BOOK OF ABSTRACTS

9-10 DEC 21

#ERNC21

Esports Research Network
Conference

Esports
Health & Wellness

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Introduction by
the ERN Chairperson

Esports is part of the digitized society and the ongoing pandemic showed that this digitized society is heavily intertwined with our daily life. People were forced to digitize their work environment "move online," for esports, this was a step back into their old digital home.

This is important to understand and highlights the relevance of esports research. Especially the topic of health and fitness is crucial not only for esports but for the digital society. Understanding esports and creating a sustainable environment for esports players will help solve issues in the digital work environment. Therefore, the Esports Research Network Conference 2021 will help improve the esports ecosystem and give practitioners input for further professionalization of esports and offer insights for everybody interested in ways to shape digitized society.

The ERNC 2021 will also foster the discourse with the practitioners in the panels and the keynotes and help give people tools to battle health issues and shed insights into mental and physical health topics. Esports is part of society and the ERNC 2021 will strengthen this understanding by showing that esports research directly impacts society and can act as a future lab for digitized society.

Dr. Tobias Scholz
Associate Professor
University of Siegen, Germany
ERN Chairperson

The **Esports Research Network** **(ERN)** is an international network of over 200 researchers from more than 35 countries around the world. The association aims to foster collaborations in the field of esports by creating a meeting point between academics and esports industry professionals.

Introduction by the I3SP Director

The Esports Research Network Conference 2021 is an important moment to connect the Esports research community with the health, social and ethical issues of this new form of sport.

The I3SP laboratory, around Nicolas Besombes and the research Thema on technologies and health, is developing international research on the impacts of virtual environments and new digitally-driven sports on the health of practitioners and communities. Faced with the risks of fatigue, injuries or compulsive training, the research opens with this event a reflection on health and new technologies.

By including esports as one of the main research objects of our laboratory, "sports-health" considers the virtual and physical dimensions in a contemporary investigation: how do the new technological devices of esports modify the relationship of bodies playing together to different tasks and the perception of internal sensations? Esports develops a new kind of motor skills and a new perception of action: it is necessary while remaining lucid to give the word to the experts and to the gamers to understand the points of view of each.

The Paris 2024 Olympic and Paralympic Games have chosen young, creative, and spectacular sports that are in phase with their time: surfing, climbing, skateboarding and breaking. While still refusing esports, new motor skills remain contained in the physical body. The work of ERCN 2021 and our laboratory already demonstrate that motor skills used to navigate in virtual environments is a vector of health, emotional sharing and socio-cognitive expertise.

Pr. Bernard ANDRIEU
Full Professor
Université de Paris, France
I3SP Director

The **Institut des Sciences du Sport-Santé de Paris** **(I3SP)** is the research laboratory of the Sports Faculty of the University of Paris. The work of its members deals with (i) the impact of physical activity on the capacities of the body in movement, (ii) conviviality, creativity and emotions in physical activity and finally (iii) technologies and adaptations for health in sports.

Keynotes

Shifting the Perspective in Esports:
Lessons learned while building well-being
in high-performance teams

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Performance Coach, Rogue Esports
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My work in esports is guided by a scientist-practitioner approach, in which my research work focuses on better understanding the interaction of cognitive and psychophysiological factors on esports performance while informing my applied practice. Additionally, I am a specialist in sport and exercise psychology, working with esports players and coaches at the highest level of performance. This work aims to optimize performance while developing health and well-being approaches. Consequently, drawing from my combined work in science and the field, I will present insights that I have gathered throughout the years. I will provide examples of the different strategies implemented to get the buy-in from players and coaches. Those successful and less successful approaches that I use to optimize health and performance. Lastly, I will share my understanding of how to bridge the gap between theory and practice that contributes to the day-to-day in both fields.

Managing Esports Health:
It's More Than Just Exercise

Pr. Joanne Donoghue, PhD. ACSM-CEP
Director of Clinical Research, Department of Osteopathic Manipulative Medicine
New York Institute of Technology College of Osteopathic Medicine
Associate Professor, Center for esports research and medicine
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Gaming has exploded at such a rapid pace in the past few years, it is no wonder the scientific community has had a hard time keeping up! It appears every corner of the market wants to be involved in esports and player health. Esport health goes beyond just sitting less and exercising more. This talk will begin with the common injuries and health concerns of esport athletes and delve into the myths versus the science. Topics discussed will include:

(1) Where the science of esport health currently stands and where is it lacking compared to other competitive sports;

(2) How the health of esport athletes impacts the industry as a whole;

(3) The future direction of research on the health of the esport athlete.

Panels of Experts

Nutrition in Esports

Anton "Foxy1" Mihailov
LEC Team Chef
Rogue Esports

Jessica Turner
Accredited Practising Dietitian
PhD Candidate
Queensland University of Technology, Australia

Stephanie "missharvey" Harvey
Former CS:GO World Champion,
Director of Development
Counter Logic Gaming
Founder of ÉLEVEY

Moderation by
Dr. Stephanie Orme
Assistant Professor
Emmanuel College, US

Physical Injuries in Esports

Dr. Lindsey "GamerDoc" Migliore,
Esports Medicine Physician
NYIT Center for Sports Medicine
Wellness & Performance Consultant
Evil Geniuses

Dr. Caitlin McGee, PT, DPT,
Performance and Esports Medicine Director at 1HP
Co-founder at Esports Health and Performance Institute

Jacob "Jake" Lyon
OWL Coach
Houston Outlaws

Moderation by
Dr. Seth E. Jenny
Assistant Professor
Department of Exercise & Rehabilitative Sciences
Slippery Rock University of Pennsylvania, US

Mental Health in Esports

Martina Čubrić
Esports & Sports Psychologist
MAD Lions

Mia Stellberg
Esports & Sports Psychologist
Independant

Sébastien "Ceb" Debs,
Dota 2 Proplayer
OG Esports
Back-to-back winner of The International

Moderation by
Dr. Tobias Scholz,
Associate Professor
University of Siegen, Germany

Parental Environment in Esports Careers

Shae "Shaemmon" Williams
Founder of Coalition Of Parents in Esports (COPE)
Proud mother of Duster (OA FN Proplayer)
and Brooke (accomplished figure skater)

Koen "Koenz" Schobbers
Former Trackmania esports athlete
Founder of Parents of Play

Michael "CAPS.dad" Winther
Proud father of Caps (G2 LoL Proplayer),
Ryze (Former C9 Dota2 Proplayer)
and 2 others on CSGO

Moderation by
Dr. Brian McCauley
Assistant Professor
Jönköping University, Sweden

Session 1.1:
Players Management
& Esports Education

Current Landscape of Higher Education Performance and Health-Related Esports Academic Programming

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Keywords: Education, Academia, Degrees, Curriculum, Courses, Certificates

1.   Objective(s) and Research Question(s)

As part of a larger study inventorying nearly 100 worldwide higher education esports programs (Jenny et al., in press), the purpose of this presentation is to offer an analysis of the current global offerings of performance and health-related esports degree, certificate, and minor academic programs. In addition, individual esports performance and health-related modules within these programs will be presented.

2.   Theoretical Background and Literature Review

Esports education has been recently thrusted into the spotlight through the initiation and near immediate retraction of the Esports Certification Institute's (2021) *Esports Professional Certificate* after immense industry backlash after its launch (Fitch, 2021). Academics and industry-alike have called into question the need for formalized esports education degrees and certifications (e.g., DeKay, 2020; Scholz, 2021). Moreover, entities are starting to monetize the ability to connect prospective students to esports education programs (e.g., Majoring in Gaming, 2021), or offer higher education institutions esports curriculum development services (e.g., GHS Esports Solutions, 2021). Moreover, while esports players continue to retire prematurely due to health or injury complications (e.g., professional Overwatch player Ki-hyo "Xzi" Jung's recent retirement due to physical injury; Aquino, 2021), little is known regarding the amount and breadth of formalized esports health-related academic programming that is available worldwide. In addition, little empirical evidence exists surrounding esports education, particularly research that targets investigating formal education of esports performance, health, and medicine in higher education.

3.   Methodology and Data Collection/Analysis

Data collection occurred between July 2018 and March 2021 and started with widespread Internet searches focusing on finding higher education esports academic program websites and esports education media news articles. Inventory search term and inclusion criteria included: "e-sport", "e-sports", "esport", or "esports" included within the title of the higher education institution's "degree", "certificate", or "minor" program. Members of the following two discord server groups that are primarily comprised of esports students, faculty, and researchers were also solicited during data collection: 1) *Esports Research Network* (n = 164), and 2) *Global Esports Studies* (n = 122).

When available, collected data included the higher education institution's name, location, and language taught, along with the esports education program's title, type of program (e.g., type of degree, certificate or minor), term and year it started, objectives, delivery format (i.e., online or face-to-face), program curriculum (i.e., individual "course" titles – commonly known as "modules" outside of the United States – within the program), and course (i.e., module) descriptions. Data was then triangulated across academic institution esports program websites, media articles, and personal correspondence to enhance validity, when possible.

A comparative content analysis design was used for this study (Saldaña & Omasta, 2018). All data was organized, categorized, analyzed, and coded into common occurrence themes within Microsoft Excel (Given, 2016). As health is part of performance optimization, the focus of this analysis was to determine the current number and composition of health-related and performance esports degree, certificate, and minor academic programs offered globally. Distinct esports health and performance-related courses (i.e., modules) across all found programs were also analyzed. Finally, frequency counts of data (i.e., type of program, focus area of the program, focus area of each course/module, etc.) and descriptive statistics were performed.

4.   Main Results/Findings

Across our analysis, only 13% of found global higher education academic esports programs focused on esports performance or coaching (i.e., sport science). Moreover, the majority of these health or performance-related esports academic programs focused on becoming a better esports player (i.e., skill development), with no programs found that focused on esports health or medicine. In addition, an analysis of over 400 individual esports-specific courses (i.e., modules) offered by higher education institutions that deliver esports academic programs where curriculum was available (n = 77) found that only 1% of courses (n = 5) related to esports health/medicine (e.g., "*Esports Injuries and Rehabilitation*", "*Health and Wellbeing for Esports Competitors*") and 8% of courses (n = 32) related to esports performance/coaching (e.g., "*Introduction to Esports Coaching*", "*Game Analysis*", "*Skill and Strategy Development*").

5.   Discussion & Practical Implications

Educating current and future esports practitioners on the health management of players is paramount for the sustainability of the esports ecosystem. Formal education may be a part of this solution. Developing esports-specific health promotion knowledge, skills, and abilities among future esports professionals could contribute to lengthening professional player careers and increasing the health of players at all levels. Specific institutions and their programs will be discussed, with future directions of esports education also highlighted.

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From Amateur to Professional: A Brief Review of E-Sports Game Companionship in China

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Keywords: Game companionship; China; E-sports; Game Culture

As the largest market for games in the world, China features the largest population of e-sports participants. In 2019, the profit of the entire Chinese e-sports market, composed of over 600 million players, reached 800 million yuan (Chen, 2019). Along with the growth of this market has come a promotion of pertinent occupational demands for e-sports, including game companionship, which is served to company players in gameplay, with a promise to have a better group game experience. In 2020, the Chinese government, in correlation with the Bixin (比心), released the National Occupational Skill Standard: E-Sports Professionals (国家职业技能标准：电子竞技员) to promote the game companionship industry, establishing the minimum level of education, pre-job training, exam content, classification of career levels, and other detailed regulations. This was done to standardize and to promote the holistic e-sports industry service, actuating the public demand for a professional, entertaining e-sports industry.

Even the game companions for e-sports have existed for over a decade, the research of its history is still absent, while the public holds mixed views upon the industry. That is to say, most believe that game companions promote Chinese e-sports' popularity. However, the esports game companionship industry is confined to online transactions and has similar issues in other service industries (e.g., maid cafe), like differentiated levels of services and transactions falling within the grey area (such as gambling and prostitution, See: Santu.Jun, 2020). Meanwhile, even the game companions have significant effects on promoting professional players' abilities, the industry still has strong sexual biases, the equality between male companions and female companions is almost impossible (Netease, 2021). These appreciations and controversies showed an epitome of the Chinese e-sports industry and brought many questions to be studied further. For example, what does game companion, as a positive industry, contribute to the e-sports in China? How does the Chinese society, game community, and government prevent side effects, while bringing out the best game companionship to service e-sports in China?

To fill in the researching blanks concerning the Chinese e-sports industry and game companionships, this research will utilize secondary data, including news reports, interviews on newspapers, laws, and regulations. These materials will be located based on searching words in Chinese news data archives and research

databases. With these contents as the basis, by examining the historical development process, the project will answer what is game companionship and how the progression of the game companionships, a unique Chinese esports cultural phenomena, is correlated to and affects the e-sports industry. It also answers how 'Chinese experience' will be beneficial for future research on Chinese video game policies, Chinese e-sport game communities, and fan cultures. Most importantly, how the Chinese game fans, e-sports corporations, and governmental bodies all facilitate the professional improvement of e-sports and the game companionship industry.

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Rationale and Perspective of the eSports **H**ealth **A**nd **PE**rformance Network

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Keywords: eSports, Network, Health, Performance

1. Rationale

eSports is an unprecedented cultural phenomenon increasingly shaping social life. eSports has surpassed established "players" of sports, cultural and entertainment sectors in participants, audience, businesses, and organizations involved. For example, the 2019 League of Legends World championship became the most viewed eSports event establishing global relevance compared to other major league sporting events (e.g., 2019 NFL Super Bowl; Roundhill, 2020).

eSports participants and audiences are predominantly younger with almost half of 16–29-yearold (49.5%) and 30–44-year-old (46.3%) people being involved in eSports, with growing numbers across age groups (Roundhill, 2020). Increases in viewership, competition prize pools, athlete earnings, audience engagement

activities, league infrastructure, and formidable investments are projected as the main growth drivers. For example, in Switzerland people participate in eSports on average 11 hours per week (1.5 h per day) - more than the time spent on social media (1.25 h per day; Hüttermann, 2019).

Despite this growth, many have negative associations with eSports leading to a lack of acceptance in parts of society, social exclusion problems, stigmas, and potentially discouraging non-endemic investors. eSports participation and gaming time has been linked to increased stress, sleep disturbances, sedentary behavior, obesity, and behavioral problems, which are associated with a higher risk of cardiovascular diseases, diabetes and other adverse health outcomes (Young et al., 2016), as well as increased health care costs and financial burdens.

Compared to other traditional sports, an eSports physical health and safety network is largely nonexistent, as are specific training programs, associated health professionals, and physical clearance or return to play protocols. This should be addressed to ensure eSports' sustainability. Thus, eSports offers a vast potential for new spinoffs, for example:

•   new training tools such as training handbooks or videos incorporating healthy warm ups and regeneration periods,
•   physical activity and health promotion through gaming technology such as incorporating exergames into training routines,
•   adapting existing sports technology to the eHealth market such as integrating virtual or augmented reality games that require physical activity into eHealth services,
•   and the transfer of the sports tech market into eSports.

Already existing markets in sports and gaming, like the sport tech industry, eHealth and mHealth, game design, the Serious Games market, and game analytics could also profit.

Thus, this is timely to actively shape and influence the rapidly developing eSports infrastructure and culture. Regarding health, eSports is uniquely suited for prevention and is currently socially, culturally and economically highly relevant.

2.   Perspective

Promoting health in the younger society can add economic value through increased work productivity, and reduced health care costs both short and long-term. Further, it could assist children, adolescents, adults and older adults in healthy development, e.g., developing cognition and fundamental movement skills through eSports, exergames or long-term physical activity. eSports could serve as a role model or "vehicle" to tackle critical public health issues. Furthermore, research on performance factors of elite eSports players could be a powerful innovation motivator due to the societal and customer cross-industry

interests in performance and health. Further research could also help aspire eSports athletes for "eSports fitness". There is a broad scientific basis for health and performance in eSports (Figure 1).

