes towards breastfeeding and were more confident of breastfeeding in public; the breastfeeding initiation rates and breastfeeding prevalence six to eight weeks post-birth increased between 2008 and 2010 (from 76.43 per cent to 79.2 per cent and from 44 per cent to 54.7 per cent, respectively). There was also an increase in free school meal uptake between 2009 and 2011. An important element of this programme was the buy-in from stakeholders across the city and ensuring that stakeholders remained satisfied and retained the programme's vision. It was reported that 93 per cent of the programmes strand positively rated their engagement in the programme, and 97 per cent of those attending the Sheffield Let's Change4Life conference reported a belief that the programme would have a beneficial impact on reducing obesity in line with the targets and priorities of the city.

The Sheffield Let's Change4Life programme developed a Whole Systems Approach to childhood obesity that brought together a range of partners across the city to contribute to eight domains key to children's health. The longer-term effectiveness of the programme will continue to be realised as the prevalence of childhood obesity is monitored over time and data is collected on engagement in healthy behaviours that foster physical activity, healthy food and drink choices and social and mental well-being.

Implications for community sports managers

What community sports managers should consider from this case study is that there are key barriers that need to be addressed in physical activity-related programmes including enjoyment, cost and access. It is also evident that marketing materials from an already-established health campaign was effective and contributed to the local buy-in of a community group.

Case study: adults – Football Fans in Training

In response to the UK obesity epidemic, the Football Fans in Training (FFIT) project was developed as an innovative weight loss intervention aimed at males attending Scottish Premiership clubs. The FFIT project was a collaboration between The Scottish Premier League Trust; Scottish Premiership football clubs; and academics from the University of Glasgow, Leeds Beckett University, University of Strathclyde, University of Edinburgh, University of Aberdeen, University of Dundee and the Medical Research Council. The FFIT project used scientific evidence related to weight loss, physical activity and diet that is delivered to attendees at their favourite club by community coaches, with over 3,000 men participating in the programme by 2013 (FFIT 2013, see Figure 4.3). The initial pilot of the FFIT project was delivered during the 2010/2011 season and was funded by the Scottish Government's Chief Scientist Office and the Scottish Premier League Trust.

Delivery of the project at each Scottish Premier League club between 2010 and 2013 was funded by the Scottish Government and the Football Pools, covering the cost of the community club coaches' training, materials, equipment and staff time. In 2011, the FFIT project also received funding from the National Institute for Health Research Public Health Research programme to evaluate a Randomised Controlled Trial (RCT) of the project. In an RCT, the people participating in the trial are randomly allocated to either the intervention group or to a standard treatment group (or placebo treatment) as the control. The intervention was gender-specific, meaning that the programme was developed incorporating the values of

masculinity; content was designed to be attractive to men, and camaraderie, team bonding and banter was encouraged to facilitate discussion of sensitive topics (Wyke et al. 2015).

The dietary component of the programme aimed to deliver a 600-kcal deficit by adopting nutrient-based foods, reduced portion sizes in particular energy-dense food and reduced snack, and sugary and alcoholic drinks. The physical activity element had two components; a pedometer-based walking programme and pitch-side physical activity sessions. Men were encouraged to set daily walking goals, recording their weekly progress in step-count diaries. As the programme progressed, the participants were encouraged to engage in more vigorous physical activity to supplement the walking. FITT was based on 37 behaviour-change taxonomy strategies, with particular use of self-monitoring, implementation intentions, goal setting and review. Social support and relapse prevention was built into the programme (Wyke et al. 2015).

The RCT attracted 747 men aged 35–65 years with a body mass index (BMI) of ≥ 28 kg/m² (90 per cent with a BMI ≥ 30 kg/m²) who were classed as high risk of ill health such as Type 2 diabetes, hypertension and cardiovascular disease (Hunt et al. 2014a). FFIT led to clinically significant weight loss, with Hunt et al. (2014b) reporting a significant difference between the control and intervention group, where the intervention group lost on average 4.94 kg, which was 4.36 per cent more than the control group. It was also reported that the intervention group achieved significantly greater reductions of objectively measured waist circumference, percentage body fat and systolic and diastolic blood pressure than the control group. They also improved self-reported physical activity, diet and indicators of well-being and physical aspects of quality of life compared to the control group.

