

## Sport, Health and Medicine

Parissa Safai and Dominic Malcolm

### Overview

- Problematising the assumption that ‘sport is good for one’s health’
- Distinguishing the benefits of physical activity
- The risks of sport
- Sports medicine and the provision of healthcare to athletes
- Conclusion

Within the past two decades, the sport for development and peace (SDP) movement has gained heightened attention and acceptance from major international governmental and non-governmental organisations including Right to Play (RTP), the World Health Organization (WHO), the Commonwealth and its Commonwealth Games Federation (CGF) and the United Nations (UN). Many of the SDP initiatives that emerge from these bodies highlight the importance of sport and physical activity for improving the health of marginalised individuals and communities around the world. Sport, in fact, is often touted as an effective vehicle for health promotion with direct physical, social, and psychological benefits from actual participation as well as indirect benefits as a platform for non-violent interaction/connection, communication and awareness building, health education and social mobilisation (Right to Play, 2008). Kay and Dudfield’s 2013 report, *The Commonwealth Guide to Advancing Development through Sport*, outlines in detail how sport and physical activity have been effective in the fight against communicable diseases (e.g., HIV/AIDS, tuberculosis) by providing popular and informal places for preventative health education.

The UN's website on SDP is replete with reference to sport, physical activity and play as low cost and high-impact cross-cutting health tools and such a fulsome embrace of sport is not surprising given the UN's early recognition of sport and physical education (vis-à-vis UNESCO in 1978) as a "fundamental right for all" (<http://www.un.org/wcm/content/site/sport/home/sport>). In fact, the UN designated 2005 as the International Year of Sport and Physical Education (IYSPE) in recognition of sport's ability to contribute positively to healthy human, and in particular childhood, development. In promotional materials about the IYSPE, the United Nations General Assembly (International Year of Sport and Physical Education, 2005) identified the multiple relationships that are thought to exist between sport and health:

Sport and play improve health and well-being, extend life expectancy and reduce the likelihood of several non-communicable diseases including heart disease. Regular physical activity and play are essential for physical, mental, psychological and social development. Good habits start early: the important role of physical education is demonstrated by the fact that children who exercise are more likely to stay physically active as adults. Sport also plays a major positive role in one's emotional health, and allows ... valuable social connections, often offering opportunities for play and self-expression. (7)

Such positive comments resonate with our commonplace assumptions about sport's power to improve our health. However, a closer examination of these statements in light of existing research on the relationship between sport and health reveals a number of concerns that problematise the conventional wisdom that 'sport is good for one's health'. This chapter explores the relationship between sport and health and, in particular, focuses on the ways in which participation in sport contributes to increased rates of morbidity and mortality. The central argument here is that while sport may have the potential to enhance and augment health,

it is currently structured in ways that foster the production and reproduction of health compromising norms and behaviours. Divided into three parts, this chapter first draws attention to some of the positive health associations that accompany increased participation in non-sport forms of physical activity. The second section focuses on the negative associations between sport and health in an attempt to demonstrate how the structure and production of sport can facilitate ill health, while the last section of this chapter explores the provision of therapeutic care to athletes and, in particular, the development and implications of the medical/paramedical field of practice known as sports medicine.

### **Distinguishing the benefits of physical activity**

One of the most significant challenges to our understanding of the negative relationship between sport and health resides in the ways in which sport is often discursively wrapped up with and within other types of physical activities. In the UN's descriptions of sport – both with regards to the SDP movement and also the IYSPE – 'sport', 'physical activity', 'physical education', 'exercise' and 'play' are used interchangeably and loosely blended together. Such a discursive tactic is not confined to just the UN. In recent years, cities hosting the Olympic Games have rallied behind the notion of sport for health without adequately unpacking such concepts as 'sport', 'physical activity' or even 'health' (see de Lisio, Derom and VanWynsberghe, forthcoming). The legacy goal of the London 2012 Olympic Games to 'inspire a generation' and engage a million more people to do more physical activity as a mechanism and measure of improving the health of the nation (DCMS, 2007), is a clear example of this conflation and the widespread failure to consider the differences between each form of activity. Sport is a physical activity; sport is often used in physical education curricula; it incorporates exercise; and may even involve an element of play. However, this does not mean that sport is the same as physical education, exercise or play. The conflation of sport with

physical education, exercise and play obscures its differences in intensity, frequency and duration of participation from other forms of physical activity. We must be cognisant of these differences since the institutionalised, competitive, rigorous and complex nature of sport has markedly different consequences for health than physical education, exercise or play. As Waddington (2000: 20) fittingly notes:

In short, to suggest that a 30-minute gentle swim three times a week is good for one's health does not mean that running 70 miles a week as a means of preparing for running marathons is good for one's health in an equally simple or unproblematic way.

Such resounding political commitment from major international sport and non-sport organizations to the promotion of physical activity is admirable and welcomed; however, the loose use of sport in the wholesale promotion of the positive health benefits of physical activity is problematic. In order to better understand the relationship between sport and health, we must firmly distinguish between sport and other forms of physical activity.

In our efforts to examine critically the consensus that 'sport is good for one's health', we cannot overlook the positive health benefits associated with some, specifically mild to moderate, forms of physical activity. A survey of press releases, publications and policy documents from such organisations as WHO, Health Canada, the Public Health Agency of Canada, the United Kingdom's Department of Health, and the United States Centers for Disease Control and Prevention highlights the ways in which many national and international organisations (and initiatives) echo one another in their support and promotion of 30–60 minutes of moderate physical activity most, if not all, days (e.g., Department of Health 2011). There is compelling evidence from all over the world that supports the physiological and psychological benefits of regular rhythmic exercise and physical activity for people of all ages. Such health gains include improved quality of life, improved self-esteem, increased strength and flexibility, increased energy, improved mental health and reduction in stress, and continued independent

living in later life (Alwan, 2011). Two separate recent reports, WHO's Report on Non-Communicable Diseases (Alwan, 2011) and the Lancet Physical Activity Series Working Group Report (Lee et al., 2012), estimated that physical activity could reduce mortality by 20-30% and save 1.3 to 3.2 million lives each year. In recent years, exercise has been increasingly deployed in the fight against chronic disease with evidence to support that exercise may be just as good as pharmaceutical interventions and should be included as a comparison when new drugs are undergoing development and clinical trials (Naci and Ioannidis, 2013). A growing *Exercise is Medicine* initiative – initially founded by the American College of Sports Medicine and the American Medical Association – is working to encourage physicians and other healthcare providers to routinely assess, prescribe and counsel patients in physical activity (see <http://exerciseismedicine.org/>).

There is also significant evidence supporting the risks associated with physical inactivity such as increased risk for cardiovascular diseases including stroke and hypertension/high blood pressure, osteoporosis, depression, adult-onset diabetes, some forms of cancer, and premature death and disability. The *Global Recommendations on Physical Activity for Health* report (World Health Organization, 2010) noted that physical inactivity is now the fourth leading risk factor for global mortality and is the principal cause for a variety of major non-communicable diseases (NCDs) including breast and colon cancer, diabetes and ischaemic heart disease. Given that NCDs account for nearly half of the overall global burden of disease, this report rings the alarm for scientifically-informed, population- and age-based recommendations, policies and programmes that counter physical inactivity. While for some years scholars have been turning a critical eye towards the social construction of fat, fatness and the 'obesity epidemic' (e.g. Gard and Wright, 2005), to some extent this preoccupation, or rather panic, is being replaced by concerns over a 'global physical inactivity pandemic' (Kohl et al. 2012; see Piggin and Bairner, 2014, for a critique). In a research brief heavily laden with martial

metaphors, Booth and Chakravarthy (2002: 2; see also Lees and Booth, 2004) go as far as to coin the term ‘Sedentary Death Syndrome (SeDS) to categorize the emerging entity of sedentary lifestyle-mediated disorders that ultimately result in increased mortality. We believe this term is appropriate to describe the nature of the war we are fighting’.