Therefore, the primary aim of the newly formed eSports Health And PErformance (eSHAPE) Network is to positively shape the eSports phenomenon through a multidisciplinary participatory network enabling an interchange about eSports players' health and performance.
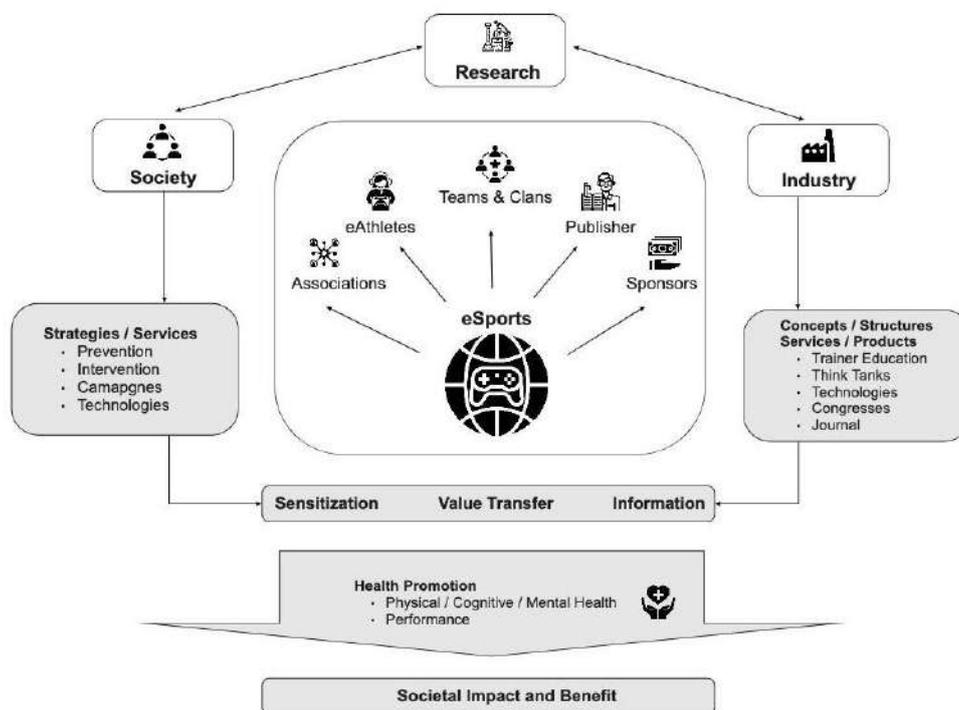
Figure 1. eSports and the eSHAPE Network.

3. The eSHAPE Network

The eSHAPE Network, established this year, is a multidisciplinary community participatory network including business, community, player and research organisations enabling an interchange about eSports players' health and performance.

This network offers a unique opportunity to frame the development of a recent, rapidly developing phenomenon. Connecting stakeholders, facilitating inter-sectoral exchanges, evolving and shaping the direction, societal meaning and eSports acceptance will lead to greater credibility and political and industry investment. There is potential to make eSports an exemplar for sustainable and health-oriented development in society.

Thus, potential next steps in our process will be discussed.

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Understanding the Role of Coaches in Esports

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Keywords: Esports, coaches, coaching, sports psychology, roles

1.   Objective(s) and Research Question(s)

This exploratory phenomenological research study attempts to understand the role of coaches within esports as they present an unexplored area within sport science, and research into this area supplies new evidence to be considered in controversy regarding esports classification as a sport. This study attempts to answer the question of, what is the role of esports coaches.

2.   Theoretical Background and Literature Review

The limited but innovative research into esports within sport science suggests that those who compete within esports are similar to athletes in traditional sports. The role of coaches has a significant influence towards athlete development and well-being within traditional sports. Thus, it is important to understand the role of coaches within esports, as the popularity and rapid growth of esports suggest those in coaching roles will only increase and is yet to be explored

3.   Methodology and Data Collection/Analysis

Five esports coaches of varying coaching levels and experience participated in one-on-one semi-structured interviews, facilitated by an interview schedule that explored the responsibilities, relationships shared with athletes, and coaches' personal development within their role.

4.   Main Results/Findings

The results of this exploratory research suggest that esports coaches share similarities within their roles to those who coach traditional sports; this highlights a similarity that exists between traditional sport and esports.

5.   Discussion & Practical Implications

This finding provides new evidence to be considered in the ongoing debate regarding esports classification as a sport, whilst justifying continued research specifically into esports coaches, and the broader context of esports from a sport science perspective.

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Session 1.2:
Esports Mental Health

Are Esports Players at More Risk for Mental Health Concerns?

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Keywords: esports, gaming, depression, anxiety, self-esteem, gaming disorder

1. Theoretical Background and Literature Review

Although an esports career may seem like a dream job for young gamers, several researchers have raised concern about the mental health aspects of videogame play on a competitive level. Chung and colleagues (2019) argued that esports players, similarly to people with gaming disorder, may experience negative physical and psychosocial consequences, such as extensive time investment in videogames, sedentary lifestyle, failure in formal education or workplace, aggression and irritability and even the neglect of social relationships. However, several of the problematic gaming symptoms was criticized in their reliability to estimate videogame use related problems (Nielsen & Karhulahti, 2017). For example, preoccupation with videogames in the case of an esports player may be the sign of healthy commitment of a chosen career path and preparation for a high performance demanding task rather than "obsessive behavior". Furthermore, professional esports players are in a special position due to the heightened level of stress, cognitive anxiety and perceived match importance (Mendoza et al., 2019) and the greater need for adaptive coping and the formation of a positive, progression oriented "growth mindset" (Himmelstein et al., 2017). To examine and compare the motivational background of gaming disorder in esports players and nonesports players, Bányai and colleagues (2019) tested the same mediation model in the aforementioned two groups, both of which explain the

association between psychiatric distress and gaming disorder symptoms largely through escapism motivation.

2. Objective(s) and Research Question(s)

The aim of the present study was to measure and compare esports players (i.e., gamers who took part in esports competitions 6-11 times in the past year) and non-esports videogame players in different aspects of mental health in two gamer samples.

3. Methodology and Data Collection/Analysis

Results of two different studies will be reported. The data collection of the first sample (Sample1) was done in 2016, the second in 2020 (Sample2). In both data collections, the recruitment of participants was done in collaboration with the popular Hungarian gaming magazine, Gamestar.hu. Data was collected using online, self-report surveys. The first data collection included 5,093 participants (90,4% males, mean age 22,93 years [SD=6,56], ranging from 14 to 59 years). The second sample comprised 14,537 participants (89,2% males, mean age 24,15 years [SD=6,94], ranging between 14 and 75 years). The following data was collected: gaming disorder symptoms (both studies), self-esteem (both studies), depressive symptoms (both studies), anxiety symptoms (Sample1), positive and negative affect (Sample2), level of functionability (Sample2), perceived stress (Sample2) and attention deficit hyperactivity symptoms (Sample2). Three groups were created, based on esports competition involvement and weekly videogame use time: esports players group (N=247 in Sample1, N=529 in Sample2), highly engaged gamers (N=2079 in Sample1, N=8932 in Sample2) and recreational gamers (N=2767 In Sample1, N=5076 in Sample2). To compare the differences in mental health related variables, analysis of variance (ANOVA) was performed.

4. Main Results/Findings

Esports players reported slightly more gaming disorder symptoms than recreational players, but they did not differ from the highly engaged gamers in either sample. Regarding self-esteem, esports players had the highest self-esteem in Sample1, while they had higher self-esteem than the highly engaged gamers, but similar to recreational gamers in Sample2. In Sample1, esports players reported the highest social and appearance related self-esteem, while their performance related selfesteem was similar to recreational gamers, but higher than the highly engaged gamers. No difference was found in anxiety symptom severity between the three groups and lower depression severity was found in the recreational and esports players groups, than in the highly engaged gamer group in Sample1. In Sample2, no difference was found between the esports players and the other two gamer groups in depression symptom severity. In Sample2 esports players did not differ from the other gamer groups in ADHD symptom severity. Regarding perceived stress, highly engaged gamers reported the highest score

and esports players and recreational gamer did not differ significantly from each other. Esports players also did not differ from the other gamer groups in the level of functionability.

5. Discussion & Practical Implications

In general, esports players were not found to be at higher risk for mental health problems than regular video gamers, however, future research should focus on the possible vulnerability of these gamers in developing gaming disorder symptoms. Gaming disorder symptoms among esports players could lead to difficulties in daily life functioning, the erosion of social life and negatively affect performance. Esports players and teams should be aware of the risks of developing problematic video game usage, therefore, screening and provision of treatment is recommended.

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Funding sources

How Do Phenomenological Insights Evidence the Tension Between Gaming Disorder and Intense Play in Esports?

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1.   Objective and Research Question

The inclusion of 'gaming disorder' in the ICD-11 as a mental and behavioral disorder has further increased the importance of researching the health spectrum related to gaming. A critical area in this regard is the lack of clarity concerning the differences between gaming disorder and intensive play, the latter of which often involves several gaming hours per day without health problems especially among the players of esports games. In this study we ask how do the experiences and meanings of playing videogames—shaped by the individuals' diverse sociocultural contexts—differ between those with related health problems (potential disorder) and those who play esports games several hours per day without health problems?

2.   Theoretical Background and Literature Review

In 2013, the American Psychiatric Association (APA) cautiously announced 'internet gaming disorder' in their Diagnostic and Statistical Manual of Mental Disorders (5th edition) as a condition in need for further study. In 2019, the World Health Organization (WHO) confirmed 'gaming disorder' to be included in their International Classification of Diseases (11th edition) as a mental and behavioral disorder due to addictive behaviors. As a consequence, an increasingly large body of varied research has emerged regarding the colloquially termed 'gaming

addiction' and its epidemiology in particular (Kardefelt-Winther, 2017). Meanwhile, the nosology of this now officialised mental and behavioral disorder remains under active debate (Bean et al., 2017) and its ontology—what disordered gaming really is—largely unknown.

At the same time many studies have found evidence indicating gaming to contribute to life quality (Granic, Lobel & Engels, 2014). Considering the paradoxical state of affairs where gaming simultaneously gathers evidence for both negative and positive health associations, large groups of scholars around the world systematically express confusion about the conceptual foundations of the two (Ferguson & Colwell, 2020). As for 'gaming disorder' in particular, a foremost yet still unsolved issue has been the inability to distinguish empirically and theoretically between highly involved healthy gamers and those who suffer from genuine gaming-related health issues (Billieux et al., 2019; Nielsen & Karhulahti, 2017)

3.   Methodology and Data Collection/Analysis

In this study we approach the above question by means of phenomenological interviews in two groups of highly involved gamers: those who seek or have sought clinical help for their problems with gaming (Group 1, n=5–10), and those who play esports more than 4 hours per day without problems (Group 2, n=10). These data are contextualized with medical expert interviews (Group 3, n=5–10) who have experience of working with the former group.

Group 1 and Group 2 participants are interviewed with a semi-structured Phenomenology of Play (POP) interview frame. The development of this frame started in 2020 with a cross-cultural pre-study (n=20) concerning the gaming experiences of people during the pandemic (https://psyarxiv.com/5km3e/). In particular, the purpose of this interview is to understand how the interviewee experiences gaming and what gaming means to them in their unique biographically shaped sociocultural context. Temporality also has a central role in this interview: distinct parts concern the interviewee's past, present, and future, respectively.

Group 3 participants are interviewed with a separate semi-structured questionnaire with 12 questions that mainly concern their experiences and views regarding help-seekers with gaming related health problems. These Group 3 interviews do not directly contribute to the research question but triangulate the phenomenological findings by providing external perspectives to our individual main cases.

4.   Discussion & Practical Implications

The current situation where gaming is seen both as beneficial and detrimental for (mental) health and there is no clear understanding of how to distinguish between

problematic and unproblematic highly involved gaming leads to both false positive and false negative diagnoses, which can be seriously harmful when over and under medicating people in opposing life situations. The results of our research will bring a clearer understanding of problematic gaming and its relation to unproblematic highly involved gaming, and potentially help health professionals to better diagnose and treat gaming related (mental) problems. Considering the wide scope of our RQs, we are aware that our study will be able to answer them only to a limited extent and thus participates in the gradual construction of a stronger foundation for more wide-ranging studies. The interviews will be carried out and analyzed over the summer 2021.

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Expectations of the Implementation of a Routine On the Perceived Control and Recovery for Players

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Keywords: esports; psychology; perceived control; recovery; routine

1. Objective(s) and Research Question(s)

The recent democratization of competitive video games (also named esports) has enhanced the social recognition of the discipline. At the same time, the growing popularity of the phenomenon is contributing to the professionalization of teams, whose consolidated investments allow them to build a multidisciplinary team with performance specialists. However, the ever-increasing competitive and economic stakes weighing on these players are stress factors in terms of their preparation and recovery.

This study wants to demonstrate the expected effects of implementing routines on players' perceived control and recovery.

2. Theoretical Background and Literature Review

According to the literature, slowing down psychophysiological activation would promote recovery. Also, the implementation of a training routine oriented towards the management of the activation level should lead to an increase of perceived control.

3. Methodology and Data Collection/Analysis

In this process, 23 players, including 21 men and two women, between 19 and 31, participating in at least one competition per month, were trained over a period of six weeks in the use of three techniques (controlled breathing, relaxation, mental imagery).

The TOPS questionnaire was used to determine the performance strategies used by the players before and after protocol. The bi-weekly Mastery Scale and RecUp questionnaires assessed changes in perceived control and recovery strategies used by the players, respectively.

## 4.	Main Results/Findings

There are no data reported to date. While we are waiting for results, we can rely on informal feedback from players who have testified to being more confident before training and matches, falling asleep faster, and being able to focus better between games, and a better ability to wake up faster before playing.

## 5.	Discussion & Practical Implications

For a healthier practice, the coaching of competitive players must take seriously these physical and mental factors of performance. This research work provides an initial insight into the needs and expectations of players with regard to the supervision of their practice.

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Session 1.3:
Social Health in Esports

The Value of Peer-To-Peer Prosumption in Esports During Covid19: A Digital Auto-Netnography by a CSGO Noob

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Keywords: CSGO, Auto-Netnography, Covid19, Prosumers, Social Outcomes, Peer-to-Peer Prosumption

1. Objective(s) and Research Question(s)

Esports experienced rapid growth since 2014 yet CSGO, at 20 years old, is currently the world's 3rd most popular esport. During Covid-19 I found myself with time at home and began this project with the simple purpose of understanding CSGO from an insider perspective.

2. Theoretical Background and Literature Review

Ethnography as a method can provide insight on identity and community in virtual worlds through examining social and cultural elements while netnographies apply a technocultural lens to explain the pervasiveness of digitality within society (Kozinets, 2020). Autonetnography is an "approach to netnography that highlights the role of the netnographer's own experiences of his or her own online experiences" (Kozinets & Kedzior, 2009, p.8).

3. Methodology and Data Collection/Analysis

Between March 22nd 2020 and June 14th 2021, 1091 matches were played on the European matchmaking servers. Fieldnotes were developed through a combination of audio and typed diaries, often during games with every match documented. Also recorded were in-depth interviews, practice, alternate match-modes, purchase behaviors and informal discussions with esports insiders in both academia and industry. More than 320,000 words and 2000 screenshots were analyzed though hermeneutic interpretation which allows understanding of meanings within a broader context (Huston et al., 2020), reading and interpretation to the extent of the author 'reinterpreting their reinterpretation' (Kozinets, 2015). In essence what I documented was my consumer journey in esports (Huston et al., 2020).

