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Citation: Rooksby, John, Cecchinato, Marta, Asadzadeh Birjandi, Parvin, Philpott, Matthew and Bunn, Christopher (2020) Design Opportunities for Digital Men's Health: An Exploratory Study Focusing on Football Fandom. In: DIS2020: Designing Interactive Systems 2020: More than Human Centred Design, 6-10th July 20/20, Eindhoven, Netherlands. (In Press)

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Design Opportunities for Digital Men's Health: An Exploratory Study Focusing on Football Fandom

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ABSTRACT

Many men stop exercising as they age, engage in risky behaviours such as alcohol misuse, are reluctant to admit to mental health problems, and avoid seeking help. Men are generally hard to reach for community health interventions. However, interventions run at football clubs have successfully engaged men and have led to positive health outcomes. Mobile health technology might similarly be designed to engage and encourage men via connections with football. This technology could be used to augment and extend community programs, or be used to target global fan bases. However, it is not clear if and how what attracts men to community interventions can translate to technology. In this paper we report a design study with 18 middle-age male participants exploring what men find important in football, and connections between football, health and technology. We present five design opportunities to guide and prompt further innovation in this area.

Author Keywords

Design; Gender; Masculinity; Men's Health; Digital Health

INTRODUCTION

Health problems often affect men and women differently. For example, in the UK, men in their middle age are twice as likely as women to have diabetes, and twice as likely not to know they have diabetes [13]. In South Korea there have been significant increases in obesity among males [20] but decreases among middle-aged females [43]. In Australia, men between the ages of 25 and 64 are twice as likely to die than women of the same age [26]. In high income countries including the USA, the suicide rate among men is 3.5 times that of women [34]. Central to the problem is that men are more likely to engage in risky behaviour and less likely to seek help, for example men in the UK are more likely than women to smoke, to eat too much salt, to eat too much red and processed meat,

to eat too few fruit and vegetables, and to drink alcohol at hazardous levels [13].

A recent report for WHO in Europe has called for more attention to be paid to *men's health* [35]. The area of men's health focuses on the needs of men. It does not propose that men are in greater need or more disadvantaged than women (by many measures women suffer greater adversities and problems than men [52, 55, 38], sometimes at the hands of men [49, 14]). Rather, it recognises that particular strategies are needed to reach and help men.

An area of health that has often failed to meet the needs of men is lifestyle and behaviour change. Lifestyle change programs that encourage and enable people to take up and maintain positive health behaviours (e.g. maintain an appropriate diet, be physically active, or manage mental health and well being) are important forms of public health intervention [65, 63]. These programs are typically community-based, primarily face-to-face, and often incorporate mundane health technologies including weighing scales, calorie counting and pedometers [27, 23]. However, an issue with community-based interventions is that men are hard to reach [44, 62]. For example, the weight loss program Slimming World is effective [25], but only about 5% of participants are male [9].

One approach that has been successful in attracting men to community health interventions and producing positive outcomes is to engage them via a sports team they support [19]. Many men follow sport and support a team, and in the UK and many other countries this is often football. Recent healthy lifestyle programs run at football clubs in the UK and Europe have been positive for men's health [64].

In the research reported in this paper we have been interested in how digital technologies may better support men's health. We present an exploratory study of how football fandom connects with men's health, and we consider how digital technology could be designed in ways that capitalise on the successes of football based healthy lifestyle programs. Our interest is not simply in putting football branding on existing health technologies, but if and how deeper understandings of fandom and 'the love of the game' can produce new insights and directions for designing health technology. By exploring how healthy behaviours and football fandom can be connected,

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DIS '20, July 6–10, 2020, Eindhoven, Netherlands.

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<http://dx.doi.org/10.1145/3357236.3395458>

we seek to rethink and reframe ideas in designing mHealth technology.

BACKGROUND

The major determinants in men's health are social and cultural rather than biological – *masculinity* rather than biology explains why men take and are exposed to risks, and often do not seek help [45, 35, 61]. As Robertson puts it:

"The processes of being or becoming a man usually negatively influences men's health practices and outcomes" [45, p. 2].

Many men internalise or feel under pressure to conform to masculine ideals such as strength, stoicism and invulnerability. These ideals can lead men to celebrate risk taking, and to avoid seeking help [1, 45].

Football and Masculinity

Masculinity and sport are closely connected. According to Swain [54], UK adolescent boys' success at and interests in football from an early age are strongly linked to their developing masculine ideals. As men age their interests in sport and identification with football teams often remains [60, 51]. However, men often drop out of playing sports and their exercise levels decrease as they become less able to perform and compete and to live up to masculine ideals [2, 51].

Sports fandom remains tightly interwoven with masculine identities [50]. Issues of social class and place are also important. Connecting football and social class, Robson [46] claims it is difficult to overestimate the significance of football in the lives of working class men and boys in the UK. Millward refers to 'local fans' [31] as people who are often highly engaged and attend matches. A major aspect of following a team for these local fans is the 'carnival' of fandom that surrounds the match itself [42, 37], for example travelling to games together, chanting and drinking alcohol. Not all football fans are 'local'. Football is a global sport, and UK teams are followed around the world [31]. Some of these may be people who support a team of a place that they are connected to, perhaps via birth, but no longer inhabit. Others may have no connection at all.

Football fandom is not an exclusively male pursuit, but in most countries it is highly associated with men and masculinity (the USA is an exception where women's "soccer" is popular). In the UK and many countries there are institutionally and culturally entrenched distinctions and disparities between men's and women's sport [60].