Interviews with the coaches offered support for the participants' perceptions, where coaches reported that use of pedometers; self-monitoring; and novel, tangible and visible approaches to demonstrate weight loss (e.g. use of sandbags and replica lumps of fat to

represent weight lost) was key to the success of the programme. Coaches also reported that they were concerned about the perceived responsibility of leading a men's health improvement programme, difficulty of fitting FITT into their current coaching schedule and the need to diversify approaches to goal setting. They also felt that greater training for how to respond to exercise-related medical emergencies was warranted. Despite these concerns, the beneficial impact of FITT relative to the cost delivery led to the conclusion that FITT represents a cost-effective weight loss intervention for overweight males (Wyke et al. 2015).
<COMP: Place Figure 4.3 Here>

The FITT project has been immensely successful not only in terms of the project that was delivered in Scotland, but also in the emergence and sustainability of FITT projects across the UK. Indeed, the creative methods used to measure weight loss are used in other FITT and weight-management programmes. Thus, the project has led to development of other initiatives aimed at improving health and well-being of sports fans using elite sports clubs as the draw for fans, addressing drop-out rates that are consistently high in weight management intervention programmes/services.

Implications for community sports managers

What community sports managers can consider is the importance of the environment created, as in this case study, the sport setting was a huge draw for fans. Community sports managers should also consider the benefits of developing a team spirit, which in the case study, was developed early in the intervention and where the group commonality of attendees (i.e. similar-aged males attending for weight loss) was evident. This impacted their engagement in the project and, thus, can be beneficial to include in new approaches by community sports managers.

Case study: older adults – walking sports

Walking sports teams are being established across the UK to get older and less physically able individuals together to enjoy competitive team sports at a slower pace without the high impact, risk of injury or strenuous level of activity that standard versions of the same games require. Most of the sports have the same rules as the standard versions, except you walk to get to the ball, position or next base instead of running. This means that one foot must be on the ground at all times with a 'fine' or 'sin bin' for participants who run instead of walk. The great thing about this type of sport is that it's open to all, so women and men can compete alongside each other and less physically abled individuals can participate. The manner in which these sports are played allows participants to maintain an active lifestyle and promotes cardiovascular fitness whilst producing less stress on the body with the added benefit of being in a social setting.

Walking football was arguably the first walking sport, devised in 2011 by Chesterfield Football Club (FC) Community Trust. It can be played both indoors and outdoors, and though based on association football, if a player runs, they concede a free kick. This restriction, together with a ban on slide tackles, is aimed at avoiding injuries and facilitating the playing of the sport by those who are physically disadvantaged. The game was originally played without goalkeepers (though goalkeepers now play in some variations), and, crucially, the ball must never be kicked above hip height. Different footballs are used in the indoor and the outdoor variations of the sport. When played indoors, a size-4 futsal ball is used, whilst outdoor games use a traditional size 5. The size of the pitch can vary to suit different locations but should be between 20 and 40 yards in length and between 15 and 30 yards in width.

Arnold et al. (2015) examined anthropometrical and fitness changes following a 12-week walking football programme in adults 50 years and older. Ten male participants (mean age 66 years), with a range of health conditions, completed a 12-week walking football

programme consisting of a single two-hour training session each week. Walking football significantly reduced body fat mass and percentage body fat measured before and after the intervention. There was a significant increase in time to volitional exhaustion during an incremental exercise test without any change in peak blood lactate. There was also an effect seen for a reduction in whole body mass, increase in lean body mass and a reduction in BMI, although these changes were not significant. This study highlights that walking football can be an effective public health intervention.

