# Executive Summary

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EXECUTIVE SUMMARY

Addressing health, wellbeing and inequality remains an urgent challenge along with related environmental and other sustainability issues, at local and global levels. The golf sector is rising to these challenges with innovative sustainability initiatives. In this review, we contribute to understanding of the roles golf can play in human health and wellbeing. The review is an output of a European Union (EU) Erasmus+ co-funded project entitled GoGolf and complements research undertaken to assess how youth access and participation in golf can be enhanced to release health benefits in five countries across Europe within a social sustainability context.

REPORT AIMS

- Explore and articulate theoretical basis for this and future project work
- Engage with academic debate through analysis of peer reviewed literature
- Produce a report for the golf industry to illustrate connections between golf and health, especially in relation to sustainability

RESEARCH QUESTIONS

Three research questions are addressed in this report. The first asks how golf could contribute to the health and wellbeing of people. The second investigates how we might improve access to and increase participation in golf, especially amongst youth. Finally, we consider how golf might contribute to social sustainability more widely.

Whilst we cannot completely address this question within the scope of this report, we begin to explore some options for the sector to fulfil its potential.

SUSTAINABILITY

Sustainable development is a concept that has emerged through the recognition that ecological integrity and social justice are interconnected; it offers pathways with solutions to current crises as well as visions of futures to which we may aspire. There are different models and perspectives of sustainable development, which influence how we may put it into practice. The Brundtland definition focused on meeting the needs of current and future generations. The early triple bottom line and three legged stool models saw environmental, social and economic aspects given equal weighting, but later models have supported ‘strong sustainability’ in which environmental limits define a ‘safe operating space for humanity’ and have shifted to notions of wellbeing. The UN Sustainable Development Goals and Agenda2030 highlight the holistic and complex nature of sustainable development and the need for partnership and good governance approaches. We conclude that golf could benefit from recognising the interlinkages of sustainability, consolidating sound environmental practice, considering how golf can enhance wellbeing and prosperity for all, integrating theoretical as well as technical knowledge and embracing different perspectives.

HEALTH AND WELLBEING

Health is more than treatment of medical or clinical conditions; it is integrated with the wider notion of wellbeing. Both western and developing countries are experiencing an obesity epidemic caused by
dietary changes and reduction in physical exercise, in addition to other epidemiological consequences such as stress and coronary disease. Globally, in 2014 over 1.9 billion adults of 18 years and older were overweight, with over 600 million classified as obese. The latest Eurobarometer: Health at a glance report cites 22% of children with measured obesity and 16% of adults self-reporting obesity, with higher incidence of obesity amongst those with lower levels of education. Whilst diet is also critical, this study focuses more on physical activity and wider health framings. It is well documented how “the pandemic of physical inactivity” affects non-communicable diseases and life expectancy. Physical inactivity occurs alongside industrialisation, urbanisation and economic development. Physical health issues are accompanied by mental health challenges, such as youth loneliness, social disconnectedness and “nature deficit disorder”. Environmental and human health are interlinked, with effects of environmentally mediated disease being felt more strongly by deprived communities.

Being physically active is considered by some to be even more important than avoiding obesity, although both optimal Body Mass Index and an active lifestyle are required in order to maximize health outcomes. Physical activity can reduce mental illness and enhance self-esteem, cognitive ability and scholarly achievement. WHO and EU guidelines for physical activity levels suggest that children and youths 4-17 years should undertake at least 60 minutes of moderate to vigorous physical activity daily, whilst adults should undertake at least 150 minutes of moderate or 75 minutes of vigorous intensity activity per week, with additional provisos. However, globally, it seems that one third of adults and four out of five adolescents do not achieve these recommended public health guidelines. Within Europe, 34.8% of the population, especially females and older adults, has been considered technically physically inactive. It is thus essential to promote more physical activity, including the design and implementation of new interventions.

Wellbeing is a concept related to quality of life, and recognises not only the advantages of good physical and mental health but also the importance of social connection and wider influences on health. Sport, including golf, can play a role in supporting individual and community wellbeing not only through physical activity but also through the creation of social interaction and outdoor activity in natural and semi-natural environments.

**GOLF AND HEALTH**

Golf is unique amongst sports in the extent to which it offers a competitive and yet meditative sport from beginner to elite; enables social networks; contributes economically; and uses significant land areas. In the USA alone it is estimated that the sport generates $68.8 billion from goods and services with a total economic impact of $176.8 annually and supports 1.98 million jobs. There are around 40,000 courses worldwide, each 50-60ha, comprising approximately two million hectares in total.

Courses can be divided into three broad ownership categories:

- **Members’ Clubs** – Owned by their membership
- **Proprietary Clubs or Courses** – Commercially owned and operated by individuals or corporations
- **Municipal or Public Courses** – Owned by local authorities and normally operated for the benefit of local communities

Golf is a unique sport in its characteristics and attributes and hence potential contribution to the health and wellbeing of people. These include:

- provision of physical activity of moderate intensity yet accessible walking;
- the swing;
- mindful focus and strategic thinking;
- nature connection;
- social aspects;
- intergenerational engagement.

Health impacts of golf differ depending on whether an individual plays an 18 hole course or some other format of golf, walks or travels in a golf cart, carries their own clubs or has a caddy, the course form and frequency and intensity of play. Those who play golf tend to live on average 5 years longer than persons who are sedentary. In general, golf is classified as ‘moderate intensity’ exercise, with a round of golf taking 11245-16667steps (above the recommended daily 10000 steps).
There are a few improved cardiovascular markers in golfers, although more research is required. The swing can enhance proprioception and balance, especially in older people. Claims from practitioners that mindfulness and meditation can enhance golf performance, and suggestions that golf can stimulate mindful practice, have not been scientifically substantiated.

Outdoor experience can have positive impacts on health. Physical activity in natural environments can enhance exercise motivation, vitality, psychological wellbeing and physical outcomes beyond similar activities in indoor contexts. Nature connection can be defined as the degree to which a person includes nature as part of their identity, feels emotional affinity (love) for nature and considers themselves a part of nature; it is positively related to wellbeing. Golf can thus be a form of the ‘green prescription’ which is particularly important for young people suffering from ‘nature deficit disorder’.

Golf can be an attractive sport for differently abled people. New technologies have facilitated wheelchair and other forms of participation and golf programmes have conferred some proven and anecdotal benefits on children and adults with mental health issues.

Whilst the overall net impact of golf on health is very positive, there are also possible deleterious effects. These include an increased incidence of skin cancer in those playing in sunnier climates, spine and lower back, hip and wrist injuries, exposure to chemicals from pesticides or herbicides, injuries through being hit by ball or club, cardiac events and an extremely rare mechanism of ischaemic stroke. Whilst acute cardiac incidents and sudden death have been documented more in golf than other sports, this is thought to reflect the fact that older men play golf. Golf carting accidents can occur.

Golf can also offer social benefits. Sports participation can lead to physical, psychological and social benefits for adolescents and children, with variations depending on the level of organisation versus informality of the sport, the extent to which it is played alone or in a team and practical delivery such as school versus sports club effects. Golf play can be recreational, ritual or competitive and clubs offer the possibility of social connectedness. Clubs and course facilities can also provide a service for the wider community. Golf particularly offers the chance for inter-generational play, although this intergenerational potential of golf will best be realised if clubs offer a range of activities for multi-generational families and cohorts.

For golf to make claims to many of the potential health and wellbeing outcomes described above, we will need further and often better quality research. Much of the research demonstrating links between golf and health parameters exposes relational rather than causal links. There is a need for future research to investigate consequences of golf on physical and especially mental health and on the capacity of golf to support disabled individuals and groups. We could thus optimise opportunities from the unique game attributes and structure of golf as a sport.

**ACCESS AND PARTICIPATION**

There are three meanings of participation in this report: sports participation, social participation in health and participation as an aspect of golf governance. Access is seen to be the possibility for people to engage in golf. Youth sports participation is considered to be a positive outcome, and is often broadly associated with youth development, but complexity can arise, for example, from highly competitive or exclusive contexts. Participation occurs in different forms and intensities, hence when we discuss golf and health, we consider not only the number of people playing but also our capacity to inform people about health aspects of golf, to consult and involve communities about the potential to participate in golf or use golf courses and to empower golfers and communities to make decisions about wellbeing in relation to golf and golf infrastructure.

Overall, approximately 55 million people play golf in 206 countries. Participation is growing fast in some parts of Europe and significantly in Asia, but traditional markets (such as UK and USA) have struggled to retain membership numbers, especially since 2010. The European market improved slightly by 2014, although well established markets (including France, Scotland and the Netherlands) experienced a decline in the number of registered golfers in 2014. The Czech
Republic, as the most established golf market in Eastern Europe, continued to grow with a near doubling of golfer numbers since 2007.

Golf has a poor reputation with regards to participation and access in terms of gender, ethnicity, age and socio-economic status, although practices and attitudes vary globally. The type of golf club influences form of participation. Whilst some clubs are egalitarian, golf also reinforces a network of elite interests, situating power within an exclusive system of social relationships. Across Europe, there are more male golfers and there is a recent decline in junior golf participation. Female golf participation is limited by a lack of self-confidence and knowledge, practical issues, the behaviours of men at the club, family and time commitments and men only clubs. Golf’s ethnic bias has led to barriers in professional play for African Americans until relatively recently. Attitudes to golf indicate concerns around cost and attraction for women and girls and other demographic groups as well as infrastructural barriers associated with the focus on 18 hole golf courses as the basis for most play.

The importance of physical activity is not disputed, but there are different views of how to implement a successful intervention to increase youth sport participation. Such interventions tend to be either sector led and not well evaluated, or researcher led, rigid experimental studies that are not embedded in relevant organisations. Youth sport participation interventions often target coach behaviours, attempting to promote more engaging and supportive approaches. Such interventions can not only influence physical activity, but also psychosocial health variables such as anxiety and self-esteem. Self-determination theory (SDT) has helped explain some positive benefits, such as increased physical activity and autonomous motivation, in both adolescents and adults. The role of sports structures and organisations is also critical.

CONCLUSIONS AND RECOMMENDATIONS

This review examines how the golf sector might pursue more social sustainability, particularly around access and participation by young people, as a contribution to improved health and wellbeing. Whilst the golf sector has responded well to sustainability challenges in some areas, a strategic approach will ensure that the game of golf fulfills its potential to contribute to the development of a healthy and just society living within environmental limits, in line with contemporary concepts of sustainability. We need to increase participation by under-represented groups; consider golf courses within local community contexts; recognise and encourage diversity of golf courses and clubs.