4.   Main Results/Findings

There is danger in the first-person writing approach of auto-netnographies being misinterpreted as self-congratulatory but after 1614 hours my rank is GoldNova 1, a lower skilled player (Toth et al., 2021). Most association with the context begins through play itself yet with 30 years of primarily single-player console gaming, several esports publications and engagement with the esports community and ecosystem, I was still a 'noob' in terms of PC and competitive play, providing me a unique perspective to reflect on the culture and experience. The theory of psycholudic development (Karhulahti, 2020), a course of individual growth with a game until fitted as a congruent part of your life, often taking years, frames my overall experience. My accelerated psycholudic development has been facilitated by the current pandemic as I found myself as a somewhat isolated extrovert, needing some form of social engagement. In esports you both produce and consumer media as a prosumer, shaping the experience on a platform existing as a peer-to-peer prosumption community. Peer-to-peer prosumption is defined by Alhashem et al., (2020, p.199) as "a collective, contextual and consumer led production activity that prioritizes use and social value among peers, eschewing concerns about exchange value but with social value being evident in exchanges that take place among prosumers". Essentially through using a platform, social outcomes can occur. The challenge of improvement has been a welcome distraction with promotion from lower silver ranks a particular moment of pride. But key to my positive experience has been 'friended strangers', those we meet in-game that we may not know well as individuals but become part of our social network through play (Karhulahti, 2020)

5.   Discussion & Practical Implications

The people I have gotten to know through play represent the social outcomes of peer-to-peer prosumption. I have spent countless hours playing with new disabled or chronically ill friends for whom CSGO provides a welcome respite. I have spent time interviewing and playing with smurfs who are not griefing from their point of view but merely reinventing their mode of play to avoid the stress of higher-level play. I've had a middle-aged Finnish father substitute his 10-year-old son into play as he put his younger child to bed. I've joined a mix of slightly drunk Europeans on Discord playing and laughing when pre-pandemic they would have been at a bar. I've engaged in play as a team, with a multitude of nationalities, something that gets more difficult in sports as you get older. It becomes evident, that this experience mimics elements of the potential digital post-covid world, especially in the working context, that risks a rise in mental health issues. Interestingly, the aspect of isolation will challenge extroverted people more, especially as the pre-pandemic working world was 'designed for extroverts'. Understanding esports and how platforms enable peer-to-peer prosumption where people interact, socialise and challenge themselves resulting in positive social outcomes will help us to understand an increasingly digitized society.

Pandemic restrictions meant this study to date was by definition a auto-netnography yet as the world normalises can become an auto-ethnography as I begin to integrate more into the offline world esports inhabits. The data collected and that continues to be collected represent opportunities to explore esports across a multitude of disciplines.

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Equity Actions and Diversity of Representations in the Public Communications of Finnish Esports Organisations

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Keywords: Equity, inclusivity, accessibility, diversity, cultural sustainability, esports organisations

1. Objective and Research Question

Globally, esports is a sector of culture and business dominated by a very limited demographic consisting of young, predominantly White and Asian men from middle or upper class backgrounds (e.g., Fletcher, 2020). For marginalised player groups left outside the hegemonic image of an esports player, there are many structural and cultural barriers for participation in esports due to various forms of discrimination, harassment, and toxic culture (e.g., Choi et al., 2020; Darvin et al., 2021; Fletcher, 2020; Ruotsalainen & Friman, 2018; Ruvalcaba et al., 2018; Ståhl & Rusk, 2020; Witkowski, 2018). This leads to social, cultural, and economic inequality between the dominant and marginalised player groups (e.g., Darvin et al., 2021; Witkowski, 2018). As such, there is an urgent need for actions aiming to improve equity in esports in order to increase social wellbeing and cultural sustainability within the field.

This study looks into the ways of improving social wellbeing and cultural sustainability in esports by examining how different aspects of equity, inclusivity, accessibility, and diversity are present in Finnish esports organisations. We will analyse how the organisations present these features in their public communications through their websites. Through the selected approach, our aim is to examine if and how Finnish esports organisations present themselves as inclusive and accessible environments for marginalised players.

2.   Theoretical Background

The theoretical background of the study draws upon earlier research on marginalised participant groups and mechanisms of discrimination and exclusion within the culture of esports and, by extension, (competitive) gaming. Earlier research has shown that gaming environments in general are discriminatory, even hostile, towards marginalised player groups such as women players, LGBTQIA+ players, and players of colour (Fox & Tang, 2016; Nakamura, 2019; Passmore et al., 2020; Richard & Gray, 2018). Players marginalised in game culture face many challenges when entering competitive gaming and esports environments, including discrimination and harassment based on the player's identity, such as misogyny and racism (e.g., Choi et al., 2020; Fletcher, 2020; Ruotsalainen & Friman, 2018; Ruvalcaba et al., 2018; Witkowski, 2018). In this study, we are focusing on actions aiming to increase the equity and inclusion of the player groups that have been shown to be marginalised in these environments.

3.   Methodology

In this study, we have analysed the websites of Finnish esports organisations (operating primarily in either Finnish, Swedish, or English) to find statements, goal descriptions, and actions related to equity, inclusivity, and accessibility. Additionally, we have analysed the visual representations of esports players and other esports participants on the websites, focusing on diversity of representation. The research material consists of the public websites of 55 Finnish esports organisations, including associations, communities, teams and player organisations, competition leagues, educational institutions, esports events, gaming spaces, and other organisations (such as coaching services and platforms).

4.   Main Results

In our analysis, we found that contents related to equity, inclusivity, and accessibility as well as visual representations of diversity are rare on the Finnish esports organisations' websites. Within those that do exist, the most common equity materials were general statements concerning the inclusivity of the activity, usually included in the description of the organisation. Some organisations also presented separate value or mission statements or rules containing equity statements. When these statements existed, they were presented on a very general level, not directed towards any specific marginalised player groups. Only the national esports organisation, the Finnish Esports Federation (Suomen elektronisen urheilun liitto SEUL ry), presented specific action plans for equity and accessibility. The visual representation of esports players and other participants on the organisations' websites also did not communicate openness to diversity of participants, consisting almost solely of young, White, assumed men.

5.   Discussion & Practical Implications

From earlier research (e.g., Taylor & Stout, 2020), it is known that despite acknowledging the issues of inequity within esports, practical efforts for inclusivity are still regrettably rare in esports organisations. Based on the organisations' websites, neither does the Finnish esports scene, for the most part, seem to target, or take steps into lowering the threshold for participation for, marginalised player groups. In general, the websites did not provide descriptions of equity goals set or actions taken by the organisation, and their visual imagery presented esports activities to be reserved for young White men.

One central way to make esports more accessible for different player groups is to show that they are welcome to join in and will be able to participate without fear of harassment or discrimination. To make this happen, more research should be conducted, and actions taken – preferably in close dialogue and collaboration with the organisations, players, and other participants.

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Gender-Based Virtual Violence in Esports and Live-Stream Gaming

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1.   Objective(s) and Research Question(s)

Much has been written on different forms of gender-based violence in traditional contexts of sport. Researchers have documented sexual and domestic violence perpetrated by professional male athletes against women, coaches aggressively harassing and bullying young athletes under their care, and significant opportunity and resource disparities between men's and women's sports. Much less is known about how issues of gender-based violence, harassment, discrimination, and exclusion manifest within esports and virtual gaming contexts. This paper identifies how social media users who participate in esports and livestream gaming describe their experiences of virtual violence, what forms of gender-based virtual violence are most commonly disclosed on social media, and who is involved in this virtual violence as victims/survivors, perpetrators, and bystanders.

2.   Theoretical Background and Literature Review

In a recent quantitative, survey-based study Darvin, Vooris, and Mahoney (2020) found that female gamers experience hostility and discrimination at rates that far exceed male gamers. Likewise, Nakandala, Ciampaglia, Su, and Ahn (2016) have identified significant genderbased differences in live streaming comments directed towards female gamers, who are more commonly targets of objectifying comments that have little relevance to game play. In an analysis of spectator comments on Twitch, Ruvalcaba, Shulze, Kim, Berzenski, and Otten (2018) found that female gamers were more likely to experience sexual harassment in online gaming compared to male gamers. In a study of gendered experiences of League of Legend participants, Kim (2017) identified significant barriers to access and opportunities of advancement for female participants that were often created and reinforced by male participants. This paper adds to this growing body of literature by investigating the issue of gender-based virtual violence in esports and live-stream gaming.

3.   Methodology and Data Collection/Analysis

Using abductive analysis, this paper employs an unobtrusive methodology to examine 418 posts on the social media sites of YouTube, Twitter and TwitLonger that have been posted by individuals who have publicly disclosed experiences of harassment, violation, systematic exclusion or discrimination during esports and live-stream gaming events.

4.   Main Results/Findings

Through this analysis, the significant, long-term implications of gender-based virtual violence are identified, including emotional distress of female gamers, heightened mental health issues, and lowered participation rates.

5.   Discussion & Practical Implications

This paper concludes with a discussion of the dual nature of esports, where there are not only negative impacts, but transformative potential to reduce and transcend the gender-based violence that is a common characteristic of some traditional, physical sport contexts, to promote greater gender inclusivity within esports and live-stream gaming.

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Session 2.1: Symposium
Sleep and Circadian Rhythms

Sleep and Circadian Rhythmicity:
Interest and Applications in the Field of Esports

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Electronic sports, or esports, refers to sports competitions in which individuals or teams play a video game competitively. The esports industry is now one of the most rapid growing industries with hundreds of millions of players engaged daily in virtual and competitive electronic gaming. Whether it is playing these games or just being a fan, esports enthusiasts have proliferated all around the world. According to Newzoo, 495 million people will be watching esports by 2020 and will reach a global audience of 1.1 billion by 2021.

Esports has received a major public attention, with various international competitions (such as Worlds of League of Legends) and specific streaming platform like Twitch®. Moreover, various organizational structures have emerged in esports. For example, South Korean esports university competitors are considered as traditional athletes and several American colleges have varsity esports teams who are part of the National Association of Collegiate Esports (NACE). DiFrancisco-Donoghue et al., (2019) have highlighted the need to manage health in esports athletes. Indeed, esports requires long and regular training sessions, usually in a sitting position in front of a screen, fast reflexes, good hand-eye coordination, high and prolonged cognitive involvement. Thus, esports players can encounter discomfort and/or injuries. Among complaints reported by esports players, we find fatigue, neck and/or back, wrist and hand pain (DiFrancisco-Donoghue et al., 2019). If the health of esports athletes is now

analyzed through several dimensions, very little is known about sleep and circadian rhythms management.

Major advances have been made in understanding the factors influencing esports performance, in order to enhance professional athlete/team training. Among them, growing evidence is showing that sleep habits and biological rhythmicity is involved in the success of teams and individual athletes, and must be taken in consideration for athletes and coaches. One recent study has shown that esports athletes have delayed sleep periods, and also report poor sleep quality, with not feeling refreshed upon awakening (Lee et al., 2020). Sleep and circadian rhythms are involved in many processes influencing human performance, and sleep restrictions or disorders are linked to decreased executive functioning, poor decision making, physical recovery and brain restoration (Taheri & Arabameri, 2012; Waters et al., 1993; Xie et al., 2013).

More research in sleep and circadian rhythms is needed in the field of esports. Esports players need to sit and play in front of a screen for hours with high levels of concentration, with games involving fast reflexes and quick decision making. Indeed, esports players, either due to training schedules are exposed for long period to screen lights at night time. It is now well demonstrated that light at night, and more particularly blue enriched light can affect sleep and circadian rhythms (Czeisler, 2013). Exposure to light at night time impairs melatonin excretion, a peptide involved in sleep initiation, and delays its circadian rhythm (the excretion starts later on the next day). This may cause delayed sleep phases, and makes waking up on the next day more difficult. Moreover, light exposure also triggers a sequence of physiological and psychological events related to wake phase (increase in heart rate, alertness...), causing a desynchronization of the biological clock (Prayag et al., 2019).

Moreover, the importance of psychology in esports performance was recently acknowledged in a systematic review (Pedraza-Ramirez, Musculus, Raab, & Laborde, 2020). At the psychophysiological level, executive functions have been found to be linked to the activity of the autonomic nervous system, as detailed by the neurovisceral integration model (Thayer, Hansen, Saus-Rose, & Johnsen, 2009). Given the circadian rhythms of esports athletes are regularly challenged by late night computer use, this may affect the response of their autonomic nervous system and hence their sleep quality (Meerlo, Sgoifo, & Suchecki, 2008). Consequently, esports athletes may benefit from using techniques that have been found to optimize the functioning of the autonomic nervous system, such as the voluntary slowing down of one's respiratory frequency, slow-paced breathing. In particular, slow-paced breathing has been shown to positively influence executive functions (Laborde et al., 2021) and sleep quality (Laborde, Hosang, Mosley, & Dosseville, 2019). Hence, slow-paced breathing appears as a promising technique to help esports athletes regulate their autonomic nervous system in order to enable them to optimize their sleep quality and reach peak performance. The

present symposium will discuss about sleep and circadian rhythmicity and the application of techniques promoting sleep quality and effective regulation of circadian rhythmicity for esports athletes. This panel format is dialogic, moving away from individual presentations as it will present the general functioning of sleep and circadian rhythms, tools and methodology that can be used in the sport area and how these tools can be used with esports athletes. Moreover, the panel will present and discuss potential methods to improve sleep.

Participants

Panelists:

Tristan Martin (Le Mans University, France) is an Assistant Professor at the Faculty of kinesiology and sport sciences. His work focuses on biological rhythms, sleep and improvement of quality of life using exercise intervention in various populations. His PhD work was in the field of chronobiology, and now more specifically focuses on 1) the characterization of markers of chronobiology (circadian variation of the activity-rest-activity rhythm, temperature, sleep and hormonal concentration, sleep recording …) and 2) their improvement through remediation protocols and their impact on health. His interest in esports is recent and growing, in particular regarding the impact of gaming on chronobiological disorders: blue light exposure, sleep habits, health and performance in esports athletes.

Sylvain Laborde (German Sport University Cologne, Germany) is a Lecturer at the Department of Performance Psychology of the Institute of Psychology since 2014. His research focuses on the psychophysiological factors influencing self-regulation and performance, in particular with heart rate variability and emotional intelligence. Specifically, he develops techniques to optimize the functioning of the autonomic nervous system, such as slow-paced breathing. With his colleagues Ismael Pedraza-Ramirez, Markus Raab, and Lisa Musculus, he was part of the seminal team setting the stage for esports psychology.

Bernadette Ramaker is an applied practitioner, SPORT PSYCHOLOGIST VSPN®, and Specialist in Applied Sport Psychology (SASP-FEPSAC). She is currently working as the Performance Coach of Rogue's Rainbow 6 Siege team, which is competing in both the European League and the German League. She started working as an applied practitioner in 2016 and gained most of her applied experience working in traditional sports but has now (almost fully) transitioned into the field of esports. Her own sport background is in speed skating which she did at national level.

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Session 2.2:
Psychosocial Behavior
in Esports

Use of Interval Aim Training Platform
to Monitor Fatigue During a 3-Hour Gaming Session

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Keywords: Periodization, EEG, Fortnite, Apex

1.   Objective

The purpose of the current investigation was to examine the potential for an aim training platform as a standard objective method to monitor fatigue in gaming.

2.   Background

Esports, or competitive video gaming, has rapidly increased in online play and viewing. Physiological responses within this paradigm have been demonstrated in competitive (Andre et al., 2020) and non-competitive environments (Valladão et al., 2020) A myriad of literature focuses on physiological responses in traditional athletic competition, training loads, and fatigue prevention. However, very little research has addressed the concept of methods to best monitor training loads in esports or acceptable methods for fatigue monitoring. Previous research has observed divergent responses after 150 minutes in gaming for executive function with increases in speed, but reduction in accuracy (Sousa et al., 2020). However, varied skill levels of competition could impact in game results. Given the high volume of training hours noted by Kari (2016), there remains a strong rationale to develop training load and objective fatigue monitoring strategies that can be utilized as a standard.

3.   Methods

A total of 10 college aged males (Age: 22.70 ± 2.58 years; Height: 175.98 ± 6.77 cm; Weight: 76.00 ± 12.46 kg; Exercise: 7.85 ± 3.21 hours/week; Gaming: 15.90 ± 13.33

hours/week) were utilized for the current investigation. Participants completed a familiarization trial in which game was selected (Apex or Fortnite), controls and sensitivity settings were calibrated, and completed 3 rounds of AimHero to be familiarized with the training platform. Participants returned to the lab to complete a 3-hour gaming session of Apex or Fortnite including 2 rounds of Aimhero classic every hour (Pre, 1-hr, 2-hr, and 3-hr). Participants were asked to rate perceived mental fatigue (17 scale) every hour immediately post AimHero. Participants wore a Polar H10 (Polar Electro USA; Lake Success, NY) heart rate monitor and a Muse 2 EEG headset (InteraXon Inc; Toronto, Canada) for the duration of the session. One-way repeated measures ANOVA was utilized to examine criterion variable.

