JOURNAL OF INTERCOLLEGIATE SPORT

The Impact of Esports on the Habits, Health, and Wellness of the Collegiate Player

Julie Delello[1], Rochell McWhorter[1], Sangok Yoo[1], Paul Roberts[1], Beth Adele[2]

[1]University of Texas at Tyler
[2]Oklahoma City University

College students continue to invest a good deal of time in esports despite potential risks such as addiction, health impairment, and social isolation possibly outweighing the benefits of gameplay. This mixed-methods exploratory study examines the impact of esports on 38 collegiate gamers and gathers the students' motivations, gaming habits, and the effects of their engagement on academic performance, social interactions, and overall well-being. It reveals esports may be beneficial in the formation of friendships, reducing negative peer pressure, and enhancing social capital. Academic advantages are also prominent, with participants reporting improved skills relevant to their coursework, better grades, and an enhanced focus on academics due to the structured nature of esports. However, the study also addresses potential risks, including gaming toxicity, addiction, and adverse health effects like sleep deprivation and stress. Included are critical considerations and policy recommendations for campus esports programs as well as future research directions.

Keywords: Gaming, health, esports, students, risks, rewards, education, well-being

Introduction

College campuses across the United States are increasingly launching esports programs, which combine competitive gaming with the organizational structure of traditional sports. Esports can be defined as a "computer-mediated form of competitive gaming within a multiplayer environment" (Delello et al., 2021, p. 3). Similarly, the National Collegiate Athletic Association (NCAA) termed esports as "an institutional activity involving physical exertion with the purpose of competition versus other teams or individuals within a collegiate competition structure" (NCAA, 2019, para. 6).

According to the National Association of Collegiate Esports (NACE), there are over 300 fully accredited collegiate member schools, and more than 5,000 student-athletes involved in competitive esports gaming (NACE, 2024). Postell and Narayan (2024) reported that in 2023, there were approximately 167,000 students participating in collegiate gaming and esports clubs and 68% of esports programs now offer scholarships. In fact, from 2018-2019, approximately sixteen million dollars in esports scholarships and aid were offered to students from 200 colleges in the U.S. (Niedan, 2020). Additionally, students have an opportunity to be awarded lucrative prize money and even sponsorships for excelling in tournament play. For example, at the University of Texas at Dallas, members of the varsity esports team were awarded a "paid scholarship, priority class registration, customized esports jersey & uniform, student-athlete backpack, paid travel & hotel for competitions, and access to the esports practice room on campus" (University of Texas at Dallas, 2022, para. 2).

Esports gaming is highly competitive, and like other collegiate athletic programs, esports players dedicate extensive training hours preparing for competitions and collegiate esports teams are allowed to practice up to six hours per day (Nelius, 2019). The most competitive national championships in esports programs are part of either the NACE or the National Junior College Athletic Association (NACE, 2023; NJCAA, 2023). As member-managed associations, esports have official policy handbooks, constitutions, and sets of bylaws. Also, the Council for the Advancement of Standards in Higher Education (CAS) proposed to publish a set of esports standards providing support and supplementary best practices for collegiate gaming (Popke, 2022). While NACE provides some guidelines, many esports programs primarily adhere to rules established by the game publishers and developers, rather than a central governing body (Heidenreich et al., 2022) falling under the regulation of organizers, member-based organizations, and individual schools.

Purpose of the Study

The expanding participation of college students in esports introduces unique opportunities but also challenges affecting their overall well-being. There are growing concerns about addiction, health impairments, and social isolation juxtaposed against potential benefits like enhanced social connections, improved academic performance, and personal development (Delello et al., 2021). There is currently a shortage of existing literature in understanding both the positive and negative outcomes of esports participation, particularly with the collegiate player (Boyle et al., 2011; Delello et al., 2021; Kelly et al., 2021; Pereira et al., 2019; WHO, 2021). In fact, Brock (2023) noted that esports are multi-layered and multi-faceted and researchers should investigate "the complex ways natural and social factors interact" (p. 1). Reitman et al. (2019) further elaborated on the infancy of esports research and the unique opportunity it presents, stating, "researchers involved in the early work - and those introducing the space to unfamiliar fields - have an opportunity to shape its growth" (p. 12). Also, Kelly et al. (2021) indicated a research gap in understanding the social connection, self-esteem, and well-being of players, suggesting these areas require further exploration. This study seeks to address this gap by employing

an exploratory approach, aiming to better understand the varied impacts of esports participation on the health and wellness of collegiate players. Furthermore, the study will contribute to a more informed understanding of the role of esports in collegiate settings, guiding policy recommendations, and future research directions.

Literature Review

The Expansion of Esports

The pedigree of esports traces back to arcade-style games like Space Invaders and Pac-Man, which were made popular in the 1970s through the 1980s (Bányai et al., 2019; Pizzo et al., 2022). Gaming consoles like Atari allowed individuals to play games like Pong from the comfort of their home. In 1990, the Nintendo Challenge Championship (NCC), later renamed to Nintendo World Championships, a video game competition series, was held in 30 cities across the U.S. and Canada (see Moby Games, 2023). With the emergence of the internet, esports began and "the momentum that took esports was unimaginable because of the accessibility that everyone started to have" (Esports.net, 2023, para. 36). In the 2010s, The Washington Post named the era one of "esports adolescence" (Partin, 2020, para. 26); streaming began, and a 16-year-old won the Fortnite World Cup (Ashley, 2019). Twitch, founded in 2011 and owned by Amazon, has grown to be the largest streaming platform for video games, broadcasts of esports competitions, and content creation. Scholz (2019) reported the gaming and multiplayer video games played over the internet have further enhanced competitive gaming.

Advantages of Esports

The increase in competitive game playing has raised important questions as to the benefits for the health and well-being of its players. According to the World Health Organization (WHO), "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1948, p. 100). However, throughout time, there have been differing interpretations of what the term health means. In fact, some interpret the definition of "complete health" to be broader in scope encompassing features of physical, mental, and social well-being or overall "holistic health" (Schramme, 2023, p. 210).

A systematic review done by Pallavicini et al. (2018) provided some evidence that video games may improve the cognitive and emotional skills in healthy adults. These skills included processing and reaction times , memory, task-switching/multitasking, and mental spatial rotation showed the most promise in young adults. In another landmark study using players' actual play behavior over self-reported measures, researchers discovered a notable connection between gaming time and well-being reporting how much players enjoyed the games they played, and their sense of competence (Johannes et al., 2021). Also, players' social connection mattered more for their well-being over the hours spent playing (Johannes et al., 2021). Similarly, Delello et al. (2021) reported that esports facilitated student autonomy and competence, while promoting social connectedness with others.

