Chapter 14

Smartphone fitness apps and football fans: A case study of Fan Fit

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Abstract

The growth of smartphone ownership by fans around the world has continued to increase. Meanwhile, we are seeing a rise in dangerous levels of obesity, diabetes and heart disease. The most at risk hard to reach groups are often synonymous with football fans (middle aged and older males). For this population group there are also high rates of smartphone ownership, 91% of 35-54 year olds and 51% of 55-64 year olds in the UK in 2018, providing opportunity for engagement in digital health related projects (Statista, 2018). This chapter explores how fans can be engaged in physical activity through their support of sport teams and use of smartphones. This chapter introduces a case study of Fan Fit - a smartphone application designed to be an official sports club app, which also includes fitness tracking elements for fan engagement. Fan Fit aims to build a community of participation, increase interaction and physical activity levels. We present the background and evidence base for Fan Fit, its implementation and the use of action research to develop and test the app. We present key learnings to develop further insight to football clubs who may wish to adopt a similar project or approach. We identify that working between football clubs, fans and a research organisation such as a University using an action research approach can be an effective way to pilot and support new innovations. Future research should focus on new action research studies on digital health initiatives with football clubs.

Introduction

This chapter explores the current evidence base in relation to building a community of participation of supporters through a digital health smartphone application and resulting interactions. As part of this, we explore the relevant policy agenda, which is likely to impact football clubs in the digital era. Then to help illustrate how fans can be engaged digitally we present an example of how action research for a digital intervention project (called Fan Fit) has been implemented in the real world to benefit the physical activity of sports fans.

The massive global growth of smartphone apps, social media networks and increased Internet connectivity presents great opportunities for engaging fans. Lawrence and Crawford (2018) highlight that football fans are now hyper-digitalized. That is, they are always connected through websites and apps on their phones and other devices. Meanwhile, the market for digital fitness apps and devices continues to grow (Tu et al., 2018). This therefore presents prevention opportunities for health issues such as heart disease, obesity and diabetes. Globally there is an increasing concern around the rise of non-communicable disease, with the Global Burden of Disease study finding that Ischemic Heart disease was the leading cause of death globally in 2017, with stroke being the 3rd most common (Institute for Health Metrics and Evaluation, 2018). In the United Kingdom (UK), The British Heart Foundation report in 2017 compiled a number of data sources finding that 39% of adults did not meet the government guidelines around physical activity and that on average men spend 78 days a year sitting. There was also much variation in activity levels across different regions (British Heart Foundation, 2017).

As well as with adults obesity and sedentary lifestyles in young people is a growing societal problem (Mitchell et al., 2009; Tremblay et al., 2011; Saunders et al., 2014).

These issues are particularly prevalent in towns and cities in the North of England (including Salford and Manchester) and in Scotland (British Heart Foundation, 2017). The increases in these non-communicable lifestyle issues, the interest in fitness app usage and the rise in smartphone ownership, have influenced the digital project outlined in this chapter.

Major manufacturers of hardware and software such as Google, Intel and Apple and the largest social media platforms are working to get ahead in the rise of mobile health (m-health). With the considerable growth of smartphones and apps, people are becoming more connected, and arguably more conscious about their own health and well-being. However, in some areas such as weight management, there is a need for more collaborative ventures to develop evidence-based effective digital health projects. This presents a major opportunity for football clubs and for academic research to gain new insight into digital fitness for fans. Social media and fitness apps can be used therefore to combine people's love of football, support interaction with fans and players, and to help fans become more aware of their own fitness and wellbeing through friendly competition.

Utilizing all opportunities to engage people in a healthier lifestyle is of growing importance to local and national governments and healthcare providers (such as the NHS and Public Health departments in the UK, and insurance companies in the US) in order to reduce operational strain and rising costs caused by unhealthy lifestyles and the associated health issues. On an international scale, Sweeney and Quimby (2012) highlighted the dangers and cost of global health and fitness issues "within the next ten years China, India, and the United Kingdom are projecting losses in national income of US$828 billion due to reduced economic productivity associated with

chronic disease". In the UK in 2016-17 there were 617 thousand admissions to hospital where obesity was a factor with the majority of these people were aged 35-64. When they were asked about their weight 45% believed they were around the right weight and 45% said they were too heavy. This demonstrates that people can be unclear about obesity, which can also impact their engagement with support programmes (NHS Digital and National Statistics, 2018).

