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Assessing the side effects of the 'exercise pill': the paradox of physical activity health promotion

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Assessing the Side-Effects of the ‘Exercise Pill’: The Paradox of Physical Activity

Health Promotion

Abstract

The *Exercise is Medicine* movement, centralised in Physical Activity Health Promotion (PAHP) policy, is illustrative of neoliberal health governance that acts to sustain the population’s regular participation in physical activity (PA) through the logics of self-care, productivity, personal responsibility and choice. One way this is propagated is through the promotion of exercise as the ‘best buy’ (AMRC 2015) in modern medicine and a wonder ‘pill’ to good health (Sallis 2009a). However, the increasing reliance of PAHP policy on the *Exercise is Medicine* narrative to construct the healthy citizen typically conflates the categories of sport, exercise and PA, and fails to recognise the different social relations and risks each entails. Consequently the neoliberal logics central to this narrative are more likely to create actors inclined towards competitive sport and, therefore, PAHP places populations at risk of physical injury that entail both social and economic costs. Mobilising data from semi-structured interviews, the social and economic ‘costs’ of physical injury are documented to develop a critical evaluation of the paradoxical implications of these ‘costs’ for contemporary public health promotion such as the *Exercise is Medicine* movement.

Key words

Neoliberalism, physical activity health promotion policy, sport, injury

Introduction

There has been a wealth of research conducted in the last half-century documenting the relationship between exercise, physical activity (PA) and health. Research indicates that regular PA significantly reduces the risk of suffering from cardiometabolic disorders (e.g. coronary heart disease, stroke, respiratory disease). Indeed a recent 72 page extended review of ‘Exercise as Medicine’ summarised the evidence for prescribing exercise as medicine for 26 different diseases (Petersen and Saltin 2015). The ‘medicalisation’ of PA is evident in popular western narratives of health (Lupton 1995, Sassatelli 2000), and concerns about a global obesity ‘epidemic’ (Gard & Wright 2005, Murray 2005) and physical activity ‘pandemic’ (Kohl et al. 2012).

Such health benefits have been translated into concomitant economic savings effecting an economization of social life (Kenny 2015). For instance, the direct cost to the UK NHS as a result of *physical inactivity* among the population has been estimated to be £0.9 billion (Scarborough et al. 2011), while indirect costs (related, for instance, to work absenteeism) rise to an estimated £6.5bn (RCP 2012). Consequently physical activity health promotion (PAHP) has become ubiquitous. A review of national documents published in the 28 EU member states between 2000 and 2009 identified 112 which ‘mentioned health-enhancing physical activity and contained overall goals on participation in sport and physical activity and/or on health promotion’ (WHO 2011, p. 42). Exercise is claimed to be ‘today’s best buy in public health’ (AMRC 2015).

This policy shift is symptomatic of health governance in the context of neoliberalism (Miller and Rose 2008), where the re-structuring of power relations mobilises practices to direct consumer ‘choice’, whilst encouraging citizens’ propensity for self-governance that aligns with strategic policy objectives (Lemke 2001, Rose 1996). *Exercise is Medicine* (Sallis

2009b), the joint American Medical Association and American College of Sports Medicine initiative established in 43 countries (Neville 2013), epitomises this development. In line with the desire to make physical activity and exercise a standard part of a disease prevention and treatment medical paradigm in the United States, its introduction was justified alongside the citation of a range of ‘costs’ associated with physical inactivity (e.g. 3.3 million deaths globally and \$102bn direct cost to the US healthcare system per year) (Jonas and Philips 2009), it entailed the instruction of clinicians ‘about how you can assist them [patients] in ... making those changes and choices’ (Jonas 2009a, p. 1), and essentially individualized exercise as ‘the one major factor affecting our health and longevity that is almost entirely under our control’ (Sallis 2009a, p. 3). The ‘exercise pill’ was claimed to have miraculous effects: ‘If we had a pill that conferred all the confirmed health benefits of exercise would we not do everything humanly possible to see to it that everyone had access to this wonder drug?’ (Sallis 2009a, p. 3; see Authors 2017 for an extended discussion of these themes).

