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# Unlocking the game within the child: a youth sport pedagogy model from the U.S.

Ronald W. Quinn

Department of Sport Science and Management, College of Professional Sciences, Xavier University, USA  
Associate Professor, Director online Graduate Program in Coaching Education & Athlete Development  
quinnr@xavier.edu

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## ABSTRACT

The positive and appropriate development of children through youth sport is of the utmost importance. The quality of this experience can also have a direct effect on their life-long engagement in physical activity and sport (Newman et al., 2018). The Game in the Child Model was designed on the premise that you must first learn how to teach the child before you can teach them to play the sport and is most beneficial for children 12 years of age and younger. This foundational premise guides all other components of the model from a philosophical as well as a developmental level. These guiding factors consist of four levels beginning with child characteristics (how they think, feel, grow), coach characteristics (their past and present experiences), organizational characteristics (type and purpose). The leads to gaining a better understanding of how play can be used as a tool for growth and development within an athlete-centered environment. The final two levels address a game-based pedagogical approach that reflects the first two levels with the goal of unlocking the Game within the Child. The model also recognizes the importance of the child's social, economic, and political influences through the envelopment of Bronfenbrenner's Ecological Theory (1975, 1977).

## KEYWORDS

athlete-centered coaching; coach education; pedagogy; youth development

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## INTRODUCTION

“Play may be the key to open many doors” (M. Torbert, personal communication, March 16, 1985). This simple phrase acknowledges a core element for the delivery of physical education, coaching and youth sport programs. Without the play element, which may or may not involve competition, a child’s learning and development may not get the start that it requires. Additionally, the need for unstructured free play is crucial and greatly limited today giving rise to declines in psychological well-being. Given that free-play has been so dramatically reduced over the last 60 plus years (Devereux, 1976; Elkind, 2007), community-based sport organizations must provide a structured child-centered learning environment. Further, Torbert (1980) states: “It has been my experience that well-planned play may increase a child’s willingness to become involved, and in turn more ‘ready’ for experiences that follow. Activities that allow a child to solve problems, make a viable decision, to feel personal success seem to increase a child’s active efforts to cope and his or her willingness to take chances” (p. 1). The challenge is that youth sport organizations generally don’t have clear developmental and/or instructional models for coaches to follow (Fawver et al., 2020; Gilbert & Trudel, 2004).

Long-term athlete development models generally act as holistic pathways for an athlete’s first sport experience and continued progress to mastery and life-long sports participation (Balyi & Hamilton, 1995; Balyi & Way, 2010). Long-term athlete development models have also taken a national athlete development approach, such as the American Development Model (*USOPC American Development Model*, n.d.) and the Canadian Sport for Life (*Long-Term Athlete Development Framework*, n.d.). However, Ford et al. (2011) caution that LTAD Models have mainly been viewed along a physiological “windows of opportunity” framework that has yet to be empirically supported. To this end, LTAD Models have highlighted the importance of viewing athlete development more holistically through a life span continuum. More recently the United States Department of Health and Human Services launched a National Youth Sports Strategy (*HHS Launches the National Youth Sports Strategy – News & Events | Health.Gov*, n.d.) with the purpose of increasing and maintaining youth sports participation through coaching, mentoring, and teaching. The National Youth Sports Strategy has a wealth of information and recommendations to improve the youth sport environment for all stakeholders.

What most coaches, coach educators and developers may not be familiar with is the model-based instructional approach found in physical education pedagogy (Gurvitch et al., 2008; Metzler et al., 2008) such as Teaching Games for Understanding (TGfU) (Griffin & Butler, 2005; Thorpe et al., 1986), Game Sense (Lauder, 2013) or the Tactical Games Approach (Mitchell, 2003). These are all applicable for the youth sport setting and have been used in various settings (see, Chatzipanteli et al., 2016; Cláudio Machado et al., 2021; Gréhaigine et al., 2010; Gubacs, 2004; Gubacs-Collins, 2007; Harvey et al., 2020; Light & Robert, 2010; Lindgren & Barker, 2019; Ramos et al., 2021).

Youth sports have been part of the American culture since the late 19th century with formal educational programs for coaches beginning in the 1970s (Albrecht & Strand, 2010; Wiggins, 2013), however the coaching practice was dominated by coach-centered practices through mostly a technical model. It was also in the early 1980s where

organized youth soccer started to grow. Traditionally, as described by (McCabe, 2017; Oliver, 2011), soccer was an ethnic sport played in urban areas by adult men and later boys teams known as juniors. Essentially, the game grew from the top down starting with Under-19 age groups and gradually over the next decade or so, to Under-6 typically in two-year grouping (i.e., Under-16, 14, 12, 10, 8, and 6). Additionally, hosting the 1994 Men's World Cup (Gerke, 2019) and the phenomenal success of the Women's National Team from 1991 on (Wahl, 2019), the game has transitioned from an ethnic sport to becoming part of the American sport culture. The youth soccer game is now firmly entrenched in almost every community of the country with a high reliance on the volunteer youth parent-coach took root in the 1980s and 1990s.

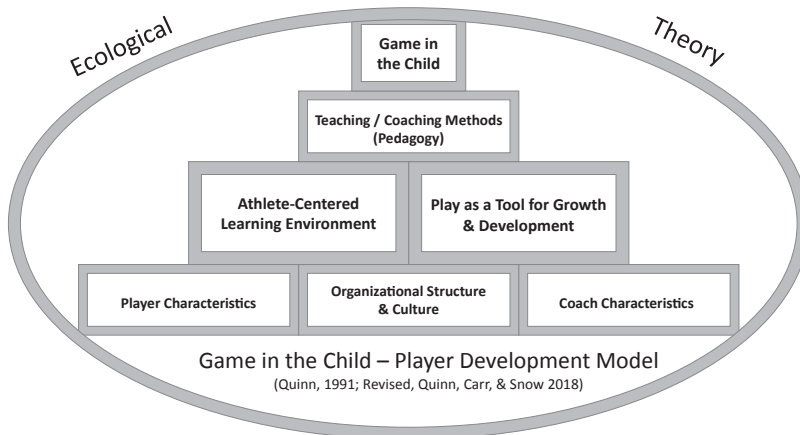
The volunteer parent-coach during this time was likely to have no soccer playing experience and was asked to coach his son or daughter or they would not have a team. Coaching education in soccer mirrored a similar adult game focus and was not relevant in the training of the youth parent-coach. This lack of quality coaching at the youth level was a concern of Timo Liekoski, US Soccer Federation director of player development who sought the advice of educators and youth soccer experts to create a new youth coaching education program specifically to address the youth game aged 12 and younger (Quinn & Carr, 1998). The aim of this article is to describe the youth coaching model that was adopted to address the parent-coach. This model is known as the *Game in the Child* (Quinn, 1990) and has been the foundation for National Youth Soccer License, sponsored by US Youth Soccer, under the auspices of the United States Soccer Federation. However, since 2020 it has become the instructional framework for the National Youth Diploma within the United Soccer Coaches, Coaching Academy. Evidence indicates that learning how to coach youth soccer using the *Game in the Child* model leads to, increased enjoyment for both coach and child, coaching confidence, and more engaged players (Quinn et al., 2012).

### **The Game in the Child Model – Development**

As previously discussed, the development of the youth game in the U.S. followed the adult game not only in form (11v11) but also within coaching education courses. Course content was reduced with fewer contact hours so that the parent-coach would receive the “basics” to begin coaching (Quinn & Carr, 1998). The youth game mirroring the adult game followed a similar path of other American sports, i.e., baseball, basketball, football, where the youth game was a replica of the adult game. As an elementary physical educator, I observed that the youth soccer game when played did not mirror the adult game and was typically called “beehive” soccer where all players on both teams were all in once space chasing the ball. This caused coaches to force children into positions, which of course only worked until kickoff, as compared to baseball where everyone had a specific role. This led me to state two propositions: 1) The youth game does not and should not resemble the adult game, and 2) if youth soccer is different than adult soccer, then youth coaching is also different from coaching at the high school, college, or professional levels (Quinn, 1988). These propositions formed the fundamental question, do we coach the child in the game, or the game in the child? It was my belief that we needed a model that was child-centered versus adult-centered, where we learned to teach the child before teaching them how to play the sport (Quinn, 1988).

### The Game in the Child Model – Description

The *Child in the Game* Player Development Model is a child-centered holistic approach to athlete development, while also addressing coach development, and its connection to organizational structure and culture. The foundational blocks frame the importance of understanding the characteristics and qualities of the child and coach, within the organizational structure. The second level acts to support the coaching pedagogy by examining how children learn and the simultaneous role that play provides as a developmental tool. Finally, Bronfenbrenner’s Ecological Theory (Bronfenbrenner, 1975, 1977) envelopes the model as an indication of the role and importance various levels of social, cultural, and environmental factors play in a person’s overall development; nothing happens in isolation. This leads to a child-centered, games-based coaching pedagogy, that opens the child/athletes to discover and enjoy of the game (Becker et al., 2018; Egan, 1994). The goal is to empower and unlock the game within the child, where a player can remain creative, seek out challenges, and internalize the game.



**Figure 1** The Game in the Child Model (Quinn, 1991; Quinn & Carr, 1998)

Level one lays the foundation for the coach to understand athlete-centered coaching and their role. The first component is to gain a better understanding of the characteristics of the child, how they think, their physical development and their social needs. Essentially to understand the child and a child/person first, and a player/athlete second. It is also important to recognize that all these factors reside with a social, cultural, and political environment. The second component is to recognize what the coach, as an adult learner brings to the coaching process. Here we identify the coach’s goals, needs, and expectations, and recognize the value of their past sport and/or coaching experiences. Finally, the organizational characteristics and policies may influence both the coach and athlete experience, and their philosophy, structure, and purpose need to be clearly stated.

Level two has two components that connects athlete-centered learning with the role that a play element needs to play. The athlete-centered environment involves six principles of youth coaching as development by Fleck et al. (2008) and include:



*developmentally appropriate* activities, *clear, concise and correct* information (not long winded instruction), ensure a *safe and secure environment*, create progressive challenges that move from *simple to complex*, while providing opportunities for the athletes to *make decisions* (also a skill), and finally to ask in all activities what are the *implications for the game*. The second component sees play as a tool for growth and development. It is here where game-based instruction is implemented and presented utilizing Torbert's play concepts (Torbert & Schneider, 1993) expansion, equalization, and interactive challenges within three activity classifications known as body awareness, maze games and target games (Fleck et al., 2008). Expansion strives to modify the activity as to increase the number of opportunities to participate, this could include increasing or decreasing the space or adding more balls or goals. The goal of equalization is to make sure that every child has an equal opportunity for success, and not just the 'good' players. Finally, given the differences in ability levels within all team, interactive challenges encourage the opportunity for all ability levels to participate and interact. This can be achieved by eliminating elimination games. These three concepts are then applied to each of the game/activity classifications. Body awareness activities include any activity where the child is personally interacting with the ball, this could include stretching, bouncing, catching, or dribbling. Once such activity could be Body Part Dribbling, where the children each dribble their ball and when the coach calls out a body part, they stop the ball with that part. Maze games are activities in which children participate in a 360° environment, this would include tag games, and any activity without goals on the side. Target games provide direction to a specific target, generally a goal, but it could also be coach or another object. The outcome is encouraged risk taking and creativity and all athletes get to play as children.

Level 3, teaching and coaching pedagogy puts into practice the first two levels to emphasize the coach as a teacher/facilitator of the environment who must use evidenced based practices is the design and delivery of a practice session. This is where the coach is encouraged to design developmentally appropriate practices that keep children fully engaged to begin the process of developing game ownership and responsibility.

Level 4 unlocks the *Game in the Child* and is achieved when a coach sees children taking risks and being more creative, demonstrates improved decision-making, improved technical-tactical-physical-social/emotional growth, becomes more empowered, and learns to accept challenges. This becomes evident when players perform moves or demonstrate tactical decisions that were not necessarily directly taught, indicating an internalization of the sport. Finally, nothing happens in isolation and the coach must recognize the role that the child's home and school environment, organization, community, and society plays in athlete development. It is here that the Game in the Child Model is enveloped by Bronfenbrenner's Ecological Theory (Bronfenbrenner, 1975, 1977), and completes the holistic nature of the Game in the Child Model.

### **The Game in the Child Model in Practice**

Youth soccer coaches in the U.S. have been using this model for the past 25 years resulting from attending either the National Youth License or National Youth Diploma courses. Even though only two studies on the NLY have been conducted to date, I have

received many unsolicited comments from coaches regarding their coaching practice. A few of those comments have been selected that represent a paradigm shift in their coaching methodology.