4.   Results

No significant difference was observed between the accuracy for the training platform for any of the time measures (Pre: 76.4 ± 16.1%; 1-hr: 73.6 ± 12.9%; 2-hr: 73.2 ± 12.5%; 3-hr: 74.2 ± 10.8%; p = 0.78). Mean peak heart rate observed during session observed was 111 ± 22bpm. time measures (Pre: 2 ± 0.94; 1-hr: 1.8 ± 0.6; 2-hr: 2.9 ± 0.99; 3-hr: 3.1 ± 1.3 p = 0.002). A 14% increase in absolute alpha band power was observed from pre to 2-hr.

5.   Discussion

The current investigation did not observe a negative impact on accuracy in an aim training platform over a 3-hour session of gaming. Potentially an alternative training platform, mode, or metric should be examined in efforts to establish a standard for assessing performance fatigue. It is possible participants prioritized accuracy over total targets within this mode as a developed strategy. Given perceptual mental fatigue did increase over the 3-hr gaming session and increases in alpha power are associated with a decrease in the level of alertness/attention and subsequent fatigue, further exploration into standardized methodologies for fatigue monitoring within this paradigm are warranted.

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Communication in Improvised Teams
in League of Legends Solo-Queue Games:
Teamplay or Aggressive Behavior?

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Keywords: toxic communication, League of Legends, Esports linguistics, team collaboration, aggressive behaviors, social cohesion

1.　　　　Objective(s) and Research Question(s)

Despite the growing number of papers on esports, esports discourse has been the focus of very few studies in the field of linguistics. Nevertheless, by contributing to the description and analysis of verbal and multimodal communication between esports players, linguistics can do its bit in identifying and dealing with mental health issues.

This paper studies toxic communication in 50 Platinum-level (5% best players) 5v5 solo-queue League of Legends games, that is to say, amateur esports games. Solo queues are a type of online amateur competitive play in which players don't know their teammates, queuing up solo and being matched with four random players.

It aims at:

(1) quantifying toxic verbal and multimodal communication, defined as any naturally or contextually negative communicative act, whether verbal or multimodal, possibly repeated, targeting one or more players (teammates or enemies) that doesn't mean to help;
(2) determining the nature of toxic communication in our corpus;
(3) exploring the context in which toxic communication arises;
(4) examining how it is dealt with, if it is dealt with: are toxic behaviors ignored? Addressed? Met with more toxicity? Negotiated and solved?

This paper therefore falls within topic 2 'Mental Health', subtopics 'Stress and Emotional control' and 'Aggressive behaviors' as well as within topic 3 'Social Health', subtopic 'Group management and social cohesion (managing conflict and appropriate communication)'.

2.   Theoretical Background and Literature Review

Several papers have been dealing with toxicity in League of Legends (Shores et al., 2014 ; Caudill, 2015 ; Neto et al., 2017): because of League of Legends' high competitiveness and its team reliance to win, frustration is easy to occur, particularly when your teammates' playstyle disalign with your conception of good play. This tendency is reinforced by a pro-play fantasy among young players and by a thirst to climb the ranking ladder.

Nevertheless, not only does the estimated probability to encounter a toxic player vary depending on the players, the same player's estimation can also vary when asked multiple times (Türkay, 2020), probably depending on the amount of toxic players they've had in their recent games, hence calling for a corpus study of game data rather than surveys.

3.   Methodology and Data Collection/Analysis

One of the two researchers herself recorded 50 games she played, making sure not to use the chat so as not to bias the study. The content of the chat box, including both player and automatic messages, was transcribed using an OCR software. Toxic behaviors as defined above were counted and each of them was annotated in terms of medium (written message or ping), target (teammate(s) or enemy(ies)) and type (lexical field used or type of ping). The context of each toxic behavior was manually examined in order to understand what in-game events or what communication item it derived from. We provided a close enunciative analysis of the following interactions to understand how players coped with toxicity.

4.   Main Results/Findings

Our preliminary search showed that:

•   Toxic behaviors are extremely hard to define and to identify, explaining the little to no definition of toxic behaviors in existing studies (Kwak & Blackburn, 2014; Neto et al., 2017).
•   Toxicity goes beyond the lexicality of a closed set of insults and, more generally, beyond verbal communication, lying, for instance, in the hijacking of pings, a system of signals conveying pre-made cooperation messages such as 'enemy missing', 'danger', 'on my way' or 'assist me'.
•   Players in our corpus rarely ever use the chat to collaborate: they use pings instead, almost always using the chat to express frustration by means of verbal abuse.
•   Toxic communication in our corpus can occur very early in the game, suggesting players already have a high level of stress in the first minutes of the game.

•   We found several examples of players producing toxic communication targeting teammates after dying to an enemy, displaying self-serving bias whereby your teammates are believed to be responsible for your misplays and negative events targeting you.

5.   Discussion & Practical Implications

This study could interest game publishers, including Riot Games, as an account of how players (really) use the in-game collaboration-planned communication tools provided to them, and consequently, gauging if those tools are efficient in dealing with players' toxicity or if they need to be re-thought.

The field of esports management could also be interested in our study, the toxicity of pro-players in solo-queue games possibly standing as an indicator of mental health issues. Spotting toxic behaviors in solo-queue games could help anticipating and answering those issues.

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Influence of Competition Result
on the Mood State of League of Legends Players

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Keywords: League of Legends; performance; profile of mood states; psychology.

1. Objective(s) and Research Question(s)

The objective of the present research was to analyze the differences in the mood states of professional League of Legends players as a function of the result of the game played. Based on the results of other sports (Lochbaum et al., 2021; Samelko et al., 2020), it was hypothesized that the players' mood would change depending on the outcome of the game.

2. Theoretical Background and Literature Review

League of Legends is the most played mutiplayer online battle arena worldwide, which has led to a large development of research trying to explain the relationship between psychological variables and performance (Bálint et al., 2021; Brühlmann et al., 2020; Matuszewski et al., 2020). However, research conducted with professional esports players is scarce, and the changes produced in players' moods, anxiety or self-confidence during competitive games have not been previously identified.

3. Methodology and Data Collection/Analysis

The participants were the players of the starting League of Legends team of UCAM esports.

Data collection was carried out during eighteen games belonging to the spring split of SuperLiga Orange. The Profile of Mood States questionnaire (McNair et al., 1971) was the instrument used to obtain information about the players' mood states and was completed one hour before the start of the matches. The statistical

analysis was carried out using the SPSS statistical package (v.25.0) and a value of $p < 0.05$ was established to determine significant differences.

4. Main Results/Findings

The results show significant differences in all mood states when comparing pre and post values when the game was lost ($p < 0.05$), and in anger ($p = 0.04$) and fatigue ($p < 0.001$) when the game was won. In addition, significant differences were found in post-game values of depression ($p < 0.001$), anger ($p < 0.001$), vigor ($p < 0.001$), and confusion ($p < 0.001$), as a function of whether one won or lost. These results would confirm the hypothesis that the mood of League of Legends players is influenced by the result of the game played, with defeats seeming to generate the most modifications.

5. Discussion & Practical Implications

In terms of practical implications, it should be noted that, although more research is needed to corroborate the results, psychology could be an aspect to be considered in the preparation of esports players to compete, especially to reduce the influence of the result when playing in the final stages of championships in which three or five consecutive games are played.

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Session 2.3:
Esports Physical Health

Are Esports Players Inactive? A Systematic Review

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Keywords: Esports, physical activity, inactivity, sedentary lifestyle, systematic review

## 1.	Objective(s) and Research Question(s)

With the popularity of this practice described as "sedentary" (Besombes & Maillot, 2018), many concerns are emerging from public authorities regarding the potential negative effects of competitive video game practice on the health of players (Wattanapisit et al., 2020). One of these concerns is the fear that gamers are inactive, and that competitive video game playing makes them sedentary by causing them to disengage from physical activity. This work proposes a systematic review of the literature on the links between esports practice and physical practice. The main research questions that guided this review were (1) What are the physical activity levels of esports players? (2) Are there theoretical approaches and empirical evidence on the influence of esports pratice on the physical activity levels of e-athletes? (3) What future research questions can be derived from these results, and what studies should be conducted soon to fill the knowledge gap on this topic?

## 2.	Theoretical Background and Literature Review

The consequences of physical inactivity on the world population are real public health issues. Affecting mental health and quality of life, physical inactivity is a factor in cardiovascular disease, diabetes, cancers and reduces life expectancy (Lee & al, 2012). Numerous studies highlight the inadequacy of physical activity in the global population (Guthold & al, 2018). In this context, several scientific works deplore the lack of data on the physical activity of esports players, preventing then any health promotion and prevention strategies (Yin & al., 2020; Kelly & Leung, 2021).

3.   Methodology and Data Collection/Analysis

This systematic review was conducted according to the PRISMA. Study inclusion criteria were as follows: Assessment of physical activity levels of competitive video game players (playing at least ranked games) and/or assessment of the influence of esports practice on physical practice, provision of empirical data through the use of quantitative, qualitative, or mixed methodologies, the study of healthy individuals over the age of 12 years (as most competitive video games are only allowed to be played by people aged 12 years or older), and publication in English. Thus, the PubMed database, as well as three additional databases (Google Scholar, Research Gate, Science Direct) were searched with selected keywords ((electronic video game* OR competitive video game* OR pro game* OR professional video game* OR online game*

OR sport video game* OR esport*) AND (sedentary OR physical activity OR physical inactivity) NOT (esporte OR esportiva OR esportivo). Exergames and video games played recreationally, outside of a competitive setting, were excluded. 1785 studies remained after the removal of duplicates. After reading the titles and abstracts of these studies, 30 complete articles were assessed for eligibility. Twelve (n=12) studies met the inclusion criteria and were included in this systematic literature review. All 12 studies were reviewed with respect to sample composition, methodological tools used, and results obtained. The quality of evidence was assessed using the Newcastle Ottawa Quality Scale (NOS) for observational studies.

4.   Main Results & Findings

The analysis shows that (1) athletes were predominantly not very active in four studies (n=4), and active, above WHO recommendations, in eight studies (n=8). High-level professional players appear to be more physically active. Only two studies (n=2) reported data from objective direct observation tools (step tracker), one (n=1) used interviews, while the others (n=9) used various self-report questionnaires. These elements, as well as the different geographical areas and esports practiced by the subjects of these studies, could explain some of the inconsistencies in the results. (2) If the practice of esports implies spending a lot of time in a sedentary way playing sitting down, some studies (n=7) highlight several reasons that could push an e-athlete to engage in physical activity (improvement of in-game performance, health, mental toughness, imitation of professionals). Nevertheless, to this day, we have not found any study that provides data on the influence of esports practice on physical practice.

5.   Discussion & Practical Implications

(3) Further research, using objective, direct-observation measurement tools, characterizing and distinguishing precisely the level of practice of players, as well as the esports practiced, is needed. The nature of the physical activities practiced

also needs to be clarified. Nevertheless, these studies, because of their cross-sectional nature (like the studies in this review), limit the links between cause and effect. Thus, we encourage supplementing these quantitative data with qualitative data obtained by interview, aiming to find out whether the practice of esport leads players to engage, abandon, resume or continue their physical and sports practice.

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Fitness and Physical Activity Levels of Esports Athletes – A Cross-Sectional Study

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Keywords: Esports, fitness level, physical activity level, aerobic capacity

1. Objective(s) and Research Question(s)

The aim of the study was to investigate the activity levels and fitness status of esport players compared to normative age-matched values.

2. Theoretical Background and Literature Review

Esports is an unprecedented cultural phenomenon with rising professionalization that increasingly shapes our social life and daily behaviors. As participation in eSports requires prolonged sedentary time, eSport athletes are often associated with less physical activity (PA) and reduced fitness levels (DiFrancisco-Donoghue et al., 2020). Lack of adequate physical activity and reduced fitness levels are major risk factors for many chronic diseases (Lear et al., 2017).

3. Methodology and Data Collection/Analysis

A cross-sectional study is currently conducted to assess the fitness and activity levels of eSport athletes. The study consists of an online survey including the self-reported weekly time spent performing eSports, game genre and weekly light-, moderate- and vigorousintensity PA. Additionally, integrated laboratory testings consist of handgrip strength measurement (hand dynamometer, (hand dynamometer Saehan DHD-1 (Saehan, Korea)), assessing the jumping performance using CounterMovementJumps (CMJ) (OptoGait (Microgate, Italy)) and measuring the maximum aerobic capacity (VO$_2$peak) with spirometry on a

bicycle ergometer (VO$_2$peak, Jaeger Oxycon Pro, Vyaire Medical GmbH, Germany), by the principle of a ramp test.

4.   Main Results/Findings

To date, 12 male eSport athletes participated in the study (age 23.33 ± 2.49 years; average time spent playing Esports: 9.13 ± 5.62 h/week). Participants were eligible for the study if they were >16 years old, and were active members of an esports club, and/or played video/computer games competitively. Self-reported physical activity levels were 493 ± 356 min/week for moderate-to-vigorous PA and 404 ± 460 min/week for light intensity PA. Mean maximal aerobic capacity (VO$_2$peak) was 51.44 ± 9.64 ml/min/kg, mean maximal handgrip strength: 47.51 kg ± 4.9 kg, and jump performance (CMJ): 31.45 ± 4.89 cm.

5.   Discussion & Practical Implications

ESport athletes show a varied picture of PA and fitness levels to the current state of the analysis. While all participants meet the WHO (2010) recommendation of at least 150-300 min of moderate-intensity or 75–150 min of vigorous-intensity, high deviations are obtainable. Compared to normative values, 70% of the included eSport athletes show a VO$_2$peak above or on average (Rapp et al., 2018). On the contrary, jumping performance is relatively low compared to average healthy adults (Hoffmann et al., 2019). A similar trend can be observed in handgrip strength, whereas 50% of the participants have a handgrip strength below average, and even 25% are at a higher mortality risk than their peers due to low strength levels. The tentative conclusion from the preliminary analysis has some indications – eSport athletes may not be as unhealthy as stereotypes would have us believe. However, the indications are limited, as the analyzed sample shows high diversity in the average gaming time and could implicate a high deviation in professionalization levels of the included eSport athletes and differences in health behavior. Based on the preliminary study, further research should explore other health and fitness indicators and a larger and more representative sample size, enabling a professionalization-level and genre-specific subanalysis.

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Health Status in E-sports Athletes -
A Cross Sectional Study

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1.   Objective(s) and Research Question(s)

The present study aims to assess different anthropometric and cardiovascular parameters of eSports athletes (EA) in Germany and Switzerland in a laboratory study.

2.   Theoretical Background and Literature Review

EA are often referred to as sedentary athletes as gaming requires prolonged sedentary screen exposure. As physical inactivity, sedentary behavior, and prolonged screen time are major causes of non-communicable diseases and premature death (Lee et al., 2012), EA may be at higher risk for numerous health implications. Researchers started addressing the health status of EA identifying numerous adverse health outcomes and risk factors, including physical inactivity, stress, sleep disturbances, musculoskeletal pain, overuse injuries, and metabolic disorders (DiFrancisco-Donoghue et al., 2019; Trotter et al., 2020). Unfortunately, current studies mainly focused on self-report data, and relevant cardiovascular

risk factors like blood pressure (BP) and heart rate variability (HRV) have not been assessed.

3.   Methodology and Data Collection/Analysis

36 male EA (average time spent playing eSports 10.3 ± 5.8 h/week age: 24.2±3.5 years) were recruited via social media platforms, esports websites, as well as personal contacts within the esports gaming community. Participants were eligible for the study if they were >16 years old, and were active members of an esports club, and/or played video/computer games competitively. Apart from body mass index (BMI) and waist to height ratio (WHtR), body composition was assessed using a bioimpedance scale (Tanita RD-545). Resting BP was assessed using the Mobil-O-Graph (24 PWA monitor, IEM, Germany) which is a clinically validated device for hemodynamic measurements (Franssen & Imholz, 2010). HRV was determined using a Polar heart rate monitor (Polar Electro OY, Finland). The root mean square of successive differences between normal heartbeats (RMSSD) was obtained as an HRV parameter reflecting parasympathetic activity. Many studies have indicated that reduced HRV parameters like RMSSD are strong and independent risk factors for all-cause and cardiac mortality (Billman, 2011).