Higher education institutions that "incorporate esports into their curriculum are seeing unexpected added benefits, such as heightened recruiting and retention rates" (Andrews & Crawford, 2021, p. 150). Esports may give students a sense of satisfaction, motivation, and an overall feeling of happiness when performing well (see Buzzelli & Draper, 2021). Furthermore, research has indicated that playing esports supports science, technology, engineering, and mathematics (STEM) education along with social-emotional learning (Williams, 2020). Additionally, esports may support diversity, inclusion, and access to cutting-edge technologies that many students might not have access to on their own (AbleGamers Charity, 2023). Recreational gaming in higher education offers opportunities for student development such as team building and leadership experiences (Delello et al., 2021; Falkenthal & Byrne, 2021).

Risks to Esports Players

Esports researchers have expressed concerns about the risks to players including how their habits may affect both their physical and mental health. According to Freeman and Wohn (2019), esports teamwork requires quick decision-making skills and response rates in a highly competitive, stressful, and intense virtual environment. Madden and Harteveld (2021) mentioned health concerns for esports players such as inactivity, pain, and psychological wellness. Anxiety, depression, stress and sleep issues are growing concerns for esports players engaged in frequent gaming (Lee et al., 2021; Monteiro Pereira et al., 2022; Schary et al., 2022). For example, Cooper Smith, a 16-year-old Texas teenager, and his 19-year-old gaming colleague won a million dollars in prize money at the Fortnite Global Championship 2023 in Copenhagen. However, this achievement did not come easily. In fact, Smith stated, "I put in a lot of preparation. I mean, I was playing like six to eight hours a day [and] watching others" (in Stark, 2023, para. 3). Additionally, health habits such as nutrition can be worrisome both from a health standpoint but also in gaming performance as some studies have found gameplay increases obesity (see Kracht et al., 2020). Sabou (2020) advocated for good nutrition for esports players noting how diet should be a priority since it improves body composition and increases players' energy levels to promote quality training.

There is also an increase in health matters for esports due to poor posture and their inherent sedentary nature (Haupt et al., 2021). For example, a recent study documented players wearing compression socks to reduce water retention in their legs during gaming (Schmidt et al., 2022). Additionally, concerns have been raised about players' poor posture which can lead to headaches and neck pain (Gugliotti, 2018; Zimmer et al., 2022) and musculoskeletal injuries are also possible (Jung et al., 2016; Lam et al. 2022). Further, players may develop "metabolic disturbances resulting from light-emitting diode computer monitors as well as mental health concerns regarding gaming addiction and social behavior disorders" (Haupt et al, 2021, p. 37). Experts have noted the stressors of esports and traditional athletes can be compared (Smith et al., 2019) due to similar cortisol levels achieved (Block & Haack, 2021; Haupt et al., 2021).

Further, cognitive enhancing substances ("doping") have come to light as some gamers want to improve their concentrated focus on gaming to stay awake for longer periods during matches and tournaments (Schöber & Stadtmann, 2022). Cognitive enhancing substances include caffeine (i.e., coffee, energy drinks; see Sainz et al., 2020), nicotine (Trotter et al., 2020), and cognitive stimulants such as Ritalin and Adderall (also referred to as "nootropics"; see Lopez Frias, 2022, p. 1) as well as illicit drugs while gaming (Škařupová et al., 2018). Further, Lopez Frias (2022) and Schubert et al. (2022) reported cognitive stimulants "pose the largest issue to be addressed by anti-doping policy" (Schubert et al., 2022, para. 4) that has yet to be written and codified.

Varzeas (2023) also studied esports student-athletes and identified mental health and wellness challenges (i.e., gambling, stress, cognitive fatigue, video game addiction) and offered advice and resources to support player wellness. Also, the WHO included gaming disorders in the 11th revision of the International Classification of Diseases (ICD). A gaming disorder "is characterized by the inability to control an obsession with video gaming, leading to significant impairment in personal, family, social, educational, or occupational functioning (Newport Academy, 2018, para. 2). In fact, mental health issues such as internet gaming disorders were added to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) in 2013 as a condition for further research (APA, 2013).

Further research on esports has illustrated a lack of inclusion may occur on some campuses further affecting the mental health and well-being of its players. For example, Taylor (2017) reported that toxicity exists in esports, especially towards female, Hispanic, and African American players. Additional research revealed that toxicity is not isolated to a particular game or community but rather exists across online gaming groups. And, although the gaming industry has highlighted its drive to be more inclusive, there is still a sense of hypermasculinity within games that systemically minimizes or oppresses females (Hayday & Collison, 2020) and players who are gay, bisexual, lesbian, or transgender (Biscop et al., 2019; Latal, 2022). Data from the NACE (2022) revealed women constitute only 8.2% of college esports players, underscoring the significant underrepresentation of female gamers. This disparity emphasizes the urgent need for enhanced inclusivity and support for women in the collegiate esports' community.

Theoretical Framework

This research employs Ryan and Deci's (2017) Self-Determination Theory (SDT) as a lens to examine esports players' intrinsic and extrinsic motivations. The SDT framework suggests behaviors aimed at achieving goals are motivated by three fundamental psychological needs inherent in all individuals: autonomy (the desire for a sense of personal control over actions), competence (the urge to achieve desired results and feel proficient), and relatedness (the need to establish connections with others; Wang et al., 2019).

Prior research has demonstrated that gaming has the potential to satisfy the three basic psychological needs purported by SDT (Sheldon & Filak, 2008). For example, research by Alexiou and Schippers (2018) highlighted the critical role of *autonomy* in player engagement, showing that games offering more personalized choices and self-expression led to higher levels of intrinsic motivation. *Competence* involves mastering game mechanics, understanding strategies, and consistently performing well. Players are attracted to activities that benefit them and will satisfy their needs (i.e., feeling skilled and competent). For example, Hulaj et al. (2020) reported a sense of competence occurs when an individual can "learn new things", "get new ideas", and "feel confident" (pp. 4–5). Furthermore, work by Villani et al. (2018) and Pizzo et al. (2022) on the *relatedness* aspect of SDT underscores the importance of community and social interaction in esports, suggesting that platforms facilitating positive social interactions can significantly enhance players' psychological well-being. Likewise, Przybylski et al. (2010) noted gaming can satisfy players' fundamental needs and contribute to their motivation and psychological well-being. The fulfillment of the relatedness requirement occurs when an individual feels a sense of belonging and forms close connections with others (Deci & Ryan, 2000).