“Without the course, I doubt that I would have moved on with coaching. I am having a fun time and the kids are clearly enjoying the experience. The course and over-all experience gave me the confidence in beliefs that are already part of my philosophy. More importantly, I gained a wealth of knowledge and the sense of support on how to better instruct my players in developing their soccer skills.” (T. Singer, personal communication, September 6, 2007)

“I believe I have a better coaching toolbox available to me and some new approaches to my ‘old’ coaching activities that will be invaluable to my players.” (E. Springer, personal communication, August 16, 2007)

“I have to say without a shadow of a doubt the National Youth is definitely one of the best licenses I have undergone its philosophy and its user-friendly atmosphere set it apart from all other American licenses. I am not aware if you know this or not but many people from the UK and their academies are coming to the US to undergo the license. I thank you for allowing the US to lead the world in grass roots football. Thanks for sharing your vision of releasing the game within each and every child worldwide.” (C. Panayiotou, personal communication, Sept 17, 2007)

“You most likely do not remember me as you instruct at numerous courses with many coaches, but I had the privilege of attending the National Youth License course as a participant, in which you were one of the instructors, in December of 2007, in Evansville, Indiana. By the way, the course influenced my life to an extent beyond my expectations. Not only did it change the way the I work with youth participants of all sports, but it also revised the manner in which I raise my own children! Great life lessons in the course!” (J. Jacobson, personal communication, April 17, 2009)

“I feel the NYL is the best coaching course offered – better than the ‘A’, ‘B’ or ‘C’. I was a participant in the very first one given. Tom Fleck and Ron Quinn conducted it for all the National Staff at our annual January gathering in Florida about 20+ years ago looking to sell the merits of the course to US Soccer. I was impressed then and I now make it a mandatory requirement for every staff coach in my club.” (H. Leung, personal communication, December 7, 2009)

“I actually employed many of the ideas and techniques I learned from this specific course in my first practice with my kids upon returning. Sufficed to say, my kids were quick to tell me that it was the most fun practice they had ever had with me. Although I was already confident in my abilities and skills as a youth soccer coach, the course taught me that there is always room for improvement, and that no matter how much I think I know, there is always more I can learn. Indeed, whether I end up passing this course and receive my certificate or not, I’ve already learned much about myself and coaching and am looking forward to instilling all that I have learned into my regular practices.” (M. Mir, personal communication, March 18, 2010)

The coaches’ comments above reflect the impact that the Game in the Child model through the NYL course has changed their coaching practice and methodology. Table 1 illustrates how youth coaches can make a paradigm shift from adult/coach-centered to child/athlete-centered practices.

Table 1

Formation	Traditional Approach	Game in the Child Approach
Individual Maze Game	Tag – One person is it without a ball, everyone else has a ball. The “It” tries to tag someone, and the roles change.	Everybody’s It – Each person has a ball and earns a point every time they can tag another person while still in possession of their ball.
Maze Game	Slalom Dribbling – Athletes are in lines and proceed one at a time dribbling in and out of the cones.	Individual Gates – Cones are randomly arranged as small three-meter goals. Each player with a ball attempts to dribble through as many “gates” as possible within one minute.
Pairs Target Game	Statics Passing – one ball for two players pass back and forth to emphasize inside of the foot passing.	Soccer Marbles – This is a passing game where player take turns trying to hit each other’s ball. The activity begins with one player playing their ball 5–10 meters away. The second player then attempts to pass their ball to hit their partner’s ball. Score one point for a hit. If there is a miss, the moment that the passed ball moves completely pass the target ball, that player’s turn begins, and they try to strike the other ball while it is rolling to score a point. This turns out to also be a running game. This process continues until one player earned 10 points.
Maze & Target	Passing to goal – in two lines, players pass the ball back and forth moving toward the goal and shoot.	Gates in Pairs – same as individual gates, players attempt to see how many goals they can score in one-minute.
Small Groups Maze Game	3v1 – In a circle or grid, 3 players pass the ball while the defender tries to win it or kick it out of the area. When this happens, play stops and the player who lost the ball becomes the defender.	3v1 dynamic – same formation and play, except the defender must win the ball and immediately dribble outside of the area without losing it, then immediately turns, and change’s role with the player who lost the ball. Play is continuous and allows for immediate transition from defense to attack, attack to defense.
Target Game	Pattern Passing to Goal – In groups of three or four, players pass the ball following a predetermined pattern leading to a shot on goal, with or without a defense.	4-Goal Game – In groups of 3 or 4 (could be more) in a 20×40 area, 4 goals are placed at each end. Each team defends and attacks the two end goals.
Team Target Game	Full Scrimmage. Although a very important activity, the scrimmage demands should reflect theme or emphasis of the practice.	Play a 6v6, 7v7, or 8v8 game to two goals with a condition, such as, playing 2 or 3 touches per person, a passing pattern of short-short-long, or all players on the attacking team must be on the same half of the field for a goal to count.

## CONCLUSION

The Game in the Child Model encompasses all age-groups and ability levels to ensure that all children have the opportunity for success. It provides the coach, organization, and parents a long-term developmental perspective that is child-centered and evidenced-based. It conveys a philosophical perspective on youth development and coaching and strives to place children on a path of life-long physical and sport participation. The model, as discussed earlier has been part of the US Soccer National Youth License since its inception in 1994 and would like to conclude with this statement from a coach upon implementing the model with his 8U team: "I changed my practice last night to incorporate some of the games and activities we learned about this weekend. It was so hot that I intended to cut the practice short ... but the girls would not let me. They had so much fun and told me so several times. They were so disappointed when I said it was over. What a difference in their attitudes. We still accomplished the same skill sessions ... but everything was a game. Even my daughter, also 8, who has been getting a little 'burned out' said, "Dad, that was fun. Can we play that dribbling game again Thursday?" I told her, "Hannah, all you want to do is play games!" She replied, "Yep! All a girl wants is to have fun! Thanks for the course. The proof is in the pudding." (J. Taylor, personal correspondence, July 22, 2008)

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# Gambling among university sport students: a preliminary analysis

Carwyn Rh. Jones<sup>1,\*</sup>, Harry C. R. Bowles<sup>2</sup>, Daisie Mayes<sup>1</sup>, Heidi Smith<sup>1</sup>

<sup>1</sup> School of Sport and Health Sciences, Cardiff Metropolitan University, Cardiff, UK

<sup>2</sup> Department for Health, University of Bath, Bath, UK

\* Corresponding author: crjones@cardiffmet.ac.uk

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## ABSTRACT

The aim of this study was to explore risks associated with the gambling habits and attitudes of sport students governed by betting integrity rules. Using focus groups with male and female student rugby and football players, we identified four areas of concern. First, participants considered gambling as a 'normal' pastime – a largely harmless form of communal entertainment. Second, we found that participants' gambling behaviour was influenced by marketing strategies and by peers. Third, although participants were aware of some of the potential risks of gambling, they had a limited understanding of how problem gambling and addiction might develop. Taken together, we believe these encourage gambling and increase risks of gambling related problems. The fourth concern relates to breaking integrity rules. Although we found no evidence of intentional corrupt behaviour, participants had a casual attitude towards gambling regulations, and some broke the betting rules in ways they deemed trivial. Moreover, participants did not seem to take anti-corruption education/intervention particularly seriously.

## KEYWORDS

gambling; student-athletes; attitudes; risk; integrity; harm

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## INTRODUCTION

In Great Britain (GB), a recent Gambling Commission (2019) survey found that 46% of the 4009 respondents aged 16 and over had gambled in the last 4 weeks, with 52% of gamblers gambling at least once per week. Rapid expansion of the gambling industry in the UK since the 2005 Gambling Act, coupled with advancements in technology, has made gambling increasingly accessible, much simpler, and less stigmatized (Orford, 2010). Growth in gambling opportunity and behaviour has fuelled a growth in gambling problems including gambling disorder or addiction (Orford, 2020). Each problem gambler is said to effect between 10 and 17 other people highlighting gambling's potential to not only cause, but to extend harm within communities and among gamblers' social networks (Orford, 2010). Harms include debt, crime, job losses, relationship breakdown, anxiety, depression, alcohol and substance misuse and suicide (Abbot et al., 2013). It is unsurprising, therefore, that gambling in the UK and internationally has become a major public health concern.

Despite its risks and associated harms, gambling continues to be heavily promoted and endorsed within liberalised gambling jurisdictions. In the UK, the 'gambling establishment' – a powerful alliance of interests – works to encourage and normalise gambling in a variety of ways (Orford, 2020). The gambling establishment includes the gambling industry (the companies which supply products), but also governments whose policies have enabled expansion through de-regulation, and non-government organisations such as football and rugby clubs (and governing bodies and league and cup competitions) who play a role in promoting gambling.

According to Cassidy (2020), the gambling establishment perpetuate an entrenched way of thinking, talking, and acting positively in relation to gambling through a series of discursive strategies designed to shape collective and individual gambling attitudes and behaviours. Orford (2020) presents five 'types' of discourse which contribute to the normalisation of gambling.<sup>1</sup> Three are particularly pertinent in the way that they frame individual behaviour, namely the 'harmless entertainment', the 'freedom to choose' and the 'personal responsibility' discourses. Collectively, these narratives work to minimise the perception of risk and promote a particular conception of problem gambling that removes responsibility from the product and places squarely at the feet of a minority of individuals who, for some reason, are unable to exercise restraint (Cassidy, 2020). Space does not permit a detailed discussion on gambling disorder, but suffice to say there are number of contributing factors about the individual, the type and availability of gambling options, the gambling setting and the prevailing gambling culture that lead people towards establishing harmful gambling practices (Flanagan, 2011; Schüll, 2014).

Marketing plays a crucial role in delivering establishment messages frequently and powerfully to the population, young and old (Jones et al., 2019). Recently, concerns about the impact of gambling marketing in general (Binde, 2009; Derevensky et al., 2010), and through sport in particular (Hing et al., 2013; Jones et al., 2019; Jones,

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<sup>1</sup> The five discourses discussed by Orford (2020, 44) are the 'harmless entertainment', the 'ordinary business', the 'social and cultural benefits', the 'freedom to choose' and the 'personal responsibility' discourses.



2015), have been raised. Betting on sport and on football in particular has grown significantly in recent years (Sharman, 2020) and is a key component of the gambling industries expansion in Great Britain (Lim et al., 2017). Gambling promotion and marketing have become ‘part of the furniture’ of consuming sport and fandom internationally (Lamont and Hing, 2020; Thomas et al., 2012a), with research indicating that marketing strategies utilised by the sports betting industry are specifically designed to target young males (Deans et al., 2016b; Lopez-Gonzalez et al., 2017).

Consequently, young men with an interest and/or involvement in sport are increasingly incentivised to gamble (Thomas et al., 2012b), with watching and betting on sport acting as a potential gateway to gambling related harms for this group (McGee, 2020). Hing et al. (2016) found that in Australia, men betting on sport who are young, single, educated, employed or full-time students were particularly vulnerable to high-risk gambling because of their exposure to sports betting marketing among other factors such as family/friend influences. Watching televised sport is associated with greater intention to gamble, and whilst men tend to watch more sport than females, women who watch sport also display greater intention to gamble (Hing et al., 2013). Advertising through mainstream and social media channels has also been shown to act as an external barrier to changing problem gamblers’ beliefs about the balance of knowledge and skill versus chance inherent to sports betting products (Lopez-Gonzalez et al., 2020). Specifically, Lopez-Gonzalez et al. (2020) findings revealed the manner ‘winners’ are promoted and portrayed in marketing reinforce problem gamblers’ perceptions about the value of knowledge and skill, and how certain approaches to betting can lead to greater success (profit).

Accompanying the rise and popularity of sport betting and the unabashed marketing regime of the sports betting industry, is the evolution and subsequent exploitation of technology. Indeed, developments in technology have played an important role in the growth of the gambling industry which has sought to maximise profit through creative and technologically sophisticated ways to entice and sustain game play and encourage extended bouts or binges (Schüll, 2014). Increasingly, gambling takes place online through mobile technology enabling ‘round the clock’ access to a variety of gambling related products and markets (Deans et al., 2016a; Gambling Commission, 2019; Griffiths et al., 2011; Killick & Griffiths, 2020).

The convenience and constant presence of online sports gambling present additional risks to other forms of land-based gambling such as bingo or horse racing, and is arguably riskier (Cassidy, 2020). For example, research has shown online betting is characterised by a lack of restrictions on the ability to place immediate bets and the opportunity to chase losses (Lopez-Gonzalez et al., 2017). For the young men in McGee’s (2020) study, the ‘facelessness’ of online betting was a significant risk factor as it enabled gambling without interaction with other people who may have otherwise criticised or judged their gambling behaviour. Similarly, Killick and Griffiths (2020) noted online sports betting using smartphones provided a solitary gambling environment absent of guilt, stigma, and feelings of judgement in a sample of young male and female gamblers. Their findings also suggest gambling via a smartphone allows immediate access to gambling, ease of access to in-play betting and facilitated gambling unhindered by interruption. Young people are thought to be particularly vulnerable to the risks of online gambling (King et al., 2010) due, in part, to young people’s proficiency and

familiarity with multi-media (Griffiths & Parke, 2009) and the ubiquitous presence of mobile technology in young people's lives (Conlin & Sillence, 2021).

Allied to the socialising effects of the gambling industry's products and profile-raising tactics, a consistent finding across the gambling literature is the direct and indirect influence of peers, friends and family members on the gambling of young adults (Abbot et al., 2013; Deans et al., 2017b; Hing et al., 2016). Gambling with others often leads to gambling more than if alone (Abbot et al., 2013) and regularly begins as a social activity before turning into more compulsive behaviour (Killick & Griffiths, 2020). Within friendship, peer or team groups, betting and discussing 'odds' become part of the everyday narrative (McGee 2020, Hing et al., 2016; Pitt et al., 2016) and can generate social pressure to gamble (Deans et al., 2017a). This link between peer influences and gambling activity often manifests as a form of subcultural identity (Iwamoto & Smiler, 2013). Gordon et al. (2015) describe a 'consumption community' among peers in relation to sport gambling. In other words, specific friendship groups or teams might be characterised by a gambling ethos that normalises, values and rewards certain betting habits.

The existence of a gambling ethos among specific sub-groups is further supported by research into the gambling culture of professional sports teams. Lim et al. (2017) highlight gambling as a salient feature of life as a professional footballer in the UK. Their qualitative insights from male professional footballers who had received, or were receiving, treatment for gambling disorder reveal a gambling rich environment characterised by regular group outings to casinos and racecourses, 'card schools', the intensive sharing of tips among teammates and other colleagues, and a strong perception that engaging with gambling activities was good for 'team spirit'. Combined, these factors worked to normalise heavy betting practices and acculturate young professionals into the authentic lifestyle of professional football. Furthermore, Vinberg et al. (2021) suggest determinants for gambling in elite sport comprise a variety of individual factors such as thrill seeking, and factors specific to the workplace setting of sport where gambling was seen as another type of performance to be deemed good at and a way of filling large amounts of spare time travelling to and from games.