Many of the lifestyle non-communicable diseases have a variety of symptoms, which include high blood pressure and high blood cholesterol. These are often caused by smoking, weight gain, inactivity and poor diet. In the North-West of England, 27% of adults in 2012 were recorded as obese, which contributes to the much lower life expectancy found in the region (Public Health England, 2012). The picture is similar across Europe, where we face tough health challenges, such as the number one killer - heart disease - which is reported to cause almost twice as many fatalities as cancer across the continent (Townsend and Nichols, 2015). Throughout Europe, these premature deaths are closely linked to social inequality, particularly related to those who fall into lower income brackets and living in less privileged communities. An example can be found through the 'Scottish Effect' and the 'Glasgow Effect' where life expectancy is lower than the expected average in more deprived areas (Dahlgren and Whitehead, 2007).

Mobile Devices and Sports Fans

The majority of sports clubs have embraced digital technologies including smartphones and apps at board and fan level. Sports clubs at all levels are embracing smartphones by engaging their fans through platforms such as Twitter, Facebook, Instagram and YouTube (McCarthy et al., 2014). Larger sports clubs have marketing

and communications departments and both large and small clubs are using social media to connect with their fans. Fans of clubs at all levels are utilising mobile devices and cameras to produce video and photos to feed into these social media platforms (Fenton and Heleu, 2019). Although the majority of clubs have at least a basic website and social media presence, clubs and fans at all levels are interested in how to effectively use social media, apps, the Internet of Things, video games and other technologies to further engage fans and connect with each other (Anagnostopoulos et al. 2018; Fenton, 2018).

Successful digital channels and apps have been found to increase fan engagement, the frequency of engagement and ultimately make the brand of a sports club better known (Fenton and Helleu, 2019). As such digital media has an important role to play in building, promoting and maintaining a fan base. Understanding the benefits and challenges of digital media to engage fans is therefore crucial. The dual purpose of engagement and conversation through digital platforms and the growth in popularity of fitness apps has led to the creation of *Fan Fit* as a real world research project which aims to support clubs with their corporate-social responsibility through digital fan engagement and wellbeing. Longer term this might produce outcomes for both fans and the clubs. The former are engaged in looking after their own health and wellbeing by reduce overweight and related diseases (Coughlin, 2016; Jee, 2017). Involving people within large networks (e.g. fans of a club), offering support and advice, and gaining the drive and additional resources that can help to motivate achievement of personal exercise goals.

There is considerable scope for research and development to understand the use of apps and virtual communities for the ‘always on’ generation of smartphone owning fans, where data and the customer (fan) is central to the activity and often found to be

wanting constant updates and engagement (Heinze et al., 2016). In order to do this successfully it is important to understand the needs and behaviours of fans and the ways they communicate online.

Sports policy and CSR

In sports, the concept of doing sport for good is widely adopted by the industry as part of corporate social responsibility (CSR) (Breitbarth et al., 2011). In a broader sense, CSR is a long-standing concept in that organisations are socially accountable to stakeholders and the public. CSR presents a variety of approaches and theories with a long history, evolving from the Paris Agreement and linking into the Sustainable Development Goals (SDG) which were adopted in 2016 (Garriga and Melé, 2004). As part of the SDGs organizations are expected to contribute to the global determination to achieve the goals, as part of this it could be said that the view held by football clubs that they have a responsibility to their communities of fans to encourage wellbeing, healthy living, exercise and research can feed into the SDGs. Implementation of CSR models within the football industry are widely adopted and discussed in literature (e.g. Breitbarth, Hovemann & Walzel, 2011; Zeimers, Anagnostopoulos, Zintz & Willem, 2019). However, as with many things the challenges associated with implementation of CSR are associated with management managerial alignment of strategies, conflict, and access to resources which triggers inconsistent application of CSR (Anagnostopoulos & Shilbury, 2013).