In addition to the epidemiological evidence supporting the physiological and psychological benefits of mild to moderate forms of physical activity, there is also a growing volume of data on the economic benefits of increased participation in exercise and physical activity for national economies and health care systems (e.g. Katzmarzyk and Janssen, 2004; Mirolla, 2004). In Canada, sport spending in 2004 constituted 1.2 per cent of Canada’s GDP (Bloom et al., 2005), a significant impact on the national economy. Furthermore, Janssen (2012) estimated that direct (i.e., medical) and indirect (e.g., lost productivity) costs of physical inactivity had reached \$6.8 billion or 3.7% of all healthcare costs in Canada. The UK Government has estimated that physical inactivity costs the UK economy £5.6bn per year due to work absenteeism and that a total saving of £1.2bn (including both direct and indirect costs) could be achieved by just a 1% reduction in inactivity in the UK (Cabinet Office, 2014). These data confirm that physical inactivity is a major contributor to chronic disease and healthcare spending and are in line with statistics on the healthcare costs of physical inactivity from other countries around the world including Australia, Switzerland and the United States.

The arguments and staggering figures in favour of regular moderate physical activity are quite persuasive, but not immune to scrutiny. Indeed, the rhetorical nature of the debate tends to obscure the fact that, in many nations, life expectancy is higher than it ever has been and this, in itself, is a major cause of rising healthcare costs. Further, and more importantly from a sociological point of view, such ‘numerous, almost miraculous claims for the benefits of physical activity’ (Donnelly and Harvey, 1996: 5) frequently fail to recognise the structural barriers to participation for disadvantaged and marginalised populations (e.g. low-income

groups, minority racial/ethnocultural groups, the elderly, women and people with disabilities). Physical activity does not exist in a social vacuum nor is it a panacea for all health problems (e.g. see Smith et al., 2004). Canada's 'Active Living' initiative encourages the integration of physical activity into daily life in ways that meet people's schedules, interests and abilities, but does so in ways that neglect broader social determinants of health and which '[absolve] neo-conservative governments from committing additional resources into fitness and health' (Bercovitz, 2000: 35).

Social determinants of health (SDOH) are social and economic conditions that influence the health of individuals and communities. A wealth of research on SDOH, as summarised by Wilkinson and Marmot (2003), provides evidence that: health follows a social gradient; stress damages health; the health impacts of early development and education last a lifetime; poverty and social exclusion cost lives; stress in the workplace increases the risk of disease; job security improves health; unemployment causes illness and premature death; social supports and supportive networks improve health; alcohol, drug and tobacco use are influenced by the social setting; healthy food is a political issue; and healthy transport means walking and cycling and good public transport. Other basic determinants of health, such as genetics, interact with SDOH to present a broad overview of why some individuals and communities are healthy while others are not (Evans et al., 1994). SDOH are directly related to the ways in which resources are organised and distributed among members of a society, and all the determinants identified above impact and influence participation in physical activity and, in turn, are impacted and influenced by, in varying degrees, participation in physical activity (cf. Donnelly and Harvey, 1996). Marmot (2004) raises a pivotal question when he asks: 'What good does it do to treat people's illnesses and then send them back to the conditions that make them sick?' We can ask a similar question with regard to physical activity: 'What good does it do to encourage brisk walks around the block to improve health when a person is struggling

financially to survive or is marginalised because of their age/sex/race/disability or lives in a polluted neighbourhood and works in unsafe conditions that makes them sick?’ This question is raised here as a polemic to stimulate much needed discussion on broader social determinants of health and their relationship to and with participation in physical activity.

Furthermore, and as noted above, even though there is compelling evidence supporting mild to moderate physical activity, in practice, physical activity is often operationalised in sport terms even though, as will be discussed below, the evidence to support the health benefits of sport is tenuous. An excerpt from the Report from the United Nations Inter-Agency Task Force on Sport for Development and Peace (2003: 6–7) exemplifies the continued and misleading overlap between non-sport forms of physical activity and competitive sport:

In Canada, it is estimated that *physical activity increases productivity* by the equivalent of \$513 (CAN) per worker per year, resulting from reduced absenteeism, turnover, and injury, as well as an increase in productivity. Therefore, *sports have significant economic benefits* for business, communities, and nations (emphasis added).

Based on available research, ‘a 30-minute gentle swim three times a week’ can contribute to reduced absenteeism, turnover and injury but this does not mean that ‘running 70 miles a week as a means of preparing for running marathons [can do so] in an equally simple or unproblematic way’ (Waddington, 2000: 20). In fact, participation in organized, competitive sport does increase one’s risk of experiencing injury. For instance, drawing on 2009-2010 Canadian Community Health Survey (CCHS) data, Billette and Janz (2011) highlight that an estimated 4.27 million Canadians aged 12 or older suffered an injury severe enough to limit their usual activities and that 35% of those injuries occurred during participation in some type of sports or exercise. In England and Wales, there are an estimated 29.7 million sports injuries per year in (Nichol et al. 1995). Sport-related injuries are estimated to account for 10% of all acute injuries treated by hospital accident and emergency departments (Harland 2005).



In addition to a decline in participation rates and the subsequent loss of associated health benefits, the consequences of such injury rates are significant for healthcare systems in a variety of ways including access to and usage of acute and long-term healthcare facilities, services, and healthcare providers. Smartrisk (2009) estimated that direct and indirect costs associated with sport-related injury reported to health care professionals in Canada in 2004 to be approximately \$188 million. This is considered a conservative estimate given the fact that not all sport-related injuries are treated by clinicians or within the healthcare system and therefore not all sport-related injuries are captured statistically through visits to clinicians or treatment facilities. Moreover, a leading Australian researcher has estimated that the psychosocial impact on quality of life accounts for 81% of the total sports injury costs (which includes both the direct costs of medical treatment and the indirect costs of lost productivity) (Finch et al. 2001). And yet sport, and its ‘significant economic benefits for business, communities, and nations’, is uncritically and problematically conflated with other forms of physical activity (see Bloom et al., 2005). The following section will take a closer look at the negative associations between sport and health and the ways in which sport can facilitate pain, injury and ill health.