High performance university athletes represent another sporting population that have received some research attention to date. Student-athletes sit within a wider student body whilst also belonging to elite or quasi-elite sporting environments, and often perform social identities that emulate their professional counterparts (Bowles, 2018). The popularity of gambling on university campuses and among university students has become an increasing cause for concern, with higher rates of gambling related activity reported among college students compared to other population segments (Martin et al., 2016). In the UK, The Gambling Commission (2017) report two in every three undergraduate students have gambled in the last six months.

University students are thought to be particularly susceptible to gambling addiction for a combination of factors described by Nowak (2018b, p. 241) as a 'perfect storm'. These factors include: *age* with university representing a period of youth synonymous with experimentation with various risk behaviours; *availability* of an array of gambling opportunities and products both of a formal and informal, legal and illegal nature; *acceptability* of gambling within liberalised gambling societies and

cultures; *advertising* aimed at promoting, glorifying and normalise gambling engagement; and *access* to money from student loans, parental support and credit lenders (Nowak, 2018b).

Researchers have consistently asserted that student-athletes are an especially high-risk group to gambling related harms (Ellborg et al., 2007; Huang et al., 2011; Martin et al., 2016; Nowak, 2018a & b; Richard et al., 2019). The majority of this research emanates from the US and has employed survey-based research designs and quantitative analyses to understand prevalence as well as differences between populations in relation to gender, ethnicity, sport type and level of performance. Early research by Cross et al. (1998) noted student-athletes who gambled held more permissive attitudes towards risk than their non-gambling peers. Furthermore, tolerance to risk taking was more prevalent among contact sport athletes compared to non-contact sport athletes. More recently, Richard et al. (2019) observed that while the prevalence of gambling among student-athletes in the US appears to be on a downward trend, gambling remains more prevalent among male compared to female student-athletes.

Alongside the risk of developing pathological and problem gambling behaviour that they share with their non-athlete peers, an acute concern related to student-athletes involves the economic, reputational, and personal risks posed by sport-related corruption and breaches of integrity rules. Indeed, athletes and coaches involved in elite university sport in the UK are subject to gambling regulations similar to their professional counterparts. For example, players, students and staff associated with a British University and Colleges Sport Super Rugby member institutions (BUCS/BSR) are prohibited from: placing a bet (or asking someone to place a bet for them) on any BUCS Super Rugby match; misusing or passing on information to any third party, such as injuries or selection, that is not already public knowledge; accepting money or gifts from any third party in return for inside information or performance manipulation in a match (see also Gambling Commission, 2018). In some instances, university sports teams participate alongside professional clubs in sporting competitions that expose them to the same betting regulations designed to protect lucrative gambling markets.

Lastra et al. (2018) report that the closed environment of sport, financial issues and comparative earning from sport are among the risk factors for susceptibility to corruption. Individuals involved in lower-tier sport (e.g., student-athletes) are at a greater risk of corruption because they have more to gain, less to lose and less chance of detection (Forrest et al. 2008). There is a long history of event manipulation in sport ranging from organised attempts to affect the outcome of sporting competition to spot-fixing (Higgins, 2018). Being tempted to spot-fix (or pass on information) is a bigger risk because it can be done without the collusion of any other participant in the game and it need not impact the result (Misra et al., 2013; Gambling Commission, 2018).

Given the multiplicity of risk and the pervasiveness of gambling among the general population, young people, sporting sub-groups and university students, student-athletes (specifically team-based athletes) represent a particularly vulnerable population to gambling related harms. The aim of this research therefore was to explore the gambling attitudes and behaviours of a select group of British student-athletes to further current insights into gambling cultures in sport. Specifically, the research was interested in the role gambling played in their lives, how they viewed sport betting and other

gambling related activity, what role (if any) gambling promotion and peer influences had in their gambling, how they viewed or conceived ‘problem gambling’ and how they navigated through or related to the gambling restrictions they faced.

## METHODS

### Participants and recruitment

In line with previous qualitative studies in the field of gambling (e.g., Killick & Griffiths, 2021), a convenience sample of student-athletes (male and female rugby and football players) were recruited from one university in the United Kingdom with a reputation for elite student sport (i.e., the sample would be subject to betting regulations). Participants were sampled from the university’s men’s and women’s rugby and football clubs all of which competed in the premier divisions of their respective BUCS championships and fielded sides in non-student National leagues and competitions.

Access to participants was sought through gatekeepers to each of the targeted sport clubs. These individuals were known to the research team and acted as conduits to identify individuals willing to take part in the study, from which a total of fourteen athletes were recruited. The sample consisted of undergraduate and postgraduate students as well as two alumni athletes who continued to compete for their respective university sport clubs (see Table 1 below). All participants were provided with an information sheet and were asked to provide their voluntary informed consent prior to the commencement of data collection.

**Table 1** Descriptive summary of student-athlete participants

Participant	Age	Graduate Status	Team Affiliation
Lea	26	Graduate	Women’s football
Tina	26	Postgraduate	Women’s football
Alice	21	Undergraduate	Women’s football
Dave	21	Undergraduate	Men’s rugby
Simon	20	Undergraduate	Men’s rugby
Cain	22	Graduate	Men’s rugby
Alec	21	Undergraduate	Men’s rugby
Nick	20	Undergraduate	Men’s rugby
Luke	20	Undergraduate	Men’s rugby
Sam	20	Undergraduate	Men’s rugby
David	21	Undergraduate	Men’s rugby
Sarah	26	Postgraduate	Women’s rugby
Lacie	20	Undergraduate	Women’s rugby
Jane	23	Postgraduate	Women’s rugby

## Method and procedure

Qualitative data were collected using a focus group interview method and were organised according to team affiliation (see Table 1). The focus group method has been used widely among gambling researchers (e.g., Gordon et al., 2015; Lamont & Hing, 2019; Lamont & Hing, 2020; Lopez-Gonzalez et al., 2020; McGee, 2020) and was selected in order to stimulate open and exploratory discussions among participants in a setting where they felt encouraged to share their views and experiences with the researcher (Conlin & Sillence, 2021). Focus groups were arranged in-person and were conducted in a relaxed and informal manner to ensure individuals felt comfortable discussing the subject of gambling in front of the researcher and their teammates. According to Kitzinger (1994), organising focus groups around pre-existing relationships (e.g., peer-groups) helps to generate the type of 'natural' interactions which may otherwise occur among friends around subjects related to their daily lives (such as gambling). It also enabled the interviewer to probe specific manifestations of gambling practice during the interview process.

To reduce the effect of social desirability on the data collected, several 'soft' interview strategies were used to establish rapport, build trust and encourage honest dialogue. For example, a semi-structured interview approach was adopted to allow flexibility in the direction and flow of the conversation and enable participants to raise issues or experiences that were important and most relevant to them (Deans et al., 2017b). Interview questions were carefully worded and posed in such a way to give participants time to reflect on their own and each other's experiences and offer insights in their own words (Lim et al., 2017). Participants were asked to comment on their attitudes towards gambling, their typical gambling activities, factors influencing their behaviour, the impact of gambling on their own and other's lives, and their understanding of sport betting regulations. These topics provided a general guide for discussion from which specific probing questions were tailored. The interviewer remained cognisant of body language to ensure all respondents had the opportunity to share their views uninhibited by perceptions of (negative) evaluation or judgement.

Participants were also assured that only anonymised data would be used in the reporting of the study's findings and that their participation in the research would not be disclosed. The focus group method, however, creates ethical difficulties in upholding individuals' right to privacy. In response to this challenge, verbal assent to Chatham House Rule was established prior to the start of each interview whereby participants agreed not to divulge the contents of discussions outside of the interview, unless done so in an appropriately anonymised manner (Bloodworth & McNamee, 2010). Interviews were audio recorded using a digital Dictaphone and transcribed verbatim by the interviewer.

## Analysis and interpretation

Data were interrogated through an iterative process of open coding to examine how gambling risk manifests in the attitudes and behaviours of student-athletes. A combination of inductive and deductive reasoning was applied to identify and label content and categorise data into salient themes (a form of patterned response) and concepts. Analysis was performed at a semantic and latent level of the text to understand both

the explicit and surface meaning of the data and the underlying ideas and conceptualisations informing the semantic content (Braun & Clarke, 2006).

The researchers approached the task of analysis independently to establish an initial reading of the data. Following familiarisation, data were coded before being organised (grouped) into representative themes. Preliminary descriptive interpretations were then shared and discussed among the authors to begin the process of developing more meaningful units of analysis and interpretation. Through a continual process of examination, organisation and cross-checking, a series of overarching themes were determined from which a representative sketch of participants' attitudes and experiences was constructed and refined.

## RESULTS

From the analysis of data, a thumbnail sketch of some areas of concern associated with the gambling behaviours and attitudes of student-athletes is presented. Results are organised into four broad and descriptive themes and are presented as an interpretive representation of the views and experiences of the sampled group – 'gambling as normal', 'impact of socialising agents', 'signals of problem gambling' and 'integrity and vulnerability'. Selected quotes are used in illustration of salient features within the data and in support the analysis. Following Lim et al. (2019), the intention is not to provide an empirically valid and generalisable account of student-athletes' gambling behaviour, but to offer some exploratory qualitative insights that complement existing knowledge about gambling among young people and university-based sporting populations specifically.

### **Gambling as normal**

All participants saw gambling as a normal, budgeted leisure activity like going to the pub or cinema. For many it was a shared interest that served to ease boredom and pass the time. Spending money on gambling was a personal choice like shopping for clothes or going out for a meal with friends. There was no stigma associated with gambling per se when perceived in connection with their own behaviour and habitual gambling choices.

Visiting casinos or online gambling on sport (using mobile phone apps and devices) were the most frequently mentioned forms. The casino satisfied the urge to "get out of the house", to socialise and have some fun "without having to get drunk". Gambling was perceived as less harmful compared to 'risky' forms of consumption, like drinking alcohol. A sober outing to the casino was less detrimental to performance than a night out drinking. Indeed, gambling was something that friends, family and coaches might encourage as an alternative to drinking.

Nick [MR]: My dad has the view [that] ... if you're going to the casino – rather than going to the pub – it's probably actually better for you because you're not actually getting drunk or anything.

Here, the well-documented risks of gambling are downplayed relative to alcohol suggesting an insufficient awareness of gambling risks, and the penetration of establishment discourse into individually held attitudes and beliefs. Indeed, gambling was discussed as a personal, adult choice that was harmless when performed in "moderation".

The normality and relative harm of gambling was reinforced within perceptions of gambling's relative cost. Most participants discussed arbitrary weekly spends of between £5 and £20 pounds that were perceived as insignificant and affordable. Furthermore, when the cost of gambling was considered in light of additional online or land-based industry incentives, gambling was deemed good value for money.

Sam [MR]: It's [casino] not an expensive option. If you take £20 and say you are going to spend £20, compared to somewhere else like a night out where you spend over £50 easily.

Nick [MR] Also that £20 could last you four or five hours, so you could go in there and lose it straight away or you could be in there all night. So, it's just another thing to do.

Visiting the casino, for example, included 'perks' such as "a free buffet", "free [soft] drinks", "big TVs [televising sport]" and "free [town centre] parking" which made gambling in this way a more alluring and holistic form of socialising and source of harmless entertainment.

Though gambling was seen as an attractive, more affordable and less risky alternative to consuming alcohol, it was also performed in combination with activities explicitly or implicitly connected to drinking like going to the pub with friends and/or watching televised sport (at home, in pubs or casinos). Though gambling as means of acquiring money was not a frequently cited explanation for gambling across the sample, one participant, Dave [MF], explained gambling for him and his teammates was a means of "getting some extra money for the weekend" to fund participation in team socials. Dave went on to explain, "so if we [teammates] play on Saturday, we put £5 on [bets] and try and get £100 back which is a bonus for the night out really". More typically, participants framed their gambling behaviours as a surplus and convenient form of ordinary leisure that could be factored into the weekly cost of living, as the following quotations indicate:

Lea [WF]: Sometimes I like to bet whatever's in my pocket after a night out ... So, if I've come home with cash and I've got £16 in my pocket – that's not very often – but when I do, I just think "I'll put that on an accumulator."

David [MR]: Say I have done a [food] shop and I've got 'this' much money left over, I could go buy a new jumper, go out for dinner or go to the casino. That's just something I'll do.

### **Impact of socialising agents**

Evident within the data was the impact of some key socialising agents on the gambling behaviour of the sampled group. As previously alluded to, gambling was most often positioned as a shared experience with data revealing specific ways significant others influenced the gambling of participants. Those who did gamble started close to or after turning 18, joining in with the behaviours of peers (e.g., teammates). For Simon [MF], his engagement with gambling coincided with the start of university. He explained going to university provided him with additional freedoms to "do stuff without parents knowing", from which point his gambling had progressed. Others, however, talked about following the example of parents or family members.

Tina [WF]: I am an occasional gambler. I started a few years ago via an app on my mobile and I probably started because my brother always wins and was making lots of money and I wanted to join in.

Other than women's rugby participants, among which gambling appeared less prevalent, gambling was commonly interpreted as "a nice social thing" within and between teams, and amid the wider student population. For men and women's footballers in particular, gambling was a quasi-ritual to fill time before fixtures. Gambling was depicted as forming part of pre-match conversations that were neither encouraged nor actively policed by coaches.

Simon [MF]: On a Saturday, say if we have an away game, we'd leave probably at like 9.00am ... It will be like 11 o'clock where we have a pre-match meal ... and everyone will be on their phones just trying to follow an accumulator together ... asking each other what everyone is putting on and stuff like that.