Despite evidence that walking football improves health, actual evidence of participation is limited. The sport came to wider public attention in July 2014, when Barclays Bank aired a television advertisement featuring walking football to promote their services. In 2016, there were 800 walking football clubs registered in the UK, twice the number that existed in 2015. Due to the surge in popularity, the Football Association issued standardised rules in 2017.

Walking netball is another sport that has evolved from a growing demand for walking sports. Women and men play the game for the fun and camaraderie the social session brings, as much as the health benefits. It can give those who feel isolated an outlet, provide an activity for those who don't deem themselves fit enough to run anymore and can attract those who have retired from playing the standardised game. Rules have been adapted to ensure that the game is played appropriately, and England Netball has recommended that a player must have at least part of one foot in contact with the court at all times. During the game, an extra step may be taken once a player has received the ball, which reduces the impact on landing. It also improves the momentum of the game, so a player may receive the ball with one foot grounded and then take two steps while in possession of the ball before it must be thrown or shot. An extra second has been allowed to increase the decision-making time whilst in

possession of the ball, which encourages improved ball placements so a player may throw the ball within four seconds of receiving the ball.

Whilst launching walking netball was not originally in England Netball's plans, research undertaken between July and October 2015 highlighted there was enough demand for the game. The game was launched nationally in 2016 and is going to be a key part of England Netball's strategy in the future. Other walking sports have been implemented including basketball and rounders, but there is limited evidence on their impact.

Implications for community sports managers

What community sports managers can learn is that regardless of the walking sport played, it's important to deliver a fun and flexible session. Despite the limited evidence to date on the benefits of walking basketball and other sports, community sports managers should have confidence that these activities can be beneficial in improving physical activity levels of older people in their communities. Walking sports should be a prominent feature of any local authority's plans to increase population levels of physical activity, particularly for older adults. Adhering to rule adaptations should depend on the demands of the players so that it is the taking part that counts.

Case study: community lifespan approach – Sheffield Move More

Move More is a community lifestyle strategy based in Sheffield that is delivered across the city. Move More was developed after the establishment of the National Centre for Sport and Exercise Medicine (an Olympic Legacy programme) in Sheffield, which aims to create a culture of physical activity that leads to an improvement in the population's health, well-being and quality of life. The five-year Move More Plan provides a rationale for increasing opportunities and stimulating demand for physical activity across a number of sectors: planning, transport, health, sport, education and workplaces (Copeland 2015). Within the plan are six priority areas for action: (1) empowered communities, (2) active environments, (3)

active people and families, (4) physical activity as medicine, (5) active schools and active pupils and (6) active workplaces and an active workforce (Copeland 2015, see Figure 4.4). To achieve the citywide project aims, Move More is comprised of the city's major partners including the voluntary sector, NHS Sheffield, Sheffield City Council, Sheffield Hallam University, University of Sheffield, Sheffield Chamber of Commerce and Sheffield International Venues.

<COMP: Place Figure 4.4 Here>

The Move More Sheffield website (www.movemoresheffield.com/) hosts an array of content including information about the project, details of physical activity opportunities within the community and current initiatives. For instance, in 2016, Move More developed a range of workplace and school interventions focussed on increasing physical activity. Overall, over 50,000 people in the city are engaged in physical activity using the Move More App, 5,000 of whom were previously inactive. Postcodes of the app users have informed the areas of the city where people are more active, which is being used to direct future efforts to increase participation.

The Move More Workplace Challenge is a web-based activity competition for organisations and their employees. The challenge is based on data retrieved using the Move More App, pedometers and other devices that record movement in and around the workplace. Data for each organisation is displayed on a website where organisations can view their participation, compare their efforts to other organisations on the Move More League table and receive participation medals. In July 2016, Move More ran a 'Go for Gold' Olympics-themed challenge with 374 teams from 23 workplaces, comprised of 3,000 participants across Sheffield. Move More reported that the challenge resulted in 4.4 million minutes of activity.