Practical recommendations arise from this review:

- Address attitudinal concerns around cost, exclusion and the format of golf through structural change and awareness raising campaigns
- Ensure golf courses and clubs are welcoming to young people; and to families; and that they offer a variety of play options including driving range and short courses
- Pursue diversification of courses to offer different suites of activities for local families and communities
- Pursue different financial models such as pay and play
- Undertake interventions to promote golf to young people and demographic groups currently under represented; by Federations and clubs and NGOs and other organisations with responsibility to promote physical activity and sport

Sources supporting this summary are cited in the full report
INTRODUCTION

We face complex global and local challenges to sustainability that transcend individual environmental and social factors. Whilst we are overstepping planetary boundaries, we have not yet fully addressed issues of social inequality and justice (Raworth, 2012; Rockstrom et al., 2009; UN, 2015). As malnutrition remains in parts of the world, other parts are experiencing a rise in obesity, diabetes Type II, heart disease and mental illness indicative of poor diet and exercise routines, exacerbated by modern stresses. Whilst there has been much effort to consolidate theories to tackle such problems, sectors are grappling with the practical application of sustainability.

The golf sector is rising to these challenges, with sustainability concerns driving debate, shifting practice and inspiring new ways of viewing the purpose of golf. In this review we contribute to our understanding of the roles golf can play in human health and wellbeing. The review is an output of a European Union (EU) Erasmus+ co-funded project entitled GoGolf and complements research undertaken to assess how youth access and participation in golf can be enhanced to release health benefits in five countries across Europe. A sister project supported by the World Golf Foundation, the R&A and other organisations is also exploring health consequences of golf, particularly clinical consequences. Hence, this report focuses on wider framings of golf and health and wellbeing within a social sustainability context.

We contribute to the need to provide an evidence base for policy regarding golf and sport more widely and to enhance health across Europe. We also recognise the need to both critically review academic peer reviewed literature and synthesise grey literature. Because the scope and range of our research questions is broad, we strive for a synthesis of current knowledge across the areas covered rather than a comprehensive list of all relevant research published. We have attempted to strike a balance between theoretical critical analysis and practical examples illustrating good practice.

AIMS AND RESEARCH QUESTIONS

The aims of this report align with the goals of the GoGolf project as part of a journey across the golf sector to strengthen the capacity of golf as a game, a sport, a sector and a land use to deliver sustainability outcomes. The aims of the report are thus, firstly, to explore and articulate a theoretical basis for this and future project work. Secondly, we engage with academic debates through analysis of the peer-reviewed literature. Thirdly, we aim to produce a report for the golf industry to illustrate connections between golf and health, especially in relation to sustainability, enabling reflection and action at multiple levels and in diverse regions to support the capacity of the golf sector to contribute to sustainability outcomes.
 REPORT AIMS

- Explore and articulate theoretical basis for project work
- Engage with academic debate through review of peer reviewed literature
- Produce a report for the golf industry to illustrate connections between golf and health especially in relation to sustainability

RESEARCH QUESTIONS

Three research questions are addressed in this report. The first research question asks how golf could contribute to the health and wellbeing of people. In order to address this research question, we draw on literatures around the definitions of health and wellbeing and explore some aspects of particular relevance to golf, such as nature connection and social aspects.

The second research question asks how we might improve access to and increase participation in golf, especially amongst youth. To tackle this research question we review literature on golf and participation, including research on gender, ethnicity and age and information on golf structures and sports participation interventions.

Finally, we ask how golf might contribute to social sustainability more widely. Whilst we cannot completely address this question within the scope of this report, we begin to explore some of the avenues open, or needing to be traversed, for the sector to fulfil its potential.

- How might golf contribute to health and wellbeing of people?
- How can we improve access to and increase participation in golf, especially amongst youth?
- How can we enhance the social sustainability of golf?
SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT

Sustainable development is a concept that has emerged through the recognition that ecological integrity and social justice are interconnected and that sustainable development offers pathways with solutions to current crises as well as a vision of the future to which we may aspire (e.g. Ferraro, White, Cox, Bebbington, & Wilson, 2010; R. M. White, 2013). The contemporary concept of sustainable development emerged in the 1970s and the first global definition was enshrined in the Brundtland definition of 1987.

Brundtland definition of sustainable development (World Commission on Environment and Development, 1987).

“The sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Our Common Future (1987), also known as the Brundtland Report.

PERSPECTIVES ON SUSTAINABLE DEVELOPMENT

There are different models and ways of perceiving sustainable development, and these different notions impact on the ways we may implement the concept in practice, including in the golf sector. Whilst it is important to acknowledge the diversity of comprehension that exists, and the need for contextualisation, several trends can be defined. This section aims to provide an overview of some of the different ways of thinking about sustainable development to enable a critical and theoretically rigorous underpinning for the implementation of sustainability in golf.

THE BRUNDTLAND DEFINITION

The Brundtland report by the WCED produced a broad definition that focused on needs and highlighted intra and inter-generational equity, the latter requiring future thinking. Importantly, it highlighted development aspects but within recognition of resource limitations; it was not merely a statement supporting environmental management.

MODELS OF SUSTAINABLE DEVELOPMENT

Sustainable development is sometimes depicted as employing a ‘triple bottom line’ approach, combining economic development, environmental sustainability and social inclusion as the three core elements (Elkington, 1998). These elements have been depicted in different models.

The ‘three pillars’ model was popular but has been critiqued because it implies that society, economy and environment are independent from
one another, failing to recognise interconnections. Secondly, the three pillars model represents each aspect as being of equal importance. Thirdly, it implies that substitutions can be made between the pillars; in other words, we can ‘buy’ environmental integrity. Finally, pillars are stationary and this model fails to address the dynamic relationship between aspects of sustainable development. For example, it has been suggested that good environmental management can help save money for courses.

The **Venn diagram model** represents each of these three aspects as overlapping sectors. Whilst it does show interlinkages between aspects, it still implies balance; it offers only a small space for a particular kind of sustainable development, at the nexus of these circles; and it implies that part of these aspects can be viewed outside of relationship with the other aspects. This suggests a ‘sweet spot’ for golf in which sustainability might be performed in one particular way, yet the golf sector is diverse and faces different sustainability challenges in different contexts, locations and scales. For example, municipal golf courses in USA may face financial problems; golf courses in arid areas have severe challenges around sourcing of water; the concerns of one local golf club may focus on shorter term goals than the long term vigour of the golf industry as promoted by organisations such as R&A and EGA.

The idea that aspects of sustainable development are interchangeable is known as ‘weak sustainability’. Many authors have now recognised that environmental integrity cannot always be substituted (Dietz & Neumayer, 2007). The **Strong Sustainability model** specifically states that there is a limit to how much financial capital can replace natural capital; that natural resources are finite and therefore no matter how much financial capital (wealth) we have, we cannot pay for unlimited
natural resources. Both economy, as part of society, and society itself are constrained by, and need to fit within, environmental limits. This model is now the most widely accepted of the basic models for sustainable development.

In some depictions of this model, an additional aspect is included to represent cultural, political or institutional capital. This model is still sometimes critiqued because the concept of ‘capital’ implies measurement of a quantitative measure and does not capture the sense of ‘nature’ experienced in different areas of practice or culture. For golf, this means that there is a need to consider environmental limits as the boundaries of the sector or of particular initiatives. Hence, the falsified debate of development versus conservation (e.g. Jönsson, 2014) is not a helpful way to frame decisions about new golf courses. The focus on environmental management in order to save money is also not a valid argument because according to this model we cannot always buy our way out of environmental damage.

**PLANETARY BOUNDARIES AND A SAFE SPACE FOR HUMANITY**

Environmental limits and ecological integrity have been redefined at a macro scale. Rockstrom et al. (2009) proposed a new approach to sustainability by identifying nine “planetary boundaries”, within which humanity should aim to operate safely. The nine planetary boundaries include global biogeochemical cycles (nitrogen, phosphorus, carbon, and water); the major physical circulation systems of the planet (the climate, stratosphere, ocean systems); marine and terrestrial biodiversity; and anthropogenic forcing (aerosol loading and chemical pollution).

In recognition of the need to address social inequalities and pursue social justice within these planetary boundaries, Oxfam set out a visual framework for sustainable development that combines environmental boundaries with boundaries for human welfare (Figure 5: Raworth, 2012). For golf, this model loses the dominance of...

*Figure 4: The nine planetary boundaries (Rockstrom et al 2009)*
economic variables as being significant and focuses on the need to recognise to respect environmental limits and support just and healthy societies. Hence, if we pursue sustainability in golf, we need to ask not only how people can support golf, but also how can golf contribute to strong, healthy and equitable societies?

Within Europe, other models of sustainable development have been developed and employed. For example, in UK sustainable development is seen as being driven by a ‘sustainable economy’, ‘good governance’ and ‘using sound science responsibly’. Whilst the golf sector has a good basis in agronomy, this review argues that wider use of other disciplines, including social sciences, would strengthen the understanding of issues such as motivations for playing golf, golf contributions to society and barriers of golf. This model also reinforces the need for good governance, including participatory modes of governance, and hence points to the need for sound democratic processes at the golf club, federation and organisational scales. Finally, this model highlights the need to envisage economics as a driver. In other words, a sustainable golf sector would function within environmental limits and contribute to a healthy and just society using financially feasible strategies. A sustainable golf sector would not exist primarily to produce financial benefit.

At a European level, there has been a shift from seeing sustainable development as a separate focus to an attempt to embed the principles and practices within different sectors and areas of activity; for example, recent emphasis on air pollution and the carbon economy. This shift to embedding only is reflected in some other areas, although in some cases it is believed that the holistic view of sustainable development can be eroded through this perspective. This notion might mean that

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**Figure 5:** Safe and just operating space for humanity illustrates this concept through a closed system (nicknamed the ‘doughnut’) bounded by a social ‘floor’ (human rights) – below which human welfare reduces – and an environmental ‘ceiling’ – beyond which environmental degradation occurs. In between these two regions is a socially just space, with inclusive and sustainable development that is environmentally safe (Raworth 2012).