Mobilising data from qualitative interviews, this paper exposes the contradictions that lie at the heart of (neoliberal) PAHP narratives such as *Exercise is Medicine*. Specifically, a fundamental flaw of this policy agenda is the conflation of PA, exercise and sport which stems from a failure to recognise the different social relations and health risks which each entail. The ideological commitments of PAHP advocates lead the holistic evaluation of participation outcomes to be disregarded and this, in turn, serves to obfuscate the net health cost-benefit associated with the respective activities. Uniquely perhaps amongst the primary targets of public health (i.e. reduced alcohol consumption, smoking cessation, safer sexual practices and healthier eating), PAHP has the capacity to create population *ill*-health through the statistically predictable side-effects of this form of ‘medication’. Moreover, the neoliberal rationalities which persuade receptive citizens to undertake physical activity actually *increase* the propensity to exercise in ways which entail a relatively high risk of injury. The outcome

of these processes is therefore twofold: individuals encounter specific, and in certain cases, extensive social and physical costs which threaten the sustainability of life-long physical activity; while Government health policies become self-defeating due to the weight of unintended outcomes they generate. This is the paradox of PAHP.

The paper begins by briefly sketching the relationship between PA, health and neoliberalism, before critically exploring the conflation of sport, exercise and PA in PAHP policies. Subsequently it focuses on how public health messages are internalised by receptive populations which engage in self-governance through proscribed health practices. While there is a wealth of sociological research on the role of gender and subcultures on the experience of sports injury (see e.g. Young 2004), and an emerging literature critiquing PAHP (discussed below), this paper is the first to empirically locate the motivations of individuals engaged in forms of sport and exercise, and the subsequent physical and social ‘costs’ that can occur as a consequence of injury, within the neoliberal *Exercise is Medicine* discourse. The paper concludes with a critical evaluation of the potentially radical implications these ‘costs’ have for the social and political economy in general and PAHP in particular.

Sport, PA and Public Health in a Neoliberal Climate

The public reception of PAHP messages is fundamentally framed by what Lupton (1995) terms the health imperative. While Foucault’s (1988, 1991) concepts of ‘governmentality’ and ‘technologies of the self’ offer critical analytical insight, theoretical contributions building on Foucault’s work, (for example Lemke 2001, 2002, 2012 and Rose 1992, 1996) have extended the use of such concepts in the continued transformation of social, political and economic conditions (e.g. neoliberalism). Governmentality conceptualises relations of

power, analysing these from the view of processes or ‘technologies’ that work to constitute practices of non-political sites (e.g. individual, family, school etc) (Rose and Miller 1992). Under conditions of neoliberalism this designates the shift in power relations through the apparent ‘rolling-back’ of the state in response to an increased individual autonomy, by ‘supplying’ a greater number of possibilities for individuals to actively participate and manage modes of subjectivity (Lemke, 2001). Action is therefore transformed into self-constituting practices and a reflexive ‘problem’ for the self, as the ‘responsibility for social risks such as illness, unemployment, poverty etc., and for life in society [are transformed] into a problem of “self-care”’ (Lemke 2001, p. 201).

The increased emphasis on consumer ‘choice’ and the wider economy of expert knowledge play a crucial role in this transformation. They provide a market for ‘risk-management’, legitimised through the ‘medicalisation’ of the PA-health relationship, which encourages active consumerist participation and management of the self, demonstrating entrepreneurial values of social productivity (Lupton 1995, Petersen 2000). The management of ‘lifestyle risk’ (e.g. obesity) is ‘directed at the regulation of the body’ (Lupton 1999, p. 90) and performs a moral function. Risk promotes increasing awareness of self-responsibility, rational control, measurement and calculation that speaks directly to the entrepreneurial consumer but, importantly, also functions as a strategy to segregate, normalise, and give social distinction to the bodies of those who consume health-enhancing behaviours (Lupton 1999). The self-management of ‘social success or failure’ is central to the neoliberal identity (Lemke 2012, p. 47) and exercise has an authenticity that other body altering techniques lack. As Sassatelli (2000, p.408) notes, ‘the idea of a fit body, useful to subjects in their daily lives and an immediate signal of self-control and adaptability, seems to have replaced the modest fatalistic hopes of health’. Consequently PAHP should be conceived of as a tool to promote

self-care which generates distinction for the neoliberal subject and encourages population responsibility of health.

Existing research has been critical of the construction of such policies, specifically: the political drivers of PAHP science (Bercovitz 2000); the use of rhetorical techniques such as nostalgia (Piggin and Bairner 2016); and the logical fallacy of equating exercise (which is largely expressive and potentially health-harming) with medicine (which is instrumental and health promoting) (Neville 2013). Others have identified specific effects, for instance: how fitness industry personnel evoke the health imperative in the surveillance and disciplining of bodies for commercial gain (Wiest et al. 2015); and triathletes' replication of neoliberal discourses in their conflation of health, body image and functionality (Bridel 2013). But as yet, no study has illustrated how these macro-social issues of policy formation influence the micro-social experience of sports injury. In our quest to do so, we next illustrate how the terminological subtleties which frame PAHP discourse concurrently include and preclude certain possibilities for self-management and thus align with neoliberal objectives of health policy (Rose 1996).