As esports continues to expand on many college campuses, it becomes increasingly important to understand both the benefits and risks to players. According to Greater Texas Esports (2023), despite existing risks, the business of esports will continue to flourish and "the ones connected to health and mental well-being are among the largest—specifically, the well-being of esports competitors in professional competitions" (para. 19). However, there is still a dearth of research on the demands of esports training and its potential risks to players (Delello et al., 2021, Pereira et al., 2019). Boyle et al. (2011) emphasized that while esports may offer health benefits, these are not always evident, necessitating further investigation into the well-being impacts of gaming (Kelly et al., 2021). In fact, the WHO reported only 10% of research papers demonstrate the potential for video gaming to improve health behaviors (WHO, 2021). Also, the extent of effort a student gives to outside physical activity (Giakoni-Ramírez, et al., 2022), maintaining their academic standing, or the amount of time they invest in esports gaming remains unclear (Lo, 2023). Hence, this study aims to explore the perceived benefits and risks of playing esports, as well as the impact of such gaming on the health and wellness of the collegiate player. Specifically, the research questions for this study included:

RQ1. What are the **gaming habits** of collegiate esports players?
RQ2. How do esports impact the **health and wellness** of the players?
RQ3. What are the **benefits** for college students playing esports?
RQ4. What are the **risks** associated with college students playing esports?

Research Methodology

The research methodology was based on a mixed-methods approach at two four-year universities. Mixed-methods research supports the use of a combination of quantitative and qualitative approaches, which yield both "statistics and stories" (Patton, 2015, p. 15). This approach, which may contain both fixed and open-ended

questions, allows for an examination of the different facets of a phenomenon and supports a greater comprehensive understanding of the data (Greene et al., 1989).

In this study, an anonymous, online Qualtrics questionnaire utilized both open and closed questions and targeted two collegiate esports teams of students aged 18 and over. Both teams are from the southwestern part of the United States, one is an NCAA Division II school, and the other is a National Association of Intercollegiate Athletics (NAIA) school. Five of the survey questions examined the demographics of age, gender, ethnicity, college classification, and college major. Also, the survey included six multiple-choice and four open-ended questions determining students' gaming habits, the health and wellness of the players, and the personal and academic benefits and risks of playing esports. The open-ended questions allowed the participants to "voice" their perceptions and offered additional insights related to the closed questions. For recruitment purposes, an email was sent to the collegiate esports directors who forwarded the information to the players, which described the research study. The research study (IRB #Sp2020-03) was approved by the Institutional Review Board at the researchers' university.

Data Analysis

For purposes of this exploratory study, the analyses were focused on examining the habits and the health and wellness of competitive collegiate esports players. Both the perceived benefits and risks to college students who play esports were investigated. The data analysis proceeded in two directions: statistical analyses and an additional exploration of the qualitative responses.

Quantitative data analysis was conducted using Excel and R, focusing on descriptive statistics and frequency distributions. Open-ended survey questions were analyzed to further illuminate the story told through the quantitative data. Multiple sources of data (for triangulation) were utilized in this study. The open-ended questions in the survey were systematically and independently analyzed and then compared by the research team creating trustworthiness of the data (see Merriam & Tisdell, 2016) resulting in an integrated mixed design.

Results

Participant Demographics

Thirty-eight of the universities' competitive esports gamers (32 male, 6 female) completed the survey. The participants ranged in age from 18-34 years of age, with an age average of 20.45 years. Of those, 27 were White (71.1%), four were Hispanic (10.5%), four were Black (10.5%), and three were Asian (7.9%). Students represented a variety of majors from business management, nursing, psychology, and economics to computer science. Eleven (28.9%) of the students were freshmen, 11 (28.9%) were sophomores, seven (18.4%) were juniors, seven were seniors (18.4%), and graduate (5.3%) were in graduate school. On a four-point scale, the average grade point average (GPA) of the students was 3.45.

RQ1. What are the Gaming Habits of Collegiate Esports Players?

Amount of Time

In terms of game play, *time* and *responsibilities* resonated. On average, students reported watching esports 2.22 hours per day, playing 2.97 hours per day, and competing 2.34 hours per day. For example, some students conveyed they could not play too much as in the following response: "I can never play too much" while others noted game play was too much when it impacted their "other *responsibilities*/ jobs in life" or affected their "studies and personal life" or "I dedicate every day to playing. Too much [is when you] can't take of yourself, your responsibilities, when it [gaming] takes over, it is too much." One student even reported gameplay "can be as long as 12 hours max."

Students reported they played on "weekends when they had nothing to do (homework, study, clean room) so 8-12 hours per weekend." And another student noted they play "almost every day except weekends—4 to 5 hours on average" while a third indicated: "Yes, one hour if busy, up to 12 hours in one session… More hours for tournament, i.e., Smash Brothers lasts more than 12 hours…I average about 4 hrs./day."

Game Habits

Students watched, played, and competed more at home than in the esports lab on campus or at a friend's home. Students played League of Legends (LoL, n = 11, 25%), Overwatch (n = 12, 31%), Fortnite (n = 5, 16%), Call of Duty (n = 3, 9%), Madden 21 (n = 1, 3%), or other games (23, 61%). Table 1 presents the frequency of games watched, played, and competed in major tournaments. Students described other games watched, played, or competed in including Smash Brothers Ultimate, Valorant, Rocket League, Dead by Daylight, StarCraft 2, and Apex Legends.

Table 1

Games Watched, Played, and Competed In

Game	Watched		Played		Competed In	
	n	%	n	%	n	%
LoL	15	43.8	11	25.0	5	12.5%
Overwatch	16	40.6	12	31.3	8	25.0%
Fortnite	6	18.8	5	15.6	0	0%
Call of Duty	6	18.8	3	9.4	0	0%
Madden 21	5	15.6	1	3.1	0	0%
Others	24	63.2	23	60.5	12	31.6%

Note. LoL = League of Legends

Gaming Devices

Survey results indicated that most of the time, players primarily played esports on a desktop computer (n = 24, 63.2%), followed by console (n = 7, 18.4%), laptop

(n = 5, 13.2%), and smartphone (n = 2, 5.3%). Additionally, in our sample, students played at home or apartment (n = 30, 78.9%), on campus (n = 26, 68.4%), friend's home (n = 10, 26.3%), and others (n = 1, 2.9%).