4.   Main Results/Findings

According to BMI, 16.7% of the EA were classified as obese, 13.9% as overweight, and 69.4% as normal weight. Regarding WHtR, 25.0% were determined as being overweight or obese and 75.0% as normal weight (Ashwell et al., 2012). 16.7% of EA showed body fat values over the 25% cut point. According to BP, 83.4% had a normal BP, 8.3% had a high normal BP, and 8.3% were classified as hypertensive (Williams et al., 2018). For RMSSD, 87.2% presented higher values than the age- and sex-related normative values (Nunan et al., 2010).

5.   Discussion & Practical Implications

Compared to age- and sex-matched reference values, the prevalence of obesity in EA was higher (8.4% versus 16.7%), however, the percentage of overweight was lower (25.1% versus 13.9%), and the percentage of normal weight was higher compared to the reference values (62.8% versus 69.4%) (Schienkiewitz et al., 2017). These results are in accordance with a previous study by Trotter et al. (2020).

Based on the WHtR and body fat, the prevalence of combined overweight and obesity in EA was considerably lower compared to BMI. This is of relevance as the WHtR better predicts cardiovascular disease risk than BMI (Snijder et al., 2006).

The prevalence of high normal BP was considerably lower in the cohort of EA than in the normal age-matched population (22.7% versus 8.3%), while proportions of hypertensive were similar (8.1% versus 8.3%) (Neuhauser et al., 2015).

Additionally, most EA showed RMSSD values higher than the normal values indicating a lower risk for all-cause and cardiac mortality (Billman, 2011).

According to the present results, it can be concluded that EA show a higher prevalence of obesity. However, this is only true when the BMI is used for classification. Furthermore, EA show a lower cardiovascular risk profile than the average population.

Based on the small sample, it is difficult to draw conclusions on the health status of EA. Largescale laboratory-based studies are warranted to better understand the public health implications of the eSports phenomenon. However, the general statements portraying the eSports athlete as an overweight and unhealthy individual are not valid across the board. Regardless, the sedentary nature of gaming puts gamers at a higher health risk. To compensate for this higher risk, efforts should be undertaken to decrease sedentary behavior and increase physical activity levels in this population.

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Nutritional Behavior
of Video Game and Esports Players in Germany –
The Esports Study 2021

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Keywords: Esports players, video gaming, nutrition and hydration, health behavior, cross sectional survey

1.   Introduction

The number of eSports and video game players in Germany continues to rise. Nevertheless, still quite little is known about the health behavior and especially the nutritional behavior of this target group. The aim of this cross-sectional study, conducted for the third time in 2020, was to collect recurring parameters such as demographics, gaming behavior, health data and physical activity. Additionally, for the first time information on the players' body image and nutritional behavior were collected.

2.   Background

Long screen and sitting times are characteristics of eSports. These factors can be responsible for the development of different chronic diseases (Bailey et al., 2019). The collection of basic information like health behavior of the risk target group of video game and eSports players is therefore necessary to evaluate the need of specific health promotion strategies. With this aim, our first eSports study was

conducted in 2018. For the first time, detailed data on demographics and health of eSports players in Germany were collected (Rudolf et al., 2020). In this third edition here, the focus is particularly on nutrition and hydration. For the most part, a selfdesigned questionnaire was used for the survey. The standardized part used for nutrition and hydration was oriented to the questionnaires of the Robert Koch-Institut (Robert Koch-Institut,

2018). Information on health behavior were partially collected with the WHO5 questionnaire (WHO, 1998). The Stunkard Figure Rating Scale (Sánchez-Miguel et al., 2019) was used for the body image survey.

3.　　　Methodology

Between June and November 2020 N = 820 gamers and eSports players between 14 and 60 years living in Germany were surveyed via a self-designed online questionnaire. Due to the Corona pandemic, it was not possible to obtain data through an offline survey this year. Instead, the questionnaire was distributed on online platforms, forums related to gaming and social media. As an incentive to participate, various prizes such as vouchers were raffled among the participants.

4.　　　Main Results

On average, the participating gamers and eSports players in this study in Germany were mainly male (86%), 24.2 ± 6.9 years old, had a BMI of 24.7 ± 5.0 kg/m² and played videogames for 20.6 ± 16.2 hours per week. The following is a selection for some of the results concerning nutrition and hydration. Selected results for the players' nutrition are shown in table 1. The information provided refer to the number of usual portions per day.

Table 1. Usual portions eaten on average per day. More detailed information for the size of one portion were given to the participants in the questionnaire.

Food	Fruit	Vegetable	Potatoes	Bread	Meat	Poultry	Cold cuts	Fast Food	Sweets	Chips
Portion	Fist sized piece	Fist sized piece	Fist sized piece	One slice	One piece	One portion	One slice	One dish	One bar	One portion
Mean	0.93	1.71	0.61	1.58	0.50	0.38	0.99	0.13	0.61	0.22
SD	1.05	1.62	0.81	1.22	0.59	0.52	1.45	0.21	0.91	0.39

A selection of results for hydration is presented in table 2. The participants specified the number of glasses drunk, for example one glass of juice. This data was converted into milliliters drunk per day.

Table 2. Milliliters drunk on average per day.

Drink	Water	Juice	Soft Drinks	Energy Drinks	Coffee	Tea	Beer
Mean	1552.7	138.6	180.5	39.5	134.0	76.7	148.1
SD	993.4	270.4	385.2	113.6	213.1	178.7	244.3

5. Discussion & Practical Implications

As in the previous survey, the esports and video game players in Germany overwhelmingly report good health. The results of the eSports study 2021 also largely show a positive picture regarding to nutrition and hydration of the players. Contrary to common preconceptions, significantly less fast food, chips and sweets are consumed. However, on average, the players eat a very high-carbohydrate and meat-heavy diet. Although this does not represent a difference to the general population (Mensink et al., 2013), it does not mean that it is a particularly healthy diet. Especially for eSports players, a healthy diet, which can positively affect cognitive performance (Pilato et al., 2020), could be of great importance. There may also be the need for health promotion here regarding an average BMI close to the threshold of overweight. One negative aspect for hydration is the above-average consumption of energy drinks compared to other populations (Robert Koch-Institut, 2018). This is possibly due to the very present sponsorship of corresponding manufacturers. The consumption of soft drinks is also quite high, but not above the average for the normal population. Further research seems to be needed here to investigate the motives behind the consumption in more detail. It will be necessary to further deepen the present results and to further refine the image of the average gamer in Germany to develop health programs and strategies that are appropriate for the target group.

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Session 3.1:
Performance Psychology
in Elite Esports

Longitudinal Investigation of Stress and Coping in Elite Esports Athletes

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1.   Objective(s) and Research Question(s)

The current study aimed to longitudinally examine the stress and coping process experienced by elite esports athletes.

2.   Theoretical Background and Literature Review

Researchers have started to investigate stress and coping in esports athletes (e.g., Leis & Lautenbach, 2020; Poulus et al., 2020). Guided by the cognitive-motivational-relational theory of emotion (Lazarus, 2000), the current study is the first to longitudinally examine the stressors, stress appraisal, coping, and coping effectiveness experienced by elite esports athletes. Dairy studies have been used to collect longitudinal stress and coping data in traditional sports research (Nicholls et al., 2005, 2006; Nicholls & Polman, 2007; Wong et al., 2015). Self-report diaries are effective at capturing ongoing experiences of stress as they more effectively capture the contexts in which these processes unfold (Bolger et al., 2003; Didymus & Fletcher, 2012). The current esports psychology and traditional sports psychology literature have shown that a small amount of stressors account for the majority of stressors reported and that stressors will be reported in higher frequencies around competitive events (Nicholls et al., 2005, 2006; Wong et al.,

2015). Furthermore, problem-focused coping (PFC) strategies are more frequently employed and rated as more effective than emotionfocused coping (EFC) and avoidance coping (AC) strategies (Nicholls, 2010; Polman, 2012; Poulus et al., 2020).

3.   Methodology and Data Collection/Analysis

Six elite male League of Legends (LoL) athletes (*M* = 21 years, *SD* =1.90), competing in the Oceanic Challenger Series (OCS), completed diaries over the 2020 competitive season (87 days). Diaries were completed weekly after three activities: solo training, team training, and competitive matches. Each diary entry collected data on four elements of the stress and coping process: (1) a stressor checklist (Poulus et al., in press) and an open-ended stressor box; (2) stress appraisal was recorded using a stress thermometer (1= not stressful at all, 10 =extremely stressful; Kowalski & Crocker, 2001), followed by asking if the stressor was perceived as a challenge (I perceive this stressor as potentially having beneficial outcomes) or threat (I perceive this stressor as being potentially harmful or causing loss; Britton et al., 2019); (3) open-ended coping responses section; and (4) coping effectiveness scale (1= not effective, 5= very effective; Nicholls & Polman, 2007). For each stressor selected or entered in the open-ended stressor box, questions on stress appraisal, coping, and coping effectiveness were repeated.

4.   Main Results/Findings

General performance, outcome, critical moment performance, and teammate mistakes accounted for 55% of the stressors reported. Stressors were more frequently reported in competitive diaries than in training diaries. Competitive stressors were rated as being more intense than training stressors. There were no differences between overall challenge and threat perception. Performance stressors were more likely to be perceived as a challenge, and teammate stressors were more likely to be perceived as a threat. PFC was the most frequently employed coping strategy. PFC and EFC strategies were perceived as more effective at reducing stress than AC strategies.

5.   Discussion & Practical Implications

Elite LoL athletes experienced a small number of reoccurring stressors over an 87-day competitive period. Athletes reported more stressors around competitive matches and perceived competitive stressors as more intense than team and solo training stressors. Similarly to traditional sports athletes, PFC strategies were the most frequently employed and, PFC and EFC were rated as being more effective than AC. Esports athletes in the present study experience, general performance, outcome, critical moment performance, and teammate mistake related stressors, applied practitioners could spend more time working with elite LoL athletes to help them manage these stressors. Specifically, elite esports athletes appear to

need support to develop effective coping strategies when dealing with teammate stressors in a competitive setting. Given that the majority of stressors experienced are accounted for by a small number of reoccurring stressors, applied practitioners could develop a small amount of coping strategies (PFC and EFC) to help elite LoL athletes better reduce stress

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The Role of Emotions in Esports Performance

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Keywords: pleasant emotions, approach motivation, challenge and threat, enthusiasm, psychophysiology

1. Objective(s) and Research Question(s)

Based on the motivational dimensional model of affect (Gable, & Harmon-Jones, 2010), we expected high-approach tendency (and not valence) to facilitate sports performance in a gaming context. Moreover, we expected the influence of high-approach emotions on performance to be mediated by higher levels of cognitive and physiological challenge as an approach-related response (Blascovich, 2008).

2. Theoretical Background and Literature Review

Studies have shown that positive emotions are usually related to higher levels of performance, whereas negative emotions are usually associated with lower levels of performance (Campo et al., 2019; Martinent & Ferrand, 2015; Rathschlag & Memmert, 2015; Uphill & Jones, 2007; Vast et al. 2010). However, emotions are more than just positive or negative states; they often also motivate individuals to approach or avoid situations (Gable, & Harmon-Jones, 2010). Given the two dimensions of affect - valence and motivational tendency - it is not yet clear which one is responsible for the beneficial effects in sports performance.

3. Methodology and Data Collection/Analysis

To test these hypotheses, 241 men completed five matches of a soccer video game FIFA 19. Before each match, approach tendencies and valence were experimentally manipulated by showing films that elicit amusement, enthusiasm, sadness, anger, and neutral states. Approach tendency, challenge/threat evaluations, cardiovascular responses, and game scores were recorded.

To investigate the effect of emotion on esports performance, we applied path analysis with maximum likelihood estimation with robust standard errors (MLR) using mPlus 7.2 (Muthén & Muthen, 2012). We regressed the primary performance level indicator (difference between goals scored and goals lost) and secondary performance level indicators (number of shots on goal, takeovers, fouls, shot and pass accuracy, ball possession) on mediators (approach tendency, challenge/threat evaluations, cardiac output) and experimental conditions (emotions).

4.   Main Results/Findings

After watching enthusiastic and amusing videos, gamers displayed stronger approach tendencies and, in turn, improved performance, compared to negative emotions and neutral conditions. Moreover, enthusiasm produced a stronger approach tendency and promoted better performance than amusement. Elicitation of unpleasant emotions (anger and sadness) had no effect on approach tendencies or gaming outcomes relative to the neutral conditions. Across all conditions, gamers with higher levels of cognitive and cardiovascular challenge achieved higher scores.

5.   Discussion & Practical Implications

In short, this study clarifies the relationship between emotions and esports performance (Behnke et al., 2020). The strengths of this study include running the experiment on a large number of highly motivated gamers. Using a multi-method approach, we measured affective, cognitive, and physiological responses in the gaming context. We found that emotions influence actions as long as they serve to increase the approach tendency. These results extend our understanding of how approach tendency and valence influence performance. These findings indicate that in a gaming context, performance is enhanced by pleasant emotions with high-approach tendencies.

This study has practical implications. We have shown the effects of watching enthusiasminducing and, to a lesser extent, amusing films to increase the performance-related approach motivational tendency and, consequently, improve esports performance. During esports events, it may be helpful for players to watch video content, such as video montages featuring famous players who have performed well in previous events. In addition, players can create personal clips showcasing their best plays to ensure optimal game preparation. Finding new ways to facilitate performance is essential in sports and esports, where players often present similar levels of professional competence, and winning or losing depends on peripheral factors such as emotions (Gould et al., 2002; Pedraza-Ramirez et al., 2020).

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Mental Toughness in Professional Esports –
A Critical Factor?

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1.   Objective(s) and Research Question(s)

The aim of this study was to investigate whether the so-called *mental toughness* (MT) has a positive influence on the performance of professional and non-professional esports athletes in different genres. Furthermore, differences in performance and MT between groups such as professionalism and gender were explored.

2.   Theoretical Background and Literature Review

In both traditional sports and esports, it is important for athletes and coaches to identify skills and characteristics that are critical for athletic performance and competitive success of individual athletes or teams. While this has been extensively researched in traditional sports, the amount of study within esports, which is the competitive playing of video games (Hamari & Sjöblom, 2017), is only moderate. One of the constructs considered critical to success in traditional sports is MT (Anthony et al., 2016; Crust, 2007), which can be defined as "[...] a personal capacity to produce consistently high levels of subjective [...] or objective performance [...] despite everyday challenges and stressors as well as significant adversities." (Gucciardi et al., 2015, p. 28). Diverse findings from traditional sports exist in which MT is associated with physical performance of athletes (Anthony et

al., 2016). But MT also has an influence on cognitive performance, which dominates in esports athletes (Campbell et al., 2018; Clough et al., 2002). Furthermore, in a study of MT in esports, Poulus et al. (2020) found that players with high MT showed higher self-perceived stress control and used more constructive coping strategies. Players with higher ingame rankings also tended to have higher MT. On this basis, we hypothesize that as MT increases, achieved performance in esports improves. Accordingly, professional players should also have a higher MT than non-professional players.

3.   Methodology and Data Collection/Analysis

To test these hypotheses, we surveyed 158 players online, of whom 130 played *League of Legends*, 10 played *Counter Strike: Global Offensive*, and 18 played other competitive esports titles (*Dota 2, Overwatch, PlayerUnknown's Battlegrounds* or *StarCraft II*). Participants were on average $M = 23.02$ years old ($SD = 4.14$). 126 were male, 26 female, 3 diverse, and 3 did not declare gender. 40 of the players classified themselves in the professional or semi-professional spectrum, the other 118 classified themselves as nonprofessionals.

Players' MT was assessed via the Sports Mental Toughness Questionnaire (SMTQ), which has 14 questions and 3 subscales (Sheard et al., 2009). To survey performance, players were asked for their unique alias (e.g. *Summoner name* in League of Legends). This information was used to determine publicly available game statistics via third-party applications. The categorization of players into the professional and non-professional spectrums was based on self-reporting by players.

Statistical testing of the hypotheses was performed using linear regression models to determine a relationship between MT and performance. Professional and non-professional players were compared using t-tests for differences in performance, MT, and playing time. In addition, correlations were calculated using Pearson's correlation analyses.