**Figure 6:** Sustainable Development principles adopted by DEFRA in UK (UK Government, 2005).
within governing organisations, sustainability may be highlighted as a separate goal or might be included within specific areas (such as good environmental practice, community engagement, social responsibility). For individual clubs, there may be sustainable objectives within wider goals permeating strategies such as recruitment and procurement, but there may also be a particular focus on sustainability as an overarching or separate aim.

**PROSPERITY AND WELLBEING**

Relationships between these three different aspects, economics, society and environment, have been considered further. Whilst some countries have promoted ‘sustainable economic growth’, many academics consider this an unresolvable paradox because growth is limited by environmental constraints (Dietz & Neumayer, 2007; East & White, 2016; Meadows, Randers, & Meadows, 2005). Instead of a focus on growth, the notion of prosperity without growth has been debated (Jackson, 2009). This idea has been explored by some countries, notably Norway and Canada, but has gained little traction within a global society focused strongly on economic growth and then experiencing recession. However, the concept promoted a shift to thinking about non-GDP measures of the economy, from ‘prosperity’ to ‘wellbeing’. Wellbeing is a term with positive implications that denotes the general condition of an individual or group, and has also been used in reference to the natural environment (planetary wellbeing). It has many interpretations, usually incorporating elements of physical, mental, social and spiritual aspects, and is discussed in more detail in the section below. For the golf sector, this implies the need to be careful about focusing on ‘the growth of the game’ without articulating how this growth will contribute to the wellbeing of individuals and communities.

**WHAT IS INCLUDED IN SUSTAINABLE DEVELOPMENT?**

Whilst the models above recognise broad aspects for inclusion (environment, society, economy), sustainable development is often seen to comprise a set of topics to pursue and to also incorporate ways of pursuing them. It is more than what you do; it is also how you do it. The recently defined UN Sustainable Development Goals (UN 2015) offer a contemporary framework that each country will have to pursue. If the golf sector can contribute to these 17 goals and the associated 169 indicators it will be seen to be supporting local, national and international sustainable development aims. These goals include environmental goals as well as those for social and gender inequalities; goals promoting good governance and partnership approaches as well as those supporting a strong economy and sustainable

![Figure 7: The UN Sustainable Development Goals](image)
cities and communities. Health and wellbeing are highlighted in Goal 3. The importance of this framework for the golf sector is that:

- each country will have to address these UN goals and each sector will have to demonstrate some contribution
- they offer a holistic and interlinked framework in which environmental and social aspects can clearly be seen to be connected
- they present an opportunity for an integrated strategic response from within the sector

**A WORKING DEFINITION OF SUSTAINABLE DEVELOPMENT**

Whilst different models of sustainable development are relevant within different contexts, it is useful to broadly define sustainable development as being:

- recognition of interdependence of human and planetary wellbeing
- pursued through good governance, strong science integrated with other knowledges plus a strong economy
- a process, enabling adaptive capacity and resilience to environmental and social change
- capturing a plurality of perspectives within an active dialogical debate and culturally and contextually specific
- recognition of complexity and the need for systems thinking to explore interlinking aspects
- future thinking

**CRITICAL SUMMARY POINTS**

This section has discussed models of sustainable development. We now highlight some critical summary points in relation to golf:

- The notion goes beyond environmental issues to recognise social justice as well; yet whilst golf has recognised environmental sustainability, social sustainability is rarely acknowledged.
- The three oft cited basic elements of sustainable development are the environment, society and economy. The relationship between these elements has been modelled in different ways, with the three pillars model largely superseded by a strong sustainability model in which environmental limits set boundaries for our economic and social activities.
- The debate on economy has moved beyond that of financial measures alone to one considering how we can create prosperity and enhance human and planetary wellbeing. Whilst strong financial processes can make clubs and federations feasible, the aim of clubs is thus not to maximise profit but rather to maximise outputs and outcomes. The focus on wellbeing opens up new avenues for golf to contribute and be recognised.
- The roles of good governance and the responsible use of sound science are recognised in some sustainable development models. Whilst golf has integrated technical knowledge very well, it may benefit from additional governance focus, knowledge flows and strategic debate.
- The SDGs offer a sound practical framework within which golf could develop holistic and strategic responses to sustainability and demonstrate the sector’s aspiration to lead in this area.
INTRODUCTION

In this section, we outline health and wellbeing challenges in general, before exploring the specific links between golf and health in the following section. We firstly explore health and wellbeing challenges in global and European contexts, then explore aspects of physical activity and mental health, examine how a wellbeing framework can be useful and conclude with a discussion of the influences of sport in general on health and wellbeing.

GLOBAL AND EU HEALTH AND WELLBEING CHALLENGES

Whilst health was seen by many to be successful treatment of medical or clinical conditions, it is now considered to be integrated with the wider concept of wellbeing. The WHO now promote equity in health, adding ‘life to years’, adding ‘health to life’, and adding ‘years to life’; they endorse a global strategy on diet, physical activity and health. Health can thus be defined as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 2017).

Whilst medical research has improved our understanding and capacity to treat medical conditions, modern societies have created conditions in which symptoms of western lifestyles create a different kind of health threat. Paradoxically, whilst over 800,000 people are malnourished, inactivity, stress and poor diet have created a different kind of health crisis in Europe and beyond. Both western and developing countries are experiencing an obesity epidemic caused by dietary changes and reduction in physical exercise, in addition to other epidemiological consequences such as stress and coronary disease (WHO, 2013). Globally, in 2014 over 1.9 billion adults of 18 years and older were overweight, with over 600 million classified as obese (WHO, 2017). The latest Eurobarometer: Health at a glance report (OECD and the European Commission, 2016) cites 22% of children with measured obesity and 16% of adults self-reporting obesity, against a rising trend and higher incidence of obesity amongst those with lower levels of education.

This study focuses more on the activity and wider health issues than on diet. It is well documented how “the pandemic of physical inactivity” affects non-communicable diseases and life expectancy (e.g. Kohl 3rd et al., 2012). Increase in physical inactivity is not just a problem for developed countries; it occurs because of industrialisation, urbanisation and economic development (WHO, 2013). There is an ongoing debate as to which is more detrimental for ill health – physical inactivity or obesity. Recently it was suggested that mortality can be delayed longer by being physically active than by avoiding obesity, although obviously both optimal Body Mass Index and an active lifestyle are to be pursued in order to maximize health outcomes (e.g. Ekelund et al., 2015).

Along with physical disease challenges, we see a rise in mental health issues (Collins et al., 2011). Loneliness is an increasing challenge for adolescents and older people (e.g. Ullrich-French, McDonough, & Smith, 2012), with social disconnectedness meaning some youths become disengaged from their communities and society and have poor prognosis in terms of personal development, wellbeing and life outcomes. At the same time, we see increasing signs of “nature deficit disorder” and a lack of nature connection in younger generation, exacerbating mental and physical health problems and causing additional sustainability concerns (Louv, 2005).
As we saw in the sustainable development section above, environmental and human health are interlinked. Environmental issues such as air pollution and lack of clean water or sanitation threaten human wellbeing, with 23% of global deaths due to modifiable environmental factors (Prüss-Ustün, Wolf, Corvalán, Bos, & Neira, 2016). This report describes how environmentally mediated disease is greater in lower income nations, except for some noncommunicable diseases and certain cancers, which are more prevalent per capita in developed countries.

Various guidelines have been developed for recommended levels of physical activity and then to encourage these levels to be achieved. These include the WHO (2010) guideline recommendations, which differ by age and indicate recommended levels and intensities of physical activity for different age groups.

**PHYSICAL ACTIVITY**

Caspersen, Powell, and Christenson (1985) define physical activity in terms of the following three elements: movement of the body produced by the skeletal muscles; resulting energy expenditure (which can vary from low to high); and a positive correlation with physical fitness. Exercise is usually considered to be more structured than physical activity, and includes keep fit type activities; sport is also considered to be more structured, but with established rules for each sport, although sport may not always be competitive. Any sport that promotes physical activity can thus potentially reduce the societal cost of health treatments. Physical activity in youth can reduce also mental illness and enhance self-esteem and body image, although the evidence base for this is still incomplete (Biddle & Asare, 2011; DeBate, Gabriel, Zwald, Huberty, & Zhang, 2009). School achievement is also associated with physical activity; many authors suggest that improved scholarship is associated with high levels of physical activity (Coe, Pivarnik, Womack, Reeves, & Malina, 2006; Donnelly & Lambourne, 2011; Kibbe et al., 2011). A review of impacts of physical activity in adults indicates enhanced cognitive ability from single and longterm interventions in adults, including effects on youths and young adults (from 15 years) due to cellular, molecular and systemic effects (Ratey & Loehr, 2011).

The EU physical activity guidelines correspond with those of the WHO. Whilst the last published EU guidelines were in 2008 (EU, 2008), there has been substantial focus since this on the implementation

**PHYSICAL ACTIVITY KEY FACTS**

- Insufficient physical activity is 1 of the 10 leading risk factors for death worldwide.
- Insufficient physical activity is a key risk factor for noncommunicable diseases (NCDs) such as cardiovascular diseases, cancer and diabetes.
- Physical activity has significant health benefits and contributes to prevent NCDs.
- Globally, 1 in 4 adults is not active enough.
- More than 80% of the world's adolescent population is insufficiently physically active.
- Policies to address insufficient physical activity are operational in 56% of WHO Member States.
- WHO Member States have agreed to reduce insufficient physical activity by 10% by 2025. WHO (2016)
of the guidelines, including accuracy and comparability of data collected across countries and regions (European Commission, 2016) with significant input from the Health Enhancing Physical Activity (HEPA) network. The rationale for supporting physical activity is clear and widely accepted, and increasingly the debate is less on the emphasis to facilitate physical activity and more on the mechanisms by which to promote it. For example, see infographic below which emphasises that physical activity can be undertaken in different contexts and throughout the life course.

It can be difficult to monitor levels of physical activity at a global level, but we have seen more effective data collection, primarily supported through self report instruments, over the last decade. Hallal et al. (2012) report estimates of physical activity levels for 122 countries (two thirds of the 194 WHO member states). These authors calculate that, globally, it seems that one third of adults and four out of five adolescents do not achieve recommended public health guidelines on recommended levels of physical activity. Within Europe 34.8% of the population was considered to be technically physically inactive by the terms

**CHILDREN**
1. Children and young people aged 5–17 years old should accumulate at least 60 minutes of moderate to vigorous-intensity physical activity daily.
2. Physical activity of amounts greater than 60 minutes daily will provide additional health benefits.
3. Most of daily physical activity should be aerobic. Vigorous-intensity activities should be incorporated, including those that strengthen muscle and bone, at least 3 times per week.