A school-based intervention was the Move More Schoolyard Challenge, which was piloted in 2016. The challenge aimed to motivate primary school children to be more active at

lunch and playtime, and, where possible, during elements of the curriculum. Using wristbands worn by pupils and timing gates, children's activity across the schoolyard was recorded. In total, amongst six primary schools, children have made over 100,000 journeys, and within a two-week period, children have travelled 2,500 miles. The project has recorded data from 1,941 children, reporting that some of the least active children were motivated by Move More, with schools creatively devising curricular activities to engage children in physical activity (see Figure 4.5; Move More Sheffield 2016).

<COMP: Place Figure 4.5 Here>

The Move More month takes place every July. A key element of the Move More month in 2016 was the development of a competition between the two professional football clubs in the city: Sheffield Wednesday FC and Sheffield United FC. The 'Steel City' (as Sheffield is known) Derby allowed fans to identify their allegiance on the app, where overall scores for both clubs could be viewed. In total, 689 fans participated, with 1.2 million minutes of activity recorded. The competitiveness between the two football clubs was the key motive to participants' activity, where an individual's activity contributed to their team's score. Thus, team identity and desire to support their team encouraged physical activity and suggests that identity may be an important driver that can be considered in future interventions where individuals can contribute to a team or organisation's participation. Indeed, this supports the aforementioned FITT project, where participants' identity with their football club was a crucial motivation and adherence factor that saw lower dropout than commonly reported dropout from weight management programmes. Figure 4.6 shows participation in the Move More Steel City Derby, workplace and school challenges.

<COMP: Place Figure 4.6 Here>

Whilst Move More is still in its infancy, the impact that the project has had across the city leading to increased physical activity is clearly evident, and the longer-term impact on

physical activity and associated health risks such as cardiovascular disease and obesity needs evaluation over time. The Move More model can inform future citywide efforts to increase physical activity or engagement in other health-related behaviours.

Implications for community sports managers

Community sports managers should be aware that a successful citywide initiative can lead to increased physical activity in children and adults through education, workplace and sports settings and organisations. In addition, the success of the Move More campaign was underpinned by media engagement with appearances on BBC Breakfast, BBC Radio Sheffield, an array of local newspapers and social media sites including Facebook and Twitter. Thus, community sports managers should not overlook the importance of engaging with the media and social media outlets.

Interventions in the digital age

The Couch to 5K app is a nine-week running programme for beginners to running. It was developed by a novice runner, Josh Clark, who wanted to help his 50-something mum get off the couch and start running as well. Over the nine-week duration, the app guides users through a mix of running and walking three days per week. This progresses until the participant can comfortably run continuously for 30 minutes or complete a 5-km distance. You can download the app as well as podcasts at www.nhs.uk/Livewell/c25k/Pages/couch-to-5k.aspx. It continues to be promoted through NHS Choices, and the app has been downloaded thousands of times, but to the authors' knowledge, there has been no official evaluation or published research to show whether it is effective. Pickering and Colleagues (2016) at Leeds Beckett University are currently determining the feasibility of the app. Qualitative data gathered so far from over 900 Couch to 5K users (aged 18 years or over) indicates that those who use the app are surprised by the level of physical activity they are

capable of achieving upon completion of the programme, compared to their level of activity and fitness before using the app (Pickering et al. 2016). Users report that they like the flexibility of being in charge of when and how often they use the programme and can repeat sessions or full weeks as many times as they feel necessary before progressing. Thus, while running apps may not be suitable for everyone (e.g. younger people are generally more comfortable using technology and smartphones), they may be an effective way to engage those people not currently participating in physical activity.