The SDG of good health and wellbeing is prominent in the healthy stadia agenda, with the healthy stadia agenda (source) being concerned with promoting positive health behaviours through stadium healthier living choices, community initiatives and workforce development (source). In relation to population health, sports stadia enable

access to large number of individuals, and often a chance to target hard to reach groups to tackle issues such as diet, nutrition, physical activity and other lifestyle behaviours (Ramshaw et al., 2013). The underpinning principle is that supportive social communities influence positive healthy behaviours. This also relates to adopting a 'settings approach' to public health "bringing to bear public health resources on everyday sites of mass interaction" (Parnell et al., 2017). Specifically, utilizing sports club brands to promote health and fitness of fans.

Action research (AR) and CSR

One method that can support clubs to develop projects and help fan engagement is to undertake AR. AR began in the health sciences as a method to create practical and useful research in multiple iterations. It was popularised for use in the medical field by (Lewin, 1946) and in more recent times, AR has grown in prominence within the social sciences to support practical and insightful research. It has been utilised within the academic community to cross the gap that exists between academia and practice (Cavicchi et al., 2014). Although it has been used less in relation to healthy stadia, AR could provide a framework for the implementation of CSR within the football industry to address existing challenges and refine solutions to issues being tackled (e.g. supporting the health and wellbeing of fans). The underlying concept of AR is to undertake multiple iterations of a project/activity to support effective engagement/design and delivery (e.g. fan engagement activities and programme implementation) (Heinze et al., 2016). Each AR iteration involves planning, acting, observing and reflecting (as shown in the diagram below). AR typically uses a combination of researchers and practitioners of different fields and as part of the

research and implementation to help combine different skill sets and build on community assets.

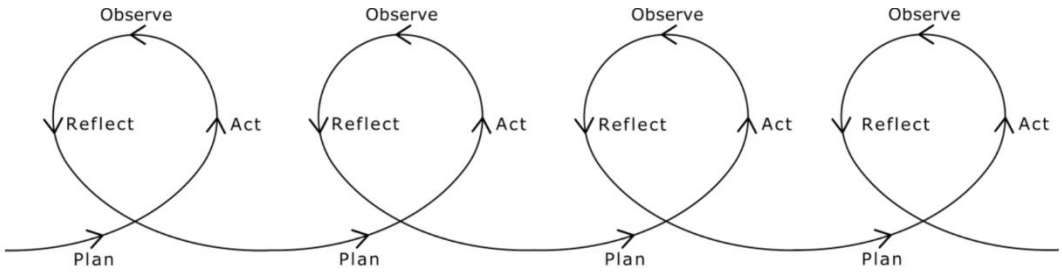

Figure 14.1 – The AR cycle (Heinze et al., 2016)

Fan Fit Case Study

In the next part of this chapter we present a case study of Fan Fit as an example of how a smartphone application can be utilised by a sports club to support their fans health and wellbeing, meet the healthy stadia agenda and CSR of sports clubs. The combination of the health issues outlined above, the rise of smartphones for fan interactions, the rise in health apps and increases everyday use of wearable technologies (such as fitness wristbands) sets the context for Fan Fit.

Fan Fit is a project based at the University of Salford, UK aimed at improving the fitness and wellbeing of fans through their engagement with technology. This project utilised the concept of AR in a number of ways, with underpinning research projects taking the form of multiple projects, which engaged students as well as external partners. To ensure the evidence base of the app the research and design team comprised of academics with background in information systems and health sciences, and students working across a range of topics including digital marketing, digital development, User Experience and business planning. We also worked with several external companies including app developers and User Experience experts, sports

clubs and fans. Drawing on a range of expertise and backgrounds is crucial for tacking complicated situations such as lifestyle health issues, which often have complex behavioural influences and aetiologies. It also ensures that beyond the evidence base, there is engagement from those who participate in any on-going development, participation in initial pilot research and evaluation of the app as it is developed and also used by professional clubs to support fan health and wellbeing. This builds on the knowledge that understanding the needs of a community and building on assets is more likely to lead to behaviour change, as well as the importance of doing research 'with' not 'on' people (Involve, 2019).