In amongst this type of face-to-face, peer-group conversation about "who's got who", there was evidence of other influencing mechanisms that fell both within and outside the immediate team environment. For example, social media groups were identified as a form of exposure to gambling discourse and encouragement among friends/ teammates. As Jane [WR] indicated:

Jane [WR]: I know like I've got a [WhatsApp] group chat with all the [rugby] boys and they're like, "Alright boys. Let's go get your bets in." Like, it's just a huge thing for them ...

There was also some evidence of direct and deliberate peer pressure to gamble manifest in relationships players help with others.

Tina [WF]: I've actually encouraged my partner to put bets on so that she might watch the football with me.

[Laughter]

Tina [WF]: If I really want to watch football, I'll be like "aw put a bet on, put a bet on" and then she actually will watch it because she's put a bet on.

Lea [WF]: And then they [partners] start counting the corners, so it makes it exciting for them.

Here a specific peer influence is illustrated, perhaps a unique kind of gateway, where individuals start gambling to fit in or to 'please' a partner even though initially they have no real interest in the activity. In this instance the 'partner' (not included in the study) was a female rugby player not really interested in gambling on sport.

Accompanying the influence of peers and significant others, participants in this study were acutely aware of, and somewhat susceptible to, marketing – including TV commercials, sponsorship of sport's teams, events and competitions, and social media (Twitter and Instagram).

Participants made references to a range of 'high-street' gambling brands and online betting products that they were either familiar with or regular uses of. Some even expressed a sense of brand loyalty based on "sassy" advertising strategies, marketing incentives (e.g., free bet "boosts"), accessibility (facilitated by mobile apps and social media communications) and social media-based features such as "#YourOdds" that enable the creation of personalised betting markets<sup>2</sup>. Participants were also cognisant

<sup>2</sup> #YourOdds is marketed by William Hill as 'our way of making your quirkiest punting premonitions a reality'. To create a bet, punters can simply Tweet William Hill a scenario who will return a price on it happening. <https://promotions.williamhill.com/offer/yourodds>.



of marketing that incentivised downloading apps or setting-up accounts and were able to articulate in detail (based on experience) how these incentives worked.

Simon [MF]: There's loads of little things where you don't even have to bet with money anymore. So, like on a Saturday there's a thing called Super Six where Sky give you six games to correctly predict the score. [If you win], you get 250k ... It's like a little teaser. Once you're on that app, after you put all your scores in, they'll say "if you actually put money on this you will get this much value". So, it kind of gets you into thinking "I might as well put a fiver on it" anyway.

Revealingly, all participants associated sport betting with men's football, and many were even critical of the strength of this association despite being frequent consumers. Football was conveyed as a "simple" and less "complicated" sport to watch and bet on (compared to rugby), requiring less knowledge of the rules to follow the game and offering "so much more" to gamble on. Indeed, the variety of betting markets available within men's professional football was deemed more exciting compared to rugby or the women's football. The overt marketing presence of gambling within men's football was also emphasised.

Lea [WF]: I don't think they [gambling companies] make [women's football] exciting enough for me to bet on ...

Tina [WF]: Yeah, they only have basic bets like 'who's going to win' and that really bores me ... I like to bet on individual players, and I feel that I know men's football that well and it will help me win. I think that when I watch men's football, I am encouraged to gamble. Just because you see it so often and it's more fun to bet on ...

The notion of 'knowing' as a motive and source of confidence to gamble was repeatedly cited across participants, which the socialising effects of marketing were perceived to play on.

Nick [MR]: When you're watching live on sky sports, they always come up with a fact like "Burnley haven't won away at Tottenham in four years" ... [laughter]. You would have never researched or found out that and they just come out with it, so you just think "Mate, I've got to bet on that" ...

Cain [MR]: But TV channels like Sky, will do that because they have SkyBet. They are probably working together to get those vulnerable people on the sofa.

Indeed, participants were conscious of intelligent or targeted marketing that exploited a multiplicity of media in a very connected and joined up way. They were aware that gambling could become a problem and recognised (particularly in relation to some marketing strategies) a more sinister and cynical industry trying to encourage gambling. Yet, in spite of this awareness, participants also admitted to responding to certain sport betting promotions if an attractive market was offered.

### **Signals of problem gambling**

Participants suggested that 'problem gamblers' displayed distinctive forms of behaviour such as solitary gambling, large transactions, fluctuations in spending, loss of control over finances, debt, borrowing, chasing losses and jeopardizing friendships/relationships. In addition, similar to the way participants rationalised their gambling as normal, arbitrary weekly spends (or amounts lost) were used to distinguish gambling as a problem. Interestingly, each focus group produced a story (or two) about someone who participants knew or suspected had an issue with gambling for a collection of reasons.

Simon [MF]: There's a lad called Jason. He used to like to bet a lot. He was putting on like £50 a week and then he'd win big but because he keeps putting so much money on, he'd just lose big as well. And then he bet on like random games ... But then I think he owed quite a lot of money because he was gambling. ... He got really bad at one point and then started betting on like Arabian football and like random tennis matches and at like 1am in the morning.

Although participants had a reasonably 'accurate' view of problem gamblers (many of their observations fit with the DSM-5's criteria), most did not feel particularly vulnerable<sup>3</sup>. Rather, when it came to reflecting on and conceptualising their own gambling behaviour, participants were quick to identify personal attributes like being "stingy" or possessing self-control that made them less susceptible to developing a gambling problem.

Sam [MR]: Well I would never, 'touch wood', get addicted. I know myself; I would never be addicted to gambling.

Cain [MR]: I suppose it just depends on how strong you are as a person. If you earn X amount of money a month and you say, "I'll limit myself to X amount", then I'm fine.

Only one participant [Lacie, WR] was concerned about predisposition to addiction because of an addictive personality and/or history of addiction in the family. Other than this specific example, none of the participants expressed concerns over their own gambling or gave sufficient weight to any 'red flags'.

Tina [WF]: If I knew someone that gambled as much as me ... I would just think that they were sensible and that they fit into the 'average gambler [bracket]' ... My partner would disagree and say that I have a problem because she made me delete my betting app ... She said I was spending money when I didn't have the money to spend ...

While behaviours like avoiding betting when drunk, setting limits, and deleting apps were used as symbols to denote self-control, boredom was frequently mentioned as a motive to gamble, and some participants admitted that boredom often tempted them to reinstall apps or re-open accounts they had deleted.

Alice [WF]: I don't like having betting apps on my phone because I know that when I'm bored, I will just go on there and bet. So I delete. Then when I'm bored I just download them again [laughs].

Though mood manipulation and an inability to stay away from gambling could be viewed as indicators of problem gambling, by and large, participants' sense of vulnerability to developing related problems, was displaced through a process of 'othering' that posited an identity on the "type of people" that typified problem gamblers and problem gambling. Indeed, going to the casino with friends or placing bets on sport through mobile technology was a distinct (and normal) mode of gambling consumption from that which "low lives" and "old men" in betting shops participated in. As Sam [MR] put it, "I don't think we [he and his teammates] are on that level; do you know what I mean?"

<sup>3</sup> The DSM-V lists 9 characteristics of problem – these include 'concealing gambling activity', 'asking others for money to help resolve gambling debt', 'chasing losses', repeated unsuccessful attempts to cut down'. A diagnosis of gambling disorder is given when 4 out of 9 are present. <https://www.psychiatry.org/patients-families/gambling-disorder/what-is-gambling-disorder>.

### Vulnerabilities to breaking the rules

A number of specific areas relating to participants' perceptions of betting regulations were identified in the data. Despite receiving 'education' on the rules to which they were subject, participants displayed an ambivalence and naivety towards betting regulations. Most participants were aware that they were subject to certain betting restrictions both as players and as individuals working within the sport industry. Participants reported having received annual gambling education in the form of a "leaflet", "conference" or "workshop", however, there was uncertainty about the authority (i.e., illegality versus codes of conduct) of gambling regulations and their scope. Indeed, in comparison to the knowledge participants displayed about the availability of gambling products, their understanding of betting integrity, how they might intentionally or unintentionally break the rules (e.g., by passing on information to a third party), and the extent to which breaching the rules might affect them, was limited.

Luke [MR]: I think that [the content of the workshop] was more towards betting on us [University RFC]. So, say if we could access ourselves on a betting site, that could be classed as fixing. Obviously, we aren't that professional so it's probably only one game a year that we could bet in, in the [National] Cup.

As indicated within the above quote, participants mentioned 'match-fixing' as the paradigm offence. In other words, being caught deliberately manipulating the result of a match was viewed as the principal integrity breach. There was, however, some tentative discussion about other ways of falling foul of the rules.

Alice [WF]: I don't think we are at the level that people bet on us.

Tina: [WF]: Although my brother did bet on us when we went to the [international competition] when we won 2-1.

Alice [WF]: I don't think he's allowed, is he?

The potential integrity issue here is profiting from 'inside information' by virtue of participants being uniquely placed *vis a vis* information (knowledge) not in the public domain. The regulations are breached even if the information is 'innocently' passed to a third party (brother) who then profits from it. Nevertheless, understanding of the issue was depicted without clarity or confidence.

As previously described, most participants routinely bet on elite televised football even though at certain times they are not permitted to do so<sup>4</sup>.

Lea [WF]: I'm not actually allowed to bet on football so it's more 'under the radar' betting ... when I see other people going to bet I think, "why not, I might as well do it." But then obviously if I did win big, I wouldn't tell anyone because I'm not allowed to<sup>5</sup> ...

Interviewer: Does that not scare you?

Lea [WF]: No because I always think that I'm not going to win a ridiculous amount of money, I only bet £5, £10 here and there. So, it's not a life-changing amount.

<sup>4</sup> Uefa's code of conduct discourages players to bet on football. Specifically, players (including coaches, partners and family members) in European Leagues are not permitted to bet on themselves, their opponents or any match within a competition they are involved in. [https://www.uefa.com/MultimediaFiles/Download/uefaorg/Clubs/02/14/97/66/2149766\\_DOWNLOAD.pdf](https://www.uefa.com/MultimediaFiles/Download/uefaorg/Clubs/02/14/97/66/2149766_DOWNLOAD.pdf)

<sup>5</sup> Lea works for a football club so is prohibited from gambling on all football in the UK on that basis.

In this instance, the likelihood of getting caught was downplayed and only became 'risky' in the unlikely event of winning a significant amount of money. Such risks were perceived as being easily mitigated by limiting the size of stake and the comparative low profile of the betting market. Encouragingly none of the participants admitted to more serious and systematic breaches of the regulations and in some cases explicitly rejected the proposition:

Alice [WF]: I would never bet on one of my mates who plays in the WSL 1 (Women's Super League).

Finally, participants shared belief that 'knowing' the sport shifted the balance in favour of the 'punter' exposed a possible temptation (and vulnerability) to bet closer to home:

David [MR]: I'd definitely feel more confident if I was to bet on rugby now, like I'd have a better idea of what was going to happen. I feel like I could be able to predict it more accurately now, because you just know it better ...

Sam [MR]: I definitely only bet on the things that I know, as David said. I would never bet on like women's badminton – I don't know, I have no idea what's going to be the outcome of it.

Tina [WF]: ... the odds for women's football make me want to gamble because I don't think the betting companies have a good understanding of who the good teams are.

## DISCUSSION

The purpose of the present study was to explore the gambling habits and attitudes of a hitherto under-researched population, namely British student-athletes subject to gambling integrity rules. From focus group data derived from male and female student football and rugby players, the research offers a series of qualitative insights that complement and extend current knowledge on how gambling manifests among this specific population. Based on a thematic analysis of the views and experiences expressed by the studied group, four broad areas of concern (themes) emerged.

The first related to the way participants conceptualised and justified *their* gambling as 'normal'. Most of the participants engaged in some form of gambling. For the majority, gambling on sport (men's football) using online accounts and mobile devices was a regular activity that they participated in without stigma, a finding which supports previous research that has warned of the popularity (Deans et al., 2016a), accessibility (Griffiths et al., 2011; Killick & Griffiths, 2020) and 'facelessness' (McGee, 2020) of this mode of gambling for young adults and adolescents. Furthermore, routine visits to the casino with friends/ teammates was another mode of gambling conceived as 'social', 'budgeted' and thereby normal. Indeed, when compared to other forms of leisure, there was strong evidence to suggest that participants bought into the 'establishment discourse' that gambling was a relatively harmless activity with minimum risk (Orford, 2020). In this sense, participants' attitudes reflected the discourses of the gambling establishment that have successfully normalised gambling as a legitimate, freely chosen, and harmless form of entertainment in liberal gambling jurisdictions such as the UK (Cassidy, 2020; Orford, 2020).

Another area of concern related to participants' susceptibility to known socialising agents. The influence of targeted marketing is a widely reported risk factor shaping the gambling behaviours and perceptions among young people with an interest or involvement in sport (Deans et al., 2016b; Deans et al., 2017a; Hing et al., 2013; Hing et al., 2016). The findings from the present study provide further illustrative evidence of the pervasiveness and penetration of marketing strategies deployed by the sport betting industry via multi-media channels (Gainsbury et al., 2016), as demonstrated by participants' familiarity with, preference for and detailed understanding of several gambling products, markets, and incentives. Research has identified an extensive list of gendered advertising themes tailored towards specific (male) populations including friendship, sexualised images, social status, winning, thrill seeking and risk (Deans et al., 2016a). In addition, Gonzalez-Lopez et al. (2018) highlight 'knowledge of sport' as a core feature of sport betting marketing designed to increase illusions of control over gambling outcomes, a belief which gamblers undergoing psychological treatment for gambling disorder find it difficult to reconfigure (Gonzalez et al., 2020). Tellingly, the student-athletes in this study appeared to have largely internalised 'knowing' as a reason to bet on one sport (team or match) over another alongside perceptions that some sports (football) are easier to bet on than others.