Feasy [12] sees a strong connection between football culture and masculinity, giving an example of how televised football matches can reproduce problematic gender norms related to health:

"When footballer Michael Owen played for Newcastle United in the Barclays Premier League just eight days after a double hernia operation that would normally demand over four weeks of recuperation, the commentators did not question his ability or his right to play, but simply established the physical and mental toughness of the

player because they had 'no idea how he's doing that'" [12, p. 98].

Football Centered Men's Health Interventions

Men have often failed to engage with healthy lifestyle programs and take up positive behaviours. However, there have been successes in reaching men when advice is connected with football fandom. Several lifestyle change programs have targeted men via football clubs. For example,

- FFIT (Football Fans in Training) is a 12-week program run at football stadia in Scotland. The FFIT program has been shown to help a large proportion of men to lose a clinically important amount of weight [19].
- EuroFIT (European Fans in Training) is a 12-week program run for men at football stadia in four European countries. This program has been shown to lead to improvements in physical activity [64].
- PLH (Premier League Health) was a program run at English Premier League clubs encouraging physical activity and delivering sessions that are responsive to local participants' issues (e.g. unemployment and substance use) [41, 66].
- IYG (Imagine Your Goals) was a program delivered at English Premier League clubs focusing on increasing confidence and decreasing isolation for people with experience of mental health problems [57].

These and other football centered programs (e.g. [3, 24, 32, 22, 11, 15]) are typically designed to serve or appeal to men. This may mean they are men-only, or are mixed gender but designed and evaluated with consideration of men's health. There can be subtleties and complexities to this, for example a program designed to appeal to men with early onset dementia was then also able to reach and serve women carers [10]. Other football-centered programs and initiatives exist that are aimed at children [36, 16]. Similar programs are also run in other sports, for example Hockey FIT has been piloted in Canada with two Ontario Hockey League clubs [4].

Factors in Popularity and Success

The literature on football centred health interventions has identified several reasons for the effectiveness of these in recruiting and retaining men. These include the symbolism and prestige of the "club badge" for fans [39], the role of peer support [24], and the familiarity and convenience of stadia [40].

Lozano-Sufrategui et al [24] draw particular attention to the importance of peer support. In their study of the experiences of older men (aged 50+) in a football-led weight management program, they found that whereas football is typically "*an oppositional and confrontational activity that may discourage participation*", the program for older men fostered a sense of "*team spirit, enjoyment and participation*" and inclusive, caring relationships among the men.

Bunn et al. [7] address how masculinity factors in these programs. Focusing on Football Fans in Training (FFIT), they find that they do not challenge problematic masculinity, but enable groups of men to collectively adopt positive behaviours within a masculine space:

"the FFIT programme allows men to refashion their own masculine identities in relation to specific behaviours and to take part in a collective re-negotiation of uncritical equations of destructive health practices with gender orthodoxies" (p. 13) [7].

Similarly, Spandler et al. [53] find that these programs "re-assert but also reconfigure" masculinities. Spandler et al. view this as potentially paradoxical and while they recognise football-led programs can be effective for men, they call for further work in the area that is better informed by feminist and other critiques of gender relations. Even if men's health programs improve men's health, what is the wider cost of reasserting problematic masculinities and gender norms?

The Current and Potential Role of Technology

The football centered programs can feature mundane health technologies including weighing scales and pedometers, and participants may be encouraged to keep a food diary. For example participants in the FFIT [19] and EuroFIT [64] programs are given a self-tracking device, and EuroFIT also featured a social, game-based mobile app. Another program, 'Man V Fat' has a digital dashboard that can be used to track progress towards exercise and weight goals. The potential for technology to take a more central role in how football centred community health interventions are organised has not been addressed. It certainly should not be assumed that technology is necessary or will be beneficial for programs that are already successful, but this is worth questioning

One of the issues with football centered programs is scale. With football being a global sport with distributed fandom, even for local fans, face-to-face programs may not be accessible. The programs have limited capacity and often take people on for just a few weeks or months before inviting others. Some people may not be able to join in at all owing to work or family commitments. Therefore it is worth considering issues such as: how technology might enable programs to scale; how global fans or people unable to attend programs be reached; and, how engagement can be extended for those that do attend programs beyond the term of that program.

Finally, by considering football and men's health, approaches to health technology that are not tied in with existing health programs at all may be inspired. It is our intention to present an exploratory study that broadly addresses fandom and how health technology may be linked to this. An important issue to explore is the relationship between technology design and masculinity, and the ways design might avoid playing into forms of masculinity that negatively affect men's health.

THE STUDY

To explore design opportunities for mobile health technologies targeted at male football fans, we have conducted a qualitative study with 18 male football fans.

Procedure

We have run four, two-hour group sessions with fans at football clubs. The sessions began with collection of structured data about physical activity using the IPAQ-SF International Physical Activity Questionnaire (Short Form) [5, 21], and about

Table 1. Participant information.

P#	Site-Grp.	Gend.	Age	Device	Wearable	Apps	IPAQ	SSIS	Prog.
1	1-1	m	29-39	iOS*	-	Y	Mod	High	1*
2	1-1	m	29-39	And.	Fb.	Y	High	High	1*
3	1-1	m	49-59	And.	-	Y	Low	High	1
4	1-1	m	59-69	And.	-	Y	Mod	High	1
5	1-1	m	49-59	And.	-	-	Mod	High	1
6	1-1	m	49-59	iOS.	Ga.	Y	High	High	-
7	1-1	m	49-59	iOS	-	Y	High	High	1*
8	1-1	m	29-39	iOS.	AW	Y	High	High	1*
9	1-2	m	29-39	iOS.	Fb.	Y	Mod	High	1
10	1-2	m	39-49	And.	Fb.	-	High	High	1
11	1-2	m	29-39	iOS	-	Y	High	High	1
12	2-1	m	29-39	iOS	-	Y	High	High	2
13	2-1	m	39-49	iOS	Fb.	Y	Mod	High	2
14	2-1	m	29-39	And.	-	-	Low	High	-
15	2-1	m	29-39	And.	-	-	Low	High	-
16	2-2	m	39-49	And.	Fb.	Y	High	High	2
17	2-2	m	29-39	And.	Fb.	-	Mod	High	2
18	2-2	m	29-39	And.	-	Y	Mod	High	2