Pokémon GO is a free-to-play, location-based, augmented-reality game that was released globally in July 2016. The media has anecdotally reported increased physical activity with one study estimating that Pokémon GO has added a total of 144 billion steps to physical activity in the US (Althoff et al. 2016). Since no study has examined the differences in walking and sitting time between Pokémon GO users and non-users, Broom and Flint (2017) developed the 'Physical Activity and Pokémon Go' questionnaire. The questionnaire was distributed using social media from 22 July 2016 onwards. After four weeks, 461 participants ($n = 193$ male, $n = 265$ female, $n = 3$ transgender) who were predominantly white ($n = 420$) and did not self-report a disability ($n = 443$) completed the questionnaire. Their mean \pm SD age, body mass and BMI was 29 ± 10 years, 73.2 ± 16.6 kg and 24.6 ± 5.1 kg/m², respectively. When analysing differences between Pokémon GO users ($n = 236$) and non-users ($n = 225$) during the last seven days, Pokémon GO users walked on more days and spent more time walking on one of those days than non-users. Whilst there was no difference in sitting time during weekdays, Pokémon GO users reported greater sitting time at weekends than non-users. Pokémon GO users usually spent 90 ± 101 minutes walking on one of those days when using the app. Therefore, Pokémon GO users reported greater walking time and sitting time during weekends than non-users. Greater weekend sitting time could be due to increased walking, and whilst health benefits are likely, these need to be substantiated. Also,

the effect of Pokémon GO on physical activity might be different in children, who were not included in the study.

Implications for community sports managers

Despite Pokémon GO potentially being a short-term fad, both this and Couch to 5K show that interventions in the digital age can lead to population increases in physical activity.

Community sports managers should keep up to date and be aware of the latest apps and monitoring tools to embed them in their sports and physical activity programmes.

Emerging interventions in development

Supporting Young People to Move More, Improve Lifestyle and Eat Well

Childhood obesity is a major public health concern, particularly in Lancashire where 23.5 per cent of reception-aged children are overweight or obese, with this figure rising to 32.4 per cent in Year 6. Evidence-based interventions that promote successful and sustained weight loss are needed. Consequently, **Supporting Young People to Move More, Improve Lifestyle and Eat Well (SMILE)** has been commissioned for pilot in three areas across Lancashire by Preston City Council (Coulton et al. 2014). The intervention design was informed by a review of literature and an extensive consultation using semi-structured interviews with local professionals, children and families, including those attending and seeking treatment. The programme runs weekly for the first six weeks, followed by a two-week home programme where families implement changes within their 'normal' environment. This is followed by a further four weekly sessions. Additional group sessions are provided at Week 14, 18, 33, 34 and 35. The participants are being followed over 12 months, with data collected at baseline, immediately post-intervention (12 weeks) and six months, nine months and 12 months from baseline. The primary outcomes include weight, height, BMI centile and waist circumference,

and the secondary measures include quality of life, eating and activity behaviours and self-esteem of the child. Whilst the intervention and sessions are continually being reviewed and evaluated, a research student at Sheffield Hallam University is monitoring and evaluating the intervention. If successful, and after further review and development, it is the intention to disseminate the programme further afield.

Whole Systems Approaches

Whole Systems Approaches have become a focus of public health action, with emerging efforts that aim to develop community-wide interventions and work in partnerships across sectors. Systems thinking aims to understand how objects at different levels within a given system operate (i.e., cell, organ, individual, group, organisation, community, earth) whilst appreciating that any system is dynamic. The dynamic nature of a given system, therefore, means that the properties of a system are consistently changing, which can have an impact on different levels, and that the ever-changing landscape of a system highlights the complexity and multi-faceted nature of systems thinking. The premise of systems thinking is that by working collaboratively and appreciating that the system continually changes over time, new ways of working can emerge to create a healthier system. In 2015, Public Health England, the Local Government Association and Association of Directors of Public Health commissioned Leeds Beckett University to explore Whole Systems Approaches to obesity that act at a local authority level. Working with four local authorities across England, Leeds Beckett University is examining local system understanding of causal loops across sectors where the causes and consequences of obesity are highlighted for each local authority (Leeds Beckett University, 2017, see Figure 4.7). To date, the project has highlighted the need to work with authorities to understand their systems, the role that partners within a given system play to develop new ways of thinking and working that pull in the same direction rather than disparate efforts that

may lead to counterproductive outcomes. Thus, if a system is set up to cause obesity, it is pertinent to understand why that is the case and what the key levers are so that these can be disrupted and the system can work towards achieving the desired outcome (i.e. healthy lifestyle behaviours). In October 2016, the Whole Systems Approach to Tackle Obesity project hosted a national conference at Leeds Town Hall attracting over 300 attendees. The importance of strong partnerships and senior management engagement was emphasised, as well as the need for commitment and action from a range of stakeholders. As part of the conference, workshops on the key themes that have emerged from the project were delivered. The topics were weight stigma covering how people talk about obesity, the need for planning and public health to work collaboratively, making use of community assets, the influence of the food environment and encouraging local authorities using the wide range of available data and information to inform future strategies.