4.   Main Results/Findings

Self-rated professional players were, on average, in a higher performance percentile than nonprofessional players, $d = 0.68$, $t(132) = 5.40$, $p < .001$. Neither the SMTQ main scale nor its three subscales showed any association with performance. Professional players had higher average scores on the Confidence subscale than nonprofessional players, $d = 0.32$, $t(156) = 1.73$, $p = .043$. Professional players also showed a longer playing time than nonprofessionals, $d = 0.39$, $t(141) = 2.08$, $p = .020$.

Women showed lower scores on the Confidence subscale than men, $d = -0.69$, $t(150) = -3.30$, $p < .001$. On the Control subscale, women's scores were higher than men's, $d = 0.38$, $t(150) = 1.80$, $p = .037$.

Playing time did show a positive association with performance, $r(129) = .18$, $p = .04$. Age had a negative association with overall MT and the subscale control, $r(153) = -.16$, $p = .048$ and to $r(153) = -.18$, $p = .024$, respectively.

5.   Discussion & Practical Implications

The self-rated professionalism of the players was on the average accurate in terms of performance, as the group of semi-professional and professional players was in a higher percentile than the non-professional players.

For the most part, the findings contradict the assumptions made, as the SMTQ scales showed no relationship to performance. Even though this study was subject to some technical limitations, the question arises whether the construct of MT may not play as large a role as found by Poulus et al. (2020).

Furthermore, it is conceivable that the SMTQ validly measures MT in traditional sports but not in esports. It is important for further investigation of MT in the esports environment to have a validated instrument, which could be the target of future research.

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Comparison of Cognitive Performance Between Professional Esports Players, Regular Players and Non-Players

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Keywords: esports, neuropsychology, performance, professional players

1.   Objective(s) and Research Question(s)

The objective of this study is to analyse the differences among professional LoL players, amateur players and non-players in two cognitive tests of attention and planning.

2.   Theoretical Background and Literature Review

In recent years, the video game industry has revolutionized the way of understanding entertainment, generating a social and economic movement around it, especially since the beginning of eSports (competitive video gaming industry). Among the different eSports, the video game League of Legends (LoL) stands out above the rest, not only for its popularity but also for its solid competitive scene (Kollar, 2016).

Wit the progressive professionalization of the sector, eSports teams have imitated the operating model of traditional sports (Fiore et al., 2008) including professionals from different disciplines to improve the performance of their players, among them, sports psychologists (Pedraza-Ramírez, 2019).

In the same way that it has been proven in sport such as chess, neuroscience is a field of study that is capable of predicting performance and carrying out a neuropsychological profile on these players. In a field as novel as that of sports

psychology applied to eSports, it is necessary to carry out studies that allow us to know the cognitive profile of this type of players and thus be able to carry out interventions with a solid base of knowledge.

3. Methodology and Data Collection/Analysis

Twenty-seven people participated in this study. The inclusion criteria for this study were: (i) LoL players (except for the non-player group); (ii) Man players, criterion based on the recommendations of Pedraza-Ramirez et al. (2020); (iii) Pure-genre player, which implied dedicating to LoL at least 62,5% of the total hours dedicated to video games, following the criteria of Dale & Green (2017).

Three groups were formed. The professional players group (PPG) (n= 8) was recruited from the UCAM eSports Club team that plays in the top professional league in Spain. The amateur players group (AGP) (n= 10) and the non-players group (NPG) (n= 10) were recruited from advertisements at UCAM University.

Antisacade task (ANT) (Roberts et al., 1994). Computerized PEBL battery task (Mueller & Piper, 2014). During this task, an arrow is presented in the centre of the screen and the participants are asked to focus on this stimulus. Next, a square (for 225 ms) is shown on the left or right side of the screen (3.4 in from the cross), then another square is shown on the opposite side. The second square contains the target stimulus ($\uparrow$, $\downarrow$, $\leftarrow$, $\rightarrow$). Participants must respond as quickly as possible to the direction of the arrow.

Tower of London – Dextrel Universiy (TOL-DX) (Culbertson & Zilmer, 2008). Computerized PEBL battery task (Mueller & Piper, 2014). This test measures planning ability and is a version of the classic task Tower of London (Shallice, 1982). The aim is to reproduce the position of the top screen in the bottom screen with the least number of movements possible. There are a total of 15 problems divided into groups of three problems with different difficulties (three, four, five, six and seven movements required).

Statistical analyzes were carried out using the SPSS program. Comparisons of means from the Kruskal-Wallis test were performed.

4. Main Results/Findings

Sociodemographic variables and cognitive performance among groups

Variable	PPG	APG	NPG	Differences
Age	21,50 (3,02)	21,40 (3,17)	24,20 (5,86)	
Education years	17,50 (1,60)	19,50 (1,35)	19,90 (1,20)	
Nº Hours played per week	7,19 (3,90)	2,55 (1,19)	-	

Nº Days played per week	5,62 (2,66)	4,75 (1,72)	-	
Percentile position ranked	99,74 (0,21)	64,42 (24,60)	-	
ANT % correct answer	93,39 (4,56)	87,15 (8,03)	82,46 (10,32)	No significative differences
ANT Reaction time	592,98 (85,44)	603,90 (75,53)	715,12 (96,43)	APG=PPG <NPG
TOL-DX Total moves	109,12 (22,94)	110,40 (40,40)	124,80 (34,23)	No significative differences
TOL-DX Total time	382,71 (143,28)	415,82 (127,60)	412,21 (101,14)	No significative differences

5. Discussion & Practical Implications

The results of this study confirm that from the field of neurosciences it is possible to differentiate among professional and non-player players based on attention tests. Despite the importance of strategy and planning in the LoL, the results of the TOL-DX test did not show differences among groups. Future studies should delve into the development of specific tests that make it possible to differentiate between professional and amateur players. These results could have implications in the development of high-performance programs in professional players.

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Session 3.2:
Physical Injuries
in Esports

Musculoskeletal Injuries in Competitive and Non-Competitive Video Gaming: A Scoping Review

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1. Objective(s) and Research Question(s)

The primary objective of this scoping review is to determine the prevalence of musculoskeletal injuries in competitive and non-competitive gaming populations.

Secondary objectives include determining 1) which musculoskeletal conditions are most prevalent across game genres/titles, and 2) whether musculoskeletal injuries are more prevalent in competitive or non-competitive video gaming.

2. Theoretical Background and Literature Review

Competitive and non-competitive gaming industries have grown exponentially both in popularity and in financial remuneration in the past decade. Likewise, reports of physical health issues related to video gaming has also emerged. A 2020 scoping review found a possible association between increased video game playing time and deterioration in some physical health indicators. However, this review was not specific to musculoskeletal injuries, and no review on musculoskeletal injuries in either competitive or non-competitive video gaming currently exists. Additionally, new studies have been published in this area since 2020, which warrant an updated review.

We suspect that few data exist on the prevalence of musculoskeletal injuries within the competitive gaming population, and marginally more within non-competitive gaming populations. Therefore, a scoping review is more appropriate to broadly encapsulate and synthesize the available data, with the option to perform meta-analyses if possible.

3.   Methodology and Data Collection/Analysis

This review was prospectively registered on Open Science Framework Registries

(https://osf.io/2qh58) MEDLINE, Embase, CINAHL, Scopus, SPORTSDiscus, PEDro, SciELO and Google Scholar were searched from inception date to 4th March 2021. Citation tracking will be performed for included studies and relevant reviews in the field. There are no language or geographic restrictions in the search strategy or meta-analysis. Reference lists of included studies and studies in relevant reviews will also be checked.

We included musculoskeletal injuries or conditions occurring due to or during casual and/or competitive gaming activities. These include symptoms originating from injuries to or conditions of muscles, tendons, joints, ligaments and/or nerves; or decreased ability to perform physical functional activities required for gaming. Included studies must 1) report a case of an acute, sub-acute or chronic gaming-related injury OR include reported incidence or prevalence data, 2) report injuries that occurred during the intended use of gaming devices including computers, keyboard/mouse, console, console controller, mobile phone, and tablet 3) report signs and/or symptoms of injuries reported as a consequence of gaming, and 4) published in a peer-reviewed journal.

We excluded injuries occurring during or as a consequence of improper use of gaming devices (e.g., falling while using a Wii controller), and injuries occurring during virtual reality gameplay, as with an Oculus or an HTC Vive.

The abstract and full text screening stages will be performed by two reviewers using Covidence software. Assessment of risk of bias and data extraction will also be performed by two reviewers. Any disagreements at each stage will be resolved through discussion with a third reviewer. Missing data will be requested from the authors.

A narrative synthesis of the findings from included studies will be provided, structured around population characteristic and injury type and frequency. If possible, we plan to perform a meta-analysis on each of the primary and secondary outcomes, for included studies which have reported incidence or prevalence data. We will conduct sensitivity analyses based on study type and quality. We will also assess evidence of publication bias. Subgroup analyses based on game title/genre, location of symptoms or involved/affected anatomical structures, and condition chronicity will also be conducted, if possible.

4. Main Results/Findings

The scoping review is ongoing. 9,312 unique articles were obtained from the search strategy and 152 studies are undergoing full-text screening. We anticipate the completion of the screen and the provision of preliminary results, by the conference date.

5. Discussion & Practical Implications

We hypothesize that musculoskeletal injuries are most prevalent in the upper limb than any other body area, and more prevalent in competitive than non-competitive gaming populations. Results from this scoping review will guide the prevention and management of key musculoskeletal pains and injury. It will also highlight gaps in musculoskeletal injury research in video gaming and inform study designs for future research.

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Prevalence and Patterns of Upper Body Gaming-Related Pain and Discomfort in Teenagers and Adults

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1.   Background

Investigation into the physical effects of playing video games has largely been restricted to young adolescents (Jacobs & Baker, 2002; Lui et al., 2011; Zapata et al., 2006). However, long duration video game usage is prevalent in many age groups and professional gamers predominately include young adult demographics. The average age of a professional gamer is between 24 and 27 years (Statista, 2015). Understanding the physical effects of gaming in youth is vital for sustained health and performance throughout the playing years. Professional gamers are known to practice for upwards of 10 hours per day and at high levels of intensity (DiFranciscoDonoghue et al., 2019). The high intensity and repetitive motion associated with gaming increases susceptibility to musculoskeletal injuries and discomfort. A significant portion of the Danish esports athletes have reported experiencing musculoskeletal (MSK) pain and those who experienced pain spend significantly less time practicing (Lindberg et al., 2020). Therefore, it is important to gain an understanding of the risk factors which may lead to MSK pain and where pain is most commonly experienced.

2.   Objectives

The main objective of this study was to characterize and quantify the prevalence of gaming-related pain currently being experienced by gamers of all ages and skill levels. A secondary objective included identifying possible risk factors which may lead to pain or discomfort.

3.   Methodology

An online survey was developed which included questions on respondent demographics, gaming habits, and health history. Additionally, questions focused on characterizing respondents' pain (both location and intensity), as well as gaming preferences (i.e. Console or PC, genre of game, level of competitiveness, etc.). The target population included individuals over 15 years of age who currently play video games. Self-reported injuries and pain were documented based on body region (e.g. lower back, neck, forearms, etc.) and pain was

characterized using a modified McGill pain questionnaire (Melzack, 1975). One-way ANOVAs were performed to assess differences in gaming behaviour between various demographic groups. Bivariate correlations were performed using to determine any association between demographic information and pain prevalence.

4. Results

The survey was completed by 502 individuals. The average age of the respondents was 23.5 ± 5.7 years of age. The majority of participants identified as male (406; 80.9%), while 89 respondents (17.7%) identified as female, and 7 respondents (1.4%) preferred not to answer. On average, participants reported playing video games for 22.7 ± 14.6 hours per week and an average of 3.5 ± 1.9 hours per gaming session.

Of the 502 respondents, 393 (78.3%) reported feeling pain in the upper body while gaming. Of that 393, 81.2% reported feeling pain in more than one area of the upper body. The highest occurrence of pain was reported in the neck (217; 43.2%), lower back (207; 41.2%) and the right distal upper extremity (203; 40.4%). In the right upper extremity, wrist and hand pain were most reported, with 23.9 and 21.5% of participants reporting pain in the right wrist and hand, respectively. Of those who experience pain, 24.2% indicated that their pain had been diagnosed by a medical professional. There was a weak relationship between the duration of gaming sessions and pain in the right wrist, $r = 0.15$; session length was also correlated with lower back pain $r = 0.12$, $p < 0.05$. There was a weak correlation between the platform individuals used and right wrist pain, $r = 0.17$, $p < 0.05$, with PC gamers more commonly reporting wrist pain compared to console gamers.

5. Discussion/Implications

The results of this study confirm that gaming-related pain and injury is a common problem among gamers. Gaming for a longer time in a single session may increase an individual's risk of experiencing low back or wrist pain. Reducing the length of individual gaming sessions or breaking up sessions into shorter bouts, may reduce the likelihood of experiencing wrist and back pain while gaming. Furthermore, as the right hand and wrist are heavily involved, PC gaming may also increase an individual's risk of wrist pain. The findings from this study will help guide future research into injuries experienced by gamers. While some may draw direct comparisons between office work and gaming, the physical demands of office work and gaming differ. Unlike traditional office work, gaming sessions involve high intensity use of peripherals (mouse/keyboard, controller, etc.), often over long durations. Therefore, this work is an important step to develop customized ergonomic and industry standards for both casual gamers and esports athletes. Additionally, these findings may aid players and coaches in development of practice schedules to reduce pain and improve performance.

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Tendinopathies in Video Gaming and Esports

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1.   Objective and Research Questions

In this opinion article, our objective is to highlight proposed injury risk factors in esports, current tendon research and its potential applicability, and the research gaps in the field.

2.   Theoretical Background and Literature Review

The physical demands of esport competitors triple those of office workers, varying between esport games, platforms (computer, console, mobile), and levels of performance (amateur, semi-professional, professional). These demands include unique ergonomic and postural considerations across different game types, wrist and hand muscular endurance, and potential physiological effects related to psychological stress during competition.

Per a review of the associated and relevant literature, no data exists differentiating injury rates among players who use console controllers, mice and keyboards, arcade-style sticks controllers, and mobile devices such as smartphones or tablets. Using the basic principles of biomechanics, medical professionals may reasonably assume general differences in which muscle groups and joints are likely to experience the most strain with each of those devices. However, in the absence of esports-specific and even game- and device-specific research, no concrete determination of best medical practices can be established.

3.   Methodology and Data Collection/Analysis

The authors utilized a review of available literature specifically relating to esports and video gaming injuries. In addition, sources reporting on related fields (e.g. office workers, traditional athletes, and orthopedic medicine) were reviewed for relevance to the topic.

4.   Main Results and Findings

1.   *Injury risk factors in esports*

While musculoskeletal esport research is being developed, existing research on injuries, ergonomics, and posture in office workers is well-established and may provide a basis for preliminary best practices, given that many, although not all, esports competitors use similar input devices (e.g., mouse, keyboard, monitor) as office workers. Esports competitors exhibit many of the same pain and injury patterns as office workers (DiFrancisco-Donoghue et al. 2019). In both populations, these injury patterns include neuropathic and tendinopathic conditions, including epicondylopathies (wrist flexor and extensor tendinopathies), de Quervain's tenosynovitis, and intersection syndrome.

A number of occupational factors have been identified as contributing to increased risk for the development of upper limb tendinopathies, including repeated or sustained wrist bending, repeated twisting or pushing motions, non-neutral wrist postures during work activity, and repetitive forceful motions (Shiri et al., 2006; Petit Le Manach et al., 2011; Shiri and Viikari-Juntura, 2011; Herquelot et al., 2013). While office workers routinely perform 130–180 keyboard and mouse inputs, or actions per minute (APMs), over the course of an 8 h workday (Szeto et al., 2005), esports competitors perform up to 500–600 APMs and regularly train for 5–10 hours per day (Lewis et al., 2011; DiFrancisco-Donoghue et al., 2019). This results in repetitive loading to a degree that may result in elevated risk of tendinopathic conditions. Sustained loading can also contribute to elevated risk. A variety of ergonomic considerations which may affect repetitive and sustained loads exist for esports competitors include keyboard key force attenuation, keyboard and mouse angle, mouse size, mouse grip type, arm support, most commonly used keys, and infrequent whole-body movement.