Findings from the study also suggest participants' gambling was exercised through a peer-group culture and gambling ethos. Gambling often begins in the context of social groups before progressing into more compulsive and solitary behaviour (Killick & Griffiths, 2021). Indeed, Gordon et al. (2015) emphasise gambling as a social and cultural process expressed through collective practices, shared values, social interaction and identities. Furthermore, Deans et al. (2017b) note that gambling can act as a natural and socially accepted 'ad on' to watching sport within male peer groups. Although there was scant evidence of an excessive gambling culture previously identified within professional team sport environments (Lim et al., 2017; Vinberg et al., 2021), gambling was positioned as part of everyday conversation both inside and outside the team environment (Deans et al., 2017b; McGee, 2021) that run concurrently with their sporting participation. While there was limited direct evidence of participants' experiencing an explicit social pressure to gamble from within their respective sports clubs, gambling was depicted through the prism of significant relationships (friends, teammates, family members, partners) that could, or were used to, exert an influence.

Although participants were aware of signs and signals of problem gambling, they did not realise how their own gambling might become a problem. Problematic gambling behaviours lie on a continuum (Orford, 2020). The DSM-5 description classifies gambling disorder as a matter of degree ranging from mild, moderate to severe. Becoming an addict is a result of a process involving several stages, including placing your first bet (Orford, 2010). Research also suggests patterns of gambling behaviour (specifically online sport betting) are not perceptively different between 'recreational' and 'problem' gamblers other than frequency (Braverman et al., 2011). Classification is more complex among young people with the 'qualities of youth' (e.g., emulation, impulsivity, risk taking, experimentation, emotional distress) camouflaging features of gambling disorder (Shaffer, 2011). Moreover, Nowak (2018a & b) warns of a 'perfect storm' of factors related to age, availability, acceptability, advertising, and

access heighten university students' risk towards developing problematic gambling behaviours. Though aware of gambling's addictive potential and the capacity for gambling to develop into an individualised 'problem' (e.g., through a lack of self-control), participants were largely uncritical of their own gambling practices and choices. Instead, participants distanced themselves from images they conceived as stereotypical of problem gamblers and demonstrative stories of problem gambling.

Finally, while this study found no evidence of systematic attempts to break integrity rules – which is perhaps unsurprising given that betting-motivated corruption is a hidden behaviour reliant on secrecy (Lastra et al., 2018; Numerto, 2016) – findings reinforce the general view that integrity related issues are a valid cause for concern in (quasi) elite student-athlete populations (Richard et al., 2019). Participants lacked detailed appreciation of the regulations to which they could (willingly or unwillingly) fall foul, particularly about the sharing and use of inside information. It was notable that participants were more hesitant and less coherent when discussing the rules to which they were subject and how they might affect them, as they were about describing their gambling behaviours and justifying their normality. For student-athletes whose participation in leagues and competitions is exposed to minor betting markets (in terms of liquidity), it is easy to envisage situations where betting-related malpractice, brought on by financial stress, changes in career, identity and life aspiration, or simple opportunism, might occur. This is consistent with the consequentialist argument that gambling and non-gambling related corruption are decisions driven by rational evaluations of personal and situational constraints and incentives (Forrest et al., 2008; Lastra et al., 2018). It is our view that a central limitation of anti-corruption education is its failure to develop a reflexive awareness about their positionality in relation to gambling, risk, temptation and the rules.

## LIMITATIONS

Findings from the research should be interpreted with reference the study's limitations. Difficulty in recruiting student-athletes who were willing to speak openly about gambling restricted the scope of the research and the transferability of the results beyond the small convenience sample (Killick & Griffiths, 2020). Furthermore, participants were not purposefully screened and categorised according to their gambling behaviour resulting in the focus groups' discussions being informed by a mixture of gambling experiences and perspectives. While attempts were made to extenuate the challenge of social desirability (Conlin & Sillence, 2021; Lamont & Hing, 2020) through the utilisation of a semi-structured approach, open-ended questions and other 'soft' interview techniques, there is no way of evaluating whether these strategies had their desired effect. However, based on a reflexive assessment of the interview process, and the richness of the data gathered, the study was successful in achieving the modest ambition of drawing meaningful insights into the gambling attitudes and behaviours of student-athletes that complement and extend understanding of how gambling vulnerabilities and risks exist within this particular group of young people.

## CONCLUSION

This preliminary analysis adds to a body of literature which has identified gambling's popularity and normalisation as a serious public health issue (McGee, 2020). Gambling can cause a multiplicity of harms (Abbot et al., 2013; Orford, 2010) to which young people are increasingly exposed (Shead et al., 2011). Though confined to a small and specific group, the qualitative findings from this study provide a foundation for future research into how gambling affects this subset of the student population that researchers have consistently asserted are at additional risk to gambling harms (Cross et al., 1998; Ellborg et al., 2007; Huang et al., 2011; Richard et al., 2019). To inform policy, education and harm prevention, research should seek to produce more fine-grained, multi-method and longitudinal insights into the ways gambling is embedded as a form of social and (sub)cultural practice among athletic populations and university students more broadly. This study also identifies an opportunity for future research to examine nuances of gambling practices from a social cultural perspective including specific gendered practices. Finally, we consider it an integral part of the future research to begin from a position of criticality in interrogating the ethical dimensions of the 'gamblification' of sport and the production of (young) sports men and women who gamble.

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# Culture and emotion in Paralympic swimming medalists

Jeffrey J. Martin<sup>1</sup>, Erin Snapp<sup>1</sup>, Franziska Loetzner<sup>1</sup>, Fatemeh Dehghan<sup>1\*</sup>,  
Eva Prokesova<sup>2</sup>, Tania Bastos<sup>3</sup>

<sup>1</sup> Division of Kinesiology, Sport Studies and Health, Wayne State University, Detroit MI, USA

<sup>2</sup> Department of Adapted Physical Education and Sports Medicine, Faculty of Physical Education and Sport, Charles University, Prague, Czech Republic

<sup>3</sup> Centre of Research, Education, Innovation, and Intervention in Sport (CIFID), Faculty of Sport, University of Porto, Portugal

\* Corresponding author: hl9324@wayne.edu

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## ABSTRACT

The purpose of the present study was to examine if cultural identity was related to the emotional experiences of Paralympic ( $N = 83$ ) swimmers' upon winning medals at the 2016 Paralympic Games. Paralympic athletes' countries ( $N = 5$ ) were scored on Hofstede's (2011) six cultural dimensions and athletes who won medals had their facial expressions analyzed to determine levels of basic emotions (i.e., happiness, sadness, anger, surprise, disgust, fear, and neutral) based on Ekman's (1993) neuro-cultural theory of emotion. After controlling for medal won, and time and place expectation proxies, we found that happiness was negatively associated with long/short term orientation ( $r = -0.313, p < 0.004$ ) and positively linked to indulgence/restraint ( $r = 0.210, p < 0.06$ ). The emotion of neutral was positively associated with power distance ( $r = 0.239, p < 0.032$ ) and long term/short term orientation ( $r = 0.290, p < 0.009$ ) while being negatively linked to indulgence ( $r = -0.276, p < 0.013$ ). Based on an abductive theory of the scientific method (Haig, 2005; 2008) we formed plausible theory-based explanations for our findings and concluded, given our study is the first of its nature, that researchers should continue this line of inquiry.

## KEYWORDS

sport; culture; identity; disability

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## INTRODUCTION

Cultural identity is one of many potential identities that individuals, including athletes, embrace and take pride in. Almost thirty years ago Duda and Allison (1990) urged sport psychology researchers to consider the role of culture in their work. Unfortunately, for many years, Duda and Allison's (1990) call was largely ignored with a few exceptions (e.g., Martin & Gill, 1995). However, in the last few years more and more scholars have advocated for a "cultural turn" and the incorporation of cultural considerations into sport psychology research (Ryba et al., 2010). Within disability sport psychology researchers have examined athletic identity over the last 25 years ranging from non-elite adolescent athletes to Paralympians (Martin, 2017, 2015, 2013; Guerrero & Martin, 2018; Martin et al., 1995; Martin et al., 1994; Martin & Vitali, 2011). However, research examining other identities such as "cultural" identity in disability sport is, to our knowledge, non-existent.

Similarly, with few exceptions, research on emotion in disability sport, especially spontaneous emotion in ecologically valid settings, is also scarce (e.g., Martin et al., 2019; Martin, 2021). Hence, to address this research gap we developed the current study to examine a cross-cultural theory of emotion (Matsumoto, 1991) with Paralympic athletes. Our findings are of value because they extend both basic emotion theory and cultural theory into an ecologically valid setting with a sample previously unexamined in this type of work. Our findings also have applied value as Paralympic coaches should be alert to the potential influence of culture on emotional experiences.

In a recent paper examining the emotional experiences of Paralympians Martin et al. (2019) found that Paralympians from collectivistic cultures (e.g., China) expressed less happiness, based on facial expressions, compared to athletes from more individualistic (e.g., USA) cultures.

In the current paper we expand on the work of Martin and colleagues (2019) by looking beyond the singular emotion of happiness and the single cultural dimension of individualism/collectivism. Examining the full range of emotions athletes experience and the multiple cultural dimensions constituting cultural identity provides a much more comprehensive picture of the ways in which they might be inter-related, relative to examining just one emotion and one cultural dimension. In the current paper we examine seven basic emotions (i.e., happiness, surprise, anger, sadness, disgust, fear and neutrality) based on a neurocultural theory of emotion (Ekman, 1992, 1993; Ekman & Friesen, 1971; Elfenbein & Ambady, 2002; Matsumoto, 1991). A neurocultural theory of emotion proffers that emotions are universal but culture specific display rules influence the expression of emotions as a function of the social context. The Paralympics is an ideal setting for the current study because so many different countries are represented that vary on the six major cultural dimensions developed by Hofstede (Hofstede, 2011; Minkov & Hofstede, 2011) and athlete's performance in a high stakes setting elicits varied and intense emotion. Additionally, as Hofstede argues (2013) research in this area should use matched samples. In the current study individuals from each country are all Paralympians. Definitions of the six dimensions upon which cultures vary are as follows.

First, power distance (PDI) focuses on the inequality of power distribution; where, on the large PDI end, individuals agree that everyone has a different (i.e., unequal)

place on the hierarchy and no other explanation or argument is needed. Large PDI means there is an understanding and acceptance of inequality among members of the society. Small PDI, however, challenges inequality. In a culture with small PDI members have an equal distribution of roles throughout the hierarchy and no person is more powerful than another.

Second, individualism/collectivism (IDV) emphasizes individualism at the high end with a low emphasis on collectivism. On the high end individuals emphasize taking care of themselves and their immediate family and one's personal opinion is important. On the low end, IDV deals greatly with the idea of "we" where people are part of an extended family or clan and opinions are determined by the group at large. Countries like the USA tend to score high on this dimension as they emphasize individuality whereas countries with communist roots (e.g., China) emphasize collectivism.

Third, the masculinity/femininity (MAS) dimension views society along a continuum from masculine to feminine. If a society is masculine it prioritizes competition, role differentiation, and work. A feminine focused society values cooperation, equal roles, and balancing family and work.

Fourth, uncertainty avoidance (UAI) deals with whether or not a society values trying to control the future or just letting the future happen. In a low UAI society uncertainty is accepted, chaos is okay, rules are disliked, and change is seen with little trepidation. In a strong UAI society, uncertainty is a threat, there is a need for rules, and structure is valued. Long/short term orientation (LTO) deals with how a society uses what happened in its past to deal with the hurdles that exist in its present and future.

Fifth, a short-term orientation values the present, believes the most important events are happening now, and that they should be proud of one's country and its history. Countries with a long term orientation view future events as most important, believe that one should learn from other countries, and that people adapt to situations over time.

Sixth, an indulgence/restraint (IVR) focuses on whether countries and societies permit their citizens to gratify their basic human needs for things like control and fun. Consequently such countries tend to have many happy people. Countries that emphasis restraint tend to suppress need satisfaction and have more restrictive social norms against meeting needs. Although the six dimensions are mostly easily defined based on the extreme ends of the continuum it is important to note the dimensions and scores on the dimensions are not dichotomous: countries can score anywhere between zero and one hundred.

In regard to emotion, because the Paralympics is the pinnacle of an athlete's career and perceptions of success or failure are so important to athletes, the Paralympics has the potential to elicit a wide range of emotions that may be remembered for a lifetime and have implications for future well-being. Emotional experiences observed in settings such as the Paralympics may also be particularly nuanced. Athletes can experience "disappointing wins" (e.g., winning a bronze medal while being favored to win gold) or "relieving wins" (e.g., third and a bronze medal relative to fourth and no medal; Martin, 2021). Narrow victories may also elicit emotions (e.g., surprise) not present in wins that come more easily while close losses may elicit strong emotions (i.e., anger) relative to losses not considered close (Martin, 2021). In brief, the interna-

tional composition of the Paralympics and its' potential to generate intense emotions makes it an ideal setting to examine cultural identity and emotional diversity.

To briefly summarize, it was expected that some of the seven basic emotions would be associated with some of the six cultural dimensions that the Paralympic athletes' country of origin varied on. We next offer a few hypotheses that are based on theory, logic, and empirical work. We hypothesize that; in general, the individual/collectivist dimension would be related to both negative (i.e., fear, anger, sadness, and disgust) and positive emotion (i.e., happiness). Individualist countries (e.g., USA) prioritize individual uniqueness over the group. Hence, emotional expressions are seen as examples of individual success or failure and the expression of positive or negative emotions are not seen as casting a negative light on the group (i.e., the team). In contrast, expressions of emotion in collectivistic cultures, such as anger, are viewed as poor reflections on the group (i.e., the team) and tend to be suppressed relative to individualistic cultures. Martin et al. (2019) found that Paralympians from the USA, Brazil and Great Britain (individualistic countries) were happier than athletes from China and the Ukraine (i.e., collective countries), after controlling for the medal they won.