Spending Behaviors

Furthermore, when the students were asked if they used real-world money to purchase gaming items, most students reported spending an average amount of money on cosmetic items (i.e. skins, emotes, clothing) (n = 26, 68.4%). Following cosmetic items, students reported they spent money on tournament fees (n = 8, 21.1%), loot boxes (n = 8, 21.1%), coins (n = 6, 15.8%), betting (n = 5, 13.2%), functional weapons (n = 4, 10.5%), upgrades (n = 4, 10.5%), and other (n = 2, 5.3%) such as "game passes"; five students (13.2%) answered indicating they have not purchased anything. In contrast, some students reported spending up to $300 on cosmetic items, $10-20 dollars on tournament fees, $10-20 a month on loot boxes, $250 on upgrades, "several hundred dollars" on coins, and $250 on functional weapons. One student remarked, "Maybe $50 a month. These coins can be used to purchase bundles, loot boxes, cosmetics, and battle passes."

RQ2. How do Esports Impact the Health and Wellness of the Players?

When students were asked *whether participating in esports affected their health,* students reported health concerns mostly about reduced sleep (n = 12, 31.6%) and increased back, hand, and neck pain (n = 12, 31.6%), followed by a weight increase (n = 3, 7.9%). Mental health issues were also a concern, with four students (10.5%) experiencing heightened anxiety, and two (5.3%) reporting increased depression and suicidal thoughts. Notably, none of the respondents reported an increase in tobacco or vaping usage.

Exercise Routines

Among the students responding, 18 (47.4%) reported engaging in some form of exercise routine. However, when inquiring about participation in recreational or competitive sports, 20 students (52.6%) indicated they did not engage in such activities or found the question not applicable. Conversely, eight students (21.1%) mentioned their involvement in activities like being in a band, playing disc golf, tennis, softball, or participating in a soccer club. One student shared, "No, I did used to do recreational volleyball during college while being a gamer…"

RQ3. What are the Benefits for College Students Playing Esports?

Personal Benefits

All thirty-eight (100%) students in the study acknowledged personal benefits from participating in esports. The analysis of 37 open-ended responses revealed recurring and often overlapping themes of friendships, socialization, teambuilding, improvement of skills and health, inclusion, and an overall enjoyment. For instance, socialization through esports not only fostered friendships but also contributed to teambuilding and the improvement of various skills. For example, one student re-

ported that: "Personally video games make me happy. This is where I have made friendships, socialize with others that have the same interests as I do, and this is also where I have fun." Themes of health and inclusion were also reported as some students noted how esports had a positive influence on their mental health, provided an alternative to negative behaviors, and even supported a more inclusive environment for students (see Table 2).

Table 2
Personal Benefits of Esports

Themes	Selected Student Extracts
Friendships	"I've found a lot of friends" "It has helped me to make lifelong friends who share the same hobbies with me" "It also can be a great way to meet all kinds of different people and honestly make tons of friends. It can also be a big help with getting used with the fact that you won't like everyone around you, but you have to deal with them"
Socialization	"It is an awesome opportunity to socialize with other college students my and makes my time on campus more enjoyable" "Definitely huge benefits in communication, setting goals, social interaction" "I think it builds a great community within a school"
Teambuilding	"Regarding participating in eSports, being a part of a team and practicing together builds your own personal discipline as well as teaches you many things. It is similar to the benefit of working in group projects in school" "It can help people learn how to be a good team member and leader" "Help to feel like you are a part of a team" "Participating in eSports gives students like me a chance to participate in group activities. When playing video games, it's pretty common to sit alone and isolate yourself, but in eSports, it promotes team synergy, building, and socialization"
Skill Improvement	"It would let me meet new people and let me work at improving my skills within a hobby I like" "It helps develop my communication and confidence skills. As well as making long lasting relationships." "Improves quick processing ability in the mind multitasking skills from looking at mini-map and POV etc."
Health	"I have made many great friends in the eSports lab and have had a good time overall. Very positive for my mental health!" "Playing games growing up has also kept me from getting in the wrong crowd and making bad choices throughout my late teenage years. I am on the right path in my life and video games have contributed to me not giving in to peer pressure to do things that would steer me off the right path"

Inclusion	"Playing eSports builds a sense of community that regular sports can't cater to everyone due to health or medical problems" "It provides individuals that usually are hard to reach by traditional student engagement to get engaged while on campus"
Enjoyment	"It's just fun! It's nice to have an outlet where I can unwind, hang out with friends, and have fun" "It's fun, helps me relax and get my mind off of school for a while, helps me reconnect with friends I can't see face to face" "The satisfaction of winning against other players"

Academic Benefits

When students were asked whether esports had *academic benefits*, notably, 34 (89.5%) students reported "yes". Moreover, there were 37 open-ended responses given, with themes of skill/workforce development, grades/academic performance, health, friendships, and networking/making connections to others. Students elaborated on the academic benefits of playing esports (see Table 3). For example, within the theme of *Skill/Workforce Development*, a student noted they saw academic benefits of esports because "playing video games competitively builds more problem-solving skills, visual perception, and builds individuality" that are essential for academic success. Within the theme of *Grades/Academic Performance*, one student remarked they are motivated to maintain good grades because they "need a good GPA to participate, so esports incentivizes good grades." An example for the theme of *Health* included a student who commented that they are replacing less healthy practices with esports: "The biggest benefit is that I, personally, spend my weekends playing video games rather than going out to party, smoke, get wasted (drunk beyond belief because people have no self-control), and do drugs."

Friendships was another theme that surfaced in this study. One student remarked that esports afforded them a pause from school and work and reported: "It [esports] provides a much-needed break from constant studying and going to work that allows me to talk to my friends when we have free time." The final theme of academic benefits and esports is termed *Networking/Connections*. A student disclosed the valuableness of networking with others as illustrated by their remark: "Gets you connections in college which leads you to meet people who will know resources on campus and know people who can help you."

Table 3
Academic Benefits of Esports

Name of Theme	Selected Student Extracts
Skill/Workforce Development	"Can promote students to think critically in fast changing environments" "Learning and adapting to different environments and working well within a team" "Increased reflexes and improved memory" "Playing video games competitively builds more problem-solving skills, visual perception, and builds individuality" "Time and Resource Management, Critical Thinking" "Playing video games competitively builds more problem-solving skills, visual perception, and builds individuality" "Encourages me and makes me excited to go to campus. Also, allows me to learn about software and hardware mechanics from the computers as well as other participants. Helps teach me about game design and mechanics as well as video broadcasting and editing." "Yes, much easier to work with a team on projects, specifically to my major I feel more equipped to lead film sets and teams based on my experiences in leadership from the esports program"
Grades/Academic Performance	"Esports means competitive so "no pass no play." As well as being in a "nerdier" community so they can probably get study help from friends!" "No pass no play is a good incentive to keep my grades up" "When you lose you decide to cool off by focusing on your schoolwork more. It also gives some people an incentive to pass their classes, as failing classes can sometimes prevent competing" "Need a good GPA to participate so esports incentivizes good grades" "When my grades are better I usually play a lot better"
Health	"Esports provides an outlet to destress during and after the school week ends" "Video games in general have been proven in the past to improve motor skills, critical thinking, and comprehension. They are even used to treat illnesses" "As long as it is not in an unhealthy fashion, eSports can boost one's concentration and discipline depending on the game the athlete specializes in" "The biggest benefit is that I, personally, spend my weekends playing video games rather than going out to party, smoke, get wasted (drunk beyond belief because people have no self-control), and do drugs. I play video games, do my homework, then go to school. I focus much more on my academics as a result of this"