**ADULTS 18–64 YEARS**
1. Adults aged 18–64 years should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week, or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.
2. Aerobic activity should be performed in bouts of at least 10 minutes duration.
3. For additional health benefits, adults should increase their moderate intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous intensity activity.
4. Muscle-strengthening activities should be done involving major muscle groups, on 2 or more days a week.

**ADULTS 65 YEARS AND ABOVE**
1. Adults aged 65 years and above should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week, or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.
2. Aerobic activity should be performed in bouts of at least 10 minutes duration.
3. For additional health benefits, adults aged 65 years and above should increase their moderate intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous intensity activity.
4. Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.
5. Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.
6. When adults of this age group cannot do the recommended amounts of physical activity due to health conditions, they should be as physically active as their abilities and conditions allow.

(WHO 2010: Global Recommendations on physical activity for health)
given within the study. The authors demonstrate that usually females and older adults have lower levels of activity. They reveal a reduction in occupational physical activity but an increase in leisure time physical activity. However, since it has been shown that self-reporting measures of behaviour underestimates sedentary time and overestimates physical activity (e.g. (Dyrstad, Hansen, Holme, & Anderssen, 2014), it is probable that the problem of lack of physical inactivity is even greater than this report suggests.

Given the benefits of physical activity and the failure to achieve recommended levels in many groups and areas, the promotion of physical activity has been a major focus of campaigns. The reduced costs, human and financial, of preventing social, non-communicable illnesses have prompted state and non-state organisations to invest in education and incentive programmes to support healthier lifestyles.

In many places this coincides with goals for sustainable transport options, more connected communities and recreational developments. Physical activity is influenced by built and natural environments, transport options and lifestyle choices such as sedentary behaviours (watching television, desk work and other such activities) (Roemmich, Epstein, Raja, & Lin, 2007). Further information on the efficacy of sports participation interventions is provided in Section 5 in this review.

The EU has developed a focus on the reduction of poor health by facilitating a Nutrition and Physical Activity platform on which knowledge and strategies around diet and activity can be shared and debated 1. The scope of this platform is demonstrated in the infographic shown here.

**MENTAL HEALTH CHALLENGES**

The grand challenges of mental health, including the scope and influence of mental and neurological disorders, have recently been documented (Collins et al., 2011). In 2013 the WHO developed a comprehensive Mental Health Action Plan (WHO, 2013) that documents the impacts of mental health (disproportionately higher rates of disability and mortality because of unattended physical health issues and suicide) and interactions between mental health and other diseases and stress factors. This output revealed that mental, neurological and substance use disorders accounted for 13% of the total global burden of disease in 2004, and suicide is the second most common cause of death in young people.

There is a good research evidence base demonstrating a relationship between physical...
activity and mental health in youth (Biddle & Asare, 2011) and in adults (Bize, Johnson, & Plotnikoff, 2007). Physical activity can increase self esteem (Allermann & Stoll, 2000), improve mood (Penedo & Dahn, 2005), reduce stress and anxiety (Salmon, 2001), inhibit the development of mental health problems (Zschucke, Gaudlitz, & Strohle, 2013) and enhance quality of life for those people already experiencing such problems (Alexandratos, Barnett, & Thomas, 2012). Specifically in children and adolescents, physical activity can potentially reduce depression, but a recent meta-analysis demonstrated a paucity of good evidence, with a limited number of often poor quality interventions (Biddle & Asare, 2011). The EU Council recommendation on promoting physical activity across sectors recognised the benefits of physical activity for mental health. A number of initiatives have implemented strategies to promote mental health through physical activity, for example the Mental Health Organisation. Mental health is a particular concern in youth, who can exhibit problems with social connection and a rise in ‘loneliness’ (Ullrich-French et al., 2012). Some of the benefits of physical activity were illustrated in an infographic from Stephens at the University of Edinburgh.

**WELLBEING**

Wellbeing can be defined and interpreted in different ways. Philosophical theory offers various insights and ethical theory generally supports wellbeing for moral reasons. The concept is often related to quality of life. Once people’s basic needs are met, they can improve wellbeing, for example, by connecting, being active, taking notice (being mindful), continuing to learn and giving to others. It is known that sport and physical activity promote wellbeing in individuals and society (Bloodworth, McNamee, & Bailey, 2012). The notion of wellbeing is useful in this report in that it recognises the wider potential sport, and golf in particular, can play in promoting sustainability. It enables us to explore and capture potential benefits such as social and community aspects and to examine the structures of golf as well as individual practice in connection with wellbeing. A wider sustainability perspective on wellbeing also recognises the importance of nutrition, diet and environmental health (e.g. WHO, 2016).

This wider sustainability framing allows us to move beyond seeing sport in general or golf in particular as contributing merely to physical parameters and physiological health measures. Instead we can see a
role for sport as contributing to individual wellbeing, and potentially to community wellbeing.

Whilst we have seen above how physical activity and environmental issues influence wellbeing, and we acknowledge the impacts of other factors, such as diet and disease, we highlight the potential of golf to offer nature and social contributions to individual wellbeing, as shown below and discussed in more detail in R. White (2016).

**SUPPORT OF HEALTH AND WELLBEING THROUGH SPORT**

Sport is generally considered to be some form of organised activity, with different sports maintaining their own set of regulations, events and (usually) episodes of group activity. Most sports facilitate physical activity, although to differing degrees of intensity. For example, the debate continues over whether darts is a game or a sport. Whilst there is limited intensity in the physical activity required, it still demands training, skill, focus and often has a team element. Some sports are considered to offer more intense levels of physical activity, but in actual fact the energy expenditure may be low in practice or training sessions, as has been documented, for example, in some children’s football lessons (Schlechter, Rosenkrantz, Milliken, & Dwzewaltowski, 2017).

Sport has the potential to play a wider influence on wellbeing than merely through health benefits of physical activity, motor skills, movement and muscle strength and even individual sense of self esteem. Sport at a community level has the capacity...
to contribute to community resilience and social capital. Individual sport enterprises may contribute through Corporate Social Responsibility and sport industries can significantly enhance economic and tourism parameters locally or regionally.

**CRITICAL SUMMARY POINTS ON HEALTH AND WELLBEING**

- Obesity and inactivity are increasing throughout Europe and present significant concerns with regards to human health now and in the future as well as wider issues relating to the provision of health structures and productivity.

- Physical activity can occur during lifestyle activities, intentional exercise or through sport. It is considered by some to be better to be ‘fit and fat’ than thin and inactive, although to be both of normal weight range and active is most desirable.

- As well as physical parameters, we see mental health challenges, particularly in younger people; physical activity can help overcome some poor mental health aspects.

- We can demonstrate how health is important for individuals and at society level, but we can also explore how we might support wider notions of wellbeing at personal and community levels. This latter view enables us to more fully consider social interactions and the engagement between people and their natural environment.
SECTION 4: GOLF AND HEALTH

THE GAME OF GOLF

Golf is unique amongst sports in the extent to which it offers a competitive and yet meditative sport at all stages, from beginner participant to elite competitor; enables social networks; contributes economically through the industry and within development and tourism plans; and accommodates significant land areas. As a participant sport, golf is widely accessible to those of differing physical abilities and in many places to those of diverse socio-economic backgrounds, yet elite games command media coverage and massive fees. Calculation assumptions influence estimates of revenues generated by golf, but in the USA alone it is estimated that the sport attracts 25.7 million participants, generates $68.8 billion from goods and services with a total economic impact of $176.8 annually and supports 1.98 million jobs (SRI International, 2011). The form and function of golf clubs varies; in some towns the golf club constitutes a major social hub, whilst others offer exclusive membership and networks. There are around 40,000 courses worldwide, comprising approximately two million hectares (Hudson & Bird, 2009). Each course is 50-60ha, hence has a significant effect on its local area (Gange, Lindsay, & Schofield, 2003) often in key urban sites, small semi-rural towns or in tourism or estate resorts.

Courses can be divided into three broad ownership categories:

- Members’ Clubs – Owned by their membership
- Proprietary Clubs or Courses – Commercially owned and operated by individuals or corporations
- Municipal or Public Courses – Owned by local authorities and normally operated for the benefit of local communities

(after SMS ‘What is golf’ 2006; and the Scottish Assessors Association 2004)

The Old Course in St Andrews still represents the spiritual home of golf to many participants. Whilst early golf courses were often Municipal courses near the centre of old towns, more modern courses are often Proprietary or Members courses and may be associated with resort or housing development (Wheeler & Nauright, 2006). These authors note that colonial expansion of the game has since been superseded by growth through the development boom of the late 20th and very early 21st century, particularly in Asian markets.

HOW MIGHT GOLF CONTRIBUTE TO HEALTH AND WELLBEING OF PEOPLE?

Golf is a unique sport in its characteristics and attributes and hence potential contribution to the health and wellbeing of people. These include:

- provision of physical activity of moderate intensity yet accessible walking;
- the swing;
- mindful focus;
- nature connection;
- social aspects;
- intergenerational engagement.

Each of these aspects will be discussed in more detail below. The infographic developed by colleagues at University of Edinburgh helpfully illustrates some of these aspects (A. Murray et al., 2016).

When discussing golf and health, it is important to contextualise data and results. Firstly, course and playing choices influence health impacts. The game is normally played whilst walking around a 18 hole course. However, health impacts will vary depending on whether the golfer is walking or in a golf cart; carrying their own clubs or with
a caddy; or on a long or hilly course. Secondly, ‘golf’ actually includes multiple related activities in addition to the traditional ‘round of golf’. Some variations of short games occur (typically 9 holes, or, rarely, hour long sessions). However, ‘golf’ may also include a session on the driving range, which will include more swinging and less walking. ‘Golf’ may also comprise lessons, which may focus on stance, putting or driving and hence again concentrate effort on some form and extent of movement. For youth and children in group lessons, there may be a variation of movement types on order. Thirdly, the health effects of golf will depend on the intensity and frequency of play.