2.   *Current Tendon Research and Potential Applicability*

Tendinopathies are thought to have a pathological continuum involving three phases. These in order from least to most severe are: reactive tendinopathy, tendon disrepair, and degenerative tendinopathy. As a continuum, a tendon may improve or regress through these stages based on the load placed on it. Tendons further down this continuum, toward the degenerative stage due to continual overloading, have less potential to return back to a normal healthy tendon.

Most tendinopathies can return to normal if managed early on with optimal loading, where the load is adequate for proper tendon healing and restructuring (Rio et al., 2015). It is a balance between complete rest where muscles and tendons actually get weaker, and overload where the tendon's condition worsens. Optimal loading of a tendon involves the combination of graded activity and strengthening and possibly motor control. Rehabilitation programs that have

been successful in terms of pain reduction and return to sport outcomes usually include strength training (Couppe et al., 2015; Quinlan et al., 2019).

5.   Discussion and Practical Implications

In the absence of more concrete research, medical professionals in esports must rely on the data available to them in the form of experience, expert opinion, and relevant research in other populations. As established by research on office workers, esports competitors are subject to the kinds of repetitive loads which increase the risk of tendinopathy. Extensive research exists on all facets of tendon pathologies, from prevention to development to treatment.

Given the current dearth of esports-specific research, medical professionals working in the field should apply existing research in related fields to provide care for esports competitors at present. Significant research is needed into injury prevalence, validation of injury-prediction measures, and effectiveness of interventional and prevention programming. Research is also needed to assess the effects of mouse size and weight, controller size and weight, key force attenuation, common movement patterns across input devices, and other esports-specific ergonomic concerns.

Additionally, research on the effects of supplements, sleep, travel, and exercise on esports competitor performance, not just health, is necessary to establish clinical practice guidelines for medical professionals and best practices for coaches and teams.

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Session 3.3: Symposium
Stress, Coping and Mental Health

Stress, Coping and Mental Health in Esports

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Keywords: Esports, stress, coping, mental health.

1.   Rationale of the symposia

The esports industry has seen a dramatic acceleration in growth over the last 10 years (Himmelstein, et al., 2017), which has led to the formulation of professional teams competing for seven-figure prize funds and playing contracts. In line with this increase, the interest into the science underpinning performance and player health in esports has accelerated dramatically in recent years. However, there have been relatively few empirical studies which have explicitly examined the factors influencing esports performance when compared to studies examining traditional sports. Key stakeholders in esports (e.g., ESL, CSPPA, coaches, academics) have expressed an interest into better understanding the stressors faced by esports players and the strategies used to overcome stress. The term stressor has been used to express "environmental demands encountered by individuals" (Fletcher et al., 2006, p. 329). As esports athletes are competing in highly pressurised and competitive environments that are comparable to traditional sports, it is likely that stressors exist in an esports performance environment. Indeed, an early study by Himmelstein et al. (2017) interviewed five high-level League of Legends players about psychosocial factors in competitive esports and found that a number of obstacles prevented optimal performance, including pressure of competing, being harassed by others, and negative communication during performance.

Very recently, professional esports players have taken to social media platforms to not only discuss the negative impacts stressors can have on performance, but also on mental health. Indeed, some professional players have taken breaks from competition in an effort to protect their psychological and physical health. Although research has consistently highlighted the mental health benefits associated with sport (Daley, 2008; Stanton & Reaburn, 2014), athletes are not

immune to developing mental illness and are often highlighted as most at risk during the peak of their competitive years (Allen & Hopkins, 2015). Given the empirical understanding that suggests the prevalence of mental illness in athletes is comparable to the general population (Rice et al., 2016), it is important to investigate the stressors faced by athletes and the impact they may have on performance and mental health. This is particularly pertinent when these individuals encounter unique stressors that are also detrimental to mental health, including sport-related stress (Noblet & Gifford, 2002), injuries (Smith, 1996; Appaneal et al., 2009), living away from home (Bruner et al., 2008), and burnout (Gustafsson et al., 2011).

Inspection of the literature highlights an array of variables which are understood to influence one's mental health. Anxiety and depression symptoms have been associated with broader mental health disorders in elite athlete samples and the general population (Rice et al., 2016). Specifically, greater social phobia anxiety has been shown to positively relate to internet gaming disorder symptoms (Sioni et al., 2017). Sleep quality has been shown to have a positive relationship with mental health. For example, Biggins et al. (2019) found that sleep problems and poor sleep hygiene positively predicted low mood in a sample of elite multi-sport athletes competing at the World Student Games. Van Ramele et al. (2017) investigated a sample of retired elite soccer players and found that when adverse life events had occurred, sleep disturbance led to increased reporting of mental distress. Burnout has been described as a state of physical and emotional exhaustion (Raedeke & Smith, 2001), and symptoms of burnout have been shown to be significant contributors to diminished psychological well-being in a sporting context (Madigan et al., 2019; Rice et al., 2016).

It is clear that such investigations are now warranted within the esports community. A community that has since became recognised as an international sport in most countries (Jonasson & Thiborg, 2010) and is, arguably, one of the fastest growing sectors in sport in recent decades (Nagel & Sugishita, 2016). As highlighted through previous research (e.g., Himmelstein et al., 2017), there appear to be comparable links to the challenges reported in traditional sports and esports. Considering previous recommendations to advance our understanding of the stressors experienced by esports competitors (Smith et al., 2019) and the mental health challenges faced by elite athletes (Foskett & Longstaff, 2018), the aim of this symposia is to outline our ongoing programme of research examining stress, coping and mental health in esports. Firstly, we will discuss our research examining stress and coping in professional CS:GO players (i.e., Smith et al., 2019) and how the evidence gleaned led us to examine the predictors of mental health in esports. Secondly, we will unpack our ongoing research examining the predictors of mental health in both student and professional esports players. Finally, we will discuss the practical implications of our findings, our future research plans and how they may impact the esports ecosystem more broadly.

2.   Convenor

The symposia will be led by Dr Phil Birch who is a Senior Lecturer in Sport and Exercise Psychology at University of Chichester, England. Phil's research focuses on performance psychology, with a particular focus on the psychological determinants of esports performance and mental health. Phil is the primary author of the Psychology of Esports blog for Psychology Today.

3.   Presenters

Dr Matt Smith is a Senior Lecturer in Sport and Exercise Psychology at University of Winchester, England. Matt's research focuses on team dynamics, mental health and the use of creative qualitative methods to disseminate research findings.

Benjamin Sharpe is a PhD researcher at University of Chichester, England. Ben is competitive gamer (predominantly CS:GO) and his doctorial research focuses on the impact of individual differences and expertise on sports performance.

4.   Presentations

Presentation 1: Setting the scene for stress and coping in esports

Phil will outline the importance of stress and coping in esports and present the findings from the Smith et al. (2019) article examining stress and coping in professional CS:GO players. Phil will discuss how the findings of the Smith et al. (2019) publication provided the catalyst to continue this line of enquiry and will outline the roadmap for our programme of research examining the predictors of mental health in esports players.

Presentation 2: Predictors of mental health in esports

Matt will present the methods and findings of our current study examining the predictors (e.g., stressors, sleep, social phobia anxiety, burnout) of mental health in University based esports players. Matt will also discuss our ongoing study examining the predictors of mental health in professional CS:GO players in collaboration with the CSPPA.

Presentation 3: Practical implications and future directions

Ben will discuss the applied implications of our findings and what they may mean for the sustainability of player health and the esports ecosystem more broadly. Ben will also present our ideas for future research, including advancing the way we examine data (e.g., using mediation analyses) and which variables may be most influential in terms of predicting mental health in players.

References are available on request.

Session 4.1:
Psychology of Esports Players

Problematic Gaming and Quality of Life in Online Competitive Videogame Players: Identification of Motivational Profiles

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1.   Objective(s) and Research Question(s)

The objectives of this study were to identify motivational clusters of competitive video games players and to compare them regarding quality of life, problematic use of video game, and personality traits.

2.   Theoretical Background and Literature Review

Online competitive practice of video games has recently known a significant worldwide expansion. However, this practice can be associated to problematic use (American Psychiatric Association [APA], 2013) and deterioration of quality of life (see Saunders et al., 2017 for a review) depending on multiple determinants, among which motivation is central (Hussain, Williams & Griffiths, 2015; Laconi et al., 2017).

3.   Methodology and Data Collection/Analysis

Participants (N=256) in this cross-sectional study were recruited through specialized websites to complete self-reported questionnaires assessing motivation to play online (MOGQ), personality (BFI Fr), quality of life (WHOQOL-BREF), and problematic use (IGD-Scale). A hierarchical clustering analysis and intergroup comparative analyses were conducted.

4.   Main Results/Findings

Three motivational clusters were identified ("recreational", "competitive" and "escapers"). "Competitive" and "escapers" players reported higher IGD scores than the "recreational" players (p<.001). However, "escapers" players had lower psychological health scores (p<.001), were more neurotic (p<.001), and less extroverted (p<.001) than the others. Based on IGD scores, "competitive" and "escapers" players were considered as problematic albeit only "escapers" exhibited a functional impairment. Therefore, engaged and problematic players cannot be differentiated with IGD scores.

5.   Discussion & Practical Implications

IGD scores were insufficient to differentiate between players at risk of evolution toward pathological states (i.e., "escapers" players) and those whose strong engagement is not detrimental to their quality of life (i.e., "competitive" players). Consequently, considering both psychological health and motivation is necessary to assess the problematic nature of competitive videogame practice. Better definitions and assessment tools are essential in order to avoid over-diagnosis of non-pathological behaviors.

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Comparing the Gaming Motives of Esports Players, Recreational and Highly Engaged Gamers

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1.   Theoretical Background and Literature Review

Video gaming as a leisure time activity, as well as competitive video gaming or electronic sports (esports) have shown a permanent and steady growth in the past few years (Block & Haack, 2021). Accordingly, research interest in the psychology of gaming and esports is also on the rise. One important topic is gaming motivation, because video games are designed to satisfy a broad range of needs and motivate players in very different ways (Yee, 2006). While research regarding gaming motives is abundant, there is a scarcity in studies investigating the motives of esports players.

2.   Objective(s) and Research Question(s)

The present study aimed to compare the motivational background and specific personality traits of three groups: recreational gamers, highly engaged gamers and esports players (i.e., gamers who regularly took part in esports competitions).

3.   Methodology and Data Collection/Analysis

Data was collected from Hungarian video gamers via an online self-report survey in 2020. Recruitment was carried out in collaboration with the biggest online video gaming magazine, GameStar.hu, a media actor much respected by the gaming community. Incentives were provided to increase willingness to fill in the questionnaire (shopping vouchers of different values were drawn between the

participants). The total sample comprised 14,537 gamers (89.2% males, mean age 24.15 years [SD=6.94], age range: 14 – 75 years). Videogame-related (gaming time, gaming platform, gaming genre) and esports-related variables (number of competitions in a year, intensity of training, career plans, money won in competitions), gaming motivation and personality characteristics (sociability, competitiveness, sensation seeking) were assessed. Three groups were created: (i) esports players group (n=529) (i.e., gamers who participated in esports competitions at least 6-11 times in the past year), (ii) highly engaged gamers (n=8,932) (i.e., gamers who played more than 20 hours per week and did not fulfill the esports group criterion), and (iii) recreational gamers (n=5,076) (i.e., gamers who played less than 20 hours per week and did not fulfill the esports group criterion). Analysis of variance (ANOVA) was performed to test the motivational and personality differences of the three groups.

4. Main Results/Findings

The esports group had the highest proportion of males and was the youngest. Playing time for the esports players (34.6 hours/week) was similar to that of the highly engaged gamers (34.8 hours/week) and much higher than the playing time of the recreational players (13.9 hours/week). First person shooter was the most popular genre in our total sample including the esports group. Battle Royale and the sport genre were played significantly more by those in the esports group compared to the others. To assess gaming motives, a comprehensive motivational model was used comprising six main dimensions (Mastery, Immersion/Escapism, Competition, Stimulation, Social, and Habit/Boredom) and 26 distinct motives. The esports group had significantly higher scores on the Competition and Social dimensions and on the Competition, Game Skills (improving specific gaming skills), Status (recognition by fellow players), Skill Development (improving general skills, e.g., concentration), Competence, Financial, Social, Cooperation, and Strategy motives. Regarding the personality traits, esports players had higher scores on competitiveness, sociability and sensation seeking than highly engaged and recreational gamers. Finally, the Escape motive (playing games to forget about everyday life difficulties) was lower for esports players than highly engaged gamers suggesting that gaming for them does not serve as an avoidance of problems but as a pursuit of specific goals.

5. Discussion & Practical Implications

Results are in-line with both previous findings and theoretical considerations. As competition is the core of esports, it is expected that esports players or those who take part in esports competitions are both more competitive in nature and have stronger competition motive (García-Lanzo & Chamarro, 2018). Our findings reveal that besides competition, status, feeling of competence and developing general and gaming-specific skills are also crucial for esports players along with financial motives (to earn money from gaming). All these are in-line with the characteristics of the esports scena. Furthermore, esports players are highly

social, who value cooperation and strategic thinking, which is also expected as most of the esports games are team-based (Bányai et al., 2019). Given that succeeding in esports requires a lot of effort and sacrifices, gaming motives and personality variables may be used both in the early and later career phases to support players in their plans to become professionals (Bányai et al., 2020). Similarly to traditional sports, psychological support for esports players is much needed (Cottrell et al., 2019) and practitioners should build on the inner motives and personality strengths of the players to reach maximum efficiency.

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Funding sources

Mirror, Mirror of The Game?
Exploring the Truthfulness of Selfreports
of Generational Cohorts in Esports

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Keywords: triangulation, self-reported and behavioral data, generational cohorts, honesty

1.   Introduction

Nowadays, video games and more specifically eSports (we follow a wide definition understanding eSports as the competitive play of video games, which is present in every game that uses points to differentiate between players) can be considered the fastest growing entertainment market and one of the fundamental pillars of digital culture (Seo et al. 2019). Current projections suggest that half of the population in the Western world appears to play video games, with this quantity still growing (Scholz 2019). Accordingly, eSports can be considered a future lab for societies allowing prospective insights into the digital coexistence of individuals (Kishita et al. 2021). Accordingly, different research disciplines already approached selected examples deriving insights regarding consumer behavior (Hamari and Sjöblom 2017), market behavior of organizations (Kordyaka et al. 2020), and player behavior (Adinolf and Turkay 2018). Nonetheless, the

psychology of eSports is only partially understood, and a substantial number of relevant insights is still missing.

One such instance is the truthfulness of self-reports of players, which is a question of high relevance for eSports organizations to better understand and manage their portfolio of players. A relevant question in this regard is the relationship between self-reported and behavioral performance data and underlying demographic patterns. Generational cohort theory (Jackson et al. 2011) predicts players from generation y (born between 1981 – 1996) to be more dishonest regarding their performance than players from generation z (born between 1997 – 2012). Members of generation y tend to be ego-centered (Twenge 2013) and so-called trophy kids (Alsop 2008). Opposed to this, members of generation z tend to be well-behaved, abstemious, and risk-averse (Del Rey et al. 2019). Previous studies on age and honesty found older participants to be more honest in behavioral experiments (Gerlach et al., 2019) and in their personality (Ashton & Lee, 2016). We aim to test these competing predictions in the specific context of performance in LoL.

2.   Methodology

1.   Research design

To answer our research question, we used a cross-sectional approach applying an online survey and covariance-based statistics to derive the results of our study.

2.   Participants

As participants for our study, we collected a sample (N = 146) of players of the multiplayer online game League of Legends. For this, we activated networks (e.g., community boards, social media, gatekeepers) to disseminate the link to our study to collect self-reported data. Participants were close to 23 years old (M = 22.52, SD = 3.84) at time of participation and the majority (N = 133) were male.

3.   Data analysis

A correlation between age and honesty was computed to test for an association. To compare the two generational cohorts (i.e., generations y, generation z) regarding their self-reported and behavioral performance, we applied a chi-square test of independence to test if there is an association between the generational cohorts and honesty.