We also anticipated that cultures with a more short time orientation might have athletes more "in the present" and therefore experience both positive and negative emotions more frequently and intensely compared to athletes from countries with a long term orientation. Finally, we also anticipated that athletes from countries that are more indulgent and less restrained might experience positive and negative emotions more frequently and intensely than restrained and less indulgent cultures because they do not suppress needs and desires and the emotions (e.g., happiness) associated with meeting those desires (e.g., a gold medal).

Examinations of other potential relationships beyond the above hypothesized ones are exploratory in nature. For example, in thinking about how a cultural dimension (e.g., uncertainty avoidance) might be related to an emotion (e.g., anger) we were unable to develop a logical or theory based argument to support a hypothesis. Given the current study is the first one of its nature we believe the partial exploratory approach of our study is appropriate. Another way of viewing our study is through the lens of an abductive theory of the scientific method (ATOM). The ATOM, in part, uses exploratory data analyses as a method to determine if data patterns exist which can then lead to plausible explanations for the phenomena and in turn support continued research that might lead to theory development, refinement and appraisal (Haig, 2005, 2008). A critical research design element warrants emphasis. We employed a rigorous test of our hypotheses and the potential relationships among culture and emotion by controlling for 3 relevant individual based performance related (i.e., medal won, place and time expectations) emotional antecedents. This decision allowed us to determine if the six cultural dimensions would account for variance beyond performance (e.g., medal won) influenced emotional experiences.

Finally, we should also point out that our measure of emotion was done at an individual level with Paralympians. In contrast our cultural dimension measure was done at the group (i.e., country) level using historical data based on large groups of people who were not Paralympians. Hence, this mismatch also provides a strenuous test of our hypotheses as associations due to common method variance are eliminated. However, it also means that expected relationships may be attenuated.

## METHODS

### Participants

Participants consisted of Paralympic ( $N = 83$ ) swimmers from the 2016 Games who won gold, silver, and bronze medals<sup>1</sup> and had valid (i.e., Facereader software could detect a face long enough to gather data) emotion data output from Facereader. Additionally, athletes had to be from countries that had cultural dimension scores, and had place and time world rankings from 2015 in the same event that they swam in the 2016 Paralympics. We sought to examine countries that had somewhat large and similar numbers of athletes and covered the range of scores from Hofstede's dimensions (see Table 1). For instance, countries who had single athletes were eliminated because within group variability is impossible to determine. With somewhat similar sample sizes we are also more likely to meet the equal variance assumption of many statistical tests. Finally, a power analysis with the ability to detect a small to moderate correlation of 0.30, alpha at 0.05 and power at 0.8 indicated a sample of 85 was needed. The final sample was as follows: China,  $n = 21$ ; USA,  $n = 20$ ; Ukraine,  $n = 17$ ; Great Britain,  $n = 14$ ; Brazil,  $n = 11$ .

Based on the Paralympic data base, athletes were classified as follows: visual impairment,  $n = 17$ ; neurological or musculoskeletal impairments,  $n = 13$ ; upper limb deficiency,  $n = 15$ ; cerebral palsy,  $n = 15$ ; lower limb deficiency,  $n = 6$ ; upper and lower limb deficiency,  $n = 10$ ; spinal cord injury,  $n = 4$ ; short stature,  $n = 3$ . Age ( $M$  age = 24.39;  $SD = 5.09$ ; range = 14–40 years) and gender (Males = 43; Females = 40).

**Table 1** Hofstede's Cultural Dimension Scores by Country

	Power Distance	Individualism	Masculinity	Uncertainty Avoidance	Long Term Orientation	Indulgence
China	80	20	66	30	87	24
Ukraine	92	25	27	95	86	14
United States	40	91	62	46	26	68
United Kingdom	35	89	66	35	51	69
Brazil	69	38	49	76	44	59

<sup>1</sup> Given the exploratory nature of the research in this area it was determined that making a Type II error would be more serious than making a Type I error. Therefore a  $p$  value of 0.10 was selected for determining statistical significance. In the current study we emphasize effect size (i.e., relationships among cultural dimensions and emotions) because effect sizes judged as meaningful should not be disregarded if they do not meet the traditional value of  $p > 0.05$  (Cohen, 1994; Franks & Huck, 1986; Sauley & Bedeian, 1989). Many other researchers, going back over 60 years have supported our perspective (e.g., Fritz et al., 2012; Kelly & Preacher, 2012; Sullivan & Feinn, 2012; Vacha-Haase & Thompson, 2004; Yates, 1951).

## Measures

*Emotions:* Facereader software, developed by Noldus Information Technology, was used to examine swimmers' facial expressions. Facial expressions were obtained from recorded broadcast footage that was edited to short video clips (10–15 seconds) of all 46 individual 2016 Paralympic swimming races. The video clips showed the three medal winners completing their races with their heads above the water and close-ups of their faces as they experienced a range of emotions. Most images lasted three to four seconds but given the live nature of the event full front facial views were not always captured for the full three to four seconds. The software detects the presence of faces such as those in video clips and then analyzes over 500 key points of the face. Key points are then used to determine emotions that are classified into seven emotional categories (happy, sad, angry, surprised, fear, disgusted and neutral) considered to be universal based on the extensive work of Ekman (Bartlett et al., 1999; Ekman, 1970, 1992, 1993, 1997). All scores range from zero to one. A score of one means that emotion is fully present while a score of zero indicates it is absent. Furthermore, a higher score reflects a more intense emotion. While the six basic emotions (e.g., sad) are self-explanatory the emotion of neutral reflects a lack of any emotion or no emotions. The Facereader has been successfully used in sport research (Hetland et al., 2018; Martin, 2021) and hundreds of non-sport research publications (Stöckli et al., 2018) and has produced scores deemed valid and reliable.

*Cultural Dimensions:* Each athlete, based on their home country, was awarded a score (see Table 1) for the six cultural dimensions based on Hofstede's model. Scores for each country that athletes were representing in the Paralympics were obtained from Hofstede et al. (2010) and could range from 0 to 100. For example, Japan scored 95 on the masculinity/femininity scale whereas Sweden scored five. Four cultural dimensions (i.e., power distance, uncertainty avoidance, individualism/collectivism, and masculinity/femininity) were developed based on data from International Business Machines (IBM) and its employees in over 60 countries in the 1980's. As Hofstede extended his line of research he added long term/short term orientation and indulgence/restraint as well as the number of countries scored ( $n = 76$ ; Hofstede et al., 2010). Various replications and similar work by various research teams have substantiated his work (Hofstede et al., 2010) although he has been criticized for viewing cultural as too static (Beugelsdijk & Welzel, 2018).

*Medal Won:* Each athlete's race finish and medal won was determined from the video clips and confirmed on the Rio Paralympics results page (<https://www.paralympic.org/sdms/hira/web/competition/rio-2016/swimming>). We then scored gold, silver, and bronze medals as three, two and one respectively.

*Race Time and Place Expectation Proxies:* Each athlete's world ranking and best time from (2015) was based on their world ranking (<https://www.paralympic.org/swimming/rankings>).

A comparison of each athlete's 2015 ranking with their Paralympic race place was used to determine if athletes' placed higher, the same or lower. The same logic was used for their time expectation and to determine if they swam faster, the same, or slower. Swimmers who placed higher and swam faster were scored a three and those that placed lower or swam slower were awarded a one. Finally, if swimmers placed or had a time identical to their 2015 best performances they were scored a two.



## RESULTS

### Preliminary results

Data were screened for outliers, normality and missing data. Missing data varied according to the variables used in each analyses and was not replaced given the nature of the missing data. For example, the Facereader software was unable to assess emotion for all athletes because the software could not pick up the front of the face for long enough or the face was partially emerged in water. Other athletes with missing data came from countries without a cultural dimension score or did not have a 2015 world ranking in the same race they competed in during the Paralympics. Descriptive data indicates the following mean values for the emotions in descending order: neutral ( $M = 0.42$ ;  $SD = 0.15$ ), happiness ( $M = 0.22$ ;  $SD = 0.20$ ), surprise ( $M = 0.16$ ;  $SD = 0.14$ ), sadness ( $M = 0.14$ ;  $SD = 0.14$ ), scared ( $M = 0.10$ ;  $SD = 0.11$ ), angry ( $M = 0.05$ ;  $SD = 0.04$ ), and disgusted ( $M = 0.03$ ;  $SD = 0.03$ ). Values for cultural dimensions by country only convey valuable information in relation to each other (see Table 1). Interested readers can access how countries are scored on the six dimensions here: (<https://www.hofstede-insights.com/product/compare-countries/>).

### Cultural dimensions and emotions

We examined correlations among the six cultural dimensions and the seven basic emotions and found some support for our hypotheses. As noted earlier, we first controlled for emotions linked to performance because the Paralympians in our study from various countries all won different medals (i.e., gold, silver, bronze) which elicited varied emotions. We controlled for three forms of objective and subjective success that are important to athletes: medal won and whether swimmers swam faster and placed higher than their 2015 world rankings for time and place. Additionally, this analytical decision allowed us to determine if cultural identity (i.e., dimensions) accounted for variance in emotional expression beyond that associated with performance. Such a strategy is a much stronger analytical approach compared to not controlling for such obvious performance (e.g., medal won) based influences on emotions linked to success or failure.

Neutral (3 times) and happiness (2 times) were the emotions that were most often linked to the cultural dimensions and long/short term orientation (3 times) and indulgence (2 times) were the most common cultural dimensions associated with emotion. The emotions of surprise, sadness, fear, anger, and disgust were unrelated to any cultural dimension and the cultural dimensions of uncertainty avoidance, individualism/collectivism and masculinity/femininity were unrelated to any emotions.

Happiness was positively linked to indulgence/restraint ( $r = 0.210$ ,  $p < 0.06$ ) and negatively associated with long/short term orientation ( $r = -0.313$ ,  $p < 0.004$ )<sup>1</sup>. The emotion of neutral was positively associated with power distance ( $r = 0.239$ ,  $p < 0.032$ ) and long term/short term orientation ( $r = 0.290$ ,  $p < 0.009$ ) while being negatively linked to indulgence ( $r = -0.276$ ,  $p < 0.013$ ). All effect sizes (i.e., variance accounted for; 5 to 9%) were small. All other correlations were not significant and ranged from  $r = 0.01$  to  $r = 0.190$ .

## DISCUSSION

The major purpose of this study was to examine if cultural identity was related to the emotional expressions Paralympians displayed as a result of winning a medal. We first comment on the five significant relationships that we found. We should note that our explanations are tentative and involve extrapolating how athletes are socialized via their countries cultural dimensions to an individual expression of emotion in one moment in time. Hence we offer these explanations with caution and in the hope our current work might stimulate similar research in disability sport. We should also note that mean levels (on a 0 to 1 scale) of positive emotions, were not particularly high (e.g., 0.22 for happiness) but relative to negative emotions they were certainly higher (e.g., 0.05 for anger). Standard deviations clearly indicate variation in emotional expression. It is also important to keep in mind that our analyses only reveals that Paralympians from countries with certain cultural dimensions were more (or less) likely to experience particular emotions or in the case of a neutral emotion; no emotion.

First, happiness was positively linked to indulgence and negatively linked to restraint. It seems plausible that Paralympians growing up in indulgent cultures that accept and encourage meeting basic needs linked to living a happy life and having fun would be more likely to produce Paralympians who will express more happiness compared to Paralympians who are socialized in more restrained cultures that do not encourage enjoyment and indulgence. We should also note here that we did not find a happiness and individualistic/collectivist link which is contrary to Martin et al. (2019) who found that athletes from individualistic countries like Great Britain were happier than athletes from collectivistic countries like the Ukraine. Different measures of happiness and varied samples<sup>2</sup> may have produced the divergent results between the current study and Martin et al. (2019).

Second, happiness was positively associated with a short term orientation and negatively associated with long term orientation. Hofstede's dimensional concept of culture long-term orientation focuses on perseverance and a tendency to work hard and emphasizes that the most important life events will happen in the future (Hofstede, 2011). Cultures in which long-term orientation dominates tend to easily accept belated gratification of individual achievement (Beugelsdijk & Welzel, 2018).

In contrast, according to Hofstede (2011) cultures in which short-term orientation dominates people tend to have a focus on the "here and now" (Beugelsdijk & Welzel, 2018). Given this definition it is not surprising that long-term orientation was negatively associated with emotional experiences of happiness. Our results are also in agreement with a study of Beugelsdijk & Welzel (2018) who found moderately high negative correlation of happiness (-0.35) with long-term orientation.

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<sup>2</sup> The video tapes examined in the current study are a sub-sample from a data base used in the Martin et al. (2019) and Martin (2021) research study, but are not identical. Additionally, the tapes were used to generate data (the 7 emotions) that was not presented in the Martin et al. (2019) study. Emotion data but not cultural data was presented in a previous publication (Martin, 2021).

According to Hofstede et al. (2010), societies with long-term focus tend to be more restrained and societies characterized by a short-term orientation incline to be indulgent. Indulgence represent a tendency to enable relatively free enjoyment of human desires, expressing emotions and having fun. Restraint represents an inclination to suppress emotional impulses, regulate and curb the human desires and needs by strict social norms. These definitions also support the current findings where happiness was negatively associated with long-term orientation (Beugelsdijk & Welzel, 2018).