Many elite professional golfers will pursue stringent fitness and training regimes, including significant time on the course. Professional golf coaches and caddies will benefit from their work in different ways, but administrative, marketing or hospitality roles within the industry may confer little health benefit directly. Recreational golfers will differ, with many playing more than once a week but others less frequently. Finally, health impacts of attending golf events and associated walking and standing are anticipated, with some spectators citing exercise as one reason for attending (Lyu & Lee, 2013).

Whilst individual health benefits are documented below, it is worth noting that one of the most significant papers emerging to date on golf and health indicates that those who play golf tend to live on average 5 years longer than persons that are sedentary (Farahmand, Broman, de Faire, Vågerö, & Ahlbom, 2009).

The recent scoping review of health and golf and health (A. D. Murray et al., 2016) provides a comprehensive overview of literature on this topic and will be cited throughout this section for further information on particular aspects. This review was also summarised and presented for practitioners in the International Golf Pro News (Griffin, Murray, & Hawkes, 2016).

GOLF AS PHYSICAL ACTIVITY

As described above, playing ‘golf’ takes many formats, and hence it is not unexpected that golf has been classified as variable in exercise intensity, but in general a game of golf is classified as ‘moderate intensity’ exercise (e.g. Parkarri et al., 2000; see Murray et al 2016 for review). It is recommended that each individual take 10000 steps per day and a round of golf has been documented as requiring between 11245 and 16667 steps (e.g. Tangen et al., 2013; see Murray et al 2016 for review). A round of golf can thus contribute to recommendations for a healthy lifestyle. In addition, golf is accessible, since it is played at a walking pace, but includes a wider range of physical movement than walking alone and incorporates ball strategy and focus, which might enhance interest for some individuals. It is thus an ideal activity for those unwilling or unable to engage in high intensity physical
activities, including older and disabled people, or those potentially less motivated by the thought of a walk alone. The relative contribution of golf to physical activity is also believed to be greater in older age groups (Murray et al. 2016). Even those using a golf cart can register over 6000 steps in a round (Sanders, Broker, Berning, & Subudhi, 2007), and a shift to use of golf cart in elderly or infirm golfers can extend years of play and associated health benefits.

Finally, golfers exhibit improved cardiovascular parameters, although these observations are generally through association and not proven to be causal (see Murray et al. 2016 for review). A very few studies have attempted experimental protocols to test hypotheses regarding the effects of golf on health parameters. These have demonstrated positive changes in lipid profile and on body composition (Palank & Hargreaves, 1990; Parkarri et al., 2000).

**THE SWING**

In addition to walking and energy expenditure, the hold of the club, the swing in a golf drive and picking up a bag of clubs require muscle grip and extensive movement, body stretching and stability. These aspects can enhance proprioception and balance, especially in older people (Parkarri et al., 2000; Tsang & Hui-Chan, 2004).

**MINDFULNESS AND MEDITATION, MENTAL TOUGHNESS AND GRIT**

The mental health challenges outlined above have led to the search for solutions to stress both within a medical context and by people themselves. Mindfulness and meditation have commanded significant attention within society, although the rigorous research supporting many claims remains limited. One of the attractions of golf cited by enthusiastic players is that the game requires mental focus. It is possible, but not yet proven, that exploration of this aspect of the game may have implications for health and wellbeing outcomes in golfers.

‘Mindfulness’ is considered to be “a way of directing attention”; self-awareness whilst being open, receptive and non-judgemental (Schonert-Reichl & Lawlor, 2010). ‘Meditation’ is a term that has been used to apply to a family of mental training techniques or the states of consciousness arising from deployment of these techniques, and may more helpfully be perceived as a dynamic process (Nash & Newberg, 2013). These authors categorise mindful meditation as a form of meditation permitting an enhanced cognitive state. We can also understand meditative styles to be either mindfulness or concentrative (Cahn & Polich, 2006). Despite a lack of rigour in some academic studies, general positive effects of mindfulness and meditation are widely documented (Chiesa & Serretti, 2010), including enhancement of social and emotional competence in adolescents in a mindfulness based education programme (Schonert-Reichl & Lawlor, 2010).

With regards to golf, we could ask whether playing golf may confer an experience akin to mindfulness or whether playing golf in a mindful way may confer benefits of mindfulness. No scientific evidence was found to directly support the suggestion that playing golf facilitates mindfulness; academic research has focused mainly on the potential and mechanisms by which known meditative practices promote mindfulness, concentration and neurological changes (Cahn & Polich, 2006).

The focus on the as yet unsubstantiated potential for golf to offer mindfulness benefits in this review should not be confused with claims from practitioners and some research that mindfulness training enhances performance. One study indicates that after a year of mindful sports performance enhancement, there is an improved ability in golfers, archers and long distance runners to act with awareness (a mindfulness trait) and experience reduced anxiety around sport tasks and task-irrelevant thoughts (aspects of sport cognitive interference), but performance improvement was only evident in the long distance runners (Thompson, Kaufman, De Petrillo, Glass, & Arnkoff, 2011). Some sports psychologists and coaches promote the benefits of mindfulness and some coaches specialise in mindfulness training to improve golf handicap8. Meditation is also said to improve the game and there are numerous websites offering support for golf meditation9.

The need for concentration to support a golfer’s game is also discussed in many golfing magazines and online fora10. However, the relationship
between mindfulness and meditation practice and golf remains unclear in the academic literature.

The mental aspects of the game are also explored through the concept of mental toughness, although again the emphasis has been on how an understanding of mental processes might influence performance rather than how playing the game as a recreational, competitive or elite player might influence mental health. For example, Clark, Tofler, and Lardon (2005) promote the need for mental toughness, stating that “Golf is a mentally challenging game”, with the long periods between play and the focus meaning that players must have excellent pre-shot routines and strong psychological and philosophical belief systems around winning and losing.

Mental toughness is a psychological trait that can be strengthened through training. It is considered to be an important trait for athletes to enable them to maintain concentration, cope with competition and overcome adversity and is associated with problem solving coping strategies and optimistic approaches (Nicholls, Polman, Levy, & Backhouse, 2008). There are different interpretations of what mental toughness comprises, but it is associated with personal resilience and is believed to incorporate a desire to succeed and perseverance (Gucciardi, Hanton, Gordon, Mallett, & Temby, 2015) or ‘grit’ as defined by Duckworth, Peterson, Matthews, and Kelly (2007).

BEING IN NATURE

Merely being outside in the natural environment (nature exposure) is beneficial to both physical and psychological health (Bowler, Buyung-Ali, Knight, & Pullin, 2010) (always given the proviso to be dressed for ‘the weather’). Taking outdoor physical activity and exercise, especially in natural environments, can enhance exercise motivation, vitality, psychological wellbeing and physical outcomes beyond similar activities in indoor contexts (Coon et al., 2011). These benefits are strengthened in more natural environments; walking in farmland supports mental wellbeing more than walking in green corridors, but both options enhance the health outcomes of walking in urban settings (Marseille, Irvine, & Warber, 2013). However, the mechanisms by which nature exposure mediates such health benefits are not fully understood. It has been suggested by ecopsychologists that some individuals in nature experience an expansion of the sense of self beyond the western notion of ‘I’. A form of spirituality, expressed as the ecological self, thus occurs. This form of spirituality can positively influence psychological wellbeing (Kamitsis & Francis, 2013). However, it is more commonly understood that nature connection explains how natural environments can support wellbeing.

NATURE CONNECTION

Nature Connection can be defined as the degree to which a person includes nature as part of their identity, feels emotional affinity (love) for nature and considers themselves a part of nature. The degree of nature connection can be influenced by knowledge of local ecology, familiarity with a natural place, culture or previous experience and is associated with environmentally friendly behaviours (Restall & Conrad, 2015). Connectedness to nature is positively related to health (Maller, Townsend, Pryor, Brown, & St Leger, 2005), so encouraging recreational golfers to bird watch, smell the flowers and recognise seasonal changes on their regular course could strengthen their sense of wellbeing. Regular golfers can establish particular relationships with the land, wildlife and views of golf courses they know well, and shared memories with golfing partners can deepen these relationships.
NATURE EXPERIENCE

Physical engagement with nature, such as being in inclement weather, is a form of *nature experience*. This moves beyond nature exposure or nature connection to an active interaction with the natural environment. Many authors have written about the blurring of the relationship between the human body and the natural environment (see Bateson, 1972; Ingold, 2000). A sometimes visceral engagement with the elements can be a part of the outdoor experience. Whilst little research has been undertaken specifically on golf, other outdoor activities have been studied to assess the influences of experiences in natural environments (e.g. Eden & Barratt, 2010; Zink & Burrows, 2008). Competitive golfers tell of a relationship with the wind, rain and terrain that requires responses which appear instinctive but are in fact embodied and experientially informed by years of play. The movement of the ball across the three dimensional curves of the land also creates a connection with the physical materiality of the course. Nature experience thus calls for more than connection with nature, but also connection with the self.

The health benefits of golf thus go beyond the effects of physical activity alone. Conferred anecdotes have been suggested by Marselle et al. (2013). Golfers can strengthen their connection to nature, more fully appreciate the wildlife and plant life on the course and possibly even enhance the spiritual aspect of outdoor experience.

NATURE AND YOUTH

Louv (2005) wrote of a syndrome he called “nature-deficit disorder”. He outlined how, in the western world, an increase in the use of electronic devices, risk averse culture, lack of connection with local places and change in play routines for young children were causing a significant decline in outdoor play. The consequences of this include higher levels of obesity and associated disease outcomes, but also worrying levels of associated mental and social problems in the children of today. The children about whom he wrote are now young adults, and this generation will thus be the first to demonstrate the consequences of “nature deficit disorder”.

DISABILITY AND REHABILITATION

The attributes of golf listed above mean that golf can also be an attractive sport for some people who are differently abled. For example, The European Disabled Golf Association (EDGA) has been very active in promoting wheelchair and other forms of golf. New technologies have facilitated access for people with physical disabilities. Golf is also being used in specific programmes to mitigate some effects of mental health and learning difficulties. One study offered a golf coaching programme for participants with mental health issues and proposed that it was a success, as indicated by good participant attendance, the enthusiasm they voiced in qualitative research, social interactions after games and, importantly, participants continuing to play and to recruit new players, despite the cessation of the funded activity (Carless & Douglas, 2004).