<COMP: Place Figure 4.7 Here>

Integrated health services have received a lot of attention and in 2015/2016 saw several local UK authorities release Integrated Healthy Lifestyle Service tenders. However, it is recognised that there is little evidence base on how they function or what outcomes they achieve in isolation or in comparison to other service models. In April 2016, an integrated public health service commissioned by Suffolk County Council delivering prevention and targeted interventions around healthy lifestyle training and awareness, NHS health checks, weight management, physical activity and smoking cessation programmes to adults and children across the county commenced. The service (OneLife Suffolk, see Figure 4.8) is a collaborative project delivered by Leeds Beckett University, MoreLife Ltd and Quit51. The service is free for all attendees who are both referred and self-referred. The service uses a Whole Systems Approach to recruit, deliver and support adults and children in making healthy decisions about their lifestyle behaviours. Thus, based on systems thinking, the

service uses a variety of techniques to engage several sectors and settings approaches to foster collaborative efforts across the county. In doing so, OneLife Suffolk aims to reduce the risk of early death and reduced quality of life that is associated with unhealthy food and drink behaviour, providing targeted programmes that have a focus on health inequalities to reduce health risks associated with obesity, smoking, high blood pressure and physical inactivity. The service is research informed, and over time, the programme of research will examine the effectiveness of the service in supporting attendees' behaviour change, its cost-effectiveness and its sustainability. Attendees are recruited from across the county through awareness raising, health checks, stakeholder engagement or general practitioner or professional referrals to the service, where they are registered through a triage system. Once registered, they attend the programme in nearby locations, making use of local facilities, community assets and green and blue spaces.

<COMP: Place Figure 4.8 Here>

Implications for community sports managers

The Whole Systems Approach to Tackle Obesity and the OneLife Suffolk service represent novel programmes of work that over time can be assessed for their effectiveness in improving the health of communities across England. Community sports managers should follow these programmes as well as interventions such as SMILE, as they will provide much needed evidence regarding the most effective ways to tackle complex lifestyle behaviours that are impactful on individuals as well as wider society health and well-being.

Summary

In summary, physical activity and sedentary behaviour have been defined because the two are different. Despite the Chief Medical Officers recommending specific amounts of physical

activity to benefit health, levels are low and are predicted to fall alongside an increase in sedentary behaviour in years to come. Interventions are implemented to increase physical activity, and thousands have been developed and implemented, many with little evidence of success. The chapter has adopted a case study approach to introduce the reader to interventions the authors feel are models of good practice and/or are currently being developed. It is hoped the content will stimulate the reader to seek further information about these interventions and provide ideas for developing and implementing community sports managers' own interventions. All have a role to play in increasing the nation's physical activity and reducing sedentary behaviour, including the community sports managers of the present and future.

Key take-home messages

- Physical activity benefits health, but levels are decreasing
- Interventions are needed to increase physical activity
- Citywide interventions can increase levels of physical activity
- Use of sport and sports facilities can increase the effectiveness of physical activity initiatives
- Walking sports can increase activity of all ages and abilities
- Physical activity and health initiatives can be delivered successfully through education, workplace and sports settings and organisations
- Technological advances and new ways of thinking means that there are novel approaches to increase physical activity that are emerging

Review questions

1. Describe physical activity trends in the last 60 years.
2. State what the Chief Medical Officer's (2011) physical activity guidelines are.
3. Define what a physical activity intervention is.