The project was initially named Footy Fit, but renamed to Fan Fit when it became apparent that the app might work effectively for other kinds of sports clubs. In 2018, a version of Fan Fit was created for Salford Red Devils Rugby league club, which provided the first implementation partnering with a professional sports club. A version for a Scottish football club is in development at the time of writing through a collaboration with the Healthier Lives Data Fund from the Scottish Government and Nesta.

Fan Fit began as an idea to engage football fans and raise awareness of fitness levels through their love of their favourite teams. The concept therefore was to combine fitness as gamification (game like features) with social media information from their favourite club. Fan Fit has created a fitness app for people that may not traditionally use this kind of apps or fitness wristbands.

Figure 14.2 - The original Footy Fit app design from phase 1

The first version of the app as shown in Figure 14.2, created the basic ability to track walking and running, combined with football club social media feeds and video with live information embedded directly into it. It was designed to become an official app of a sports club, rebranded into the clubs colours so that it is recognisable as being part of a clubs offering to their fans. Fan Fit includes the usual club app functions such as pulling in club news, fixtures, team and social media feeds. Furthermore on a day-to-day basis, Fan Fit tracks movement in terms of steps and minutes, allowing

fans to set their own daily minutes target and compete against other fans in leagues. The built in leagues are split into:

1. Global - all time highest number of steps since the app is launched
2. Monthly - highest steps from the start to the finish of a calendar month
3. Personal - allows fans to create their own mini league containing their own friends and others they want to compete against.

The leagues are designed to create an active community, with more people choosing to walk on match days, and encourage them through the app, which in turn can reinforcing achievement and improve motivation. Working in partnership with a sports club means this can be done through physical prizes linked to the club (e.g. season tickets, shirts and fitness wristbands). For all users digital badges (graphic designed icons) can also be earned for maintaining levels of fitness to encourage the maintenance of behaviour change through a process of reward and recognition.

This type of fan app provides a productive way in which fan groups can interact with each other, through sharing their achievements on the app and through social media such as Facebook and Twitter. For example the people involved within a network (e.g. fans of a club) offer support, advice, and gain the drive and additional resources that can help to motivate achievement of personal exercise goals. Word of mouth and social media conversation about the app and the use of club based and exercise based competition between fans can help to reinforce their motivation.

Through the implementation of the app, we have observed increased social media engagement and interaction with the app. Through the app; clubs, researchers and potentially health professional can learn about the walking/running habits of

supporters over time. Fan Fit tracks therefore measures the number of steps and active minutes which are tracked automatically through the phone or a fitness wristband. This data can then in turn help clubs to support their fans and work with health providers to improve the health & wellbeing advice/support that is provided to supporters, which feeds into the Healthy Stadia agenda (Parnell et al., 2017). With Fan Fit to date, there were three key iterations (phases) of the AR cycle, which are outlined below and can be used as a guide for others in the future.

Table 14.1: Phases of AR undertaken within the case study

Phase 1	**Phase 2**	**Phase 3**
Plan – Initial idea to create a fitness app for a football club called Footy Fit	Plan – create rebranded instance of the app for Salford Red Devils Rugby club called 'Red Devils Fan Fit'	Plan – create rebranded version of Fan Fit app for Rangers FC called 'Fit Bears'
Act – secure internal funding and appoint app develop to develop a minimum viable product (MVP)	Act – secure internal funding, appoint student and then app development company to develop app Beta on Android and then iPhone	Act – secure external funding and develop new version with new features identified in phase 2
Observe – use of target audience survey, user	Observe – use of focus groups, user experience	Observe – use of focus groups, analytics data and

experience testing, focus groups and Masters projects to gather data to	testing, social network analysis and netnography	netnography
Reflect - shape future direction and roadmap of new features, rebrand to Fan Fit	Reflect – shape future direction and source external funding and new partners	Reflect – shape future direction for potentially a fourth phase.