There is anecdotal evidence that autistic children benefit from playing golf, although it is unclear whether it is the physical activity, focus on the ball, outside exposure, social interaction or some combination of these aspects and more that provoke success. Individual success stories regarding the experiences of Down’s syndrome children are available on the internet, suggesting a powerful role for golf to play in addressing symptoms of such syndromes and enhancing happiness, social and life skills in some such individuals. Golf can also be used to contribute to cardiac and stroke rehabilitation (Editor, 1995; Unverdorben et al., 2000).

NEGATIVE IMPACTS OF GOLF ON HEALTH

Whilst the above sections have demonstrated positive ways in which golf can have effects on health and wellbeing, and we argue that the overall net effect is very positive, there are also possible deleterious impacts on health. Negative illnesses and impacts include an increased incidence of skin cancer in those playing in sunnier climates, hip and wrist injuries, exposure to chemicals from pesticides or herbicides, injuries through being hit by ball or club, increased incidence of acute...
cardiac events and an extremely rare mechanism of ischaemic stroke (see Murray et al 2016 for review).

For example, increased acute cardiac incidents and sudden deaths have been recorded in association with golf more than other sports in Ireland, but mainly in older men, some with pre-existing conditions and symptoms (Quigley, 2000). This may reflect the fact that such individuals play golf rather than other sports rather than being due to some particular effect of golf. Golf appears to represent moderate risk for injury in comparison with other sports (Cabri, Sousa, Kots, & Barrelros, 2009). Injuries result from biomechanical stress because of more repetitive action in professionals and perhaps because of poor swing technique in amateurs. Injuries primarily affect the elbow, wrist, shoulder and dorsiolumbar sites (Theriault & Lachance, 1998). Injuries in relation to golf carts can also occur (Watson, Mehan, Smith, & McKenzie, 2008). Players can be hit by golf clubs or balls, with child injuries due to club strike being a serious concern if safety routines are not followed (Fountas et al., 2006).

Long hours spent playing outside are known by professionals to catalyse sun damage including skin cancer and cataracts, especially in sunnier, hotter climates, with professionals now being warned of dangers more and golf clubs urged to run awareness campaigns with members (del Boz et al., 2015).

Resource intensive management of turf grass can involve significant applications of chemicals and concerns have long been raised regarding the toxic effects of these compounds (Joyce, 1998). There are anecdotal reports of players becoming sick from putting golf tees in their mouths, and the golf industry is advised to promote healthy actions to minimize the potential for toxic effects of pesticides, fungicides and herbicides by allowing non player time after applying chemicals and recommending that players do not place cigarettes on the ground between drives nor place golf tees in their mouths (Borgert, Snyder, & Snyder, 2017; Snyder, Sartain, Cisar, & Borgert, 1999). Of course, there is also a responsibility to the industry to ensure that employees administering chemicals wear protective clothing and are aware of correct procedures. For example, a study of golf course superintendent proportionate mortality revealed elevation of certain cancers and nervous system diseases in line with other occupations exposed to high levels of pesticide use (Kross, Burmeister, Ogilvie, Fuortes, & Fu, 1998). Such concerns are greater where intensive chemical use and certain types of chemicals are widely used. Risks decline in countries where chemical use is severely restricted by regulation (much of Europe) or on courses where style or intention has led to responsible environmental management, such as links courses or courses striving for high environmental certification.

**SOCIAL ASPECTS**

The benefits of sport go beyond physical activity to mental health options, as partially described above. However, the consequences of the social interactions arising during, before, after and around sport are sometimes neglected. Sports participation can lead to physical, psychological and social benefits for adolescents and children, with variations depending on the level of organisation versus informality of the sport, the extent to which is played alone or in a team and practical delivery such as school versus sports club effects (Eime, Young, Harvey, Charity, & Payne, 2013). These authors reviewed studies demonstrating effects of sport on self esteem, emotional wellbeing and social connection in young people. One framework that is useful to explore these effects is that of Positive Youth Development, which acknowledges and promotes different forms of development that can be conferred through sport and other activities and experiences (Larson, Hansen, & Moneta, 2006; Lerner, 2005; Zarrett et al., 2009). Golf is flexible in form, offering team and individual formats and casual or organised possibilities; it can be played alone, permitting emphasis on concentration and mindful play; or with others. Play may be recreational, ritual or competitive. In addition, clubs offer capacity for social connection within a tight community of interest, in a Member's club, or in a more general sense in a Municipal club house. New and old social contacts can be developed.

Golf clubs can also play a major role in the wider community, by offering a space and events than can build social capital and community resilience. Clubs can be the venue for local celebrations, birthdays or other events, and in the case of Municipal clubs may be a valuable resource in small towns or villages from which the local pub, shop and post office may
have gone. This social potential will be maximised if clubs act as multi-activity facilities, promoting, for example, skiing in winter, riding, running, cycling, offering a crèche. There are good examples of this approach in Sweden creating vibrant clubs with a mix of people, activities and social interactions (STERF, 2011).

Golf is also renowned for its focus on etiquette, underpinning which is emphasis on respect, self control and courteous interactions with others. Respectful interaction promotes connection between people and hence mental wellbeing, although an over emphasis on one form of behaviour can be perceived as exclusive to certain groups. For example, the formalisation of etiquette into golf rules was associated with the increasing exclusion of the lower class from golf in Scotland (Ceron-Anaya, 2010).

The positive effects of golf and golf courses can be optimised if other physical activities are permitted, as in the multi-functional models proposed by Sweden (STERF, 2011) and if sectors of the population are not excluded from these potential health benefits, thereby possibly exacerbating effects of socio-economic status on poor health.

**INTERGENERATIONAL POTENTIAL**

Golf can offer an accessible challenge across a wide and inter-generational age span. Children of 8 years old and younger can play golf, yet their grandparents may still play aged well into their 80s or 90s. Family members may choose to play separately, linked by a common experience and passion, or may choose to play together in a (potentially rare) moment of engagement. This attribute offers potential health benefits in strengthening intergenerational family ties; permitting family members to pursue a sport whilst accommodating family commitments (e.g. mothers, fathers); establishing a culture of sports participation within families; presenting a sport in which one may play as a child or youth then return to much later in life, when sport options may be or seem diminished. The intergenerational potential of golf will best be realised if clubs offer a range of activities for multi-generational families and cohorts.

**FUTURE RESEARCH DIRECTIONS**

Golf can thus offer a suite of interconnected health and wellbeing benefits that may be realised by individuals, but also at a community level. Playing golf may even be associated with a five year increase in life expectancy (Farahmand et al., 2009), although it is not clear if this is an effect of physical activity or a combination of the wider benefits possible. Given current levels of participation, and with potential to increase participation, golf may thus play a significant role in the contribution of sport to address global health and wellbeing challenges. However, much of the literature indicates association between playing golf and health benefits and does not demonstrate temporal relationship. Undoubtedly the physical activity of golf will produce wellbeing benefits, and we have sufficient understanding of the impacts of taking over 10,000 steps a day to be able to extrapolate some consequences of golf. Some of the individual narratives are extremely powerful and inspiring.

For golf to make claims to many of the potential health and wellbeing outcomes described above, we will need further and often better quality research. We need experimental, randomised control studies to assess the impact of golf on inactive populations; longitudinal studies to demonstrate impacts on players over time and especially into old age; specialist studies on muscle, grip and balance in older players; qualitative studies to explore the wider social impacts of golf on community; and a great deal more information on the relationship between golf and mental health, teasing out effects of being outdoors, socialisation and sense of purpose, competition, the mindful focus of playing the ball, self esteem and other aspects. We also need to ensure that all such studies take account of age, gender, ethnicity and socio-economic status.

With regards to physical activity, we know that in general this supports positive health outcomes. Whilst experimental, controlled and longitudinal studies will help us tease out the contribution of golf, as opposed to diet, other activities, lifestyle choices and other aspects, to health, we also need to move beyond measuring benefits and develop more interventions. It appears that there are multiple benefits of golf, especially for older people. Interventions that encourage golf take up...
and are then tested for efficacy will not only benefit the individuals and groups concerned but will also examine and analyse the effects of golf.

There are many fascinating examples in the grey literature (on golf course or charity websites, in reports from the golf sector or consultants, in stories in golf magazines and professional newsletters) that illustrate inspiring ways in which golf is making a difference to the lives of people in different contexts and situations, such as children and young people with autism or Downs syndrome. However, these case studies and this learning is not being widely shared or validated through independent research. It is thus limited in its capacity to influence practice throughout the sector, to be translated into tools or approaches for wider uptake, to be available to the golf sector as ‘evidence’ to support the sector’s aspirations for sustainability and demonstrate the potential golf has for wider groups. It is recommended that regional golf groups develop collaborations with researchers to interpret and document ongoing and past activities, and that national and international golf governance organisations seek and develop further partnerships with researchers to capture, analyse and publish golf initiatives.

**CRITICAL SUMMARY POINTS ON GOLF AND HEALTH**

- Golf is a game, a sport for recreational and elite players, an industry, a land user, networking structure and development opportunity. Different forms of clubs (Municipal, Members and Commercial) engage different demographic groups and have different mechanisms for contributions to health within society.
- The game of golf is thus unique amongst sports and other forms of exercise. It offers physical activity, the challenge of the ball, a swing, mindful focus, nature connection, intergenerational potential and the potential for social interaction.
- Golf is an excellent form of physical activity; it is played at walking pace yet generally offers moderate intensity exercise and over 10,000 steps for a typical round of golf. The activity levels differ depending on whether golfers walk or drive golf carts, course terrain (hilly or flat), whether clubs are carried or not and whether golf is played as a full round or a short round or session on the driving range or in some other context.
- There is little known about the impacts of the swing but it potentially offers additional benefits to muscle and bone strength as well as balance to older golfers.
- Playing golf well demands mindfulness and mental toughness. Exercise outside offers additional benefits to inside activities, permitting nature connection which may be enhanced through the physical exposure and experience in golf. These aspects of the game can confer wider mental health advantages to players.
- Golf offers potential to engage more disabled people. There are excellent, although few, programmes that demonstrate anecdotal benefits to players with autism and Downs syndrome and to players with physical disabilities.
- Golf has the potential to play a greater role in building community through the use of their facilities and the social networks that can be developed, although inclusivity and exclusivity need to be balanced.
- There is potential for golf to strengthen intergenerational ties since golf can be played from early childhood to old age, with golfers in their 80s and 90s regularly playing together.
- Whilst the majority of connections between golf and health are positive, there also some potential negative impacts of golf on health, including the possibility of cardiac incidents, musculo-skeletal injuries, skin cancer and exposure to harmful chemicals.
- Much of the research demonstrating links between golf and health parameters exposes relational rather than causal links. There is a need for future research to investigate consequences of golf on physical and especially mental health and on the capacity of golf to support disabled individuals and groups and optimise opportunities from the unique game attributes and structure of golf as a sport.
SECTION 5: ACCESS AND PARTICIPATION

INTRODUCTION TO PARTICIPATION

How can we improve access to and increase participation in golf, especially amongst youth?