Friendships	"My free time is not being spent partying, clubbing, etc. My friends that I have made through video games encourage me to do well in school and to get my homework done each night. I know several people who are in fraternities, for example, and they struggle to pass classes because oftentimes they're going out with friends each night. Meanwhile, I make the President's list each semester. (Straight A's)" "It provides a much-needed break from constant studying and going to work that allows me to talk to my friends when we have free time"
Networking/ Connections	"Gets you connections in college which leads you to meet people who will know resources on campus and know people who can help you" "People I meet could be in the same class and I could make study groups with them"

Nonetheless, for some of the students, no significant association between academics and gaming was reported. For example, one student wrote, "Personally, no. More time commitment to esports means less time commitment to my schoolwork. But I have and always have had good grades."

RQ4. What are the Risks Associated with College Students Playing Esports?

In terms of *risks* to playing esports, students were evenly divided with 19 (50%) stating there were risks and 19 (50.0%) stating there were no risks. Twenty-one students (55.3%) also described such risks while 15 responses (39.5%) suggested in open-ended responses why there were no risks to playing esports. Themes of physical and mental health issues, impact on academic performance, sleep disruptions, work-life balance issues, and self-regulation of play were emphasized. For example, one student noted, "There are for sure risks. Some can include bad sleeping habits, too much stress, an imbalance between playing and school, and too much focus on the game which can impact social life." Conversely, several other students stated, "there are no risks" and even queried in their response, "How could there be any danger?"

Physical Health Risks

Some of the students expressed concerns about physical health risks linked to esports. These concerns ranged from potential hand injuries to the consequences of prolonged sitting. One student highlighted, "Some risks may include damaging hands due to not practicing proper stretching habits..." Meanwhile, another student pointed out wider issues related to gaming posture: "If not sitting properly, there are some issues that could arise like hand cramping, back aches, and neck issues." Yet, other students pointed out esports, being non-physical and lacking physical contact, pose fewer risks compared to traditional sports as noted in the following sentiment: "Because it for the most part does not involve physical contact such as a sport would." Another student suggested, "Video games are fun, not life threatening."

Mental Health Concerns

Mental risks emerged as significant themes, with students highlighting risks such as stress, addiction, a lack of sleep, and the psychological impact of competitive gaming (Varzeas, 2023) As one student put it, "I believe esports carries similar risks as any physical sport can also have. In this case, most of the risk happens mentally for the athlete." The potential for toxic and obsessive behavior was also noted, with a student stating, "It can easily become toxic or obsessive. Lack of communication and respect can crumble teams in an instant." Another student added, "some people can't take it at all. Some people have bad mental states that makes the game not fun, and everyone needs to have time off games doing other things as well as personal time."

Sleep disruption and difficulties in maintaining a healthy life balance were also noted. For example, one student suggested, "Some people do tend to mess up their sleep schedule or gain a bit of stress from competing but providing classes for mental health will help combat that." Another student countered, "Unless you have an unhealthy habit then I feel there is not a risk to being in esports."

Impact on Academic Performance

The risk of esports negatively impacting academic performance was a concern for some students. One respondent candidly expressed, "I may end up neglecting my academics in favor of participating more in esports, which could hurt my GPA and endanger my scholarship."

Self-Regulation

Several students pointed out the challenges of self-regulation in gaming, acknowledging the difficulty in maintaining moderation. One student remarked, "Like anything, without moderation, it can become an unhealthy addiction" Another student stated,

> Often, I think that without proper structure and discipline it's harder to judge how much you are putting into esports mentally and physically. Traditional sports have an organic indicator…your body will feel very tired, so you stop. In esports that indicator is harder to activate, and so players can tend to overdo it.

One student reported there were no risks to playing esports but then suggested that "the only potential risk comes from overplaying the games which is more of a matter of self-control rather than the game being dangerous or unhealthy."

Discussion

Our study revealed both benefits and risks associated with competitive esports gameplay, drawing on SDT, which posits motivation is based on "the different reasons or goals one has that give rise to action" (Ryan & Deci, 2000, p. 55). In our research, students reported academic benefits associated with esports, specifically, motivating them to go to school and complete coursework. Despite spending sig-

nificant hours on gaming practice, overall, students reported having a grade point average of B, with some even reporting being on the President's list. However, some students expressed the need for strategies to balance academics with gaming time.

The need for competence is represented in one's mastering a task, improvement of skills, and ultimately feeling accomplished (Deci & Ryan, 1985). In this study, most students conveyed wanting to improve the skill level of their game performance, and some students had professional ambitions in the gaming industry after graduation. Collegiate esports also allow students to have autonomy in game selection and play, aligning with the SDT (Ryan & Deci, 2000) notion that activities pursued for personal interest or value foster high autonomy. Similarly, Qian et al. (2019) reported improvement in gaming knowledge and skills led to a feeling of accomplishment and overall competence in play. In this study, one student emphasized their continued motivation to play games "even if there weren't any scholarships."

Our analyses suggest esports provide opportunities for building friendships and reducing negative peer pressure (i.e., parties, clubbing, making poor choices). Similar to findings by other researchers (see Trepte et al., 2012), gaming provides a space to build social capital, enhancing social connectedness, and fostering inclusivity (Giummarra et al., 2007; Kaczmarek et al., 2017). Social motivation may be more relevant to gaming than health, immersion, or even achievement motivation highlighting the value of human relationships (Kaczmarek et al., 2017). For example, Giummarra et al. (2007) noted:

> Social health is dependent on social connectedness as well as the extent to which communities value diversity, are supportive and inclusive, and provide opportunities for each person to participate in community life, as well as the number and quality of social supports and relationships that a person maintains (p. 643).