### **The risks of sport**

Despite the conventional wisdom that greater participation in sport enhances health and the quality of life for many individuals, researchers from a number of academic disciplines are beginning to identify and investigate the ways in which the health benefits of intense participation in sport are questionable and the ways in which intense sport participation may in fact contribute to increased rates of morbidity and mortality (Waddington, 2000; White and Young, 1999). Epidemiological research into the costs of injury from sport is getting off the

ground (e.g. McCutcheon et al., 1997; White, 2004; Young, 2004); however, empirical and methodological inconsistencies and deficits plague the existing literature:

Although there are statistics for incidence of injury for most sports and active pursuits, it is more difficult to find data on the numbers of people who take part in those activities and how frequently. Secondly, there is a lack of prospective studies on this topic. Thirdly, it is difficult to identify rates of injury accurately. (Department of Health, 2004: 73–4)

As noted above, admission records at doctors' office and emergency wards are a primary way of tracking the number of sport-related injuries per year, but not everyone who twists their ankle while participating in a sport goes to see a physician for treatment. Even with these limitations, the available data provide some insights into the patterns and costs of sport-related injury that support the argument that 'sports injuries are not uncommon, [they] affect a large number of people and make considerable demands on the nation's health services' (Nicholl et al., 1993: foreword). Large-scale surveys from Australia, Canada, the United Kingdom and the United States support arguments that injuries sustained in sports present a serious public health problem; that the greatest risks are associated with vigorous competitive (in particular, contact/collision) sport and those who do 'excessive' amounts of exercise; and that there are gender differences in patterns of sport injury (Finch and McGrath, 1997; Hume and Marshall, 1994; Marshall and Guskiewicz, 2003; Nicholl et al., 1995; Shepard, 2003; Sport and Recreation Research Communiqué, 1996; Tator et al., 1993; White and Young, 1999).

Economically, estimates of direct treatment (e.g. medications, medical/dental/paramedical professional services, supplies, rehabilitation services) and indirect (e.g. reduced worker productivity, increased morbidity, increased mortality) costs of sports injury are astonishing. In a cost-benefit analysis of injuries associated with sport and exercise, Nicholl et al. (1994) offer what may be one of the most interesting conclusions about the costs and benefits of sport. They argue that while there are clear economic benefits associated with exercise for adults aged 45

years and older, the medical costs from participation in sports by younger adults between the ages of 15 to 44 years greatly exceed the costs avoided by the disease prevention benefits of participation. In other words, 'there are strong economic arguments in favour of exercise in adults aged 45 or over, but not in younger adults' (Nicholl et al., 1994: 109).

Nowhere is the argument against the health benefits of sport more evident than for athletes participating at the extreme end of vigorous competitive physical activity – high-performance sport (e.g. see Pipe, 2001). The ideology of excellence within high performance sport demands the instrumentally rationalised and calculated pursuit of the linear record on the world sporting stage which in turn demands, on the part of the athlete, the development of levels of disregard for the body in the pursuit of sporting excellence (Beamish and Ritchie, 2004; Kidd, 1988). Given the intense and rigorous training and competition regimens involved in the production of high-performance sport, it is somewhat ironic that while athletes are often seen as symbols of strength and vitality, they often sacrifice their health and well-being in the pursuit of success and idealised athleticism (Hoberman, 1992; Hughes and Coakley, 1991; Young and White, 1995; Young et al., 1994). Simply put, as athletes move up the competitive ladder, they often wear down their bodies through a variety of health-compromising behaviours such as the uncritical tolerance of pain/injury, dangerous dieting practices, or the use and abuse of drugs.

It is the awareness of such dangers that has led various international governing bodies of sport to institute injury and illness surveillance surveys at major competitions. For instance, since Beijing 2008, the IOC has obtained data through head physicians for national Olympic teams and the medical services provided centrally to athletes for the duration of the games. For London 2012, this revealed an injury rate of 128.8 injuries and 71.7 illnesses per 1000 athletes (note all figures exclude pre-existing or ongoing injuries). Injury rates varied enormously between sports, with nearly 40% of those participating in Taekwondo, 35.2% of footballers and

21.8% of handball players reporting new or recurring injuries. These figures exceed the injury incidence of 96.1 and 111.8 per 1000 athletes identified at Beijing and Vancouver, respectively, although they still undoubtedly underestimate the prevalence of injury (Engebretsen et al. 2013).

Sociologists explain the prevalence of injury in elite sport in relation to sport's 'culture of risk' (Nixon, 1992). Athletes' immersion in this culture sees their often unquestioned acceptance and re/production of norms and behaviours that endanger health. The concept of the 'culture of risk' has great utility in examining the relationship between sport and health, but it is important to recognise that while there is widespread acceptance and tolerance of health-compromising norms and behaviours in competitive sport, researchers also acknowledge the varied and complex ways in which athletes and other sport participants (e.g. coaches, administrators) produce and respond to this culture (e.g. Howe, 2004; Pike, 2005; Roderick et al., 2000; Safai, 2003; Walk, 1997). Bearing in mind Donnelly's (2004) caution about the loose use of the term 'culture of risk' in the socio-cultural study of sport, the term is used in this chapter as shorthand for the negative consequences of risk taking in sport, and while this chapter focuses on sport-related pain and injury, athletes' immersion in the 'culture of risk' applies in many ways to other health-endangering practices such as disordered eating (Johns, 2004).

Many athletes come to understand pain and injury as physical and symbolic cues of identity, such that pain tolerance and the disregard of bodily limits are often seen as reflections of strength of character. The pervasiveness of this ideology extends into the lives of male and female athletes (White and Young, 1999) and becomes part of the construction of athletic identity for many of these individuals. In short, it becomes part of their 'sport ethic' (Hughes and Coakley, 1991). In their seminal study, Hughes and Coakley (1991: 308) characterise the acceptance of pain and injury in sport as 'positive deviance', which they suggest is 'caused by an unqualified acceptance of, and unquestioned commitment to a value system framed by ...

the sport ethic'. Positive deviance refers to a form of overconformity that goes so far in 'following commonly accepted rules or standards that it interferes with the wellbeing of self or others' (310). Much of the positive deviance in sport involves an unqualified acceptance of and overconformity to the value system embodied in the sport ethic, defined by Coakley and Donnelly (2004: 157) as 'a cluster of norms that many people in power and performance sports have accepted and reaffirmed as the dominant criteria for defining what it means, in their social worlds, to be an athlete and to successfully claim an identity as an athlete'. Hughes and Coakley (1991) identify four beliefs that make up the sport ethic: (1) being an athlete involves making sacrifices for 'the game'; (2) being an athlete involves striving for distinction; (3) being an athlete involves accepting risks and playing through pain; and (4) being an athlete involves refusing to accept limits in the pursuit of possibilities. Not all athletes overconform to this ethic, but these norms make up the mindset and culture of many athletes in competitive sports. It is in this framework that athletes learn to expect, accept, minimise and/or ignore pain and injury as a normal part of the game, and even take pride in their pain threshold as proof of their character as athletes and their dedication to the team (Nixon, 1992). As Hughes and Coakley (1991: 316) stress, 'it [should be] emphasized that the norms of the sport ethic are positive norms; it is under the condition of uncritical acceptance and extreme overconformity that they are associated with dangerous and destructive behaviour'. Overconformity to the sport ethic becomes part of the overall participation experience, and although it varies between sports and athletes, it appears to be both common across sport and emphasised in particular sport cultures (White and Young, 1999).