There are three meanings of participation that will be discussed in this section: sports participation, social participation in health and participation as an aspect of golf governance. Access is seen in this chapter to be the possibility for people to engage in these forms of participation within golf.

‘Participation’ refers to an individual actively taking part in sport, with further intensity definitions capturing the frequency and length of activity (Sport England Sports participation measure background paper). Golf participation is diverse, with many golfers playing regularly but at different frequencies from monthly to several times per week. Other golfers may play occasionally, for example when on holiday or on a more nomadic basis as part of a social outing with friends or family. Overall, approximately 55 million people play golf in 206 countries (Farrally et al., 2003).

Sports participation can also be measured in different ways, including spectator interest and news coverage, indicating a cultural embeddedness with which people identify and engage. Comparisons vary, but, for example, golf places ninth amongst global world sports as measured by news coverage, weighted by country size15, after football, basketball, tennis, cricket, baseball, Formula 1, American football and athletics.

Youth sports participation is generally considered to be a positive outcome, and is often broadly associated with youth development, but the relationship is actually more complex than this (Coakley, 2011). Coakley (2011) describes how some youth engaging seriously in sport may experience stress as a result of a strongly competitive environment; and others may not benefit from wider social opportunities because coach or family support constrain interaction. However, the causes of sports related stress, responses to stress and abilities to develop coping mechanisms comprise a complex field (Nicholls et al., 2008).

There is also a wider meaning of participation within sustainability literature and practice that includes a range of types of participation from information, through consultation, involvement and empowerment. This range is actually well represented within the WHO’s notion of social participation in health (WHO 201616).

“Social participation can take on a number of different forms including:
· informing people with balanced, objective information;
· consulting, whereby the affected community provides feedback;
· involving, or working directly with communities;
· collaborating by partnering with affected communities in each aspect of the decision making process; and
· empowering, by ensuring that communities retain ultimate control over the key decisions that affect their wellbeing.” (WHO, 2016)

Hence when we discuss golf and health, we are considering not only the number of people playing but also our capacity to inform people about health aspects of golf, to consult and involve communities about the potential to participate in golf or use golf courses and to enable communities to make decisions about wellbeing in relation to golf and golf infrastructure.

A significant concern in the pursuit of participation is representation. Participation by ‘representative’ people means that the wider public, or...
local community, as appropriate, should be proportionately visible. A lack of representation leads to inequalities in opportunity to participate in sport and/or opportunities to participate in health decisions. Whilst participation is generally believed to reduce social inequalities by offering a voice and role for under represented or minority groups, poorly run participatory processes can actually exacerbate power imbalances and maintain existing hierarchies within society.

Finally, we view participation in the context of golf governance, including policies and processes in governing golf. Governance implies the contributions of all participants and not merely governing bodies (Jordan, 2008; Van Huijstee, Francken, & Leroy, 2007), and thus includes the roles of clubs, federations and international bodies but also the contributions of members, local communities and the wider public. Recently, the notion of ‘good governance’ has been promoted in order to achieve better outcomes and goal attainment, but also to support more democratic, participatory modes of engagement of stakeholders, permitting cycles of mutual learning and strengthening collaborative approaches. Principles to inform good governance in sport have been developed (Van Huijstee et al., 2007).

Golf governance is relatively simple compared to some other sports, with club, regional and national structures (Federations), with (in Europe) a European Golf Association, and the R&A and USGA governing bodies spanning some aspects of governance.

To what extent then does golf support participation in the sense of sport participation, the capacity for people to support their health and wellbeing via golf and through participatory aspects of good governance?

GOLF PARTICIPATION – INDUSTRY PARAMETERS

Participation is growing fast in some parts of Europe and significantly in Asia (HSBC, 2012), but traditional markets (such as UK and USA) have struggled to retain membership numbers. After 25 years of growth within Europe, there was a downturn in 2010. The previous KPMG report on golf participation, published in 2013, demonstrated a decline in the industry across much (although not all) of Europe. However, the European golf market improved slightly in 2014 with a slower decline in participation numbers, stable number of European golf courses and new recruitment initiatives expected to produce positive outcomes, as reported in the most recent KPMG Golf Participation in Europe Report (KPMG, 2015).

Well established and key markets (including France, Scotland and the Netherlands) experienced a decline in the number of registered golfers in 2014. Significant increases in well established areas included gains in players registered directly with the Swiss Golf Association in Switzerland and those registered as a result of initiatives of the Flemish Golf Federation in Belgium. It appears that despite many decreases in registered golfers, there is a large number of participating non-registered golfers in Great Britain and Ireland. In the less developed golf markets of Europe, there was growth in demand. The Czech Republic, as the most established golf market in Eastern Europe, continued to grow with a near doubling of golfer numbers since 2007. In 2015 there were 56,438 registered golfers in this country.

GOLF PARTICIPATION AND DIVERSITY

Although participation figures are high overall, as described above, participation is not equal across different sectors of society. Golf has a poor reputation with regards to participation and access in terms of gender, ethnicity, age and socio-economic status, although practices and attitudes vary globally. Across Europe, there are more male golfers: 66% in 2014, with females and juniors representing 25% and 9% of all registered golfers respectively. Junior golf participation actually declined by 9% in 2014. Attempts to reach and recruit more females and juniors has led to little success in most countries as shown by figures available to date. The highest percentages of junior golfers are in emerging markets, especially in Eastern Europe. However, it is hoped in this report that initiatives such as open days and Scotland’s junior golf programme will pay dividends in future participation diversity and figures.
As well as country differences, there are differences in the form of golf club. Municipal golf clubs offer wider access both in terms of financial cost and membership inclusivity; they can engage people across wide social groupings, enabling a strong level of interaction. Golf in such circumstances can be a positive force, building community cohesion, enabling different forms of knowledge to be integrated and supporting the possibility at least of adaptive capacity. Whilst municipal clubs in some areas can be accessible (Moore, 2010), commercial clubs exclude some people by virtue of socio-economic status and membership clubs can be expensive. Membership of an exclusive club in South Korea can cost $200,000 (An & Sage, 1992). There are regional and national variations in the ways in which golf is enacted. For example, in Scotland, golf has been embedded within communities for over a century, with most small towns sporting their own municipal, open access golf courses; small, egalitarian clubs are thus common. In Sweden and Denmark a golf boom and subsequent investment in municipal clubs encouraged many people to play golf. In Czech Republic and Estonia, for example, golf membership is increasing, but with only membership clubs. In USA there is mixed picture with some exclusive clubs and a large number of daily fee clubs plus many municipal clubs. In Asia golf is associated with aspirations for western modes of lifestyle.

Although popular perception and the mass media have long connected golf with business people and notions of class, only recently has this been explored in the academic literature (Ceron-Anaya, 2010). It has been suggested that in the USA, golf promoted the development of networks amongst the wealthy and an opportunity to exhibit their financial and social capitals (Ceron-Anaya, 2010). Companies acknowledge the power of social networks and have invested billions in golf; some Business Schools offer golf lessons; and business and golf have been strongly linked, especially in USA (Ceron-Anaya, 2010). A network of interconnections through overlapping company directorates situates power within a system of social relationships and can exclude others. Golf can actually reinforce hegemonic interests, acting to promote dominant (elite) interests and merely emphasising dominant values (An & Sage, 1992).

Golf also has an ethnic bias and some clubs have been accused of racial exclusion. For example, in the USA, African Americans have had a significant presence in golf since the 1890s, with excellent players emerging, but barriers to entering the professional ranks limited their impact until relatively recently (Dawkins, 2004). Dawkins recounts how the first black golfer gained full membership of the PGA in 1964, but only a few players were enabled to compete at this elite level until the emergence of Tiger Woods in the mid 1990s. Tiger Woods proved a global ambassador, although the format of his promotion of golf in the Philippines has been questioned (Cole, 2002).

There is potential for positive values and practices to also disseminate through clubs. For example, sustainability awareness and practice could be presented as the cultural norm for elite groups of CEOs as well as local communities.

**ATTITUDES TO GOLF**

Attitudes to golf differ widely nationally and within demographic groups, as might be expected given the discussion above. Popular belief is that public attitudes to golf tend to be that it is for wealthy, older, male and ‘posh’ people (Neate, 2016), although in some places there is wider acceptance...
and a broader cultural engagement (e.g. Scotland and Sweden) (Moore, 2010).

Such attitudes are often seen to be negative and inhibit participation, but there are circumstances when such attitudes create an aspiration in association with the perceived elitism of golf. Hence the game of golf becomes a component of western type lifestyles in emerging and rapidly growing economies, for example in Asia.

Finally, there is grey literature on attitudes within the golf sector and how they limit participation. For example, golf clubs have been accused of maintaining a stuffy, rigid atmosphere that puts off younger players (Neate, 2016). Clubs have been accused of poor customer service and thus limiting the industry. Attempts to change popular attitudes to golf and portray a sport that is open, modern and fun have been implemented, including a recent video clip advert that was released in UK.

**SPORTS PARTICIPATION INTERVENTIONS**

It is agreed that intervention programmes to increase physical activity and sport participation in EU are required (Commission of the European Communities, 2007b). However, such interventions are not often evaluated, meaning that we have little understanding of their effects on changing behaviour in relation to physical activity (Reis et al., 2016). Rigid, experimentally controlled experimental studies have been undertaken but they tend to be researcher led and rarely leave organisations with the capacity and skills to continue such interventions. There is thus a need to build the willingness and capacity for effective monitoring and evaluation around sports participation interventions, and to ensure that this is resourced and planned at the time of planning and funding application.