Table notes: Device: *PI also owned Android device. Wearable – Fb=Fitbit, Ga=Garmin, AW=Apple Watch; Apps: Y indicates app user. Prog.: 1* coaches/employees were familiar with prog.1

fandom using the SSIS Sports Spectators Involvement Survey [58, 59]. Participants were then engaged in semi-structured group discussions of fandom, health and technology. Finally the participants were shown four-paper prototypes and asked to comment on them. The sessions were video recorded, transcribed in full and thematically analysed [6].

The study had ethical approval from an institutional committee, and we gained informed consent from the participants. Each participant received a £20 gift voucher.

Settings and Participants

We conducted the sessions at the premises of two football clubs in England. We chose to host the sessions at clubs in order to recruit local fans that attend matches, and in order to gain insights into the football environments.

- Club 1: The first two sessions were held at Newcastle United, a football club in the English Premier League. The session was held at their stadium St James Park, in a hospitality box overlooking the pitch.
- Club 2: The second two sessions were held at Sunderland AFC, a football club in the English League One. The session was held in the Beacon of Light, a "sports, education and community facility" owned by the club adjacent to their stadium The Stadium of Light.

The two clubs are in closely located cities in northern England and have a traditional rivalry. However, following relegation of club 2 from the Premier League two seasons ago this rivalry is currently less pronounced. Attendance at matches for club 2 has fallen, but with an average of over 30,000 at matches it remains higher than several Premier League clubs.

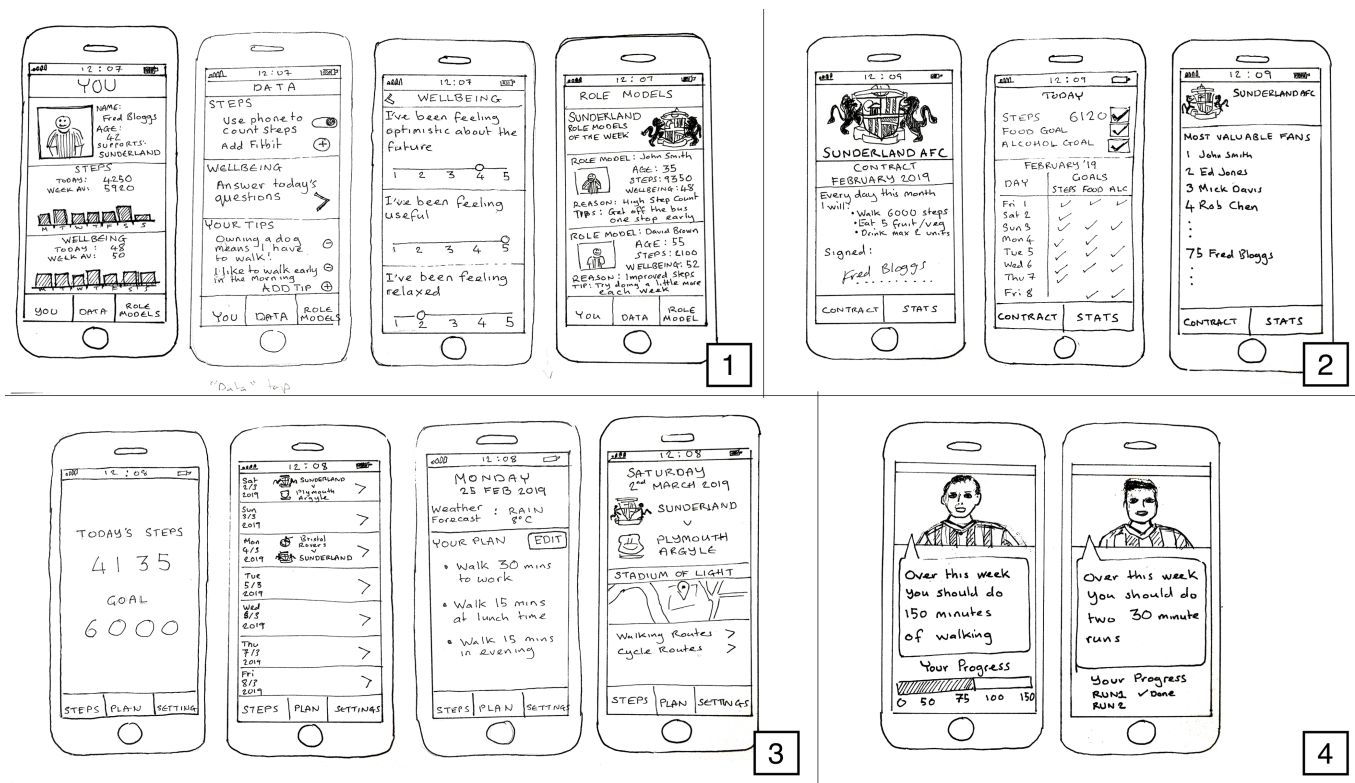


Figure 1. Sketches (Versions for club 2 shown): Top left - "1. Fans as Role Models"; Top right - "2. Contract"; Bottom left - "3. Action planner"; Bottom right - "4. Advice from players"

Recruitment was via the football club foundations, who advertised the sessions to fans. Recruitment criteria was that participants should identify as male, be a football fan, and be in middle age. We did not vet participants in advance, but allowed anyone that showed up to the sessions to take part. This explains the slight unevenness of the sessions – the largest of which had 8 and the smallest 3 participants.