The Depiction of Sport, Exercise and PA in Public Health

It has long been recognised that there is a tendency in government policy to present sport and exercise as ontologically equivalent social practices (Waddington and Murphy 1998). While exercise and sport should be considered sub-categories of PA, it is heuristically useful to recognise a sport-exercise spectrum where different forms of activity are distinguished by different social relations. Briefly stated, while both sport and exercise frequently entail the fetishisation of the quantification of production (scores, times, distances), inherent to sport is a greater degree of organisational structure and competition which requires participants to

respond to the actions of others (making contact, changing pace/direction). A fundamental problem with conflating sport and exercise is that it implicitly suggests that people's motivations, and the health consequences, are undifferentiated across a diverse range of activities.

The development of a distinct PAHP agenda designed to address failings of sport for health promotion policies (Bercovitz 2000) appears in some respects to have merely extended this conflation. For example, a recent UK PAHP iteration, *Moving More, Living More*, urges citizens to both increase PA by 'using stairs and walking', and/or take part in organised sporting events such as a *Park Run*, a 'locally-led, volunteer-run activity which is helping to attract people into (often vigorous) physical activity' (Cabinet Office 2014, p.12). Yet while sport, exercise and PA all have potential health benefits, the seamless way the former is implied to equate to, or follow from, the latter is similarly problematic. Despite epidemiological research indicating that 12.9% and 7.2% of London Olympic athletes respectively sought medical attention for a new injury or illness during the games (Engebretsen et al. 2013), then-Prime Minister David Cameron endorsed this policy, saying:

The country was captured by the spirit of the 2012 Games, inspired by our sporting heroes and their many achievements. We now need to build on this, creating a nation that's physically active and improving their health for the longer term.

While *Exercise is Medicine* documentation is characteristic of the policy re-focus on PA (Bercovitz 2000), both logically and in practice it reproduces this conflation. Primarily a form of preventative medicine, *Exercise is Medicine's* prescriptions for exercise logically lead to more vigorous forms of activity because the recommendation that activity should induce slight breathlessness (to the degree that one can talk but not sing) will require ever greater levels of exertion to achieve the same physical outcome. As Jonas (2009a, p. 7) notes,

‘being a regular exerciser is like being on a never-ending journey ... no final destination is ever reached’. Practically the documentation also encourages progression to more rigorous forms of exercise. The *Clinicians’ Guide* (Jonas and Phillips 2009), for instance, contains an explicit statement that ‘the more intense the activity, that is the more aerobic it is, the more benefit there is to be gained from it’ (Jonas 2009a, p. 11), and a chapter on ‘Choosing the Activities, Sport or Sports’ (Jonas 2009b). Phillips et al. (2009a) specify a dose-response relationship between exercise and health up to a threshold of 3,500-4,000 calories or 7-10 hours of exercise per week and suggest that joining a gym is a good way to facilitate *continued* PA. With Global Partners including a gym franchise, gym equipment manufacturer, and sports goods manufacturer *Adidas*, and the explicit call to ‘merge the fitness industry with the healthcare industry if we are going to improve the world’ (Sallis 2009a, p. 4) the links between *Exercise is Medicine* and sport are substantiated.

The overt positioning of PAHP as ‘medicine’ creates more significant and wide-ranging problems for the sport-PA conflation because of the significant proportion of the population who suffer sometimes prolonged physical injury which stems from sport and exercise participation rather than, crucially, simply PA. Quantification of the incidence of sport-related injury (SRI) is wrought with methodological problems. Moreover the paucity and relative age of data, especially compared to that evidencing the health benefits of exercise, illustrates the essentially political nature of epidemiological endeavours (Malcolm 2017). But putting such caveats aside, there is indicative evidence that the current cost of SRIs is far from negligible. Estimations of the proportion of national populations incurring SRIs each year range from 3.1% in Germany (Schneider *et al.* 2006), to 5.9% in Australia (Egger 1991), 8.1% in England and Wales (Nicholl *et al.* 1995), 10.1% in Canada (McCutchen et al. 1997) and 18% in the Netherlands (van der Sluis *et al.* 2003). The most comprehensive British study to date (in terms of sample size and survey design) concluded

that in England and Wales there are 29.7 million SRIs per year. While the survey confirmed that the highest incidence of injury occurs in ‘vigorous sports’ that allow contact (such as football), almost 45% of SRIs are defined as ‘intrinsic’ (i.e. entailing no outside object or person) and frequently derive from exercise activities such as running, gym use and ‘keep fit’.