Drawing on the psychological needs of SDT, esports players in this study emphasized the campus lab environment and their teammates affected their overall motivation to play, affecting their experiences of social relatedness. Furthermore, students desired to feel competent and successful while interacting with the online gaming world. However, for some students, feelings of exclusion as gender toxicity resonated from some of the gamers. Also, a negative relationship might be drawn from the betting and the purchasing of loot boxes noted in this study, which are both associated with gambling addictions (see Zendle, 2018). Some studies have even suggested this behavior may influence players' competence, autonomy, and relatedness (Lemmons, 2022) while furthering a gaming disorder. Close and Lloyd (2021) explained the reasons behind game-related motivations are varied, encompassing social aspects like achieving status and acceptance or being part of a group, as well as game-centric motives like enhancing performance, the visual appeal, or the overall gaming experience (see p. 2).

Despite the benefits of esports, some students experienced risks such as sleep deprivation and stress, resulting in an imbalance in life due to excessive gaming. For example, about one-third of the students reported sleeping less. Perhaps, that is

because some students in our study watched, played, or competed up to five hours a day, more than the four hours per day recognized by the NCAA (2019). Also, less than half of the students (47%) reported a regular exercise routine.

As esports becomes increasingly prevalent on college campuses, establishing policies focused on health, academic success, and positive gameplay becomes crucial, along with fostering awareness of player habits. To support collegiate gamers effectively, institutions might add resources such as mental health counselors, nutritionists, and sports medicine physicians. Incorporating self-regulation strategies is also vital, thus equipping students with the tools needed to manage their time, stress, and gaming habits healthily. Additionally, to attract and maintain students interested in esports, universities could offer courses in game design and programming, create dedicated spaces for gameplay and collaboration, establish scholarships, and promote the program as an integral part of the campus community.

Limitations

Our study has limitations that warrant consideration. First, the study had a small sample size (n=38), and its findings are not generalizable to all college esports players, given our focus on esports programs from only two universities. Moreover, the voluntary nature of responses and reliance on students' perceptions may have constrained the robustness of our data. Future research should explore the characteristics of esports players in greater detail to better understand how esports affects the players themselves and its implications for higher education institutions. This includes investigating differences among gender, student habits such as the time-of-day games are played, gaming addiction, amateurism, and additional health considerations not mentioned in this study. Also, an exploration of institutional best practices regarding policy generation and implementation of esports programs would be valuable.

Disclosure statement

The authors declare no potential conflicts of interest.

References

AbleGamers Charity (2023, January 10). *How has accessibility increase*d? The Able Gamers Foundation. https://ablegamers.org/how-has-accessibility-increased/

Alexiou, A., & Schippers, M. C. (2018). Digital game elements, user experience and learning: A conceptual framework. *Education and Information Technologies, 23*, 2545–2567. https://doi.org/10.1007/s106

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders, 5th Edition (DSM-5).* Washington, DC: American Psychiatric Association Publishing. https://dsm.psychiatryonline.org/doi/book/10.1176/appi.books.9780890425596

Andrews, S. K., Michael, T. B., Williams, M. A., Lacher, L. L., & Crawford, C. M. (2021). Impact of eSports upon higher education from a faculty perspective: Transformational pathways and opportunities. In S. Andrews & C. M. Crawford

(Eds.), *Handbook of Research on Pathways and Opportunities into the Business of Esports* (pp. 149-178). IGI Global. https://doi.org/10.4018/978-1-7998-7300-6.ch008

Ashley, J. (2019, July 19). *16-year-old Bugha wins Fortnite world cup*. Esports News Fortnite. https://www.esports.net/news/fortnite/bugha-wins-fortnite-world-cup/

Bányai, F., Griffiths, M.D., Király, O., & Demetrovics, Z. (2019). The psychology of esports: A systematic literature review. *Journal of Gambling Studies, 35*(2), 351–365. https://doi.org/10.1007/s10899-018-9763-1

Biscop, K., Malliet, S., & Dhoest, A. (2019). Subversive ludic performance: An analysis of gender and sexuality performance in digital games. *DiGeSt. Journal of Diversity and Gender Studies, 6*(2), 23–42. https://doi.org/10.11116/digest.6.2.2

Block, S., & Haack, F. (2021). eSports: A new industry. In *SHS Web of Conferences, 92*. EDP Sciences. https://doi.org/10.1051/shsconf/20219204002

Brock, T. (2023). Ontology and interdisciplinary research in esports. *Sport, Ethics and Philosophy,* 1-17. https://doi.org/10.1080/17511321.2023.2260567

Boyle, E., Connolly, T. M., & Hainey, T. (2011). The role of psychology in understanding the impact of computer games. *Entertainment Computing, 2*(2), 69–74. https://doi.org/10.1016/j.entcom.2010.12.002

Buzzelli, A., & Draper, J. (2021). Are they athletes? A self-assessment of athletic identity measurement and perceived benefits of collegiate esports participants. *Recreational Sports Journal, 45*(2), 117–130. https://doi.org/10.1177/15588661211033252

Close, J., & Lloyd, J. (2021, April 21). *Lifting the lid on loot-boxes: Chance-based purchases in video games and the convergence of gaming and gambling. GambleAware*. https://www.begambleaware.org/sites/default/files/2021-03/Gaming_and_Gambling_Report_Final.pdf

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* Plenum Press. https://doi.org/10.1007/978-1-4899-2271-7

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry,11*(4), 227–268.

Delello, J. A., McWhorter, R. R., Roberts, P., Dockery, H. S, De Giuseppe, T., & Corona, F. (2021). The rise of esports: Insights into the perceived benefits and risks for college students. *International Journal of eSports Research*, 1(1), 1-19. https://doi.org/10.4018/IJER.20210101.oa5

Esports.net. (2023). *Esports history: When it all began (Origin of competitive games).* https://www.esports.net/wiki/esports-history/

Falkenthal, E., & Byrne, A. M. (2021). Distributed leadership in collegiate esports. *Simulation & Gaming, 52*(2), 185-203. https://doi.org/10.1177/1046878120958750

Freeman, G, & Whon, D. Y. (2019). Understanding esports team formation and coordination. *Computer Supported Cooperative Work, 28*, 95–126. https://doi.org/10.1007/s10606-017-9299-4

Giakoni-Ramírez, F., Merellano-Navarro, E., & Duclos-Bastías, D. (2022). Professional esports players: Motivation and physical activity levels. *International*

Journal of Environmental Research and Public Health, 19(4), 2256. https://doi.org/10.3390/ijerph19042256

Giummarra, M. J., Haralambous, B., Moore, K., & Nankervis, J. (2007). The concept of health in older age: Views of older people and health professionals. *Australian Health Review, 31,* 642-650. https://doi.org/10.1071/ah070642

Greater Texas Esports (2023, March 11). *Is esports really a sport?* https://greatertexasesports.com/2023/03/11/is-esports-really-a-sport/