Phase 1 of the project began with formulating the original idea through working with football clubs and evaluating similar projects. To support this a target audience survey was created which was augmented using qualitative data from participant observation and focus groups using an ethnographical approach (Atkinson, 2015). We used a netnography approach, which is a set of standards and guidelines for conducting participant observation online through social media (Kozinets, 2015). The gathering of this information allowed the initial app development to begin, after which focus groups and User Experience testing with university students was employed. This helped to refine the app and led to the development of a MVP (minimum viable product). At this stage, further focus groups with university staff and students were employed to develop the road map of features for the app. A larger survey with the general public in Manchester helped to determine the target audience and horizon scanning to identify barriers to adoption. Further to engagement with uses social network analysis designed to map out and analyse social media conversations provided better understanding of the connections between developers, academics and research participants who are important to a project of this type of app. Finally once

there was a working prototype app, further focus groups and user experience testing were conducted to gain the views on the app by those it targets (e.g. sport club fans).

Target-audience Survey

Working with Masters students at the University of Salford, we formulated some initial survey questions to understand more about the audience for Fan Fit including

- Demographic information
- How many people owned a smartphone or fitness wristband
- What sports people were interested in
- How comfortable they were in sharing their fitness scores with friends or publically
- If they would be interested in an app which combined news from their favourite club with fitness features

The structured survey aimed to gauge the market for an app such as Fan Fit. It also aimed to understand the factors that could hinder the adoption of Fan Fit within the UK, asking about potential barriers. Overall the survey aimed to allow understanding of the possibilities of people using an app such as Fan Fit, their preferences and potential adoption figures. Our initial survey (n=123) found that the target audience surveyed was receptive to the use of a smartphone app designed to support improvements in physical activity.

Figure 14.3 - Infographic of survey results demonstrating the preferences of the general public for a sports club app that combines fitness

Netnography

As outlined a further method utilised was the adoption of a netnography approach of participant observation online (Kozinets, 2015) and blending of methods including interviews and social network analysis (Fenton and Procter 2019) . This allowed the team to interact with fans that were using the Fan Fit app to gather feedback as part of the AR cycle. Through this we were able to gain an insight into how the app was discussed on social media, for example:

> "I've done 182 steps and 0 minutes of activity with #**Fan Fit** lol can tell it's my week off"

> "Been on #**Fan Fit** for weeks. The competition starts now eh??

I will be definitely involved in that! It will be great for all fans to get #**Fan Fit"**

"I'm at 226.432 steps and because of this iv lost 7lbs 😂I'm very very competitive!"

"After the walking challenge last month, I actually felt confident enough today to manage my first run in 5 years since my knee injury only 1 1/4 miles but a start :-)"

One of the challenges found in initial testing is the engagement and downloading of the app by supports and players. A challenge with a club app can be the buy in from all aspects of clubs from management, communication teams, outreach teams and players.

App engagement

Having engagement from all aspects and players (which fans can often most want to engage with) can also support the adoption of an app. Of the fans that downloaded the app, 76.6% of users were male and 23.4% were female, which is similar to many clubs fan population. There was also a range of ages of fans that downloaded the app from 18-64 with the most popular age being 25-44 years old, a key demographic for many health and wellbeing initiatives.