Despite such evidence, PAHP documents, both in their text and visual images, instruct citizens to engage in a range of sports without taking into account the epidemiologically estimated injury risks. Indicatively, the UK PA guidelines for adults aged 19-24 identify the physical consequences of taking part in vigorous intensity PA (e.g. organised sport) compared to moderate intensity PA (e.g. brisk walking) as being that individuals will ‘get warmer and breathe much harder and their hearts [will] beat more rapidly, making it more difficult to carry on a conversation’ (DoH 2011, p.1). They make no reference to the heightened statistical probability of incurring physical injury. *Exercise is Medicine* literature replicates these trends in either explicitly ignoring or significantly underplaying the prevalence of SRI. For instance, injury is described as the product of individual actions caused, e.g., by ‘trying to go too far, too fast, too frequently’ (Jonas 2009a, p. 11). Consequently injury is deemed individually avoidable, and the recommendations for avoiding ‘intrinsic injuries’ (to muscles, tendons, etc.) ‘is simply not to overdo it’ while injuries caused by external events can be avoided by being ‘aware of your surroundings’ (Phillips et al. 2009b, p. 96).ⁱ While this portrayal contrasts with the indicative evidence relating to SRIs, it is wholly consistent with the neoliberal positioning of health as a consequence of judicious, individual investment choices (Kenny 2015). Ironically the fourth *Exercise is Medicine* Global Partner is DJO Global, who sell a range of healthcare technologies including braces and freezing products for joint injuries and offer a range of surgical joint replacements.

Method

This paper utilises a qualitative methodology and an emergent research design derived from an interpretivist paradigmatic position and a transactional and constructionist epistemology whereby the interpretation of data is based on hermeneutical techniques and grounded within the subjective experiences of participants' social worlds (Guba and Lincoln 1994, Denzin and Lincoln 2000). In line with this approach, semi-structured interviews were utilised as the primary data collection tool. The emergent research design was important given the relatively broad focus on the cultural experience, formation and consequences of exercising practices and therefore the research strategy was a reflexive process of inductive and deductive blending. For instance, whilst the initial focus of the research was on injury experience of everyday exercising populations, the issues relating to and contradictions with, PAHP were pertinent throughout the data collection process, becoming a central focus of the analysis.

Following appropriate ethical approval, 20 participants were recruited using purposive sampling techniques (Creswell 2013). Sampling began with contacting local sports club members and placing study details on clubs' virtual and physical noticeboards. Further recruitment was made by visiting sports club on training evenings to speak directly to interested participants and via snowball sampling. The goal was to recruit study participants who engaged in a range of sport and/or exercise activities on a regular basis. Therefore, the study inclusion criteria were open-ended, aligning with the emergent design and in regard to socio-economic background (occupation), gender, type of injury and sport played, but not age (with all participants required to be 18 years or older).

Whilst participants were spread across a variety of ages (20-56) and relatively evenly split between females and males (11:9), the sample exhibited a middle-class bias with many possessing higher education qualifications, and thus evidenced the well-documented link

between physical activity and socio-economic status (Eime et al. 2015). Although the sample incorporated participants from a wide range of sports, notable absences include football and racket sports. This stemmed from a lack of co-operation by some volunteer sport clubs to respond to initial approaches, perhaps due to their administrative limitations. The demographic characteristics of interviewees are illustrated in Table 1.

[Table 1 about here]

Semi-structured interviews took place at mutually convenient locations with the majority taking place at participants' homes or coffee shops. Prior to interview, participants were given a further explanation of the study and made aware of their rights to anonymity and withdrawal, before signing a consent form. Interviews lasted from 20 to 120 minutes and were audio-recorded to provide a professionally transcribed written (verbatim) record for analysis. Interview questions were structured around three topics. These included participant biography/background; motivation for uptake and experience of participation in sport and exercise, and experience of injury and related treatment. Fieldnotes were taken during the interviews in order to note interesting issues that emerged during the interview process and adopt a reflexive positioning or self-awareness of interview dynamics (Finlay and Gough 2003, Thomas and Magilvy 2011). This enabled new topics such as motivation for uptake and continued participation in sport and exercise to become increasingly dominant within interviews. Whilst interviewees were not directly asked about *Exercise is Medicine*, the motivations expressed 'spoke' in particular, nuanced ways to such themes. Consequently, the research aims developed and focus on this aspect of the participants' experiences became more central.