Eighteen participants attended in total (table 1). The participants all identified as male. Ages ranged from 29 to 61 (mean 42). The participants’ occupations included chef, bus driver, farming production, airport operations, and project management. One person described themselves as unemployed and one person was retired. Four participants in session one were employees of the foundation for club 1 and working in coaching and outreach roles (all four met inclusion criteria).

Eleven participants were attending healthy lifestyle programs run at their club (and the four foundation employees were familiar with these and able to provide insight into the logics behind the programs and their day-to-day running). We refer to these as program 1 and program 2:

Program 1 is a free, 12-week program run at the stadium of club 1. The football themed program focuses on exercise, diet, sleep, stress, anger and coping strategies.

Program 2 is a weight loss program in which male fans of club 2 play football in a league. They are weighed at the start of a match and extra goals are given to team members who have lost weight that week.

Paper Prototypes

We produced four paper prototypes (see figure 1) to discuss with the study participants. Each prototype was presented as a low fidelity, hand-drawn sketch (an approach used in interaction design to underline that the designs are early stage and open to criticism, comment and annotation [8, 18]). Although a great deal of attention and care had been put into the designs, we wanted to ensure the participants felt free to critique and annotate them. We also wanted the participants to focus on the proposed functionality rather than presentation issues such as colour.

The designs were informed by Miche et al.’s taxonomy of behaviour change techniques (BCTs) [29, 30]. We discussed each BCT in the taxonomy in turn as a group and in consultation with a behaviour change specialist. We chose BCTs that were relevant to football and in some way unusual in comparison to mainstream self monitoring apps. The BCTs were: self role as a model, behavioural contract, action planning, and credible source. We also chose to portray tracking of diverse health behaviours by drawing from recommendations from WHO, NHS and other sources. Our intention was not to design viable products, but to produce sketches that would serve as talking points. We drew upon research-through-design strategies [17] including incorporating ambiguities and minor provocations such as social sharing of mental well being scores, a league table based on self-reported scores, a low step goal, and inclusion of a reference to an upcoming away match.

The same designs were shown at each club, but with tailored team names, club crests, footballer images, and fixture-listings. The designs for club 2 are shown in figure 1. Further explanation of the designs is given in table 2.

FINDINGS

We present qualitative findings covering the emergent themes from our analysis: what it means to follow a team, relationships in fandom, health behaviours and uses of technology. In table 2 we also present more deductive findings that are specific to each sketched prototype. References to findings given in table 2 will be given out points in this section, and Our Discussion section will further link these findings together.

Following a Team

All participants' scores on the SSIS (Sports Spectator Involvement Scale) were above 35, indicating a "high level of identification" with their team [58] (see table 1). The mean score was 48 (club 1: 47, club 2: 50). Correspondingly, the participants told us that football was a major part of their lives:

"It's in the blood. Eat it, drink it, and sleep it. Everything." –P15

"it's a feeling of belonging, you know, it's more than a club, it's a sort of everything" –P11

Most participants attended home matches, although several said they regularly chose to watch football at home or in the pub. The cost of tickets was a major consideration in attending matches, although for P4 and P6 shift working and irregular hours also made attendance difficult. Few of the participants reported going to away games (citing time, age and expense). Money pervaded accounts of match attendance. P12, who was upset with his team's recent performance, said:

"I had [a season ticket for] 12 years, I give it up last season because I said, I felt sure I wasn't coming back. But I just ended up coming every Saturday anyway and paying 20, 25 pounds" –P12

For most participants, fandom of their local club had run in the family for generations. P7 and P9 on the other hand had moved to the area in adulthood. P7 developed an interest in football through his son. P9 remained interested in the (lower league) team from his former city, but also wanted to support his new local team.

Fans of both clubs were unhappy with the recent performance of their teams. Fans of both clubs also expressed sorrow that the two traditional rivals were no longer both in the same league.

Football and Relationships

Although all fans were highly engaged with their team, the major theme running through the focus groups was the participants' ability to make and sustain relationships with other fans through football.

Echoing Swain [54], one of the participants discussed the formation of friendships at school via football:

"I know when I was at school, and certainly when you get to high school, you knock around with friends who have similar interests and it's always football". –P1

P5 and P13 both explained that, in adult life, football is the only opportunity to see many friends:

"There are a lot of people here who sit together and only come together on a match day" –P5

"I think when you get to our age you don't see your friends as much ... That's a big part for me like seeing my friends" –P13

As well as friendships, several participants talked about football as time with family members.

"I go with my dad. I've gone with him since I was seven. It's just like a family thing" –P2

"I used to go to bingo with my nanna, my dad took me to the match" –P13

Football was generally portrayed as a masculine domain. Most participants knew women who attend matches and several had sometimes gone to a match with a female partner or family member. However, partners were mainly portrayed as uninterested in football. P16 talked about occasionally taking his teenage daughter to matches, but explained how he would end up hugging and celebrating goals with other men.

"When Sunderland score I'll jump up and go AYY! she'll cheer and then she'll probably just sit back down and clap. I'll jump up and I'm thinking, I've got nobody to cuddle. The bloke next to me! It's surprising the amount of total strangers I've cuddled in the Stadium of Light" –P16

This quote from P16 demonstrates the 'carnival' context of football [37] in which behaviours such as cuddling and crying become acceptable within the context of masculine identities [60]. P16's daughter appears less keen to engage in these behaviours.

