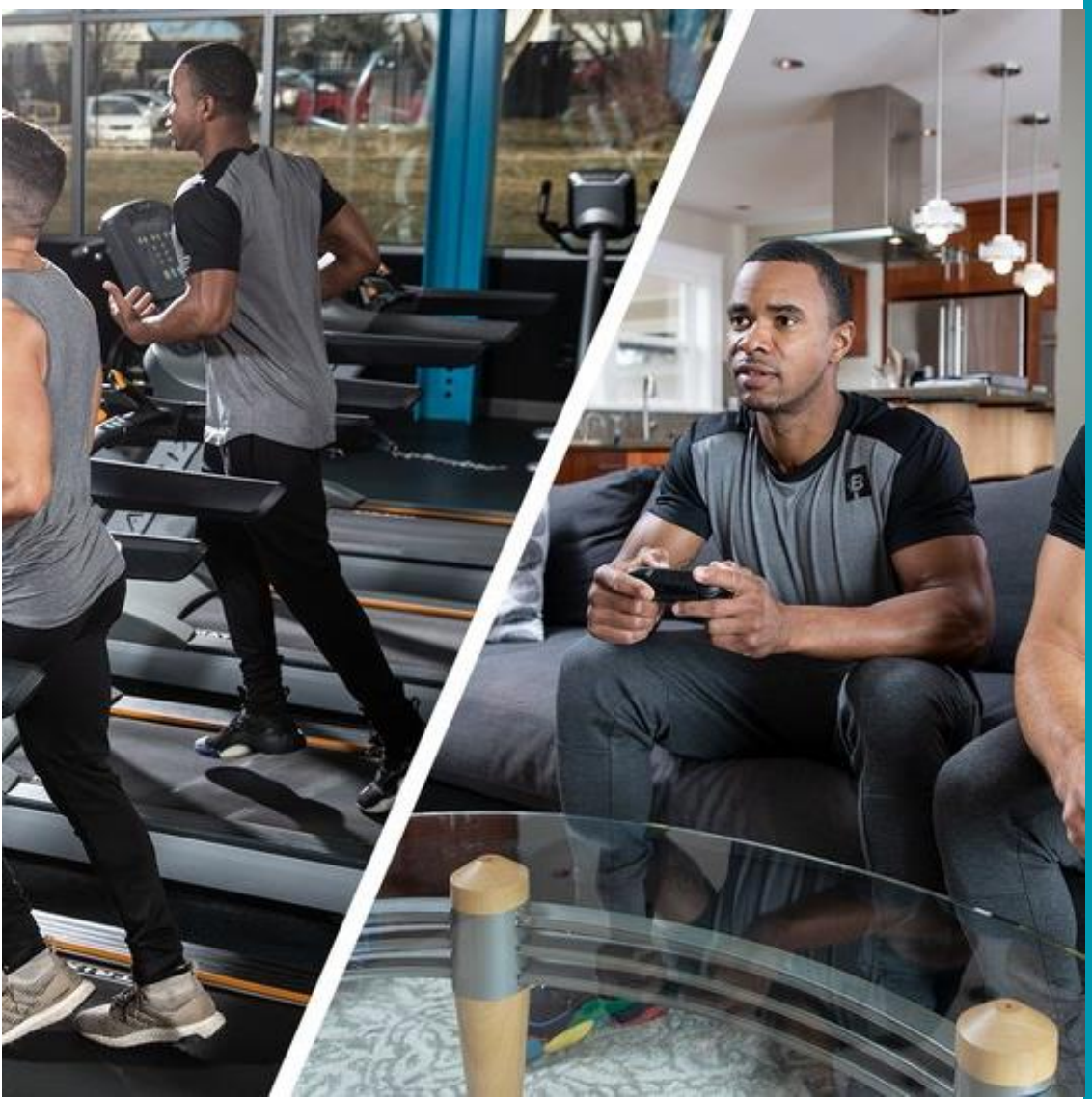
Atte Veko

The Benefits of Regular Cardiovascular Exercise in Finnish League of Legends players



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Abstract

Author: Veko Atte

Title of the Publication: The Benefits of Cardiovascular Exercise in Finnish League of Legends

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Keywords: esports, cardiovascular exercise, performance,

The purpose of this research was to study how cardiovascular exercise benefits Finnish League of Legends esports performance. The selection of this topic was made through personal interest in this research area.