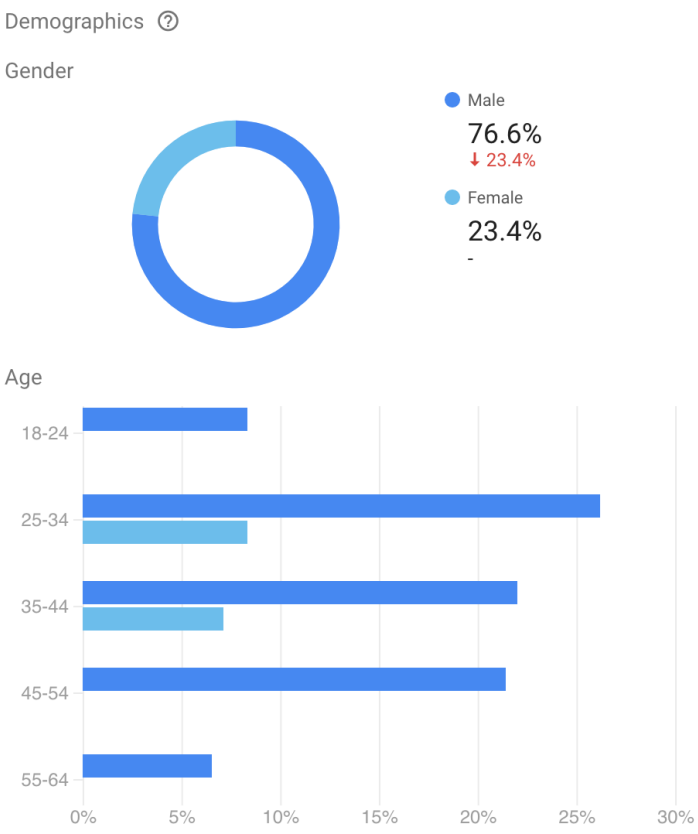

Figure 14.4 - Demographic information derived from Red Devils Fan Fit app usage December 2018

From this project there are a number of transferable lessons, which have been learnt though engagement. The Fan Fit team initially felt that engaging team players to also use the app would be motivating for fans. However, in the case study to date it was found that players were not able to use their phones or fitness wristbands for both practical and operational reasons. Although clubs do capture GPS movements of players, it was not possible to input this data directly into the app to allow them to be part of the competition this way. Going forward, apps of this nature need to establish a way to engage both the fans and the clubs players and staff to allow the interaction and building of a larger community. Engaging players in this kind of activity in the future could potentially act as ambassadors and influencers for use of the app and

build social capital, and thus help increase fans motivation to exercise and remain healthy (Fenton, 2017).

Conclusion and recommendations

The monitoring and improvement of the health and fitness through digital means is a hot topic for practical research. This is in part due to its potential and versatility. In the light of CSR and the healthy stadia agenda, organisations are interested in a healthy workforce and customers and are often supporting positive changes in the community. Meanwhile, health services are increasingly keen on prevention rather than cure, in part due to the economic conditions, which are being experienced by many countries as well as increasing life expectancy. This means there is growing importance to maintain healthy lifestyles for longer. This has led to a need for more effective public health strategies across a variety of settings, so football, smartphones and research all have their part to play in addressing these health issues. Within the current political and social context, for example financial cuts, increased pressures on the NHS through staff shortage and increased numbers of people with chronic diseases more effective community integrated solutions are necessary. Involving large communities of fans using digital solutions could trigger positive outcomes in that people are healthier with potential to address some of the existing societal and political challenges

In this chapter, we have explored the methodological approaches of AR in relation to a smartphone app to engage fans around fitness embedded into the digital community eco-system of their own club. According to evidence collected to date, it seems that the app is welcomed amongst the community of fans although there is a need to consider engagement challenges going forward. We believe that AR offers the correct

methodological approach to actively change and improve initiatives, which may offer a potential solution to support and guide CSR initiatives (Zeimers et al., 2019).

Alongside engaging fans in relation to lifestyle behavior change, sports clubs are also increasingly engaged in campaigns around mental wellbeing. These offer development opportunities for smartphone apps, which can support a person physical as well as mental wellbeing. In relation to mental wellbeing, apps such as Headspace have attracted a great deal of attention as a way to use smartphone apps to improve mental health and wellbeing. Through taking an AR approach, which combines a passion for a sports club, support with physical health and mental wellbeing there is the potential that sports club can have a greater impact in reaching and engaging harder to reach and wider groups to support the wellbeing agenda.