Drinking Alcohol

Alcohol featured extensively in the participants' discussions of football. For many, drinking is a major aspect of match day:

"It's a social event and alcohol is very much linked to that on match day." –P5

"I think it's more the fact, it's not the fact of getting drunk, it's the fact of socialising with your pals, have a drink. If your team wins that's a bonus isn't it, I think that's what happens with most football fans." –P12

An interesting aspect of the discussions of alcohol was that there were several overt performances of masculinity with respect to alcohol. Several participants were keen to point out how much they drink, and also to guard against and qualify accounts of not drinking. For example, when P18 revealed he never drinks at home he was told to "shut up man!" by P16 who apparently had two cases of beer waiting in the fridge

Table 2. Overview and feedback on the sketches (sketches shown in fig. 1)

Description	Overview of participants' opinions	Illustrative quotes	Design implications
<p>1: "Fans as role models"</p> <p>Overview: This design enables users to self track, add a selfie and add health tips. Two role models are chosen each week by an administrator to share their metrics and health tips with other fans.</p> <p>Primary BCT: Self as role model [30]</p> <p>Tracked parameters: (1) Automated step counting; (2) Self reported mental well being (Based upon the Warwick Edinburgh Mental Well Being Scale [56]).</p>	<p>Most participants were positive about the design, and one (P16) preferred it. Role model idea similar to 'before and after' photos shared in weight loss promotion. Participants thought the app should support competition to be role models, for example inclusion of a league table or leader board. Competition could be similar to Fitbit but against other fans. However, participants worried competition might encourage cheating. Most participants were positive about mental Well-being tracking but wanted it separate to competition and social sharing. Sharing tips would be positive.</p>	<p>"I will be your role model every week ... especially if you can put a league on it" –P16</p> <p>"The thing with the Fitbit is you only have friends on that you know, do you know what I mean? I think if you open it up to fans..." –P10</p> <p>"It's like I keep telling people at work ... stop printing at that printer, there's a printer in that office and that office, you'll do more steps ... just really simple things people don't think about." –P11</p>	<ul style="list-style-type: none"> • A role model approach may provoke competition rather than care and support • Fans are likely to distrust each other in a competition. • Fans would like more opportunities to track mental well being
<p>2: "Contract"</p> <p>Overview: This design enables users to sign a contract with their team stating that they will meet specified self tracking goals.</p> <p>Primary BCT: Behavioural contract [30]</p> <p>Tracked parameters: (1) Eating the recommended amount of fruit and vegetables (2) drinking alcohol within the recommended limits (3) reaching a minimum step target.</p>	<p>All participants except one (P16) said they preferred this design. Signing a contract with your club would be symbolically meaningful, several comparisons made with the game Football Manager in which gamers can add their own name to their team. Some suggestions that fans would cheat less in competitions if they'd signed a contract. Strong objections to alcohol tracking. Positive reactions to the league table, but the phrase "most valuable" is not positive.</p>	<p>"You'll feel a massive obligation to make sure that you get it done, otherwise, you'd be cheating your club ... If you sign a contract with your club, the emotion and the passion that you have relates to everything that this is about." –P1</p> <p>"My problem with that is it says, Drink a maximum of two units." –P17</p> <p>"I still play now Football Manager and that. Contracts and deals and stuff like that." –P13</p>	<ul style="list-style-type: none"> • A contract has symbolic value for fans • Take inspiration from football games and nostalgia • Alcohol tracking will be challenging
<p>3: "Action planner"</p> <p>Overview: This design enables users to plan their day-to-day physical activity in advance. A match fixture list is included and information is provided for planning walks to games on match days.</p> <p>Primary BCT: Action planning [30]</p> <p>Tracked parameter: (1) Automated step counting.</p>	<p>Disliked by all participants. Match days should not be targeted for behaviour change because these are for drinking, meeting with other fans and engaging in ritualistic and group behaviour. Inclusion of a fixture list not valuable as fans memorise this. The concept has similarities to action planning done in the programs, but these do not specifically target match days. Support for meal planning rather than physical activity planning would be more useful for some participants.</p>	<p>"It's not really a good idea" –P17</p> <p>"Not a fan of number three" –P18</p> <p>"On a match day, I just want to socialise. I probably wouldn't plan my match day ... we'll go to this pub and then we'll go to that pub ... We'll have one before kick-off. We'll have one at half-time and then after the match." –P8</p>	<ul style="list-style-type: none"> • Avoid targeting match day • Action planning would be better tied in with meal planning
<p>4: "Advice from players"</p> <p>Overview: A professional footballer sets a goal each week based upon WHO physical activity guidelines. The app shows an image of the footballer and quantifies progress to achieving the goal.</p> <p>Primary BCT: Credible source [30]</p> <p>Tracked parameters: (1) Minutes walking; (2) Runs (self report).</p>	<p>Disliked by all participants. Footballers are difficult to relate to because of the age and economic differences between them and fans. Fans do not like all players, and feel they should be the ones telling players what to do. It would be better to Use older 'legends'. The design was also seen as too simple and too similar to apps such as C25K.</p>	<p>"As someone who's now mid 30's I'm not really going or relate a 25 year old telling me to go and do this and go and do that." –P9</p> <p>"I'm thinking, those arseholes can't do it themselves out there on a Saturday afternoon. Why should they be telling me what to do?" –P16</p> <p>"You did sod all on Saturday and you're telling me to go and get some exercise? Get some yourself, you lazy shite!" –P17</p>	<ul style="list-style-type: none"> • Players are not appropriate sources of physical activity information for (older) fans • Older football 'legends' who have retired from professional football would be more relatable.

at home. In defence, P18 boasted about how he would binge drink on the coming weekend:

"I've even taken Monday off work because I'm literally out all day Sunday."—P18

Similarly, P11 spoke about trying a drinking abstinence challenge app called "Dry January". He qualified his experience, talking about abstinence yet affirming his identity as a drinker.