4.   Measurements

Generational cohorts. To measure the independent variable of our study, we used the variable age and split the data set into groups of generation y consisting of participants younger than 24 (N = 91) and generation z consisting of participants older than 23 (N = 55).

Honesty. We calculated a binary variable honesty (honest vs. dishonest). For this, we compared the levels of self-reported and behavioral performances of players. To derive a value for behavioral performance, we collected an objective identifier of players (i.e., the summoner name) and read out their performance levels using the game statistics service OP.GG. After doing so, the honest group consisted of 92 participants and the dishonest group of 54 participants.

3. Results

Results show a significant negative correlation between age and honesty, $r = -18.$, $p = .026$, with older players being less honest. In the cohort analysis, the relation between both variables was significant ($X^2(1, N = 146) = 7.339, p = .007$), whereby the proportion of players in the older group reporting dishonest answers (51%) was higher than the proportion of players in the younger group (29%). Dishonest answers were self-enhancing in 83% of the cases (reporting a higher rank than you objectively have). When only these cases were included in the analysis, the difference was no longer significant ($p = .056$).

4. Discussion

Based on our findings there is a negative association between age and honesty. Players from generation y do indeed report less trustworthy answers regarding their performance in eSports. Accordingly, the eSports industry should take cohort characteristics more into account. Our finding extends the association between age and honesty for the first time to the context of eSports.

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Session 4.2:
Perspectives
for Global Health

The Clarification of Human Rights Obligations to Protect Esports Players Against Physical and Mental Health Problems Under Article 12 of the ICESCR

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Keywords: The right to health, duty bearers, esports players, International Covenant on Economic, Social and Cultural Rights (ICESCR), physical and mental health problems, United Nations General, Principles on Business and Human Rights (UNGPs)

## 1.		Objective(s) and Research Question(s)

The purpose of this article is to consider whether the right to health guaranteed by Article 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR) may serve to protect esports players from physical and mental health problems caused by esports activity. In order to answer this main question, there are three research questions as follows: (1) Are esports players entitled to enjoy the right to health set out in Article 12 of the ICESCR? (2) Who are duty bearers in the esports community? and (3) What should esports duty bearers do to implement the right to heath under Article 12 of the ICESCR against physical and mental health problems?

However, it is important to note that international human rights law cannot impose any legal obligations on non-state actors so that the implementation of human rights obligations depends on their voluntary commitment. For instance, the Swiss Esports Federation (SESF) has already created the Human Rights Clause in its Statutes (Article 1.6). Under this provision, the SESF declared its voluntary intention to be bound by international human rights law ratified by Switzerland. It is worth noting that the SESF is the only esports federation declaring its intention to respect human rights in esports activity. Thus, this article will be a challenge to know if human rights law may contribute to enhancing esports players' working conditions.

## 2.		Theoretical Background and Literature Review

Electronic sports (esports) has been recognised as competitive video games. Thanks to the rapid development of digital media technologies, online game-streaming services and cloud gaming technologies, the esports industry has sharply developed and it has contributed to creating a huge amount of economic interests. For instance, esports market revenue worldwide from 2019 to 2024 was

analysed by Statista and it said that the esports market revenue in 2019 was 957.5 million dollars, but it will reach 1617.7 million dollars by 2024. Thus, it can be said that esports industry has become a more attractive market to business enterprises.

In this situation, there is no discussion on how esports community should engage in the protection of esports players from negative consequences given rise to the rapid economic growth of esports industry. Concerning the negative consequences, it would be said that esports players have not been enough to be protected against physical and mental health problems caused by excessive esports activity. In other words, esports players are suffering, or suffered, from physical health problems, such as joint inflammation or injury (back, neck, elbow, wrist, fingers), and mental health problems, such as depression and insomnia (sleep disorder). On this basis, it is clear that esports activity, especially at the professional level, causes esports players physical and mental health problems.

3.   Methodology and Data Collection/Analysis

This article will be divided into the following sections: After this introduction, this article will skim through the right to health guaranteed by Article 12 of the ICESCR. Furthermore, it will examine who is a duty bearer in the esports community who should implement obligations and duties under Article 12(1) of the ICESCR. On that basis, this article will consider whether esports players are entitled to enjoy health care against physical and mental health problems caused by esports. In addition to this, it will also take into account what esports duty bearers should do to implement the right to heath under Article 12 of the ICESCR against physical and mental health problems.

4.   Main Results/Findings

Through this research, it would serve to know how esports duty bearers should take necessary measures to prevent a violation of the right to health caused by esports activity, thereby enhancing the protection of esports players from physical and mental health problems.

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A Novel Exercise Programming Model
for Esports Athletes, Teams, and Organizations

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1.   Research Question and Objectives

Due to the nature of esports, many esports athletes experience challenges achieving optimal levels of physical activity. Over the last decade, professional esports athletes have had to retire due to injuries that in many cases were completely preventable (Shead, 2021). This has led to the question of how can esports athletes achieve the minimal recommended levels of physical activity to combat the deleterious effects of prolonged gaming? This research paper presents an exercise programming model based on scientific literature that is designed to increase physical activity levels for esports athletes while achieving the following objectives: a) optimizing esports performance, b) reducing risks of gaming-related injuries, and c) improving overall health and wellness.

2.   Theoretical Model

The exercise programming model called GMR-X (gamer exercise) uses a microdosing approach with exercise through short warmups and cooldowns that are performed throughout gaming sessions. Gaming sessions are defined as the total quantity of gaming in a day. Sessions can be further divided into smaller units called gaming sets. These sets are periods of gaming before an extended break. Typically, at the professional level, gaming sets may range from 2-4 hours of practice with up to 2-5 sets total a day for players. The exercise programming model uses this existing training structure in esports by encouraging players and teams at any skill level to incorporate small amounts of movement before and after gaming sets. Research literature on short bouts of exercise have shown they can optimize cognitive performance and reduce the onset of many common pain patterns associated with extensive computer use (Sibley et al., 2006) (Shariat et al., 2018). Based on the literature, a warmup is recommended to range from 3-15 minutes with moderate to vigorous intensity exercises (Blomstrand & Engvall, 2020). The warmup programming is divided into 3 phases including dynamic stretching, muscle activation, and conditioning that are designed to optimally prepare the body and mind for gaming. The cooldown after a gaming set is recommended to be 3-10 minutes with the goal of reducing inflammation and shifting the body's autonomic nervous system from a sympathetic response to a parasympathetic response (Sousa et al., 2020). There are 2 phases of the

cooldown including static stretching and mindful breathing. Players performing a 10-minute warmup and 5-minute cooldown twice a day around their gaming sets for 5 days a week can achieve the 150-minutes of moderate-intensity physical activity each week that major institutions like the World Health Organization recommend.

3.   Discussion & Practical Implications

This type of programming differs from traditional exercise programming in that exercise is chunked into smaller units over time with higher frequency and lower duration of exercise which has been shown to be similarly effective in terms of exercise benefits (Sprow, 2019). Many common barriers to exercise that individuals experience including esports athletes are lack of time, knowledge, skill, motivation, and access to equipment. The model lowers these barriers by providing individualization of exercise programming, being more time-efficient, and encouraging compliance through team accountability. In addition to these benefits, the model can be utilized along with a qualified professional to incorporate rehabilitation exercises prescribed from a sports medicine professional to increase compliance for injured players. Future research can examine interventions using this model to determine outcomes for performance, pain from gaming, and health. This research provides direction for how practitioners in esports and those from traditional sports can develop an alternative exercise program for esports athletes to meet minimum physical activity levels. The implications of this research are that it can encourage future research on this unique approach to exercise programming while becoming a minimum standard of training for esports athletes, teams, and organizations.

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Video Game Usage and Healthy Habits in Student Gamers at Secondary School

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Keywords: video games, esports, gaming habits, healthy habits, students

1. Objective and Research Questions

This investigation aims to look into the healthy habits and video game practice among students at secondary school. It has been examined the time spent among teenagers playing video games and how they do it considering the usual platform and adopted posture. The importance given to healthy habits was evaluated considering three main dimensions: physical activity, nutrition, and sleep.

2. Theoretical Background and Literature Review

In Spain, the average number of hours spent on playing is 7,5 hours per week and the most used devices are the consoles (Anuario de la Industria del Videojuego, 2020 p.17-24). Among University gamers, 40% do not perform any physical activity (DiFrancisco *et al*, 2018, p.2). Most of the gamers consider that their health status is "excellent" (18,2%) or "very good" (38,2%), and 66,9% perform 2.5 hours per week of moderate or vigorous physical activity (Rudolf *et al,* 2020) implementing the recommendations from World Health Organization (WHO). In relation to nutritional habits, 11% fulfill the WHO advice with the consumption of 2.7±1.8 pieces every day (Rudolf *et al,* 2020). Between gamers and non-gamers, gamers perceive having a less significant healthy diet, consuming less portions of fruit and vegetables (Huth, 2021). Gamers have the sleep phase more delayed with less quality, more depression symptoms, and less sleep knowledge (Lee *et al,* 2020). Among professional esports players, the average sleep schedule is 6.8 hours per day with a 86.4% efficiency (Lee *et al,* 2021).

3.   Methodology and Data Collection

The anonymous survey by Vázquez (2020) and validated by experts, was done through a Google Form titled "Hábitos de Juego y Salud de Videojugadores" (Game and Health Habits of Video-Gamers) with 47 questions. Using the Likert scale (1-5), with a Cronbach's Alpha equal to 0.78, we analyzed a sample with 818 Spanish gamer students. Microsoft Excel software was used (V16.46) to determine the average values and standard deviation, and software R (V4.0.1) for the Mann-Whitney test to see if there were differences according to the survey respondents sex.

4.   Main Results/Findings

56.48% (n=462) are men and 43.52% (n=356) are women. The average age is 14.38(±1.85) years old, the height is 165.60(±11.00) centimeters and the weight is 57.79(±13.53) kilograms. The average video game use is 1.40(±1.64) hours per day on weekdays (Mon-Thurs) and 3.21(±2.29) hours per day during the weekend (Fri-Sun). 12.84% affirmed belonging to a video game team, significantly most of them are men ($p<.001$), and the first contact was maintained at the average age of 7.21(±2.60) years with a lower average age in men ($p<.001$). 44.62% (n=365), the most usual platform is a computer or console with a command. The most used position is seated in a chair without being supported by a table 38.39% (n=314). 78.85%(n=645) consider (≥4) doing physical activity important and 39.00% (n=319) do physical activity 4 or more times per week. Men give more importance than women to physical activity ($p<.01$), and they practice it more regularly ($p<.001$). 29.34% (n=240) eat 5 pieces of fruit and vegetables 4 or more times per week. The average time in bed is 7.92(±1.31) hours per day.

5.   Discussion and Practical Implications

The average use of video games per day obtained in teenagers is bigger than the national average, which grows on the weekend. According to Rudolf *et al.* (2020), 66.9% comply with the recommendations of the WHO in physical activity which has a high frequency obtained in this study, although with a lower percentage (39.00%). A scarce percentage of gamers reflect having nutritional habits according to the data of Rudolf *et al.* (2020) and Huth (2021), which is similar to the observed low percentage (29.34%) according to WHO recommendations. The average sleep hour is below 7.00 hours in players, according to Lee *et al.* (2021), while in this study with gamer students it increases to 7.92(±1.31) hours per day. As a practical implication, we think that the key is knowing and managing healthy habits form an interdisciplinary perspective as claimed by DiFrancisco *et al.* (2018), along with establishing protocols, clinical practical guidelines or preventive strategies, and approach with different professionals adapted to the necessities of the gamers and esports players.

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Session 4.3: Symposium Exploring the Possibilities & Challenges of Gamers and Esporters

What The Future Holds:
Exploring the Possibilities and Challenges
of Gamers and Esporters

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1. Objective(s) and Research Question(s)

The objective of this symposium is to explore the possibilities and challenges in esports. More specifically, the areas of interest are, (1) challenges that seem to be common amongst gamers, esporters, and esports teams, and how one may meet and overcome them, and (2) how esports may be a venue for inclusion and integration.

2. Theoretical Background and Literature Review

Although the research on esports is promising, much work remains (Pedraza-Ramirez et al., 2020). The studies that do exist have been useful, as they provide a better understanding of esports. Himmelstein et al. (2017) highlight that esports offer similar opportunities as traditional sports. Even though esports is starting to gain recognition as a sport, it still lacks the status as a proper sport in many countries (Esports.net, 2020). This can impact a gamer's and esporter's ability to gain financial, instrumental, and emotional support (e.g., support from sport psychology consultants, dietitians, and physiotherapists). For example, in Sweden, as esports is not recognized as a sport, esporters and gamers are not able to

receive the support provided to athletes of traditional sports (Riksidrottsförbundet, 2019). Esporters and gamers could benefit from this support, as they face several potential challenges (e.g., DiFranciscoDonoghue et al., 2019; Emara et al., 2020; Pedraza-Ramirez et al., 2020). To name a few, esporters and gamers face burnout, cyberbullying, the impact of physical inactivity, including obesity, cardiovascular risks, however, more research is needed (Yin et al., 2020).

3. Methodology and Data Collection/Analysis

Knowledge has been gathered through a combination of the practical experience of creating educational projects regarding esports within the public sector, working as sport psychology consultants, and through studying the available literature on esports. This data has been discussed and analyzed both internally within the authors association and in the European Network of Young Specialists in Sport Psychology, to produce a better understanding of how general these challenges and possibilities are.

4. Main Results/Findings

The authors have found that esports holds several opportunities and challenges regarding health. For example, esports may positively impact people with disabilities, namely by offering the individuals a chance to find meaningfulness in sport, and thus improving their mental well-being. An example of a common challenge is the sedentary lifestyle, where gamers and esporters alike can spend multiple hours in front of the screen, which can lead to several negative health consequences.

5. Discussion & Practical Implications

During the symposium, both the opportunities and challenges which gamers and esporters face will be highlighted as well as how one may support and improve the conditions within a micro- and a macro level, will be discussed.

Participants

> **_Moderator Andres Ramos_**: Former esporter who had to prematurely terminate his career, due to overuse injury. Little by little, he had to rebuild himself and discover the wonders of the outside world. Today, Andres holds a 1-year master's degree in sport psychology and works alongside his friends to help improve gamers' conditions so that they may succeed online, as well as offline. Their goal is to help create a more professional and sustainable culture within esports whilst simultaneously offering support to gamers and their loved ones.

Panelist Joar Svensson: Even before Joar could walk, he had a Game Boy in his hands. Joar never reached a high-level, but he found comfort and friends through the games. When Joar got married this summer, his best man, and all groomsmen except one, were friends that he made online. Today he holds a 1-year master's degree in sport psychology and intends to become Sweden's first PhD's within esports. Joar wants to help increase the professional players' rate of improvement and longevity. By increasing the standard and general well-being of the elite players, he hopes that the player base will follow suit.

Panelist Raul Fuentes: Since being a young boy, Raul has loved doing sports and playing video games. Today, he holds a 1-year master's degree in sport psychology. His master thesis investigated tilt in esports. He currently works with applying the knowledge from his studies to esports. His goal is to optimize the performance of elite players while helping them cultivate a healthy and sustainable career. But he will not stop there. Raul also aims to help the next generation form healthy gaming habits from a young age and create a better gaming culture.

Panelist Dexter Wolffsohn: For most of Dexter's life, he has dreamt of adventure and the ability to immerse himself in new worlds. This was the reason as to why he fell in love with video games. Nowadays, he sails the Swedish west coast whilst working on his master's thesis in sports psychology. Alongside his adventures and studies, he also works with children dealing with various disabilities. Combining these three parts, he aims to illuminate how people with disabilities can benefit from participating in esport and gaming communities, so that they too may partake in these exciting new worlds.

Panelist Isak Regnér: Throughout Isak's life, sports and video games has always been a big part of his identity. Today, he works as a sport psychology practitioner, with one foot in esports, and the other within the traditional sports world. In his applied work, Isak found great inspiration in transferring practical and theoretical knowledge from traditional sports to the esports scene. Furthermore, while he is currently finishing his master's thesis in sport psychology, he, alongside his colleagues at AEP, work towards creating a more professional and sustainable culture within the esports community.

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Partners