Post-transcription, interview data was subject to a thematic analysis. Thematic analysis makes inferences from interview data to the contexts of their use based on a coding

procedure that identifies dominant thematic categories from narrative units (Krippendorff 2013). The coding procedure employed in the analysis of the interview data was based on thematic distinctions deductively informed by the research context. The process included the researchers' careful reading of the interview transcripts and familiarisation with interview data. A dialogue then led to the development of broad conceptual tags under which thematic distinctions or units could be coded (Elo and Kyngäs 2008). Following this, each interview transcript was taken individually and thematic distinctions were identified that typified salient meanings illustrative of the conceptual tags. Once complete, the thematic distinctions were collated and ordered into a table format that displayed the data of each theme in one instance. This allowed for cross-checking of interview data in order to compare the representation of themes across the transcripts. An independent colleague was utilised as a 'critical friend' in the analysis process to encourage theoretical reflection and consider alternative perspectives and interpretation of the salient meanings. The dominant themes relevant to the analysis presented here are the (neoliberal) imperative of the social productivity of sport, and the injury experience (including sub-categories identified as social and economic costs of injury). Pseudonyms are used to report the data.

Findings

Exercise, Preventative Medicine and the Productive Self

Interviewees clearly concurred with and fairly uncritically reproduced the broader PAHP discourse. Mike, who participates in road cycling and attends a gym was particularly explicit in this, stating that 'I feel good when I train and I think there is a strong link between good physical health and good mental health'. But because exercise, if medicinal at all in this context, is a form of preventative medicine, and because by definition it must be a 'never

ending journey' (Jonas 2009a, p. 7), participants continually sought to invoke other markers to indicate that they had taken the 'true, permitted, and desirable' health choice (Rose 1996 p.153).

In this respect interviewees seemed particularly influenced by promises that PA led to of an improved self that concomitantly gains 'huge social and economic benefits' (Cabinet Office 2014): 'increased energy levels'; 'workplace productivity'; and reduced absence from work (PHE 2014). Thus Mike continued by inferring a progressive improvement of the self and saying, 'I feel that [exercise] benefits me in lots of ways really, especially with general life and work'. Similarly Amy projected the perceived holistic benefit of her relationship with sport/PA:

I'm the type of person that ... always likes being on the go anyway and I always find like ... doing exercise especially going for a run, I just think it makes you feel really good, you feel like you've achieved something in the day. I was a member at the gym and I'd go early in the morning, you know, have a really good workout in the morning and then have a shower and crack on with the day and feel like, you know, more set up for the day. (Amy)

Explicit in interviewees' accounts were both the striving for achievable (but illusive) goals, and the explicit comparison with similarly neoliberal work practices and cultures:

I'm used to setting goals in my exercise...I set myself goals for work as well... and I just wasn't as focused and wasn't as productive [with injury] because I couldn't do the activities I normally do. (Jessica)

Jessica's account reflects the assembling of a personalised exercise strategy designed to manifest enterprising corporeal conduct through a focus of quantification. In this respect

interviewees mirrored the motivations of Bridel's (2013) triathletes who assessed health in terms of functionality and, specifically, completing competitions. Consequently, participation in sporting activities, particularly those that can provide a form of quantification (e.g. running), becomes a benchmark for 'achievement', the attainment of which creates the expectation of future improvement and facilitates resilience when such promise is unfulfilled. This is perhaps inevitable because the 'achievement' of health is so abstract when exercise is pursued as preventative medicine, yet neoliberalism gives primacy to the tangible, quantifiable demonstration of productivity.

Thus locating PAHP in a neoliberal paradigm means that motivations for participation in sport and the health goals of PAHP become misaligned. For instance, the desire to 'achieve' and 'better oneself', illustrated in Mike and Amy's claims (above), makes the personal competition, quantification or measurement of progress inherent to sport highly attractive relative to the largely invisible health benefits of physical activity. Unlike sport and exercise, 'using stairs and walking' (Cabinet Office 2014), involves little opportunity for tangible productivity or visible return on one's health investments. At most, it provides distantly deferred evidence of a neoliberal 'self-care'. Accounts given by participants were reflective of this:

But it's all competitive so we're all like I can beat you and all that sort of stuff... it's about actually finishing it, being able to compete and finish it. I am competitive so deep down I'm thinking I don't want to let myself down. (Lucy)

I can start building it up [running] but it takes me a while. For example if I use the 5K Park Run as a benchmark, my best ever time was 26 minutes. Last month I got it down to 28 after being out [injured]. (Mark)

It's challenging and that's what I kind of like it....you have to be able to do 25 laps in 5 minutes and it gives you something to aim for (Danielle)

Another participant described buying a cycle machine to use in the home during busy periods at work, allowing him to keep, what he perceived as, a 'measurement' of his fitness through the quantification of power output the cycle machine provided. John described

The reason my wife let me get the turbo (cycle) in the front room was so I could and actually start seeing the increase in power...and I have to say that was so satisfying to actually just see the output.