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis, 11*(3), 255–274. https://doi.org/10.2307/1163620

Gugliotti, M. (2018). Contribution of aberrant postures to neck pain and headaches in eSport athletes. *Research & Investigations in Sports Medicine, 3*(1), 202-203. https://doi.org/10.31031/RISM.2018.03.000554

Haupt, S., Wolf, A., Heidenreich, H., & Schmidt, W. (2021). Energy expenditure during eSports: A case report. *German Journal of Sports Medicine, 72*, 36-40. https://doi:10.5960/dzsm.2020.463

Hayday, E.J., & Collison, H. (2020). Exploring the contested notion of social inclusion and gender inclusivity within esport spaces. *Social Inclusion, 8*, 197-208. https://doi:10.17645/si.v8i3.2755

Heidenreich, H., Brandt, C., Dickson, G., & Kurscheidt, M. (2022). Esports associations and the pursuit of legitimacy: Evidence from Germany. *Frontiers in Sports and Active Living, 4*. [Article 869151]. https://doi.org/10.3389/fspor.2022.869151

Hulaj, R., Nyström, M. B. T., Sörman, D. E., Backlund, C., Röhlcke, S., & Jonsson, B. (2020). A motivational model explaining performance in video games. *Frontiers in Psychology, 11*. https://doi.org/10.3389/fpsyg.2020.01510

Johannes, N., Vuorre, M., & Przybylski, A. K. (2021). Video game play is positively correlated with well-being. *Royal Society Open Science, 8*, 202049, 1-14. https://doi.org/10.1098/rsos.202049

Jung, S. I., Lee, N. K., Kang, K. W., Kim, K., & Lee, D. Y. (2016). The effect of smartphone usage time on posture and respiratory function. *Journal of Physical Therapy Science, 28*(1), 186–189. https://doi.org/10.1589/jpts.28.186

Kelly, S., & Leung. J. (2021). The new frontier of esports and gaming: A scoping meta-review of health impacts and research agenda. *Frontiers in Sports and Active Learning, 3,* 1-10. https://doi.org/10.3389/fspor.2021.640362

Knight, B. (2022, May 6). *The most valuable esports companies 2022*. https://www.forbes.com/sites/brettknight/2022/05/06/the-most-valuable-esports-companies-2022/?sh=570d9b4f599f

Kracht, C. L., Joseph, E. D., & Staiano, A. E. (2020). Video games, obesity, and children. *Current obesity reports, 9*(1), 1–14. https://doi.org/10.1007/s13679-020-00368-z

Lam, W.-K., Chen, B., Liu, R.-T., Cheung, J. C.-W., & Wong, D. W.C. (2022). Spine posture, mobility, and stability of top mobile esports athletes: A case series. *Biology, 11*(5), 737. https://doi.org/10.3390/biology11050737

Látal, M. (2022). LGBTQ+ representation in video games through the eyes of the queer community. *Iluminace, 34*(3), 139-163.

Lee, S., Bonnar, D., Roane, B., Gradisar, M., Dunican, I. C., Lastella, M., Maisey, G., & Suh, S. (2021). Sleep characteristics and mood of professional esports athletes: A multi-national study. *International Journal of Environmental Research and Public Health, 18*, 664. https://doi.org/10.3390/ijerph18020664

Lopez Frias, F. J. (2022). The "big red bull' in the esports room: Anti-doping, esports, and energy drinks. *Performance Enhancement & Health, 10*(1), 100205. https://doi.org/10.1016/j.peh.2021.100216

Madden, D., & Harteveld, C. (2021, May 8– 13). *Constant pressure of having to perform: Exploring player health concerns in esports* [Paper presentation]. Conference on Human Factors in Computing Systems, Yokohama, Japan. https://doi.org/10.1145/3411764.3445733

Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation (4th ed.).* Jossey-Bass.

Moby Games. (2023). *Nintendo world championships 1990.* https://www.mobygames.com/game/19186/nintendo-world-championships-1990/credits/nes/?autoplatform=true

Monteiro Pereira, A., Costa, J. A., Verhagen, E., Figueiredo, P. &, Brito, J. (2022). Associations between esports participation and health: A scoping review. *Sports Medicine, 52*, 2039–2060. https://doi.org/10.1007/s40279-022-01684-1

National Collegiate Athletic Association. (2019). *Emerging sports for women process guide.* https://www.ncaa.org/about/resources/inclusion/ncaa-emerging-sports-women-process-guide

National Association of Collegiate Esports (2024). *About*. https://nacesports.org/about/

National Junior College Athletic Association (2019, September 9). *NJCAA announces creation of NJCAA esports.* https://www.njcaa.org/general/2019-20/releases/20190909g3cocu

Neidan, C. (2020, February 14). *As esports booms, so do scholarship opportunities: Student gamers have more access to money for college than ever before*. The Elective. College Board. https://elective.collegeboard.org/esports-booms-so-do-scholarship-opportunities

Nelius, J. (2019, September 30). *What it's like to go to college on an esports scholarship.* https://www.pcgamer.com/what-its-like-to-go-to-college-on-an-esports-scholarship/

Newport Academy (2018, June 22). *"Gaming disorder" is a mental health condition.* https://www.newportacademy.com/resources/mental-health/gaming-disorder/

NewZoo (2022). *Newzoo's global esports & live streaming market report 2022.* https://newzoo.com/resources/trend-reports/newzoo-global-esports-live-streaming-market-report-2022-free-version

Pallavicini, F., Ferrari, A. &, Mantovani, F. (2018) Video games for well-being: A systematic review on the application of computer games for cognitive and emotional training in the adult population. *Frontiers in Psychology*, *9*, 2127. https://www.frontiersin.org/articles/10.3389/fpsyg.2018.02127/full

Partin, W. (2020, January 28). *The 2010s were a banner decade for big money and tech — and esports reaped the rewards.* The Washington Post. https://www.washingtonpost.com/video-games/esports/2020/01/28/2010s-were-banner-decade-big-money-tech-esports-reaped-rewards/

Pereira, A. M., Brito, J., Figueiredo, P., & Verhagen, E. (2019). Virtual sports deserve real sports medical attention. *BMJ Open Sport & Exercise Medicine*, *5*(1), e000606. https://doi.org/10.1136/bmjsem-2019-000606

Pizzo, A. D, Su, Y., Scholz, T., Baker, B. J., Hamari, J., & Ndanga, L. (2022). Esports scholarship review: Synthesis, contributions, and future research. *Journal of Sport Management*, *36*(3), 228-239. https://doi.org/10.1123/jsm.2021-0228