4. Discuss why FFIT was such a successful physical activity intervention for the target population group.
5. Identify a sport in your community where there is no walking sport provision. What key stakeholders might you need to engage to realise this into an offer for local people?
6. Using the Move More case study example, how might you develop an intervention to increase physical activity in your community?
7. Why might using a Whole Systems Approach be beneficial to improving the health of a city?

Directed reading

1. Crone, D. & Barker C. (2009). Physical activity interventions in the community. In Dugdill, L., Crone, D. and Murphy, R. (Eds). *Physical Activity and Health Promotion: Evidence-based approaches to practice*. Chichester: Wiley-Blackwell.

Evidence based practice from the UK. Dated now, but provides a sound introduction to the area of physical activity interventions in the community.

2. Public Health England (2015). *Identifying What Works for Local Physical Activity Interventions*. London: Public Health England.

This project aimed to take a rigorous, objective look at local physical activity interventions across England to identify ‘what works’. This is the first time such a large-scale and academic approach has been taken to analysing and categorising the extent of physical activity interventions across the country.

3. Cavill, N., Roberts, K. & Rutter, H. (2012). *Standard Evaluation Framework for Physical Activity Interventions*. Oxford: National Obesity Observatory.

The Standard Evaluation Framework aims to describe and explain the information that should be collected in any evaluation of an intervention that aims to increase participation in

physical activity. It contains a list of ‘essential’ and ‘desirable’ criteria for data required for a comprehensive and robust evaluation.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.
- Althoff, T., White, R.W. & Horvitz, E. (2016). Influence of Pokémon Go on physical activity: study and implications. *Journal of Medical Internet Research*, 18(12), e315.
- Arnold, J.T., Bruce-Low, S. & Sammut, L. (2015). The impact of 12 weeks walking football on health and fitness in males over 50 years of age. *British Medical Journal Open Sport and Exercise Medicine*, 1.
- Broom, D., & Flint, S. W. (2017). Gotta Catch'em All; Increased walking time and sitting time at weekends in Pokémon Go users compared to non-users. International Society of Behavior, nutrition and Physical Activity Annual Conference, Victoria, Canada, June 2017.
- Caspersen, C.J., Powell, K.E. & Christenson, G.M. (1985). Physical activity, exercise and physical fitness: definitions and distinctions for health-related research. *Public Health Reports*, 100, 126–131.
- Chief Medical Officers (2011). *Start Active, Stay Active: A Report on Physical Activity for Health from the Four Home Countries' Chief Medical Officers*. London: Department of Health.
- Copeland, R.J. (2015). *Creating a Culture of Physical Activity. The Move More Plan: A Framework for Increasing Physical Activity in Sheffield 2015–2020*. <http://movemoresheffield.com/Media/Default/Documents/move-more-plan.pdf> [Last accessed 30 January 2017].
- Copeland, R.J., Moullin, M., Reece, L., Gibson, D. & Barrett, D. (2011). Sheffield-let's change4life: A whole systems approach to tackling overweight and obesity in children, young people and families. A Local Evaluation Report. Sheffield Hallam University, UK.
- Coulton, V., Reece, L., Copeland, R.J., Crank, H., Cross, K. & Broom, D.R. (2014). Development of a family, community-based intervention to reduce obesity in children aged 8–12 years. Abstract presented at Association for the Study of Obesity, Annual conference.