Where sport and exercise provided competition or an explicit marker of improvement, it became a means to demonstrate moral self-worth and thus facilitated social distinction. Claims to 'not letting myself down' reflect the importance of the entrepreneurial action bound up in a 'self-care' that drives the focus of social success. The converse could be found in comments which relayed the guilt of being 'sat around for a couple of days ... [when I] didn't actually feel ill' (Thomas), and turning into 'a bit of a slob' as enforced inactivity leads to weight gain (Laura). In similarly claiming that 'I do enjoy the physical side of things and keeping myself trim. It helps to keep the pounds off and things like that. I keep myself motivated rather than being a couch potato at home', Daniel demonstrates how this narrative provides a governance strategy that 'piggybacks' on the more widely established discursive construction of unhealthy bodies as socially problematic - risky and immoral, framing them as 'fat', 'lazy and not willing to commit to change' (Murray 2005, p. 154-155). Daniel's claim illustrates inactivity as an issue of personal responsibility (Foucault 1988) which becomes of tangible social distinction through the apparently self-controlled, 'trim', socially valued body. This positioning of failure (through a perceived lack of social productivity) alongside personal accountability is central to participants' motivations, strengthening and

constituting the importance of this neoliberal practice (Lemke 2001). This is evident in Mark's explicit reference to the importance of the means to measure performance and thus to provide a 'benchmark' against which future self-improvement can be assessed.

The attitudes interviewees expressed towards exercise illustrate how the logics of neoliberal healthcare shape contemporary iterations of PAHP policy such as *Exercise is Medicine*. Because sport, rather than PA, aligns with neoliberal ideologies of productivity, the 'responsible' citizen is particularly predisposed towards the former. It may be that awareness of this continually shapes the sport/PA conflation in PAHP policy, but adherence to this approach may simply and unthinkingly stem from and perpetuate the longstanding sport-health ideology (Waddington and Murphy 1998). Either way, this reproduction provides a much wider social and economic problem for individuals receptive to PAHP discourse because the risk of sustaining physical injury is considerably higher in more vigorous, physically exhausting or competitive activities. This leads us directly to consider the potential 'side-effects' of the use of exercise in a medicinal sense.

The Side-Effects of Exercise as Medicine: injury experiences

The propensity for sport/PA to lead to injury outcomes, and the far-reaching consequences of such injuries, were widely illustrated in the interview data. The most common social 'cost' incurred by participants was the experience of what has broadly been termed biographical disruption (Bury 1982), manifest in the inability to maintain the neoliberal identity of a good, moral and healthy citizen in the face of physical injury. With social and moral distinction of this identity logically dependent on the negative categorisation of other, non-active, 'unhealthy' bodies, any *inability* to exercise impacts far beyond the immediate 'symptoms' of

discomfort, disturbance and social dislocation. Mike revealed the self-perpetuating decline manifest in the experience of the injured self in the context of the neoliberal health imperative:

It's frustrating... you find yourself in a little bit of a spiral, I mean in the evenings I slump on the sofa, you know I feel rubbish... I have put weight on. You eat all wrong and as I say, I think getting into a little bit of a spiral. (Mike)

This was further illustrated by Sophie whose injury restricted her from exercising, resulting in restricted governance over her physical appearance and a diminished sense of self-worth.

I became far snappier with everybody because I couldn't channel anything. I was going from exercising four times a week to absolutely nothing. I was quite upset that I was so restricted. It did affect a lot of things like being conscious of my body. (Sophie)