Immersion in the 'culture of risk', overconformity to the sport ethic, and the uncritical tolerance of pain and injury, have become the purview of both male and female athletes. Much of the early socio-cultural research in this area focused on men as sport operates as an important site for the construction of hegemonic forms of masculinity, within which the use of

violence and force, as well as the practice of tolerating pain, become part of the masculinising process (Young, 1993; Young et al., 1994). In short, men have championed the physical basis of gender difference through the paradoxical identification of the male body as a weapon to cause harm and to be harmed (see Messner, 1990; Sabo and Panepinto, 1990). But, a substantial body of research on women's experiences of sport-related pain and injury shows that girls and women adopt similar norms and patterns of behaviour with regard to overconformity to the sport ethic and the 'culture of risk', such that Young and White (1995: 51) suggest, 'if there is a difference between the way male and female athletes ... appear to understand pain and injury, it is only a matter of degree' (see also Charlesworth and Young, 2004; Pike and Maguire, 2003; Theberge, 1997). The evidence suggests that as women intensify their participation in sport and 'colonize "new" sport territory' (Young and White, 1995: 96) – for example, the increased number of women participating in sports such as ice hockey, rugby and wrestling; what Theberge (1997: 70) describes as the 'flag carriers of masculinity' – they adopt and reproduce the underlying masculinist meanings of sport structures and 'appear to [contribute] to an already defined sport process replete with violence, excessive and compromising health behaviour' (Young and White, 1995: 56). As Young and White (1995) show, some of the very strategies that women use in discussing the tolerance of pain and injury represent 'the cornerstones of the dominant male model of sport, and are adopted for a number of reasons: to show courage or character; to consolidate membership or kudos in a group; to avoid being benched; [or] to help make sense of compromised health in a lifestyle that reveres health and fitness' (53). This discussion of the role of pain and injury in the construction of gender and athletic identity leads us back to the paradox of competitive sport described above. Many people see sport (often overlapped with non-sport forms of physical activity) as building, enhancing and improving the body, but it also hurts and damages the body. This destructive process implicates other participants in the sport system such as

coaches, administrators and, given our focus on the relationship between sport and health, medical and paramedical health care practitioners.

Box 7.1 about here

### **Sports medicine and the provision of health care to athletes**

A clue to the problematic linkage of sport and health is the existence of a specialist medical subdiscipline devoted to sport. The development and practice of sports medicine contains many indicators of the tensions that we have highlighted above (Malcolm and Safai, 2012). In the final section of this chapter we explore in greater depth firstly the development of this field plus three core features of the distinctive character of sports medicine practice: namely, the requirement to balance the sometimes conflicting considerations of health and performance (Safai, 2003; Scott, 2014; Theberge, 2007); the relatively limited professional autonomy of sport clinicians (Malcolm, 2006a; Waddington, 2000); and the distinct forms of inter-occupational relations with other healthcare providers (Malcolm and Scott, 2011; Theberge, 2008, 2009). Research in this area has largely confirmed the hypothesis, originally expressed by Walk (1997: 24), ‘that medicine is practiced differently, more competently, and/or more ethically in nonsports contexts’.

While sports medicine can be traced back as far as the Ancient Greeks, and Herodicus (460-370 BC, the teacher of Hippocrates who leant his name to the Hippocratic Oath) who advocated the therapeutic and health-related benefits of exercise, modern sports medicine emerged in Germany in the early 1900s (Hoberman, 1992), and became formalized at the 1928 St. Moritz Winter Olympics following a meeting of a number of physicians attending the games. The subsequent development of national associations was erratic - while the German Society for Sports Medicine and Prevention was founded in 1913, the British Association of

Sport and Medicine was only founded in 1953 and the Canadian Academy of Sport Medicine in 1970. As of January 2015 the international umbrella body, the Fédération Internationale de Médecine du Sport (FIMS), had 140 member states, 8 multinational organizations and 4 continental associations.

Retarding the development of sports medicine were questions about its purpose. Initially sports medicine had two parallel concerns. First medical scientists believed that by examining the extreme demands placed on the athletic body, scientific knowledge about the health of 'normal' human subjects would advance. Second, sports medicine continually sought to investigate concerns that the heart was damaged by extreme exercise. By the 1940s it was widely understood that an athlete's heart (enlarged and slow-beating, so similar in appearance to a heart affected by cardiac disease) was not only a distinct physiological feature, but also healthy. Even so, it was the response to parents' anxieties about the effects of vigorous exercise on children which made physicians and physical educators aware of the mutual benefits of collaboration and led to the 1954 formation of the multidisciplinary American College of Sports Medicine.

Research conducted on the hearts of athletes at the 1958 Commonwealth Games showed that 'the normal body, and normal readings from medical technology, were no longer appropriate measures for the athletic body' (Heggie, 2009: 289) and over the course of the twentieth century, technological advances in science and medicine have increasingly been enlisted in the pursuit of athletic success (Berryman and Park, 1992). One of the main reasons for this has to do with the transformation of the production of sport, specifically high-performance sport, following World War II (e.g. Hoberman, 1992). A rapidly changing international socio-cultural, political and economic climate post-war, both within and outside of sport, saw the adoption of an ideology of excellence in sport in many nation states (Beamish and Ritchie, 2006). Issues of doping, sex-testing and exercising at altitude converged at the



1968 Mexico Olympics and so increased the interdependence of sport and medicine at the same time that growing Cold War rivalry highlighted inequalities in the medical support for athletes from different nations. Ideological shifts transformed the nature and culture of high-performance sport, privileging the professionalised, commercialised, bureaucratised and instrumentally rationalised production of sport. It placed medicine centrally within the world of sport.

Box 7.2 about here

But while sports medicine offered the promise of ‘limitless performance’, as Hoberman (1992: 25) puts it, these developments meant the applicability of sports medicine was restricted to a relatively small, elite performer, population. Consequently, in many countries sports medicine lacked formal state legitimation until it reached out to a broader exercising public, whose concerns were health rather than performance. However, the fitness explosion of the 1960s and 70s would lead to a significant growth in sports participation (Banks, 1983) and, as a leading British sports medicine practitioner predicted, ‘sport for all means sports injuries for all’ (Sperryn and Williams, 1975). Safai (2005) shows how attempts to establish a Canadian branch of FIMS were predicated on debates about public health issues rather than sports performance. Similar arguments were expressed in the UK and it is telling that Sport and Exercise Medicine was only granted medical specialism status by the UK government (in 2005) when the British Association of Sport and Medicine (BASM) changed its name to the British Association of Sport and Exercise Medicine (BASEM) and more fully embraced a public health remit (which itself developed following London’s successful bid to host the 2012 Olympic Games with its physical activity/health legacy goal). We can therefore see how the development of sports

medicine is intertwined with both the development of performance sport in the twentieth century, and the ideology of sport and health critiqued above.

One might assume that the development of this specialist branch of medicine would only help to augment the health promoting properties of sport but for four reasons we should be cautious in this respect. In a thought-provoking article, Edwards and McNamee (2006) note that etymologically and historically medicine has been defined by attempts to relieve human suffering, such that ‘any practice which does not necessarily aim at relief of suffering cannot count as medicine’. Yet the focus of sports medicine on performance enhancement is inherent in the definitions of the area given by bodies such as BASEM and FIMS. Edwards and McNamee (2006) conclude that in this respect sports medicine is not medicine. Moreover, sociological studies of the working lives of sports medicine practitioners illustrate that priority is frequently given to performance rather than health (Theberge, 2007). Additionally we should reflect on what has been called iatrogenesis, or the potential for medical intervention to create rather than alleviate patient suffering. For instance, it could be argued that the medical policing of the use of performance enhancing drugs leads athletes to take less detectable rather than safer substances. Iatrogenesis is also at the heart of the debate about whether sports participants should undergo pre-participation cardiac screening: does the harm done to those who are inaccurately diagnosed (either those with undetected cardiac problems or those falsely diagnosed with a problem and subsequently prevented from taking part in sport) outweigh the benefits (a relatively small number of people whose lives may be saved by this process).