Third, the emotion of neutral was negatively associated with indulgence and positively linked to restraint. It is important to recall that a neutral emotion is equivalent to a lack of emotion. It seems Paralympian with more restraint have difficulty showing their true emotions and they may be unable to express what they are feeling. As mentioned earlier, emotions were suppressed in these cultures. Therefore, athletes likely found it more acceptable to stay neutral at the end of their races rather than express intense emotions. On the other hand, Paralympians coming from more indulgent cultures were less likely to show neutral emotions. These findings are consistent with our first finding as athletes from indulgent countries showed their intense feelings of happiness.

Fourth, the emotion of neutral was also positively associated with a long-term orientation and negatively linked to a short term orientation. It can be argued that Paralympians growing up in long term orientated countries believe that future events are the most important in life and value the person's ability to adapt to circumstances and persist were more likely to experience a neutral emotion. On the other hand, athletes who are socialized in short term orientated cultures value the present time and are encouraged to be proud of their own cultural identity and traditions were, consequently, less likely to express a neutral emotion.

Fifth, a neutral emotion was also positively associated with power distance. Athletes from countries that accept an inequality of power distribution, compared to athletes who favor more equality, were more likely to express a neutral emotion or display no emotion. Paralympians from countries that do not endorse a power differential among its citizens were less likely to express a neutral emotion. It is unclear how differential socialization processes regarding power differentials may influence a lack (i.e., a neutral emotion) of expressed emotion centered on winning a Paralympic medal.

Effect size is a measure of the meaningfulness found in relationships and contrary to significance testing is not vulnerable to sample size (Martin et al., 2019). In the current study we found mostly small effect sizes as the variance accounted for ranged from 5% to 9%. Ferguson (2009) and Vacha-Haase and Thompson (2004, p. 480) suggest that researchers report effect sizes and make comparisons to related research to inform readers. Our study is the first to examine Facereader generated emotion data and culture in Paralympic athletes making comparisons difficult.

However, effect sizes are also best understood within the context of an individual research effort and the context, research question, method and sample (Fritz et al., 2012). We found five relationships among the cultural dimensions and emotions and four were theoretically defensible. Furthermore we found these relationships while controlling for emotions directly linked to performance (the major goal of the Paralympics) and with a mismatch between our measurement (i.e., group versus individual) of emotion and cultural identity. Both of these factors had the potential to

eliminate or attenuate anticipated relationships. Given the above considerations we believe our findings, at a minimum, suggests our research questions had merit and warrant continued work in this promising area.

Linking culture and emotion in sport is rare. However, our findings indicate that athletes, coaches and sport psychologists should pay attention to culture and how athletes' countries cultural dimensions may potentially influence emotional display rules which in turn influence emotional expressions in high level elite competitions like the Paralympics.

### **Limitations and future research**

A few limitations should be noted. First the correlational nature of our study precludes establishing causality. However, logic would suggest that any causal implications would flow from the socialization processes athletes' experience in their home countries to their emotional reactions at the Paralympics given that the any cause must precede the effect (Hill, 1965). Additionally, our measurement mismatch may have underestimated the number and strength of relationships among the cultural dimensions and emotions.

Future researchers, if they have access to Paralympic teams, should consider directly measuring the cultural dimensions endorsed by the Paralympians. Some of the criticism of Hofstede's dimensions is that they were developed years ago and are unresponsive to how cultures change and the cultural values present in 2022. Assessing cultural values directly from Paralympians, for example, would insure measurement at the individual level and that scores reflect participant's views of contemporary culture (Jackson et al., 2006).

In summary, the current study advances the knowledge base in disability sport psychology and specifically cultural identity and emotion in two ways. First, in regard to emotion, we found that happiness and neutral emotion (i.e., a lack of emotion) were linked to the cultural dimensions and other emotions such as surprise were unrelated to culture. Second in regard to cultural identity we found that both a long/short term orientation and indulgence/restraint were the most common cultural dimensions associated with emotion. Effect sizes associated with all findings were small but we do not consider them trivial, particularly considering we controlled for a major influence on emotions with three forms of commonly used performance indices that athletes use to gauge if they performed well or poorly. These findings expand the knowledge base in Paralympic sport by examining a topic that has previously received little attention in the sport psychology literature. Our findings also inform theory based work on emotion and culture and help Paralympic coaches understand the potential influence of culture on emotional expressions linked to performance. Such emotional expressions, indicative of emotional satisfaction/dissatisfaction have the potential to influence future behavior (e.g., drop-out, perseverance).

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# Effect of physical activities and sport among patients with asthma on their life

Kamila Sýkorová<sup>1,2</sup>

<sup>1</sup> Clinic SNE Helse, Oslo, Norway

<sup>2</sup> Department of Physiotherapy, Faculty of Physical Education and Sports, Charles University, Prague, Czech Republic  
k.sykorova@post.cz

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## ABSTRACT

*Objectives:* The aim of this study was to analyse active level of lifestyle among asthmatic patients and their participation on physical activities and sports. Another goal was to find out whether asthmatic patients are limited when performing physical activities or sports because of the medical condition and how physically active lifestyle influences the medical condition and whether it takes part on improving their quality of life.

*Methods:* A survey was used for data collection. To gather information, our own survey form was developed – a self-reported tool which clinically compares and measures physical activity (such as other standardised and international forms: International Physical Activity Questionnaire and St. George's Respiratory Questionnaire). A questionnaire was distributed to people working with asthmatic patients, to different sports clubs and among university students. The research group consists of 125 respondents. The obtained data was processed into tables and charts via Microsoft Office Word 2016, Microsoft Office Excel 2016 and SPSS program. A verification of hypotheses was carried out according to the results of the survey and the independence test - chi-squared test.

*Results:* According to the chosen data processing methods, the limitation of asthmatic patients in physical activities or sports was not confirmed – physical activities on regular basis perform 100 respondents (80%), 69 respondents (55.2%) stated no limitation within physical activities due to asthma and e.g., in patients with most severe asthma were 66.7% (n = 4) of them without limitation when being active. The positive effect of regular physical activity on reducing clinical manifestations of the asthma, on reducing medication doses and also on improving the quality of life of patients has been confirmed. Physical therapy has proven to be effective, but more emphasis is needed on educating asthmatics by healthcare professionals about this treatment method.

## KEYWORDS

bronchial asthma; physical activity; exercise; sport; survey

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## INTRODUCTION

Distribution of asthma is global. Number of patients is growing which creates serious economic burden and global public health problem. Treatment cost is high – especially expenses for medication (hospital admissions) but also indirect costs (time lost from work, premature death). In fact, medication represents only part of the whole asthma management. Important part of asthma treatment includes also physiotherapy, especially physical activities and exercising which can decrease cost management of this worldwide disease (Dharmage, Perret & Custovic, 2019; Douglas & Elward, 2011).

Many patients suffering from asthma feel that their condition prevents them from being physically active and exercising. This condition is associated with increased morbidity and decreased patient's quality of life. However, if asthma is controlled there is no limitation in patient's active life style and exercising is appropriate.

## THEORETICAL BACKGROUND

Asthma is a common chronic inflammatory airway disease characterized by variable symptoms (Barrecheuren et al., 2020). It is estimated that over 300 million people in the world have asthma, both children and adults, with high morbidity and relatively low mortality compared with other chronic diseases (i.e., prevalence is around 5% and varies between different ethnic and social groups). Despite there has been significant improvement in asthma management, there are still gains to be made in enhancing patient's education, implementing new diagnostic approaches and case management (Dharmage, Perret & Custovic, 2019; Douglas & Elward, 2011).

There is clear evidence showing that asthmatic patients benefit from physically active lifestyle. Asthmatic patients believe that their medical condition prevents them from performing physical activities and adopt sedentary lifestyle. Physical activity often provokes asthma-related symptoms reflecting the nature or insufficient control of asthma. Thus, asthmatic patients may often intuitively or purposely avoid exercise (Panagiotou et al., 2020). Lack of information provided by medical staff may also be a reason for avoiding physical inactivity. A negative attitude towards physical activity and aversion to exercise lead to low physical fitness, reduced maximal oxygen consumption ( $VO_{2max}$ ), lower anaerobic threshold and oxygen pulse creating and creates thus a vicious circle (Panagiotou et al., 2020; Turner et al., 2011). On the other hand some studies show opposite as according to Mackintosh's study youth with controlled asthma was equally physically active and/or inactive as their healthy peers.

In fact, patients whose asthma is under control are not limited in physical activities. Rasmussen (2000) focused in his study on severe asthma – a type which requires treatment with high dose inhaled corticosteroids plus a second controller (and/or systemic corticosteroids) to prevent it from becoming 'uncontrolled' or which remains 'uncontrolled' despite this therapy, e.g., spirometric lung parameters – persistent airway obstruction  $FEV_1 < 80\%$  (Ahmed & Turner, 2019; Edginton et al., 2019). Rasmussen (2000) stated in his study that patients with severe asthma can thanks to aerobic training reach normal cardiopulmonary values (heart rate, maximal oxygen consumption ( $VO_{2max}$ ), anaerobic threshold, oxygen pulse, ventilation,  $FEV_1$ , etc. (Panagiotou et al., 2020). Strengthening physical fitness is essential in patients, as their  $VO_{2max}$  values



are quantitatively lower compared to healthy individuals. However, the disease does not prevent them from performing physical activities. The reason for the negative results when comparing the  $VO_{2max}$  values of healthy and asthmatic people is reduced physical activity or a sedentary lifestyle. Therefore, the asthma management should include strength and endurance training, which improve both physical condition and increased load tolerance. Diagnosis of bronchial asthma should not prevent from performing sport even on top level performance. According to Kilpeläinen et al. (2006) asthma is even more common among elite athletes than in the general population. In the present asthma is estimated to affect 339 million people worldwide (Kuder et al., 2021). According to Allen et al. (2019) in recent studies of elite-level athletes is asthma frequently reported as the most common medical condition indicating with a prevalence of 25–75% in susceptible cohorts (Ahmad & Edwards, 2015; Irewall et al., 2021; Smolíková & Máček, 2006).

## OBJECTIVES OF THE WORK

Reason for the study was the lower level of physical activities among patients suffering from asthma and also assumption of exercising on regular basis helps patients to decrease clinical manifestation of disease, to get better overall asthma control, less exacerbations, lower healthcare use and helps to increase their quality of life. It also normalize maximal oxygen consumption ( $VO_{2max}$ ), anaerobic threshold and oxygen pulse, airflow and lung function ( $FEV_1$ ) (Kuder et al., 2021; Panagiotou et al., 2020; Turner et al., 2011). The aim of the work was to obtain and to analyse data of the current state of physical activity levels and sport of asthmatic patients. We were as well interested whether the asthma creates an obstacle in exercising or doing sports. The partial goal was to discover the impact of active lifestyle on patient's medication management of disease.

## METHODS

The work is an empirical quantitative study. To obtain require information an anonymous self-reported survey was used. It was developed to meet the needs for further survey research.

The research group consisted of 125 respondents who were diagnosed with asthma disease (which was a major condition to take part in the survey) regardless gender or age. Not all facilities that have been asked agreed on cooperation. At the end there were 3 spa rehabilitation institutes, a pulmonology specialist and a sports specialist interested in collaboration. Thus, we reached respondents of wide age scale. Survey distribution continued among university students (Prague, Brno, Olomouc, and Ostrava). Assumption was an active lifestyle of young people. There were also different sports clubs in Prague, Olomouc and Zlin which agreed on taking part in the research. Based on variety of distribution, results of the survey can be used for wider sample population.

All subjects included in the research group signed informed consent and the project was approved by the ethics committee FTVS UK. The time schedule for data collection took place from December 2017 to February 2018.

### **Data collection method**

When developing our own form of survey, we used former international standardized questionnaires as inspiration (International Physical Activity Questionnaire, St. George's Respiratory Questionnaire) along with information found in literature and discussed the final draft with specialists (Apfelbacher et al., 2012; Agarwal, Gupta & Sood, 2017).

The format of survey contained combination of types – both open-format and closed-format items. The survey consists of 25 questions, divided into four parts. The first one focuses on respondent's details such as age, gender, severity of asthma and its management. Next part provides information about patient's physical activity and sports. Following questions collect facts about impact of active lifestyle on participant and last fourth part of survey form asks about respondent's relation to activities and sports.

There were two methods of collecting survey data: web-based survey and mailed form of survey. The environment for online data collection was provided by the Google Docs service. Mailed version was implemented via traditional postal service deliveries. Obtained data were converted to tables for further analysis.

### **Data processing**

Returnability of mailed version survey was lower than 10%. Web-based survey showed greater return reliability. After excluding incorrectly completed forms the total number of participants for further analysis was 125 ( $n = 125$ ).

### **Data analysis**

Obtained information was analysed using the Microsoft Office environment – MS Word 2016 and MS Excel 2016 and SPSS program. These were used to create tables and graphs, or to calculate mean values. Data missing numerical values were processed by written text.

A verification of hypotheses was carried out according to the results of the survey and the independence test – chi-squared test. The significance level was maintained at its standard value of  $\alpha = 0.05$  (5%).

## **RESULTS**

### **File characteristics**

Altogether 125 people completed survey correctly therefore that is the total number of participants in our survey. Majority represents women ( $n = 101$ ; 80.8%) compared to men group ( $n = 24$ ; 19.2%). Only 8% ( $n = 10$ ) were children. They youngest respondent was 3 years old, the oldest one was 69 years old. There were 3 spa rehabilitation institutes, a pulmonology specialist and sports specialist interested in collaboration. Therefore, the respondent age scale is wide. The average age of cohort was  $\bar{x} = 29.25$  years. Due to the large age group variance, statistical units were calculated: Mod ( $x$ ) = 23 years; Med ( $x$ ) = 24 years.