Consequently interviewees had frequently attempted to continue exercising even when they were aware that to do so entailed heightened risk of further injury. For instance Sarah, who had been running for many years, recalled, 'the week before I tore my calf muscle I felt a bit of pain in my knee ... but as usual, that's what I normally do if I felt pain or aching and you just don't think about it much - "just keep going" - and I did'. The most desperate (those who couldn't simply carrying on by taking painkillers, etc.) exhibited neoliberal consumerist strategies being proactive in prognosis- and treatment-shopping (Lupton 1999), extolling various healthcare workers to sanction their intentions to resume sports participation, or getting cortisol injections as a 'short term fix' to enable them to 'continue to play'. Re-injury or injury exacerbation was therefore a frequent occurrence: 'Every week I seem to tweak or just tear my hamstring ... [I'm having] constant problems with my legs that are just getting nowhere fast at the moment' (Mark). The seasonal nature of their activities temporally compressed competitive (i.e. meaningful, productive) opportunities and led enforced cessation to be inconceivable and when healthcare providers recommended taking twelve

weeks off from sport, the response was that this was ‘just not practical’ (James). Exercisers find it difficult to comply with the advice ‘not to overdo it’ (Phillips et al. 2009b, p. 96) because this fundamentally contradicts the broader neoliberal logic of production.

Because the act of exercising is a form of self-care and thus has a moral dimension, the social and economic costs to those who suffer more severe or chronic injury, can feed into each other in problematic ways and a ‘spiral’ of behaviours can result in more extensive problems to the individuals’ social well-being. For example, Matthew sustained a musculoskeletal injury while playing cricket that led to complications including deep vein thrombosis: ‘I just generally feel down and depressed. I’m an anxious person, but I was quite anxious because I wasn’t sure what was going to happen ... I was in hospital every third day ... it takes over your life’ (Matthew). Injury sustained from sport not only resulted in physical limitations and social costs but, ironically given the centrality of reduced work absenteeism to the rationale of PAHP (e.g. PHE 2014), economic costs due to workplace absence or reduced workplace productivity. For Lisa, the physical demands of her occupation left it impossible to work for a significant period of time:

I had 12 weeks off work and I only had started this job ... in November. I couldn’t get there as I couldn’t drive for 3 months so it was really affecting work. When I went back the problem was being able to stand on it during the day, they [work] said if you work half an hour and sit down for some time that’s fine... its eight hours a day on your feet so you can’t really get round it. (Lisa)

The economic costs incurred due to injury could be significant - for example, Lena’s injury led her to have 10 months off work during which she, ‘didn’t even get 6 months’ pay. I think I got four of five week’s pay and it was statutory after that, so it was tough financially’ – but are lost in the health cost-benefit analysis on which PAHP is justified because of: a) the

absence of a formal, distinct category for SRI in the International Classification of Diseases (Kisser and Bauer 2012); and b) an apparent disinterest in trying to quantify these phenomena.

But where acute injury becomes chronic, a relatively brief period of disability develops into prolonged physical restriction, and subsequently an even longer period of diminished participation in sport. Daniel epitomised the sense of desperation this could create,

It was immense frustration the fact that I couldn't do even the simple things to build the strength up to keep ticking over. If you can't do one sport, fine. You could aqua jog if you can't run. Do you know what I mean? There's ways of doing something but to find I couldn't even flipping bike, I couldn't run, I couldn't swim. I couldn't really do anything. (Daniel)

Equally, this quote illustrates how Daniel's spectrum of potential solutions was structured by an awareness and acceptance of PAHP. For Daniel therefore, and those similarly invested in the neoliberal quest for health, a normal outcome of being physically constrained from taking part in sport/PA through injury was actively choosing to withdraw from exercise entirely. Sophie, conscious of the inherent costs of exercise that PAHP documents largely ignore, said 'I have ditched going to the gym with my ankle, I couldn't get the most out of the membership, so I kind of stopped it'. The 'spiral' of sport injury was physical impairment, exercise experimentation, and cessation of health-promoting activity.–

However, perhaps most significant of all was the way these injuries impacted upon the *identity* of those receptive to the neoliberal PAHP agenda. For while the physical conditions that interviewees experienced could rarely be classified as catastrophic (perhaps only for Edward and Lucy who fractured vertebrae and a pelvis respectively, and Matthew whose career as a pilot was jeopardised), across the sample there was a sense that sports

injury entailed a potentially permanent withdrawal from exercise and a fundamental re-assessment of the self:

I just think I'm limited, I just, I need to accept I will be limited forever and still feel pain on it. (Lisa)

It affects absolutely everything and there's a chance that it will never be 100%. I can't go for a run, I can't ever cycle. (James)

At the moment I can't see a point in the future where I'm going to be 100% fit. I think I'm always going to carry an injury at least like somewhere in my legs ... I just don't see any light at the end of the tunnel. (Daniel)