Box 7.3. about here

As noted above ‘medicine is practiced differently, more competently, and/or more ethically in nonsports contexts’ (Walk, 1997: 24). To explain why, we need to focus on the

social relations of sports medicine, for sports medicine might fruitfully be conceived of as a clients dependent practice (Malcolm, 2006). We have already detailed the express desire of athletes to tolerate pain and injury (the sports ethic and culture of risk) and this in turn leads athletes to behave in distinct ways when they become ‘patients’, so placing demands on medical staff who might seek to challenge the culture of risk in sport with their own ‘culture of precaution’ (Safai, 2003). But in many studies, particularly with professional athletes, healthcare workers report pronounced levels of negotiation over treatment (Waddington, 2000), and an inclination towards treatment shopping (Theberge 2007, i.e., consulting various medical personnel until the athlete hears the prognosis/diagnosis they hoped for) and self-treatment (Atkinson, 2007; Pike, 2005). Athletes are particularly likely to reject medical advice outright or simply avoid consultation.

The second client for the sports medicine practitioner is often the coach, manager or team owner, Contrary to codes of medical ethics, sport clinicians also accept that their primary responsibility is divided between their patient-athlete and the team or organisation which employs them. These considerations may lead to compromised diagnoses. A number of sport medicine doctors, for instance, have stated that the medical provision they supply is generally of a poorer quality than that provided to the general public (e.g., Malcolm and Sheard, 2002; Waddington, 2000). Clinicians tend to accept breaches of patient-confidentiality and may, on occasion, even seek to justify their own infringement of such regulations when practising in professional sport (Malcolm and Scott, 2013; Waddington and Roderick, 2002).

Thirdly, these pressures combine to create relatively distinct working practices between healthcare providers in sport such that Theberge (2009b: 58), for instance, refers to a ‘reconstitution of the hierarchy of health professions’ in sport. Thus we see the frequent elevation of physiotherapy services over medicine as issues of relative cost, but also

contribution to performance, influence decision making (Malcolm 2006), and the provision of chiropractic despite the scepticism of the more established medical occupations (Theberge, 2009). Bundon and Clarke (2014, p. 132-33) argue that athletes engage not only with biomedical practitioners such as physicians and physiotherapists, but with a range of providers of complementary and alternative medicines as they seek to ‘use everything at their disposal to optimise sport performance’, while Kerr, in a study of the integration of sports scientists into the elite sport environment, argues that ‘the struggle over ... gymnasts bodies’ (2012: 20) leads to sub-optimal, uneven, integration of sports science support.

While most if not all clinicians genuinely seek to enhance the health of their athlete patients, the context of practice poses significant limitations to the provision of care. The convergence of these factors is clearly illustrated in Malcolm’s (2009) study of the management of concussion in English rugby union. This study illustrates how clinicians’ desires to be recognised and accepted within the sometimes hostile practice environment of elite sport, leads them to reject medically-based diagnostic and treatment guidelines and allow the understanding and definition of concussion dominant in the sport subculture to dictate treatment. In other words, the social relations in which doctors are enmeshed influence not just what treatment they provide, but also the ways that they come to think about, understand, and define clinical conditions. It is clear from such evidence that the realities of the conditions of sports medicine practice are not conducive to the promotion of health, that the proliferation of various sports healthcare professionals that stems from the development and institutionalisation of sport medicine mandate has been fairly limited to the provision of care to athletes in order to maintain peak performance (cf. Theberge, 2007), rather than the prevention of injury in high-performance sport (Safai, 2005).

## **Conclusion**

This chapter has been concerned with exploring the relationship between sport and health and, in particular, focused on the ways in which sport contributes to pain, injury and ill health. One of the challenges to our better understanding of this relationship remains the continued conflation of the positive benefits of mild to moderate forms of physical activity with organised, competitive sport. The empirical evidence for the positive benefits of sport is tenuous, and yet many people, including health and sport policy makers, continue to tout the commonplace assumption that ‘sport is good for one’s health’ (cf. Waddington, 2000). There are a number of positive health associations that accompany increased participation in non-sport forms of physical activity, but the increased intensity, frequency and duration of participation involved in competitive sport often negate those benefits and produce risks of their own in the form of health-compromising norms and behaviours. It would be wrong to paint a completely bleak picture of the health benefits of sport – participation in sport can and does have a positive transformative health effect for many people. However, the structure of sport – its ‘culture of risk’, its dependence on aggression and violence in the construction of gender and athletic identity, its commitment to an ideology of excellence – makes these positive health effects the exception and not the rule. The structure and production of competitive sport facilitate ill health, and this implicates the ways in which health care is provided to athletes. Sports medicine and the occupational groups that comprise the field of sports medicine have come to assume expertise and authority on the sporting body and have created a niche for themselves in the sport and health care systems of many countries. However, we must question how much of a role they have played in the prevention and reduction of sport injury and the implications of their more curative role in the treatment and care of sport injury. Much more research is needed in this area in order to ensure the good health of sport participants and to give credence to the belief that ‘sport is good for one’s health’.

## Chapter summary

Sport is frequently and increasingly promoted as a health enhancing social activity. Evidence suggests that there are considerable physiological, psychological and economic benefits to be gained from increasing physical activity levels and averting what has been called a 'physical inactivity pandemic'.

However, the campaigns of Western governments and international agencies fail to recognise the important social determinants of health and, through conflating physical activity and sport, underestimate the high injury rates and associated medical and social costs of sports injury.

Rather sport, where activity is vigorous, competitive and potentially entails excessive amounts of exercise, is structurally bound to a 'culture of risk' and infused by a 'sport ethic' which normalises pain and injury.

The emergence of specialist medical and paramedical sub disciplines devoted to sport is an illustration of the above

Sports medicine's peculiar practice context in which performance is prioritised over health and clinicians bend to the demands of their 'clients', limits its capacity to prevent and reduce sports injury.

## Further reading

While research on the costs of physical activity is poorly funded and difficult to access, literature on the benefits of physical activity is rapidly emerging and frequently well-publicised in the media. Hardman and Stensel's (2009) *Physical Activity and Health: The Evidence Explained* provides an up to date and accessible synthesis. The risks of sport, and in particular the pain and injury experiences of participants have now been well established.

Two edited texts, Young's (2004) *Damaged Bodies, Damaged Selves*, and Loland et al.'s (2006) *Pain and Injury in Sport: Social and Ethical Analyses*, provide excellent overviews of this literature. The social scientific study of the sports medicine is a relatively newer area and Malcolm and Safai's (2012) *The Social Organization of Sports Medicine* consolidates much of the emerging research.