There were patients with all 4 subdivided asthma categories in our survey (we followed classification according to GINA (Global Initiative for Asthma)). Table 1 shows that more than half of respondents ( $n = 72$ ; 57.6%) were patients with second type of asthma – mild persistent type.

**Table 1** Overview of the asthma classification subcategories of participants in our survey

Asthma classification	Percentage of participants
1. intermittent asthma	57.6% (n = 72)
2. mild persistent asthma	23.2% (n = 29)
3. moderate persistent asthma	14.4% (n = 18)
4. severe persistent asthma	4.8% (n = 6)

To obtain detailed characteristics of survey's sample participants answered questions regarding management of asthma, too. The total sum of answers significantly exceeds the number of respondents due to the possibility of multiple choice. Majority (n = 100; 80%) is controlled by an allergy specialist. Among other choices of health care providers were a pulmonologist (n = 40; 32%), a sports doctor (n = 10; 8%), a physiotherapist (n = 5; 4%), a psychologist (n = 4; 3.2%), a dietitian (n = 4; 3.2%). There were 4 respondents (3.2%) from the whole sample who do not require any medical follow up.

Medical management of asthma is choice of 116 participants (n = 92%), 2 patients (n = 1.6%) need to use medical treatment only during asthma attack. It can be usually well managed with the use of maintenance inhaled glucocorticoids (e.g., Beclomethasone) and inhaled short-acting  $\beta_2$ -agonists (e.g., Salbutamol) which provide quick relive and get asthma under immediate control (Panagiotou et al., 2020). Physical activities as part of asthma treatment use 30 respondents (n = 24%). The sum of answers again exceeds number of respondents due to the possibility of multiple choice.

### Physical activities

One of the key questions shows that more than half of interviewed are physically active (n = 69; 55.2%) without feeling any limitation due to asthma disease. Physical activity is comprised of bodily movements produced by the skeletal muscles that result in an increased metabolic rate over that of resting energy expenditure (Panagiotou et al., 2020). Table 2 represents detailed answers according to asthma severity of GINA classification. Patients from second and third categories seem to feel less restricted when being active.

Physical activities on regular basis perform 100 respondents (80%). There was no difference shown between percentage of physically active women (n = 81; 80.2%) and men (n = 19; 79.1%). Rest of the participants (n = 25; 20%) did not take part in any physical activities other than activities of daily living. Only in 5 cases (4%) asthma represents limitation to be active, 2 other participants stated different health condition which did not allow them to do physical activities. Another 18 patients (14.4%) lead rather sedentary lifestyle with decreased physical activity (physical activity in our survey represents a specific cyclic endurance activity (lasting 30–40 mins) where walking

**Table 2** Limitation of patients (according to GINA subcategories) during physical activities

Asthma classification	Do you feel any limitation during physical activities?		Percentage/number of participants
	Yes	No	
1. intermittent asthma	29.2% (n = 21)	70.8% (n = 51)	57.6% (n = 72)
2. mild persistent asthma	62.1% (n = 18)	37.9% (n = 11)	23.2% (n = 29)
3. moderate persistent asthma	83.3% (n = 15)	16.7% (n = 3)	14.4% (n = 18)
4. severe persistent asthma	33.3% (n = 2)	66.7% (n = 4)	4.8% (n = 6)

means the main physical activity (Bilyamin et al., 2022; Zatloukal & Neumannová, 2012). Due to that were these 25 answers excluded from further research involving physical activities and new total number of participants became 100.

Volume of physical activities is shown in Table 3. In 34 causes (n = 34%) were activities performed 1–2× week. According to literature (Ahmad & Edwards, 2015; Panagoitou et al., 2020; Smolíková & Máček, 2006) this frequency shows no development on human's health. About a third of asked (n = 60; 60%) enjoys aerobic activities (to increase aerobic performance (Rokyta et al., 2016) – e.g., dancing, handball, swimming, volleyball) in 24 cases (24%) were activities mostly strength oriented (to increase muscle strength, which is for the most part represented by static muscle contraction and the dynamic component participates to a lesser extent (Smolíková & Máček, 2006) – e.g., crossfit, gymnastics, rugby) and 16 (16%) respondents marked option of interval activities (an intermittent periods of effort interspersed by recovery periods (Viana et al., 2019) – e.g., crossfit, hockey).

## Sport

Questions about sport show that from all 125 respondents, 80 of them (n = 64%) play sport. By Cohen et al. (2018) sport means all forms of physical activity which, through casual or organised participation, aimed at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all level. In 10 cases (8%) have respondents never played any sport, 3 patients (2.4%) stated asthma as limitation when exercising and 9 participants (7.2%) used to play sports before. The answers were evenly distributed between men and women groups too – 16 men (n = 66.7%) and 62 women (n = 61.4%) playing sport. As we can see in Table 4 number of patients who plays sport increases with severity of asthma. Types of sports vary.

Table 5 represents weekly frequency of sport performance. Numbers relate to 89 respondents who either play or used to play sports. About a third (n = 30; 33.7%) performs sports on competitive level. In 7 cases (7.9%) patients replied they observed that asthma makes them difficult to improve their performance.

**Table 3** Volume of physical activities

Volume of physical activities	Percentage of participants
Several times a day	11% (n = 11)
Daily	18% (n = 18)
1–2× week	34% (n = 34)
3–4× week	25% (n = 25)
5–6× week	12% (n = 12)

Respondents were asked about details when being recognized with asthma. More than half (n = 47; 52.8%) stated asthma has been diagnosed before they started play sports. About a third (n = 32; 36%) received diagnosis when being already exercising. Asthma associated with sports performance was obtained in 10 cases (11.2%).

### Restrictions of patients due to asthma from physical activity and sport

To determine the effect of asthma on physical activity, chi-squared test was performed. Data analysis was processed in Pivot tables. The value of qualitative features was calculated to clarify the statistical level of significance. Result  $9.58 \cdot 10^{-10}$  is significantly lower than standard value of  $\alpha = 0.05$  (5%) therefore the assumption that asthma causes restriction for patients when being physically active has not been confirmed ( $9.58 \times 10^{-10} < 0.05$ ).

**Table 4** Participants (according to GINA categories) performing sport

Asthma classification	Percentage of participants performing sport
1. intermittent asthma	55.5% (n = 42)
2. mild persistent asthma	69.0% (n = 20)
3. moderate persistent asthma	66.7% (n = 12)
4. severe persistent asthma	83.3% (n = 5)

Table 5 Volume of sports training

Volume of sports training	Percentage of participants
Several times a day	5% (n = 4)
Daily	10% (n = 9)
1–2× week	42% (n = 38)
3–4× week	30% (n = 26)
5–6× week	14% (n = 12)

Based on the answers related to sport was result of data valued  $1.76 \times 10^{-10}$ , which again is lower than determined standard value of  $\alpha = 0.05$  (5%). Therefore, an assumption of sport meaning a restriction for asthmatic patients has not been approved either ( $1.76 \times 10^{-10} < 0.05$ ).

### Effect of activities on asthma

Regular physical activity helps about two thirds of group ( $n = 72$ ; 72%)<sup>1</sup> to decrease symptoms (cough, shortness of breath, etc.). In 54 cases (54%)<sup>2</sup> regular activity contributes to decrease asthma medication. The investigated dependence on the frequency of physical activities on asthma management was most significant at volume of 3–4 times per week. Least efficient, based on answers, has been shown volume of physical activity performed 1–2 times per week, where also more than half of group ( $n = 20$ ; 58.8%) did not see any correlation between exercising and medication decrease.

From collected data was shown major impact of physical activities on better quality of life (social life, psychological effect, activities of daily living, decrease of illness, etc.). In 3 cases (3%) patients quit medical treatment thanks to active lifestyle. Higher level of regular physical activity reduces the risk of asthma exacerbations, independent of asthma severity and is associated with lower health care use, medications and improves lung function, too (Panagiotou et al., 2020).

## DISCUSSION

The objective of the presented study was to evaluate volume of physical activities and sport at asthmatic patients in Czech Republic and the effect it may have on asthma management. We expected people with asthma having decreased level of active life

<sup>1</sup> Numbers relate to sum of 100 respondents from a sample of physically active subjects.

<sup>2</sup> Related to sum of 100 respondents.

style and feeling restrictions when exercising. To achieve this objective, we have developed a survey form based on standardized International Physical Activity Questionnaire and St. George's Respiratory Questionnaire.

Globally, several studies recognize that there is a significant decrease in physical activities among asthmatic patients (Groth et al., 2016; Jago et al., 2017; Lang et al., 2004; Lucke et al., 2007; Williams et al., 2008) even though physical therapy is part of asthma management. However there have also been studies that have not found an evident of low level in the physical activity of people with asthma (Boas et al., 1998; Ford et al., 2003; Jerning et al., 2013; Teramoto & Moonie 2011). Some authors confirm correlation between asthmatic patients and inactivity which was dependent on sex. Yiallourous et al. (2015) proved in his study decreased volume of physical activities in female group.

Although medication treatment became option selected by majority of our study sample, physical activity (physical activity of moderate-intensity performed regularly) was picked as second most frequent choice for asthma management. Questions concerning volume of physical activities in our survey were based on literature recommendation. The authors differ slightly, as the frequency of physical activities (household, occupational, transportation, conditioning, athletics, sports, or other daily activities) lasting at least 30 minutes at least 3 times a week seems to be optimal (Ahmad & Edwards, 2015; Haskel, 2007; Panagiotou et al., 2020; Tucker et al., 2011). Turner et al. (2011) showed that established recommended physical activity programs for asthmatic patients reduce the incidence of symptoms and improve patients' quality of life. For fear of overexposure to irritating stimuli and subsequent exacerbations, children with asthma are often restricted from experiencing daily activities as their peers, such as laughing, swimming, playing with pets, etc. According to Máček & Radvanský (2011) more than 30% of children with asthma are significantly limited in physical and social activities due to excessive parental concern or a passive lifestyle more than asthma itself.

In assessing the effectiveness of physical activities on asthma, several previous studies demonstrated positive impact (Lucas & Platts-Mills, 2005). Longitudinal study by Garcia-Aymerich et al. (2009) recognized that regular physical activity causes decrease of asthma attacks. Lucke et al. (2007) focused his research on women in Australia, in which he confirmed highest prevalence of asthma disease among inactive women or the ones with low physical activities. Kilpeläinen et al. (2006) found an association between the level of physical activity and the prevalence of asthma. However, according to his study, mild physical activity reduces the risk of asthma in men, but not in women. Likewise, Yiallourous et al. (2015) confirmed reduced physical activity only in the female group. These statements do not meet the results of our research, as women ( $n = 81$ ; 80.2%) and men ( $n = 19$ ; 79.1%) proved to be almost equally active.

Brumpton et al. (2016) studied diversity of the effects of physical activity on asthma and talked about possible hidden subgroup effects depending on the age period. If we analyse the impact of physical activities in relation to the age period among children/adults, 60% of children ( $n = 6$ ) in our study stated that physical activity helps them to reduce symptoms of the disease. There is 73.3% ( $n = 66$ ) among adults benefiting from physical activity. Comparing the benefits of physical activity in children and adults in

our study, it can be confirmed that there is only slight difference between these age groups.

Eighty percent ( $n = 100$ ) of the respondents stated that they regularly perform physical activity lasting at least 30 minutes. Physical daily activity encompasses household, occupational, transportation, conditioning, athletics, sports, or other activities in the context of daily, family, and community activities (Panagiotou et al., 2020). Although 80% appears to be a satisfactory result, the frequency of the activities should be considered. 34% ( $n = 34$ ) of these respondents perform physical activities 1–2× week, which seems insufficient according to global recommendations because physical activities do not have a stimulating effect on patients' health (Haskell, 2007; Smolíková & Máček, 2006; Tucker et al., 2011). The remaining 66% ( $n = 66$ ) of physically active subjects reported a volume of at least 3 times a week, thus meeting the recommended criteria for physical activities. A study by Ahmad and Edwards (2015) showed that 78% of patients out of 128 respondents do not meet the prescribed physical activity program (i.e., 150 minutes per week). In our study, it was 59% of respondents ( $n = 59$ ) who were physically active for less than 150 minutes per week.

As mentioned, diagnosed asthma does not represent limitation for sports, even at the top level (Boas et al., 1998). According to Kilpeläinen et al. (2006) asthma is even more common in elite athletes than in the general population. According to Price et al. (2014), the airways of elite athletes show an abnormal response to air exposure during intense exercise. Especially in swimmers and cross-country skiers, there is a transient narrowing of the airways in more than half of the cases. Endurance athletes are prone to developing airway dysfunction (Price et al., 2014). In our survey, we asked about the connection between the diagnosis of bronchial asthma and sports. 11.2% of subjects ( $n = 10$ ) stated that they were diagnosed with asthma in this connection, but did not stop exercising. Whether it is top performance or just recreational sports have not been shown to affect the asthma diagnosis according to research analysis, as well as the frequency of sports. The connection between a certain type of sport and the prevalence of asthma has not been proven from the obtained data either.

## LIMITATIONS

An anonymous survey relies on self-reported information from participants rather than information taken by researchers. An assumption of the survey approach is that patients will provide accurate information about their health and activities.

## CONCLUSION

As positive results of our study we can see that people with asthma does not seem to feel that limited when performing physical activities or sports. On the contrary, the results suggest how important is frequency of exercising which is taken as beneficial to human's health.

Physical activity plays important approach of asthma management and it is therefore necessary to keep asthmatics as active as possible, to involve them in social life and to enable them to participate equally in physical and sports activities as healthy individuals.



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Address correspondence to the Faculty of Physical Education and Sports,  
Charles University, José Martího 31, 162 52 Prague 6 – Veleslavín, Czech Republic  
e-mail: [auc-k@ftvs.cuni.cz](mailto:auc-k@ftvs.cuni.cz)

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