Furthermore, through initiatives such Fan Fit, general practitioners could prescribe social activities to support people's wellbeing by linking them with social activities such as football, as it is known that harder to reach groups can be reluctant to engage with traditional NHS prevention services (Bickerdike et al., 2017). As such, digital sports communities could offer attractive support environments and camaraderie both online and offline. The link amongst healthy stadia and social prescribing offer an interesting area of research in the wider field of football as medicine. On a regional and national level, funders should also be open to innovative projects and collaborations in order to support impact on a larger scale. A challenge can be the crosscutting nature of projects in relation to digital, sports and health and wellbeing in relation to gaining funding.

An important aspect of the creation of any app is that it is designed with the user in mind. As such we propose the use of AR and user centred design to ensure that fans

and those at the club are involved at all stages, and that robust evaluation is included in any design or use of these types of applications. This will also ensure that any app aligns with a clubs branding, principles, engagement strategies and the needs of fans to create behavioral change. Finally, there is a clear need for more research to investigate the use of AR as a process in implementing digital health projects within the football industry.

References

Anagnostopoulos, C., Parganas, P., Fenton, A. and Chadwick, S. (2018) 'Branding in Pictures : Using Instagram as a Brand Management Tool in Professional Team Sport Organisations.' *European Sport Management Quartely*. Taylor & Francis, 0(0) pp. 1–46.

Atkinson, P. (2015) *For Ethnography*. Sage. [Online] [Accessed on 19th November 2015] https://uk.sagepub.com/en-gb/eur/for-ethnography/book234711.

Bickerdike, L., Booth, A., Wilson, P. M., Farley, K. and Wright, K. (2017) 'Social prescribing: less rhetoric and more reality. A systematic review of the evidence.' *BMJ Open*, 7(4) p. e013384.

Breitbarth, T., Hovemann, G. and Walzel, S. (2011) 'Scoring strategy goals: Measuring corporate social responsibility in professional European football.' *Thunderbird International Business Review*, 53(6) pp. 721–737.

British Heart Foundation (2017) *Physical Inactivity and Sedentary Behaviour Report 2017*.

Cavicchi, A., Santini, C. and Bailetti, L. (2014) 'Mind the "academician-practitioner" gap: an experience-based model in the food and beverage sector.' *Qualitative Market Research: An International Journal*. Emerald Group Publishing Limited, 17(4) pp. 319–335.

Coughlin, S. S. (2016) 'The need for research-tested smartphone applications for promoting breastfeeding.' *mHealth*.

Dahlgren, D. and Whitehead, M. (2007) 'European Strategies for tackling social inequalities in health: levelling up part 2.' *World Health*.

Fenton, A. (2017) *The field behind the screen: Social capital and the social media communications of a football club brand*. University of Salford.

Fenton, A. (2018) *Digital Sport & fan engagement*. Alex Fenton blog. [Online] [Accessed on 26th March 2019] http://alexfenton.co.uk/digital-sport-for-fan-engagement/.

Fenton, A. and Helleu, B. (2019) 'Digital and social media.' *In* Chadwick, S., Parnell, D., Widdop, P., and Anagnostopoulos, C. (eds) *Routledge Handbook of Football Business and Management*. 1st ed., Routledge.

Fenton, A. and Procter, C. (2019) 'Studying social media communities : blending methods with netnography.' *SAGE Research Methods Cases*. SAGE.

Garriga, E. and Melé, D. (2004) 'Corporate Social Responsibility Theories: Mapping the Territory.' *Journal of Business Ethics*, 53(1/2) pp. 51–71.

Heinze, A., Fletcher, G., Rashid, T. and Cruz, A. (2016) *Digital and Social Media Marketing - A Results Driven Approach*. Routledge.

Husted, B. W. (2003) 'Governance Choices for Corporate Social Responsibility: to Contribute, Collaborate or Internalize?' *Long Range Planning*, 36(5) pp. 481–498.