## References

- Alwan, A. (2011) *Global status report on noncommunicable diseases 2010*. Geneva: WHO.
- Atkinson, M. (2007) 'Playing with fire: Masculinity and exercise supplements', *Sociology of Sport Journal*, 24: 165-186.
- Banks, M. (1983) 'Providing the product: the sport medicine council of Canada', in S. Kereliuk (ed.), *The University's Role in the Development of Modern Sport: Past, Present and Future*. Edmonton: FISU Conference – Universiade '83, pp. 860–3.
- Beamish, R. and Ritchie, I. (2004) 'From chivalrous "brothers-in-arms" to the eligible athlete: Changed principles and the IOC's banned substance list', *International Review for the Sociology of Sport*, 39(4): 355–71.
- Beamish, R. and Ritchie, I. (2006) *Fastest, highest, strongest: a critique of high performance sport*. London: Routledge.
- Bercovitz, K. (2000) 'A critical analysis of Canada's "Active Living": Science or politics', *Critical Public Health*, 10(1): 19–39.
- Berryman, J. and Park, R. (1992) *Sport and Exercise Science: Essays in the History of Sports Medicine*. Urbana, IL: University of Illinois Press.
- Billette, J-M. and Janz, T. (2011) *Injuries in Canada: Insights from the Canadian Community House Survey*. Canada: Ottawa, ON.
- Bloom, M., Grant, M. and Watt, D. (2005) *Strengthening Canada: the Socio-economic Benefits of Sport Participation in Canada*. Ottawa: Conference Board of Canada.
- Booth, F.W. and Chakravarthy, M.V. (2002) 'Cost and consequences of sedentary living: New battleground for an old enemy', *President's Council on Physical Fitness and Sports Research Digest*, Series 3 (16): 1–8.



- Bundon, A. and Clarke, L. (2014). ““Keeping us from breaking””: Elite athletes’ access to and use of complementary and alternative medicine’, *Qualitative Research in Sport, Exercise and Health*, 6(1): 121-138.
- Cabinet Office (2014) *Moving More, Living More: The Physical Activity Olympic and Paralympic Legacy for the Nation*. London: Cabinet Office.
- Charlesworth, H. and Young, K. (2004) ‘Why English female university athletes play with pain: motivations and rationalisations’, in K. Young (ed.), *Sporting Bodies, Damaged Selves: Sociological Studies of Sport-related Injury*. Oxford: Elsevier, pp. 163–80.
- Coakley, J. and Donnelly, P. (2004) *Sports in Society: Issues and Controversies*. 1st Canadian edn. Toronto: McGraw-Hill Ryerson.
- DCMS - Department of Culture, Media and Sport (2007) *Our Promise for 2012: How the UK will benefit from the Olympic and Paralympic Games*. London: Crown Copyright.
- De Lisio, A., Derom, I. and VanWynsberghe, R. (forthcoming). ‘Re-imagining the urban citizen: Leveraging physical cultural legacies’, in J. Baker, P. Safai and J. Fraser-Thomas (eds.), *Health and Elite Sport: Is High Performance Sport a Health Pursuit?* London: Routledge.
- Department of Health (2004) *At Last Five a Week: Evidence on the Impact of Physical Activity and its Relationship to Health. A Report from the Chief Medical Officer*. London: Department of Health.
- Department of Health (2011) *Start Active, Stay Active: A Report on Physical Activity for Health from the Four Home Countries’ Chief Medical Officers*. London: Department of Health.
- Donnelly, P. (2004) ‘Sport and risk culture’, in K. Young (ed.), *Sporting Bodies, Damaged Selves: Sociological Studies of Sports-related Injury*. Oxford: Elsevier, pp. 29–58.

- Donnelly, P. and Harvey, J. (1996) *Overcoming Systemic Barriers to Access in Active Living*.  
Report presented to Fitness Branch, Health Canada and Active Living Canada.
- Edwards, S. and McNamee, M. (2006) 'Why sports medicine is not medicine', *Health Care Analysis*, 14: 103-109.
- Engbretsen, L., Steffen, K., and Alonso, J.M. (2010) 'Sports injuries and illnesses during the Winter Olympic Games 2010', *British Journal of Sports Medicine*, 44: 772-780.
- Evans, R.G., Barer, M.L. and Marmor, T.R. (eds) (1994) *Why Are Some People Healthy and Others Not? The Determinants of Health of Populations*. New York: Aldine de Gruyter.
- Finch, C. and McGrath, A. (1997) *Sportsafe Australia: A National Sports Safety Network*.  
Report prepared for the Australian Sports Injury Prevention Taskforce. Canberra:  
Australian Sports Commission.
- Finch, C., Little, C and Garnham, A. (2001) 'Quality of life improvements after sports injury, Injury Control and Safety Promotion', 8(2): 113-115.
- Gard, M. and Wright, J. (2005) *The Obesity Epidemic: Science, Morality and Ideology*.  
London: Routledge.
- Harland, R. (2005) 'Sport and exercise medicine: a personal perspective', *The Lancet*, 366:S53-54.
- Heggie, Vanessa. (2009) 'A century of cardiomythology: Exercise and the heart c.1880–1980', *Social History of Medicine*; 23(2): 280-298.
- Hoberman, J. (1992) *Mortal Engines: the Science of Performance and the Dehumanization of Sport*. New York: Free Press.
- Howe, P.D. (2004) *Sport, Professionalism and Pain: Ethnographics of Injury and Risk*.  
London: Routledge.

- Hughes, R. and Coakley, J. (1991) 'Positive deviance among athletes: The implications of the sport ethic', *Sociology of Sport Journal*, 8: 307–25.
- Hume, P. and Marshall, S. (1994) 'Sports injuries in New Zealand: exploratory analyses', *New Zealand Journal of Sports Medicine*, 22: 18–22.
- International Year of Sport and Physical Education (IYSPE) (2005)  
<http://www.un.org/sport2005> (accessed 24 September 2007).
- Janssen, I. (2012) 'Health care costs of physical inactivity in Canadian adults', *Applied Physiology, Nutrition, and Metabolism*, 2012, 37(4): 803-806.
- Johns, D.P. (2004) 'Weight management as sport injury: deconstructing disciplinary power in the sport ethic', in K. Young (ed.), *Sporting Bodies, Damaged Selves: Sociological Studies of Sport-related Injury*. Oxford: Elsevier, pp. 117–33.
- Katzmaryk, P.T. and Janssen, I. (2004) 'The economic costs of physical inactivity and obesity in Canada: An update', *Canadian Journal of Applied Physiology*, 29(1): 90–115.
- Kay, T. and Dudfield, O. (2013) *The Commonwealth Guide to Advancing Development through Sport*. London: Commonwealth Secretariat.
- Kerr, R. (2012) 'Integrating scientists into the sports environment: A case study of gymnastics in New Zealand', *Journal of Sport and Social Issues*, 36(1): 3-24
- Kidd, B. (1988) 'The philosophy of excellence: Olympic performances, class power, and the Canadian state', in P. Galasso (ed.), *Philosophy of Sport and Physical Activity*. Toronto: Canadian Scholars' Press, pp. 11–31.
- Knowles, S. (2010) 'Is there an injury epidemic in girls' sports?', *British Journal of Sports Medicine*, 44: 38-44.
- Kohl, H., Craig, C., and Lambert, E. (2012) 'The pandemic of physical inactivity: Global action for public health', *The Lancet*, 380: 294-305.