"I've had the Dry January app. I didn't do very well! [laughs]"—P11

In our discussions of the sketches (see table 2), the idea of limiting alcohol in sketch 2 was strongly objected to. Drinking is an important part of match day, and we found being seen as a drinker was an important part of participants' masculine identity.

Talking About Health

The participants said they do not typically discuss health when seeing others at football matches. P15 thought that, among other topics, fans might sometimes talk about "gym" but otherwise health was off the agenda. Mental health was a topic seen to be certainly off topic:

"When it comes to like men talking to each other, it's serious football, could be betting, or gym or whatever talk, you know. I'd be very very surprised if I'd come across anybody who says, you know, I spoke to my mates about mental health issues or anything, you know."—P15

"Blokes tend to hide their mental health."—P3

P1 thought that when friends were drunk together they may get onto some "truer" topics about their wellbeing:

"I always find that you get a truer opinion of yourself, when you're speaking to your friends, after you've had ten pints."—P1

Participants' physical activity was relatively high according to the IPAQ-SF survey (three low, seven moderate, and eight high- see table 1). Those with moderate or high physical activity were generally those engaging in a health program at their club, or working in coaching roles.

Healthy Lifestyle Programs

Eleven of the 18 participants were enrolled in a healthy lifestyle program. Another 4 participants were familiar with these programs through their coaching and outreach related roles. The participants gave several reasons for their own and others' enthusiasm about football led healthy lifestyle programs, including the setting and the opportunity to be with other fans.

Football Settings as Motivation

The football setting was relevant and important for the participants. P12, who had been "paying for the gym and not going" had also tried programs such as Slimming World, but said these lack incentive:

In Slimming World you have scales like, but none of the incentive.—P12

A key incentive for engaging with football programs was the significance of the stadium setting:

"We were buzzing ... even when we were lying outside in the horrible dirty terraces and doing push-ups, you still felt motivated because it was your team. You felt like part of it."—P3

Also cited was the convenience of football stadiums for travel and parking. Money was also relevant (the sessions were free or low cost).

Desire to be Active or Lose Weight

The participants were not just going because of the football setting. They were also interested in being active or healthy, and the programs supplied a good opportunity to do this.

"My wife heard about this. I'd always said I wanted to get back into football because I hadn't played since I was about 25 years old and I'm 47 now."—P16

In line with prior findings from Maitland et al. [28], people attending lifestyle programs are often not in need of persuasion to be active, but need support in doing so. Participants were not being somehow 'tricked' into healthy lifestyles via their team. Rather, football-led programs offered a suitable opportunity.

Other Fans as Motivation

Another key reason the participants referred to for joining the programs was the opportunity to be with other fans. P11 explained that a draw of these programs was the presence of other football fans:

"if you're going to go to a group that is ran from a stadium and you're a fan of the club you're probably thinking, well I have something in common with some of the people there at least. So you know you can go and talk about football, whereas if you just go to a gym ... Nobody likes going to gym, especially if you're overweight"—P11

Even more overt about friendships was P9 who had moved to the area, and saw the program he joined as a way to meet people.

"Me personally would be company ... from moving up sticks here there wasn't too many people I knew to do things."—P9

P16, quoted earlier about joining program 2 in order to play football, was happily surprised by the friendships and social support. P16 and P17 discussed how "You say hello to everybody" and how good "the banter" is at the sessions. P16 explained:

"It's unbelievable the support you get. There are people I'm actually friends with on Facebook now who I've met through coming here ... I know we're in competition with each other but we're all aiming for the same goal of losing weight. It's unbelievable the way it works. As I say, I've made some really good friends through this."—P16

P13 underlined how important the peer support and friendships are for staying engaged:

"I found I would sign up for a gym, go for maybe four, six weeks, and just get sick or find excuses to go home. When you're doing things like [program 2] ... it pushes you and I enjoy that more than doing stuff by myself."—P13

P10 had tried other healthy lifestyle programs but found that after the program ends "you just sort of like disperse". With football programs however, he was able to meet people he could stay in touch with and play sports with.

New Social Circles

Many of the participants who took part in healthy lifestyle programs discussed how health and exercise rather than drinking featured in the friendships they created.

"... it's a different type of social circle. So I've got my friends I go to the pub with and stuff like that, but this is the only group now I've got where actually it's not let's go for a drink, it's more like let's do some boxing or some, it's a different social circle..."—P11

"Four, five, six months later we've still not gone for a pint ... I don't think anyone's going to have a beer but we've then done other things as a social group, activities and things."—P9

The participants did refer to some conflicts and problems with the programs. Participants at club 2 were not happy that some people were (in the words of P16) "very aggressive on the pitch". P18 explained:

"Some people forgot what the concept of the program was and they were solely there to come over and win a football match every single week. There were people there and it was the only exercise they'd done in the last ten years ... and there were people who came who you could tell still play football."—P18

P17 distinguished aggressive attitudes from their own:

"We've got a player on our team, he cannot kick a ball to save his life but we love him because he's part of our team."—P17

These points about new social circles and love for teammates who cannot kick a ball echo Bunn et al's [7] account of 'refashioned masculinities', where men are able to form friendship groups in which being active regardless of ability and performance is acceptable. The programs do not challenge wider societal issues in men's health but, as Lozano-Sufraregui [24] has seen of other programs, enables the formation of caring groups.