Popke, M. (2022). *New standards implemented for on-campus esports programs*. Athletic Business. https://www.athleticbusiness.com/facilities/rec-center/article/15301571/new-standards-implemented-for-oncampus-esports-programs

Postell, C., & Narayan, K. (2024). *Trends in collegiate esports report lite*. Esports Foundry, 4. https://esportsfoundry.com/Trends-in-Collegiate-Esports.html

Przybylski, A. K., Rigby, C. S., & Ryan, R. M. (2010). A motivational model of video game engagement. *Review of General Psychology, 14*, 154-166. http://dx.doi.org/10.1037/a0019440

Qian, T. Y., Wang, J. J., Zhang, J. J., & Lu, L. Z. (2020). It is in the game: Dimensions of esports online spectator motivation and development of a scale. *European Sport Management Quarterly, 20*(4), 455-474. https://doi.org/10.1080/16184742.2019.1630464

Reitman, J. G., Anderson-Coto, M. J., Wu, M., Lee, J. S., & Steinkuehler, C. (2020). Esports research: A literature review. *Games and Culture, 15*(1), 32-50. https://doi.org/10.1177/1555412019840892

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, *25*(1), 54-67. https://doi.org/10.1006/ceps.1999.1020

Ryan, R. M., & Deci, E. L. (2017). *Self-Determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Sabou, V. (2020, February 11). *The importance of nutrition for esports athletes*. https://www.adamasesports.gg/blogs/the-importance-of-nutrition-for-esports-athletes

Sainz, I., Collado-Mateo, D., & Del Coso, J. (2020). Effect of acute caffeine intake on hit accuracy and reaction time in professional e-sports players. *Physiology & Behavior, 224,* 1-6. https://doi.org/10.1016/j.physbeh.2020.113031

Schary, D. P., Jenny, S. E., & Koshy, A. (2022). Leveling up esports health: Current status and call to action. *International Journal of Esports, 1*(1). https://www.ijesports.org/article/70/html

Schmidt, S. C. E., Sell, S., & Woll, A. (2022). The use of compression stockings to reduce water retention in the legs during gaming and esports: Randomized controlled field study. *Interactive Journal of Medical Research, 11*(2), 1-14. https://www.i-jmr.org/2022/2/e25886

Schöber, T., & Stadtmann, G. (2022). The dark side of e-sports: An analysis of cheating, doping & match fixing activities and their countermeasures. *International Journal of Esports, 1*(1), 1-15. https://www.ijesports.org/article/98/html

Schramme, T. (2023). Health as complete well-being: The WHO definition and beyond. *Public Health Ethics, 16*(3), 210–218. https://doi.org/10.1093/phe/phad017

Schubert, M., Eing, F., & Könecke, T. (2022). Perceptions of professional esports players on performance-enhancing substances. *Performance Enhancement & Health, 10*(4)*,* 102236 https://doi.org/10.1016/j.peh.2022.100236

Sheldon, K. M., & Filak, V. (2008). Manipulating autonomy, competence, and relatedness support in a game-learning context: New evidence that all three needs matter. *British Journal of Social Psychology, 47*(2), 267–283. https://doi.org/10.1348/014466607X238797

Škařupová, K., Blinka, L., & Ťápal, A. (2018). Gaming under the influence: An exploratory study. *Journal of Behavioral Addictions, 7*(2), 493-498. https://doi.org/10.1556/2006.7.2018.27

Smith, M. J., Birch, P. D., & Bright, D. (2019). Identifying stressors and coping strategies of elite esports competitors. *International Journal of Gaming and Computer-Mediated Simulations, 11*(2), 22-39. http://doi.org/10.4018/IJGCMS.2019040102

Stark, S. (2023, October 17). *Local teen wins international Fortnite contest, splits $1 million with gaming partner.* KXAN News. https://www.kxan.com/news/local/round-rock/local-teen-wins-international-fortnite-contest-splits-1-million-with-gaming-partner/

Taylor, T. L. (2017). *On the fields, in the stands: The future of women in esports* [Keynote]. Presented at the UCI esports symposium, University of California, Irvine, May 19.

The University of Texas at Dallas (2022, May 31). *Varsity esports tryouts for 2022-2023.* https://esports.utdallas.edu/news/varsity-esports-tryouts-for-2022-2023/

Trotter, M. G., Coulter, T. J., Davis, P. A., Poulus, D. R., & Polman, R. (2020). The association between esports participation, health, and physical activity behaviour. *International Journal of Environmental Research and Public Health, 17*(19), 7329. https://doi.org/10.3390/ijerph17197329

Villani, D., Carissoli, C., Triberti, S., Marchetti, A., Gilli, G., & Riva, G. (2018). Videogames for emotion regulation: A systematic review. *Games for Health Journal, 7*(2), 85-99.

Varzeas, K. A. (2023). Mental health and wellness for the esports student-athlete. In J. L. Hoffman, R. Pauketat, & K. A Varzeas (Eds.), *Understanding Collegiate Esports: A Practitioner's Guide to Developing Community and Competition* (pp. 50–67). Routledge. https://doi.org/10.4324/9781003271772

Wang, C. K. J., Liu, W. C., Kee, Y. H., & Chian, L. K. (2019). Competence, autonomy, and relatedness in the classroom: Understanding students' motivational processes using the self-determination theory. *Heliyon, 5*(7), e01983. https://doi.org/10.1016/j.heliyon.2019.e01983

WHO (2021, December 8). Can video games make us healthier? *World Health Organization.* https://www.who.int/europe/news/item/08-12-2021-can-video-games-make-us-healthier

Williams, K. (2020). Gaming for the greater good: The North American scholastic esports federation sets students on a STEM trajectory. *IEEE Women in Engineering Magazine 14*, 2, 22-26.

Wirtz, B. (2022, October 13). *Video game graphics through the years.* https://www.gamedesigning.org/gaming/video-game-graphics/

Zendle, D., & Cairns, P. (2018). Video game loot boxes are linked to problem gambling: Results of a large-scale survey. *PLoS One, 13*(11), e0206767. https://doi.org/10.1371/journal.pone.0206767

Zimmer, R. T., Haupt, S., Heidenreich, H., Schmidt, W. F. J. (2022). Acute effects of esports on the cardiovascular system and energy expenditure in amateur esports players. *Frontiers in Sports and Active Living, 4.* https://doi:.org/10.3389/fspor.2022.824006

Zhong, Y., Guo, K., Su, J., & Chu, S. K. W. (2022). The impact of esports participation on the development of 21st century skills in youth: A systematic review. *Computers & Education, 191*, 104640. https://doi.org/10.1016/j.compedu.2022.104640