- Lee, I. M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., and Katzmarzyk, P. T. (2012). 'Effect of physical inactivity on major non-communicable diseases worldwide: An analysis of burden of disease and life expectancy', *The Lancet*, 380(9838), 219-229.
- Lees, S. J., and Booth, F. W. (2004) 'Sedentary death syndrome', *Canadian Journal of Applied Physiology*, 29(4): 447-460.
- LOCOG (2012) *Olympic Games Healthcare Guide*. London: LOCOG.
- Malcolm, D. (2006) 'Unprofessional practice? The status and power of sports physicians', *Sociology of Sport Journal*, 23(4): 376-395.
- Malcolm, D. (2009) 'Medical uncertainty and clinician-athlete relations: The management of concussion injuries in rugby union', *Sociology of Sport Journal*, 26(2): 191-210.
- Malcolm, D. and Safai, P. (2012) (Eds.) *The Social Organization of Sports Medicine: Critical Socio-cultural Perspectives*. New York: Routledge.
- Malcolm, D. and Scott, A. (2013) 'Practical responses to ethical challenges in elite sport medicine', *British Journal of Sports Medicine*, 48: 1410-1413.
- Malcolm, D. and Scott, A. (2011) 'Professional relations in elite sport healthcare: Workplace responses to organizational change', *Social Science and Medicine*, 72: 513-520.
- Malcolm, D. and Sheard, K. (2002) "'Pain in the assets": The effects of commercialization and professionalization on the management of injury in English rugby union', *Sociology of Sport Journal*, 19(2): 149-169.
- Marmot, M. (2004) 'Creating healthier societies', *Bulletin of the World Health Organization*, 82(5): 320-1.
- Marshall, S.W. and Guskiewicz, K.M. (2003) 'Sports and recreational injury: The hidden cost of a healthy lifestyle', *Injury Prevention*, 9: 100-2.

- McCutcheon, T., Curtis, J.E. and White, P.G. (1997) 'The socioeconomic distribution of sport injuries: multivariate analyses using Canadian national data', *Sociology of Sport Journal*, 14(1): 57–72.
- Messner, M.A. (1990) 'When bodies are weapons: Masculinity and violence in sport', *International Review for the Sociology of Sport*, 25(3): 203–19.
- Mirolla, M. (2004) *The Cost of Chronic Disease in Canada*. Ottawa: Chronic Disease Prevention Alliance of Canada (CDPAC).
- Muller, A. (2012) 'Pre-participation screenings in sports: a review of current genetic/nongenetic test strategies', in D. Malcolm and P. Safai (eds.) *The Social Organization of Sports Medicine: Critical Socio-cultural Perspectives*. New York: Routledge, pp. 285-304.
- Naci, H. and Ioannidis, J.P.A. (2013) 'Comparative effectiveness of exercise and drug interventions on mortality outcomes: Meta-epidemiological study', *British Medical Journal*, 347, f5577.
- Nicholl, J.P., Coleman, P. and Brazier, J. (1994) 'Health and health care costs and the benefits of exercise', *Pharmaco Economics*, 5: 109–22.
- Nicholl, J.P., Coleman, P. and Williams, B.T. (1993) *Injuries in Exercise and Sport: Main Report*. London: Report to the Sports Council.
- Nicholl, J.P., Coleman, P. and Williams, B.T. (1995) 'The epidemiology of sports and exercise-related injury in the United Kingdom', *British Journal of Sports Medicine*, 29: 232–8.
- Nixon, H. (1992) 'A social network analysis of influences on athletes to play with pain and injuries', *Journal of Sport and Social Issues*, 16(2): 127–35.
- Piggin, J. and Bairner, A. (2014) 'The global physical inactivity pandemic: An analysis of knowledge production', *Sport, Education and Society*, 23(1), 1-18.

- Pike, E. (2005) 'Doctors just say "Rest and take Ibuprofen": a critical examination of the role of "non-orthodox" health care in women's sport', *International Review for the Sociology of Sport*, 40(2): 201–19.
- Pike, E. and Maguire, J. (2003) 'Injury in women's sport: classifying key elements of "risk encounters"', *Sociology of Sport Journal*, 20: 232–51.
- Pipe, A. (2001) 'Adverse effects of elite competition on health and wellbeing', *Canadian Journal of Applied Physiology*, 26 (Suppl.): S192–201.
- Right to Play (2008). *Harnessing the Power of Sport for Development and Peace: Recommendations to Government*. Retrieved from <http://www.righttoplay.com/International/news-and-media/Documents/Final%20Report%20revised%202010.pdf>
- Roderick, M., Waddington, I. and Parker, G. (2000) 'Playing hurt: Managing injuries in English professional football', *International Review for the Sociology of Sport*, 35(2): 165–80.
- Sabo, D. and Panepinto, J. (1990) 'Football ritual and the social reproduction of masculinity', in M.A. Messner and D. Sabo (eds), *Sport, Men and the Gender Order: Critical Feminist Perspectives*. Champaign, IL: Human Kinetics, pp. 115–26.
- Safai, P. (2003) 'Healing the body in the "culture of risk": examining the negotiation of treatment between sport medicine clinicians and injured athletes in Canadian inter-collegiate sport', *Sociology of Sport Journal*, 20(2): 127–46.
- Safai, P. (2005) 'The demise of the Sport Medicine and Science Council of Canada', *Sport History Review*, 36: 91–114.
- Safai, P. (2007) 'A critical analysis of the development of sport medicine in Canada, 1955-1980', *International Review for the Sociology of Sport*, 42, 321-341.

- Scott, A. (2014) 'Sport and exercise medicine's professional project: The impact of formal qualifications on the organization of British Olympic medical service', *International Review for the Sociology of Sport*, 49(5): 575-591
- Shepard, R.J. (2003) 'Can we afford to exercise, given current injury rates?', *Injury Prevention*, 9: 99-100.
- Smartrisk. (2009) *The Economic Burden of Injury in Canada*. SMARTRISK: Toronto, ON.  
Retrieved from  
<http://www.parachutecanada.org/downloads/research/reports/EBI2009-Eng-Final.pdf>
- Smith, A., Green, K. and Roberts, K. (2004) 'Sports participation and the "obesity/health" crisis', *International Review for the Sociology of Sport*, 39(4): 457-64.
- Sokolove, M. (2008a) *Warrior Girls: Protecting our Daughters against the Injury Epidemic in Women's Sports*. New York: Simon and Schuster.
- Sokolove, M. (2008b) 'The uneven playing field', *New York Times Magazine*, May 11, 2008
- Sperryn, P. and Williams, J. (1975) 'Why sports injuries clinics?', *British Medical Journal*, 3: 364
- Sport and Recreation Research Communiqué (1996) *Injuries incurred by Ontario residents during participation in sport and other recreational activities*. Ottawa: Ministry of Citizenship, Culture and Recreation.
- Tator, G., Edmonds, V. and Lapczak, L. (1993) *Serious and Catastrophic Sport/Recreational Injuries*. Ottawa: Ministry of Culture, Tourism and Recreation.
- Theberge, N. (1989) 'Women's athletics and the myth of female frailty', in Jo Freeman (ed.), *Women: A feminist Perspective*. Mountain View, Ca: Mayfield, pp. 507-522 (fourth edition).
- Theberge, N. (1997) "'It's part of the game": physicality and the production of gender in women's hockey', *Gender and Society*, 11(1): 69-87.