Uses of Technology

The participants discussed using a range of technologies. Football related technology they discussed included video, news, social media, and football specific apps. The participants also referred to use of gambling apps and websites, and several said they play football management simulation games such as

Football Manager. Of particular interest to us was their use of personal tracking apps and communication apps.

Personal Tracking

Most participants were using personal tracking applications or wearables (15 out of 18 - see table 1). The most commonly used was a Fitbit, followed by the app Apple Health. Most were using more than one tracker and had tried various trackers in the past:

"I've used things like Strava and Runkeeper .. but mainly now it's Fitbit."—P10

The programs did not require participants to use personal tracking technology, but P10 referred to monitoring his heart with his Fitbit during sessions, and P13 found MyFitnessPal useful for tracking calories while trying to lose weight.

"[For] doing [program 2], it was MyFitnessPal, doing my calories and that."—P13

Otherwise, the men talked about how they would show off, advise each other and otherwise discuss trackers with others at sessions and elsewhere. Notably, any sense of caring or peer support was not evident in their accounts of how the trackers were actually used:

"Yeah, when I started a lot of people had Fitbits and I could see there was a bit of competition between them. I'm not a very competitive person really but when I got this it turned me into an animal."—P10

"I was saying to [P5] before, I get a little bit obsessed with closing the rings [on Apple Health]. If the rings aren't closed, I feel like it's been an unsuccessful day."—P8

None of the participants used trackers for football or considered using a football themed tracker. Several participants were using running applications such as Couch to 5K (C25K) which features audio from professional athletes. When asked about this P1 referred to audio from the athlete Paula Radcliffe:

"When she comes on and she says 'well done' it means nothing to us. I don't have any emotional connection with her."—P1

P16 was an active user of Pokémon Go:

"Pokémon Go is a big part of my fitness regime." (P16)

This had no link to football or masculine relationships. P16 and his wife had joined a Pokémon Go Facebook group and would go on organised 'raids' in the local area. Other participants also talked about their wives and female partners also using trackers such as Fitbits.

Communication Apps

The participants who had been in the lifestyle programmes discussed the importance of communication apps for these. Facebook was mentioned but WhatsApp was the main focus.

WhatsApp groups were spontaneously created ostensibly for meeting up to play sports, but these also appear to have served

heavily in the ongoing maintenance of social relationships beyond the programmes themselves.

"[On the] WhatsApp group we chat about football and stuff. You can put a thing on and say oh we're going to do badminton on Thursday, who wants to do it?" –P10

"It's like the WhatsApp group it took a few weeks to sort of, what's the word, to get the mickey taken a little bit and break the ice, and now we think nothing of it yeah." –P9

P16 said he had barely used WhatsApp before starting the programme, but was now barely off it. P18 however said that some of the WhatsApp groups he'd been in had collapsed because of people leaving:

"been in two different groups now on WhatsApp with different people who've left." –P18

WhatsApp and Facebook played an important role in facilitating the creation and facilitation of new social circles, and often appeared more important in this context than personal tracking and health apps. The technologies however do not themselves guarantee a group will stay together or exist beyond the program.

DISCUSSION

In this paper we have explored men's perspectives and experiences in football fandom, health and technology. We have been interested in how existing men's health programs capitalise upon football fandom to engage men, as well as men's broader experiences and opinions. Based upon our findings, we have identified five design opportunities (and potential pitfalls) that we discuss here. This is "upstream" research, and our discussion is intended to illuminate the problem space and indicate potential avenues for designing and evaluating novel mobile health technologies.

1: Designing for "love of the game"

Mobile health technology can capitalise on fans' emotional attachment to their team to promote healthy behaviours. We presented four sketched prototypes (figure 1 and table 2), two of which were positively received. One of these, the "contract" design was said by several participants to have strong potential for engaging fans via their emotional attachment to their club. Similarities were drawn with a football-related video game which also evokes these emotions. Similarly, the emotional connection to football and to the stadium was part of what drew men to health programs at their club. Designing for football fans is a form of 'emotional design'.

Related potential pitfalls that we have uncovered were: firstly, health technologies should not be targeted at match days themselves, unless they will not interfere with the rituals and carnival of that day (sketch 3 was criticised for this); secondly, while fans may admire their team, they do not necessarily identify with or admire individual players (see findings for sketch 4 in table 2).

2: Designing for social connectedness

Something that came across very strongly in the study was that the possibility to meet and engage with other fans was key

in fandom. Connection with other fans, be it the carnival of match day, or the possibility to make friends in a football centered health program, was important for the study participants. Family ties also featured strongly in participants' accounts.

When talking about the use of apps and technologies we found it was communication apps, not health apps, that were playing a core role to how the football centered lifestyle programs operated. WhatsApp was important to both programs, used for establishing friendships and for maintaining connections beyond the lifetime of the programs. Lozano-Sufrategui et al. [24] have previously discussed that building social relationships is key to the effectiveness of football-led programs. Our own work concurs with this, and we believe social technology in this context should be taken seriously. One approach may be to design new forms of social technology (for example Rooksby et al [48] and Morrison et al [33] have trialled novel football related technologies that take an approach foregrounding social connectedness). Another approach could be to more closely integrate digital health technologies and utilities with existing messaging applications.

In terms of design pitfalls, an assumption we made with all the sketched designs was that users should be persuaded into individualistic activities such as walking and running. This is a common assumption in digital health, which often promotes individualistic self-care. However it was team sports and group exercises, and ultimately the possibility to exercise and talk about health in the company of other men with similar interests that the participants found important. This further points to how the kinds of engagement fostered by technology can differ to those in health programs.