Youth sport participation interventions often target coach behaviours, attempting to promote more engaging and supportive approaches. Such interventions can not only influence physical activity, but also psychosocial health variables such as anxiety and self-esteem (Langan, Blake, & Lonsdale, 2013). There is evidence that altering coach behaviour in this way improves school performance as well as activity uptake (Smith, Smoll, & Cumming, 2007). The theoretical framework supporting coach behaviour changes in this way is often a form of motivational psychological framework. For example, self-determination theory (SDT) has helped explain why positive benefits are received from some youth sports interventions, such as increased physical activity and autonomous motivation in both adolescents and adults (Ryan, Patrick, Deci, & Williams, 2008). SDT appears to be effective in sports, physical activity and educational contexts (Langan et al., 2013; A Van Hoye et al., 2013; A Van Hoye et al., 2015).

It is proposed that the success of SDT in helping design effective sports participation interventions can be explained partly because it enables satisfaction of basic psychological needs of humans, such as autonomy, relatedness and competence (Deci & Ryan, 2000). This satisfaction not only facilitates personal development, psychological growth and well-being, but also affects physical activity and health (Fortier, Duda, Guerin, & Teixeira, 2012; Silva, Marques, & Teixeira, 2014). The design of the intervention and the leadership of such programmes are important to ensure these needs can be fulfilled (Ryan et al., 2008). Leadership based on basic needs theory has led to a reduction in sport dropout, improved school grades and decreased school absence (Bass, Brown, Laurson, & Coleman, 2013; Ericsson & Karlsson, 2014). However, challenges to the support of autonomy supportive coaching behaviours have been identified, such as shifting from the mind set and experiences of an athlete to a facilitator (Langdon, Harris, Burdette, & Rothberger, 2015; Mahoney, Ntoumanis, Gucciardi, Mallett, & Stebbings, 2016). Peer pressure from coaches employing conflicting coaching styles can also impede this type of coaching behaviour (Mahoney et al., 2016). Support in coaching methodology for coaches adapting to autonomous behaviours is required (Langdon et al., 2015; Mahoney et al., 2016).

Sports intervention success can also be enhanced through a supportive environment, appropriate site selection and training of others involved in the intervention, and so the role of sports organisations and structures remains critical (Petitpas, Cornelius, Van Raalte, & Jones, 2005).

One challenge for youth sports participation interventions is to clearly understand the goals
they seek. Interventions supported by government or organisations with a health mandate will often seek to increase physical activity with non-specific sport focus; initiatives supported by particular sports federations will seek to enhance their market share, recruitment and investment for the future without other sports comparisons; community and wellbeing interventions may seek to optimise social interactions and outcomes. In each case, it may be useful to ask if this sports intervention is meant to offer a route to better physical or mental health, personal development, sense of community or building the capacity of sports organisations and structures to run further interventions successfully or some combination of these goals.

We anticipate that the GoGolf programme will leave a legacy of coaching innovation and increased youth participation. Lessons could be learned from Scotland’s clubgolf programme, which offers a golfing experience to all Scottish children and employs an interactive, fun aspect including different ball skills. To date this intervention has not been fully evaluated, but it uses innovative coaching methods and rolls out widely across Scotland. In Birmingham, there is an interesting programme using urban golf in which a portable mat, simple golf club and a soft ball are used by players to follow the ball within an urban setting, negating the need for a golf course. This intervention focuses on equipment and infrastructure barriers in engaging youth. One course in the Netherlands has developed a driving range to enthuse younger players, in which novel infrastructure offers them different challenges in hitting the ball into fun targets in a colourful environment. A further initiative of interest is the MyActive run golf courses in England, which are being promoted along a model that combines leisure, fitness and golf facilities and offers family packages.

**CRITICAL SUMMARY POINTS FOR GOLF AND PARTICIPATION**

- Participation can be understood in different ways. With regards to sports participation there is a spectrum of potential participation in which more intense participation can be empowering; and such participation will include not only playing a sport but also contribution to governance of the sport.
- Participation is usually seen to require representative engagement by different demographic groups. Golfer are not currently representative across gender, age, ethnicity and social-economic groups. However, with regards to sports participation, golf can be seen to support physical activity and social connectivity for a traditionally ‘hard to reach’ group of older males.
- Participation in golf depends on the type of golf course and on attributes and activities offered by particular golf clubs.
- Industry parameters have been alarming over the last eight years with declines in membership across many countries with well established golfing population. However, this decline is slowing and there is a need to understand new phenomena in membership, pay and play and diversified family membership packages as well as alternative play modes (1 hour, short course etc).
- Attitudes to golf indicate concerns around cost and attraction for women and girls and other demographic groups and infrastructural barriers associated with the focus on 18 hole golf courses as the basis for most play.
- Interventions are required to encourage the uptake of golf in young people, to promote alternative formats of golf (such as urban golf) and to continue ways of attracting older people for whom golf has long been an acceptable form of sport.
- Innovative coaching methods that engage needs such as autonomy, relatedness and competence could enhance intervention impact.
- There are some excellent examples of interventions in golf, but relatively few have been evaluated. We need to combine wider understanding of how to change behaviour, how to increase sports participation and how to encourage community activity with particular knowledge of golf participation to increase uptake of golf and enable them golf to play a stronger role in societal wellbeing.
SECTION 6:
CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

This review has examined how the golf sector might pursue more social sustainability, particularly around access and participation by young people, as a contribution to greater health and wellbeing. Whilst the golf sector has responded well to sustainability challenges in some areas, a strategic approach will ensure that the game of golf fulfils its potential to contribute to the development of a healthy and just society living within environmental limits, in line with contemporary concepts of sustainability. This focus will enable golf to respond to local and international drivers, including an intention to enhance health of young people across Europe and the UN Sustainable Development Goals. We thus consider that in order to address the question of how we might enhance the social sustainability of golf, we should increase participation by under represented groups; consider golf courses as crucial within local community contexts; recognise and encourage the diversity of golf courses and clubs.

It was described in this review how there are global health challenges. In Europe many young people are not as physically active as recommendations state, and levels of obesity have continued to rise. Physical activity also improves mental health. Increasing physical activity levels in youth improves physical and mental health, scholarly attainment, self esteem and possibly lifetime levels of activity. We can investigate the health of individuals, but increasingly we are promoting wellbeing, in which we support the wider context for people. A sustainability lens also allows us to consider community wellbeing and to recognise that community wellbeing is influenced by local environment. When individuals are in good physical health, with high levels of self esteem and connectivity within their community, they in turn can contribute to a more resilient society.

Golf is unique amongst sports in the extent to which it offers a sport with high profile elite events and yet a large following of recreational and locally competitive players; enables social networks; contributes economically as an industry and within development and tourism strategies; and covers significant land areas. Its potential contributions to the health and wellbeing of individuals and communities are significant. The unique suite of attributes of golf include the provision of physical activity of moderate intensity yet accessible walking; the swing; mindful focus; nature connection; social interaction or solitude as preferred; intergenerational engagement.

Playing golf confers health benefits, contributing more than the recommended daily step count, offering nature connection and social connectivity, with possible benefits from the swing, particularly in older players. Negative health impacts through accident, injury, skin damage and other causes can be minimised and are outweighed by health benefits. In response to our second research question, there is thus significant potential for golf to contribute to health and wellbeing, through the benefits of physical activity but also through mental health outcomes (although the evidence is less compelling) and nature connection (which requires further research) as well as wider impacts on community wellbeing.

In some regions, including some European countries, golf membership has been declining and junior members comprise a minority. In order to ensure a flourishing future for golf and also enable it to contribute most effectively to the health and wellbeing of communities in Europe, there is the need for a focus on social sustainability, including increasing youth participation. Golf players are not currently representative of the wider population. Although the cultural context varies across countries and types of golf clubs, golfers are more likely to be male, older, white and economically comfortable. Perceived barriers to participation in golf include attitudes to golf, cost, time and access constraints.

There is a need to undertake rigorous research in order to better understand the socio-cultural
context of golf, especially in relation to young people and other demographic groups not fully represented currently. We need science to define contributions as opposed to correlational relationships between health outcomes and golf. However, most important is the need to undertake and evaluate appropriate interventions to enable under represented groups to fully participate in golf. Thus will golf achieve its potential and the future of golf be embedded within our changing societies. Hence in answer to our third and final question, increasing participation can occur through a combination of actions by golf courses and clubs, Federations, governing bodies and other organisations.

PRACTICAL RECOMMENDATIONS ARISE FROM THIS REVIEW:

- Address attitudinal concerns around cost, exclusion and the format of golf through structural change and awareness raising campaigns
- Ensure golf courses and clubs are welcoming to young people; and to families; and that they offer a variety of play options including driving range and short courses
- Pursue diversification of courses to offer different suites of activities for local families and communities
- Explore different financial models such as pay and play
- Undertake interventions to promote golf to young people and demographic groups currently under represented; by Federations and clubs and NGOs and other organisations with responsibility to promote physical activity and sport

FOOTNOTES

1 EU Physical Activity Guidelines Recommended Policy Actions in Support of Health-Enhancing Physical Activity. Approved by the EU Working Group “Sport & Health” at its meeting on 25 September 2008
2 http://www.euro.who.int/en/health-topics/disease-prevention/physical-activity/activities/hepa-europe
3 http://ec.europa.eu/health/nutrition_physical_activity/platform/index_en.htm
5 https://www.mentalhealth.org.uk/publications/how-to-using-exercise
8 https://themindfulgolfer.co.uk
9 http://www.thebarefootgolfer.com/how-to-use meditation-to-lower-your-golf-scores;
   http://www.golfinthemoment.com/golf-and-meditation/
   http://schoolofwisdom.com/golf/intro.html
10 https://golfstateofmind.com/developing-concentration-from-range-to-course/
11 http://www.edgagolf.com
12 http://www.gfaca.org
13 https://www.youtube.com/watch?v=ClVsl3jINyQ
15 http://www.biggestglobalsports.com
16 http://www.who.int/social_determinants/thecommission/countrywork/within/socialparticipation/en/
17 http://www.sportandrecreation.org.uk/pages/principles-of-good-governance
18 Thisgirlgolfs https://www.youtube.com/watch?v=_BgcWBDqijGw

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REFERENCES


variable- and pattern-centered approaches for examining effects of sports participation on youth development. . Developmental Psychology, 45(2), 368-382. doi:https://doi.org/10.1037/a0014577


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