- Theberge, N. (2006) 'The gendering of sports injury: A look at 'progress' in women's sport through a case study of the biomedical discourse on the injured athletic body', in D. Malcolm and I. Waddington (eds) *Matters of Sport: Essays in Honour of Eric Dunning*, Oxford: Routledge, pp. 132-47.
- Theberge, N. (2007). "'It's not about health, it's about performance'". Sport medicine, health and the culture of risk in Canadian sport', in J. Hargreaves and P. Vertinsky (eds), *Physical Culture, Power and the Body*, London: Routledge, pp. 176-194.
- Theberge, N. (2008) 'The integration of chiropractors into healthcare teams: A case study from sports medicine', *Sociology of Health and Illness*, 30: 19-34
- Theberge, N. (2009). "'We have all the bases covered'". Constructions of professional boundaries in sport medicine', *International Review for the Sociology of Sport*, 44(3), 265-282
- Tucker Center (2008) *Anatomy isn't Destiny: A Multidisciplinary Response to Michael Sokolove's Warrior Girls*. Tucker Center for Research on Girls and Women in Sport Bulletin, Fall, pp. 1, 3.
- United Nations Inter-Agency Task Force on Sport for Development and Peace (2003) *Sport for Development and Peace: Towards Achieving the Millennium Development Goals*. United Nations: Geneva.
- Waddington I. and Roderick M. (2002) 'Management of medical confidentiality in English professional football clubs: Some ethical problems and issues', *British Journal of Sports Medicine*, 36: 118-23.
- Waddington, I. (2000) *Sport, Health and Drugs: a Critical Sociological Perspective*. London and New York: E and FN Spon.
- Walk, S. (1997) 'Peers in pain: the experience of student athletic trainers', *Sociology of Sport Journal*, 14: 22-56.



- Wente, M. (2014) 'Agony on the slopes: Should women jump?' *Globe and Mail*, February 1, p. F2.
- White, P. (2004) 'The costs of injury from sport, exercise and physical activity: a review of the evidence', in K. Young (ed.), *Sporting Bodies, Damaged Selves*. Oxford: Elsevier, pp. 309–31.
- White, P.G. and Young, K. (1999) 'Is sport injury gendered?', in P.G. White and K. Young (eds), *Sport and Gender in Canada*. Toronto: Oxford University Press, pp. 68–84.
- Wilkinson, R. and Marmot, M. (2003) *The Social Determinants of Health: The Solid Facts*. 2nd edn. Copenhagen: WHO Regional Office of Europe.
- World Health Organizations (2010) *Global Recommendations on Physical Activity for Health*. Switzerland: WHO.
- Yeager, K., Agostini, R., Nattiv, A. and Drinkwater, B. (1993) 'The female athlete triad', *Medicine and Science in Sports and Exercise*, 25, 775-777.
- Young, K. (1993) 'Violence, risk and liability in male sports culture', *Sociology of Sport Journal*, 19: 373–96.
- Young, K. (ed.) (2004) *Sporting Bodies, Damaged Selves: Sociological Studies of Sport-related Injury*. Oxford: Elsevier.
- Young, K. and White, P. (1995) 'Sport, physical danger and injury: the experience of elite women athletes', *Journal of Sport and Social Issues*, 19(1): 45–61.
- Young, K., White, P. and McTeer, J. (1994) 'Body talk: male athletes reflect on sport, injury and pain', *Sociology of Sport Journal*, 11: 175–94.

### **Box 7.1: Women's Anterior Cruciate Ligament Injuries**

Researchers from a variety of disciplines have explored the gendered features of sport injury including such sex-specific conditions as the female athlete triad – the syndrome of disordered eating, amenorrhea and osteoporosis seen among female athletes participating intensively in sports that emphasize low body weight (Yeager et al., 1993). Most recently, however, there has been considerable attention paid to the women athletes and their (relatively) increased rates/prevalence of anterior cruciate ligament (ACL) – a stabilizing ligament within the knee – tears as compared to men. A notable feature of this heightened attention to women's knees is the depiction of the increased incidence of ACL tears among women as an injury 'epidemic' influenced primarily by women's 'different' bodies (e.g., hormones, joint angles, etc.) (see Sokolove, 2008a; 2008b). While such alarmist perspectives have been picked up and reproduced in popular media (see Wentz, 2014), there has also been resistance by healthcare professionals and researchers (see Knowles, 2010; Tucker, 2008) to the suggestion that women's bodies are frail, fragile or susceptible to sport injury – a belief that has been unfairly levelled against women athletes as a way in which to deny women's access to sport (see Theberge, 1989). Extensive research is still needed on the politics of women's knee injuries in sport and work by scholars such as Theberge (2006) hold promise for bettering our understanding of the gendering and gendered dimensions of injury in contemporary sport.

### **Box 7.2 The Scale of Sports Medicine Provision: The case of London 2012**

Medical services were centred upon ‘polyclinics’ at the main Olympic village and the two satellite villages for watersports, and at each of the training and competition venues. The exact provision matched the injury incidence of the sport concerned but generally included physiotherapy, sports massage, sports medicine, field of play recovery teams, athlete dedicated ambulance services and, in some cases, dental services. There were eleven designated Olympic hospitals and twelve on-call consultants/scheduled clinics including cardiologists, dermatologists, neurologists and surgeons (LOCOG 2012). It was anticipated that a total of 3000 healthcare volunteers would be required to support the athletes.

All this was *in addition* to the medical provision which national Olympic committees (NOCs) provide for their own teams and which deal with the vast majority of athlete injuries. Again this varied; here largely according to the support for sport from different states. But, for instance, the 530 athletes representing the US were supported by 85 medical staff.

NOC team doctors could also request physiotherapy and other musculoskeletal treatments, diagnostic imaging and laboratory tests from the British National Health Service (NHS). In contrast to the normal requirement for overseas travellers to be covered by health insurance, Olympic athletes were eligible for free prescriptions.

### **Box 7.3 Pre-participation Cardiac Screening**

Physical activity has both health enhancing consequences for the heart, but also increases the risk of sudden cardiac death in young people by a factor of about 2.5. Complicating this issue is that the ‘athlete’s heart’ (enlarged and slow-beating) looks similar to a number of disease states or precursors, making the detection of heart problems in athletes particularly difficult. This raises questions about the desirability of screening the hearts of individuals before they take part in sport. The case for screening has been advanced by a number of high profile incidents, such as the near-death of Fabrice Muamba during an FA Cup tie in 2012, while critics of screening argue that affordable tests lack precision (indeed Muamba had been given the all clear following relatively extensive cardiac testing just a few months before this incident). In 2006 the IOC published the Lausanne Recommendations which promoted the use of an assessment of the patient’s personal and family history, a physical examination, and use of an electrocardiogram (ECG), but the practice of cardiac screening varies considerably. In some countries (notably Italy) cardiac screening is mandatory for all those under 35 who take part in organised sporting activities, while in others (notably the USA) cardiac screening rarely uses an ECG. Sport philosophers have expressed concerns about the ethics of a system where people might be banned from sports participation on the basis of particular test results as an affront to personal liberty (Muller, 2012), but it is highly likely that, as testing procedures are refined, they become mandatory in an increasing number of countries. It is particularly ironic, therefore, that while governments in most Western countries are urging citizens to enhance their health through sports participation, in some countries people are required to get medical clearance before being allowed to participate.