3: Augmenting and extending healthy lifestyle programs

Early in the paper we questioned how football centered programs could be scaled, given the distributed nature and scale of fandom. Firstly, could football themed mobile technology be designed to act in a similar way to existing, stadium based healthy lifestyle programs? Doing this may be valuable in order to reach more fans, including local fans who cannot attend sessions, and also remote (potentially global) fan bases. However, we have found that this is about doing much more than just applying football branding to existing or future technology. Designers will need to think more carefully about qualities of engagement, that promote caring masculine relationships, cooperation, group activities and male friendships, and not just signing deals with clubs for gaining download and users numbers.

Secondly, as part of the motivation for our study, we questioned if and how technology could extend the engagement with existing healthy lifestyle programs to augment the benefits of those who attended, even after the term of the program. For this, we see two design opportunities emerging. One opportunity relates to our findings about facilitation and peer support between participants for choosing and using existing technology. Participants used technology as a utility within the program, e.g. for calorie counting or for heart monitoring. Programs could potentially make more of this, incorporating the use of meal trackers and other devices, and helping people choose technologies and build competencies. Designers may

therefore consider not just providing new technologies, but thinking of ways participants may also be encouraged to discuss and compare different technologies between users. Building on the importance of designing for social connectedness, another opportunity is to design keeping-in-touch technologies or features that offer a combination of messaging apps with utilities for booking and paying for courts or pitches. This is motivated by one of the challenges referred to in program 1, where staying in touch and finding ways to be active together after the end of the 12-week program was found to be hard to coordinate without a structured program.

A potential pitfall for designers is that although health technologies are often thought of as persuasive technologies, these are not always what are needed. Echoing Maitland et al.'s work on community programs for cardiac rehabilitation [28], the participants often have the motivation and desire to make improvements, but rely on programs to provide utilities, information and skills necessary to make these changes. As our findings suggest, it is not just persuasion that participants need in order to be active but more practical support.

4: Tailoring digital behaviour change techniques

The designs we presented to the participants were each based on an established behaviour change technique. An opportunity here is in relating these techniques to values and activities of football fans. For our sketches, we carefully chose each technique to relate to football fans and the game experience itself. As discussed in opportunity 1, the most appreciated design sketch was the one that related to signing a contract for healthy behaviours. Participants felt they would be more connected to their club via doing the behaviours stipulated in the contract. Potentially, fans that do not have such a strong 'local' connection might not feel quite so strongly. For the final sketch, we found that how someone that gives 'expert advice' is chosen needs to be carefully considered. We have seen the participants object to the idea of receiving health advice from younger, wealthier players (sketch 4), where we had wrongly assumed a current team icon could provide convincing advice. Instead, they would have preferred receiving suggestions and encouragement from retired 'legend' players.

A potential pitfall with tailoring behaviour change techniques for football fans, as previously mentioned, is that individualist persuasion and behaviour change is not always what is needed. Secondly, designers should pay particular attention to the nuances of how a specific technique is applied, as our findings have shown how simply age and affluence of a role model can have a strong impact.

5: Designing for masculinity

Besides age and affluence, gender is another issue at play. The study has addressed designing for men's health and masculinity. While there are many opportunities to design for men and football fans, there seem to be significant pitfalls. The opportunity to enable men to lead healthier lifestyles seems to be most strongly associated with opportunity 2 above, which is to support the formation of social relationships related to exercise and other healthy behaviours. However, when relating healthy behaviours with technology use, the participants often seemed to desire competitiveness over collaboration. One of the two

sketches that participants liked was the "fans as role models" design. The design was intended as something fair and inclusive (for example showing one role model as someone with "improved steps", rather than the highest count). Notably, it was the potential for competition that attracted participants to this design. It is remarkable that while the healthy lifestyle programs appeared to foster the kinds of inclusive, caring relationships between men as described by Lozano-Sufrategui et al. [24], and any rough competitive play in program two was criticised, as soon as apps were discussed, participants would switch to a competitive mindset and happily describe themselves as "an animal". Dispositions fostered within the programs seem not to relate also to use of technology.

As a pitfall, there is a risk that designers could fall in the temptation to create men-only apps, or ones that assume a singular form of masculinity, also based on initial reactions to technology designs. Rode [47] calls attention to the ways in which gender and particularly masculinity become inscribed in technologies, and proposes a theoretical framework to highlight and reduce these. Our qualitative and research-through-design approach highlighted how there are many facets to masculinity that emerge even just through football fandom (from being "an animal" to crying and hugging the stranger next to you in the stadium). Delivering a technology that fosters competition would mean to ignore the value that social connectedness brings and that is so evident in our findings.

Limitations

As upstream, exploratory work, the findings in this paper are broad and somewhat provisional. The scale of the study, use of self-selecting participants, focus on 'local fans', and geographical focus on North East England are also limitations. The focus group format we have used has limitations in comparison to individual interviews and in comparison to co-design and other forms of ongoing design engagement.

CONCLUSION

In this paper we have presented an exploratory study of football fandom and men's health. We have engaged with 18 men at two football clubs, discussing the draw of football, football led health programs and digital technology. We have found that while football fandom can be used to draw men into using digital technology, the kinds of practices that technology typically promotes are not necessarily the kinds of practices needed and valued. Instead design could aim to support caring relationships, friendships and group activities. Work in this area could also look more at how existing technologies could be better incorporated to extend and augment existing lifestyle health programs. Based on these findings, we propose a series of design opportunities in digital health that take into account men's health more specifically, to promote more engagement in healthy practices that men would normally be (self) excluded from.

ACKNOWLEDGEMENTS

This work was funded by the GetAMoveOn Network+ under EPSRC grant number EP/NO27299/1. We are grateful to the study participants, the clubs and foundations, and to the anonymous reviewers of our paper.

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