The depth of feeling and the lack of alternatives or coping strategies stemmed from the broader neoliberal health imperative (Lupton 1999). These injured individuals were emotionally invested, actively aligned and experientially engaged with the symbolically privileged identity of the healthy citizen venerated in PAHP (Lemke 2001). Just as the benefits of sport, exercise and PA are portrayed as holistically impacting on 'general life and work', so injury has a holistically negative impact on life per se. As Marcus put it, 'I just lost everything – I lost the routine and didn't really know what to do with myself'. Injury deprived people of the sense of autonomy which the neoliberal rolling back of the state promises the population (Rose and Miller 1992). Sophie described her experience of trying to maintain control by attending training sessions as normal, but doing her rehabilitative exercises rather than participating in full:

Everyone was amazing. All the girls were super supportive ... [but] whilst I was doing my little exercises and they were playing volleyball just next to me ... I had thoughts such as 'I hate you all' and 'you don't know how lucky you are because you can jump,

and you can run, and you can move' ... all that loneliness, it was all in my head.
(Sophie)

Injury was experienced as particularly traumatic because it (frequently) necessarily rendered a previously achieved social worth fundamentally unobtainable, potentially forever. The changing relationship with the social networks in which exercisers had previously been enmeshed, made this apparent 'failure' abundantly clear. The frustration was compounded by the discourse that individualises PA as 'almost entirely under our control' (Sallis 2009a, p.3) and therefore a failure of self-governance. The depth of feeling was not simply indicative of enforced changes to leisure time – or as Martha stated 'Everything I enjoy doing I just couldn't do' – but because one's 'prescription' for a healthy life had been withdrawn and, with it, one's status as a responsible neo-liberal citizen (Lemke 2012).

Conclusion

The ubiquity of PAHP programmes such as *Exercise is Medicine* means that few people are unaware of this health promotion agenda. Many will also be aware of the foregrounded rationale of reducing the role of, and cost to, the state. Less explicit is a form of bias accounting which leads to the prominence of certain costs (e.g. the direct healthcare and indirect social costs generated by physical inactivity) and the obfuscation of others (e.g. the direct costs of exercise participation and the direct and indirect costs generated by SRI). Combined these processes represent a somewhat subtle, neoliberal, undercurrent that shifts responsibility for health risk onto the individual and promotes the social value of preventative self-care. But if exercise is a 'miracle cure' (AMRC 2015), and the 'exercise pill' does 'have miraculous effects' (Sallis 2009a, 2009b), this is not apparent to the majority of the participants because exercise does not address a pre-existing or known condition.

Moreover, neoliberal forms of governmentality such as the promotion of self-care lead individuals to value a type of productivity which can better be achieved through participation in sport and exercise (which can be quantified and measured) rather than PA. A logical correlative of this is that PAHP ultimately encourages people to participate in activities that entail a much greater risk of physical, sometimes chronic, injury. Studies which have shown that those who experience SRIs often show little interest in pursuing alternative, less vigorous and thus potentially less ‘risky’ forms of PA (Andrew et al. 2014), illustrate the degree to which certain types of PA take on a certain morality and are valued because they entail degrees of social distinction. What is equally revealing therefore, is that one aspect of PAHP which exercisers did not appear to accept was that *any* PA was worth pursuing for its health-promoting benefits. The ‘all or nothing’ attitude of injured exercisers suggests that few literally believe that exercise is medicine, but rather are drawn to the assemblage of social benefits – moral worth, responsible citizenship, distinction – with which it is associated under neoliberal conditions.

Consequently, the neoliberal rationale that positions sport/PA participation as having significant economic benefits remains unproven as the evidence base: a) foregrounds the benefits whilst obscuring the economic, social and emotional costs; and b) ignores the self-defeating role of PAHP in limiting the capability of citizens to comply. The resultant exercise cessation and workplace absenteeism represent unintended outcomes – the side-effects of the ‘exercise pill’ - which makes such policies ultimately unsustainable. Existing cost-benefit analyses indicate that if the entire population adhered to PAHP messages, and sport and exercise participation grew proportionately, the cost of treating sports injuries would likely exceed predicted savings (Kisser and Bauer 2012).

If PAHP is to conceive of an ‘exercise pill’ it must be recognised that this is an almost entirely unregulated form of ‘medication’. The prescription is imprecise, the side-effects

disregarded, and the practice of self-medication only just emerging. However, through the qualitative analysis of exercisers' experiences we see how the broader neoliberal logics which underpin the generation of this form of governmentality create the propensity to exercise in particular ways; in ways that correlate with the neoliberal primacy of economic productivity and which are, ultimately, incongruous with the health orientation of medicine.

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ⁱ The exception is in relation to cardiac complications and in this respect a large proportion of potential exercisers are deemed to require medical or fitness professional supervision.