- Department of Health (2004). *At Least Five a Week. Evidence on the Impact of Physical Activity and Its Relationship to Health*. London: Department of Health.
- FFIT (2013). *Football Fans in Training*. www.ffit.org.uk [Last accessed 30 January 2017].
- Foster C, Hillsdon M, Thorogood M, Kaur A, Wedatilake T. Interventions for promoting physical activity. The Cochrane Library. 2005 Jan.
- Health and Social Care Information Centre (2009). *Health Survey for England 2008: Physical Activity and Fitness*. Leeds: The Information Centre.
- Hunt, K., Gray, C.M., Maclean, A., Smillie, S., Bunn, C. & Wyke, S. (2014a). Do weight management interventions delivered at professional football clubs attract and engage high risk men? A mixed methods study. *BMC Public Health*, 14, 50.
- Hunt, K., Wyke, S., Gray, C.M., Anderson, A.S., Brady, A., Bunn, C., Donnan, P.T., Fenwick, E., Grieve, E., Leishman, J., Miller, E., Mutrie, N., Rauchhaus, P., White, A. & Trewick, S. (2014b). A gender-sensitive weight loss and healthy living programme for overweight and obese men delivered at Scottish Premier League football clubs (FFIT): a pragmatic randomised controlled trial. *The Lancet*, 383, 1211–1221.
- Joint Health Surveys Unit (2013). *Health Survey for England 2012: Health, Social Care and Lifestyles*. Leeds: The Information Centre.
- Lancet Physical Activity Series (2016). Physical activity 2016: progress and challenges. www.thelancet.com/series/physical-activity-2016 [Last accessed 06 August 2017].
- Leeds Beckett University. (2017). Whole Systems Approach to Tackle Obesity. www.leedsbeckett.ac.uk/wholesystemsobesity/ [Last accessed 06 August 2017].
- Morris, J.N. (1994). Exercise in the prevention of coronary heart disease: today's best buy in public health. *Medicine and Science in Sports and Exercise*, 26(7), 807–814.
- Move More Sheffield (2017). Get ready for move more month... your city needs you. www.movemoresheffield.com [Last accessed 06 August 2017].
- Ng, S.W. & Popkin, B.M. (2012). Time use and physical activity: a shift away from movement across the globe. *Obesity Reviews*, 13(8), 659–680.
- NHS UK (2014). Couch to 5K. www.nhs.uk/Livewell/c25k/Pages/couch-to-5k.aspx [Last accessed 06 August 2017].
- OneLife Suffolk Service (2016). Helping local people live healthier lives. <http://onelifesuffolk.co.uk/> [Last accessed 06 August 2017].
- Pickering, K., Pringle, A. & McKenna, J. (2016). Does Facebook offer social support during app based physical activity behaviour change programmes? *ISBNPA Conference: Cape Town*, June 8–11 2016. Cape Town, South Africa.

- Sallis, J.F., Bull, F., Guthold, R., Heath, G.W., Inoue, S., et al. (2016). Progress in physical activity over the Olympic quadrennium. *Lancet*, 388(10051), 1325–1336.
- Telama, R., Yang, X., Viikari, J., Valimaki, I., Wanne, O. & Raitakari, O. (2005). Physical activity from childhood to adulthood: a 21-year tracking study. *American Journal of Preventive Medicine*, 28(3), 267–273.
- Tremblay, M.S., Aubert, S., Barnes, J.D., Saunders, T.J., Carson, V., Latimer-Cheung, A.E., Chastin, S.F., Altenburg, T.M. & Chinapaw, M.J. (2017). Sedentary behavior research network (SBRN)–terminology consensus project process and outcome. *International Journal of Behavioral Nutrition and Physical Activity*, 14(1), 75.
- Winter, E. & Fowler, N. (2009). Exercise defined and quantified according to the Systeme International d’Unites. *Journal of Sports Sciences*, 25(7), 447–460.
- Wyke, S., Hunt, K., Gray, C.M., 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).

Figure 4.1 Sheffield Let’s Change4Life strategy map.

Source: From Copeland et al. (2011).

Figure 4.2 Sheffield Let’s Change4Life marketing materials.

Source: From Copeland et al. (2011).

Figure 4.3 Football Fans in Training.

Source: From FFIT (2013).

Figure 4.4 Move More plan.

Source: From Copeland (2015, p. 8).

Figure 4.5 The Move More Sheffield Schoolyard Challenge.

Source: From Move More Sheffield (2016).

Figure 4.6 Move More participation.

Source: From Move More Sheffield (2016).

Figure 4.7 Whole Systems Approach to Tackle Obesity (2015).

Figure 4.8 OneLife Suffolk service (2016).