Institute for Health Metrics and Evaluation (IHME) (2018) *Findings from the Global Burden of Disease Study 2017*. Seattle, WA.

Involve (2019) *INVOLVE - Supporting public involvement in NHS, public health and social care research*. [Online] [Accessed on 2nd May 2019] https://www.invo.org.uk/.

Jee, H. (2017) 'Review of researches on smartphone applications for physical activity promotion in healthy adults.' *Journal of Exercise Rehabilitation*.

Kozinets, R. V. (2015) *Netnography Redefined*. SAGE Publications.

Lawrence, S. and Crawford, G. (2018) *Digital Football Cultures: Fandom, Identities and Resistance*. Routledge, London.

Lewin, K. (1946) 'Action Research and Minority Problems.' *Journal of Social Issues*. John Wiley & Sons, Ltd (10.1111), 2(4) pp. 34–46.

McCarthy, J., Rowley, J., Ashworth, C. J. and Pioch, E. (2014) 'Managing brand presence through social media: the case of UK football clubs.' *Internet Research*. Emerald Group Publishing Limited, 24(2) pp. 181–204.

Mitchell, J. A., Mattocks, C., Ness, A. R., Leary, S. D., Pate, R. R., Dowda, M., Blair, S. N. and Riddoch, C. (2009) 'Sedentary Behaviour and Obesity in a Large Cohort of Children.' *Obesity (Silver Spring)*, 17(8) pp. 1596–1602.

NHS Digital and National Statistics (2018) *Statistics on Obesity, Physical Activity and Diet*. England.

Parnell, D., Curran, K., Philpott, M., Parnell, D., Curran, K. and Philpott, M. (2017) 'Health Stadia: A settings-based approach to health.' *In* Parnell, D. and Krustrup, P. (eds) *Sport and Health: The Current State of Play*. 1st ed., Routledge, pp. 238–250.

Public Health England (2012) 'UK health profiles.' Public Health England.

Ramshaw, G., Gammon, S. and Huang, W.-J. (2013) 'Acquired pasts and the commodification of borrowed heritage: the case of the Bank of America Stadium tour.' *Journal of Sport & Tourism*, 18(1) pp. 17–31.

Saunders, T. J., Chaput, J.-P. and Tremblay, M. S. (2014) 'Sedentary Behaviour as an Emerging Risk Factor for Cardiometabolic Diseases in Children and Youth.' *Canadian Journal of Diabetes*, 38 pp. 53–61.

Statista (2018) *UK: smartphone ownership by age 2012 - 2018*. Statista. [Online] [Accessed on 12th February 2019] https://www.statista.com/statistics/271851/smartphone-owners-in-the-united-kingdom-uk-by-age/.

Sweeney, D. and Quimby, D. (2012) 'Exploring the Physical Health Behavior Differences between High and Low Identified Sports Fans.' *The Sport Journal*.

Townsend, N. and Nichols, M. (2015) 'Cardiovascular disease in Europe—epidemiological update 2015.' *European heart …*.

Tremblay, M. S., Leblanc, A. G., Kho, M. E., Saunders, T. J., Larouche, R., Colley, R. C., Goldfield, G. and Gorber, S. C. (2011) *Systematic review of sedentary behaviour and health indicators in school-aged children and youth*. *International Journal of Behavioral Nutrition and Physical Activity*.

Tu, R., Hsieh, P. and Feng, W. (2018) 'Walking for fun or for "likes"? The impacts of different gamification orientations of fitness apps on consumers' physical activities.' *Sport Management Review*. Sport Management Association of Australia and New Zealand.

Zeimers, G., Anagnostopoulos, C., Zintz, T. and Willem, A. (2019) 'Corporate social responsibility (CSR) in football. Exploring modes of CSR implementation.' *In* Chadwick, S., Parnell, D., Widdop, P., and Anagnostopoulos, C. (eds) *Routledge Handbook of Football Business and Management*. Routledge.