The research was implemented by creating a quantitative online survey via Google Forms and sharing the link to Finnish League of Legends players through Discord. The simple data was analyzed and turned into a clearer and more presentable way through graphs and percentages.

The survey reached 15 respondents in one week period. The primary results show that there is a belief among respondents that cardiovascular exercise positively impacts gaming performance, particularly in terms of mental well-being and cognitive skills. Additionally, while these exercises show a positive impact of cardiovascular exercise on League of Legends performance, it is worth noting that the limited number of respondents underlines the need for more responses to further explore and support these insights.

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List of Symbols

Esports - Electronic sports, organized competitive video gaming

LAN – Local Area Network, two or more computers connected to network

PC – Personal Computer

FPS - First-person shooter, a shooting game where the camera is directed from the player's own perspective

MOBA - Multiplayer Online Battle Arena, features two teams of players, each controlling a unique character or hero with distinct abilities and roles.

LoL – League of Legends, Multiplayer Online Battle Arena video game

CS:GO – Counter-Strike:Global Offensive, first person shooter video game

MMORPG – Massively Multiplayer Online Role-Playing Game, online role-playing video game with large number of players interacting with each other in real-time

HIIT – High-Intensity Interval Training, varying between short bursts of high-intensity exercise and brief periods of rest

Nexus – Central structure in League of Legends located within each team´s base. Objective of the game is to destroy enemy nexus while protecting your own

Summoner´s Rift – Primary map for 5v5 in League of Legends

1 Introduction

1.1 Background

The selection of this topic is through personal interest in this research area that provides motivation regarding the topic. This research could provide valuable insights for optimizing the esports performance, mental and physical health, for example increasing cognitive function, reaction times, and sustained attention through cardiovascular exercises. In recent years, the field of esports has gained significant attention and recognition. Competitive gaming, such as League of Legends, has evolved into a professional sport. As players engage in extended gaming sessions, their physical and mental well-being are being concerned. The topic of this research could be relevant because people are starting to realize how crucial it is for players to stay healthy and perform at their best. While the primary focus of this thesis revolves around the interaction between League of Legends and cardiovascular exercises, it's essential to acknowledge the historical context of esports to understand the evolution of competitive gaming.

1.2 Objectives and Research Questions

The primary objective of this research is to examine the impact of cardiovascular exercise on the performance of Finnish League of Legends esports players. The intention is to clarify how incorporating such exercises can lead to enhanced cognitive function, improved reaction times, and sustained attention, eventually optimizing esports performance. This research specifically narrows its focus to the benefits of cardiovascular exercises in the context of Finnish League of Legends players' performances. When no research has been done before that also influenced the choice of topic. Data for this research is gathered through quantitative measures in the form of an online survey. Research question for the study could are: To what extent does incorporating cardiovascular exercise contribute to overall esports performance and competitive edge in Finnish League of Legends players? Another research question is: How does engaging in cardiovascular exercises impact the physical and mental well-being of Finnish League of Legends players, and how might this influence their in-game performance?

1.3 Limitations

The topic hasn’t been researched before regarding Finnish League of Legends players but the research (Zachary B. Rightmire, The Effects of Cardiovascular Exercise on eSport Performance, 2022) has been an influence on the study. This research focuses more on the benefits of cardiovascular exercises in Finnish League of Legends players performances. It's important to acknowledge the limitations of this research. One limitation is the exclusive focus on Finnish League of Legends players, which may not fully represent the global esports community. Additionally, the research relies on quantitative data gathered through an online survey, which may have inherent biases and limitations.

2 Understanding Esports

To understand the involved interaction between cardiovascular exercise and the performance of Finnish League of Legends players in the field of esports, a steady understanding of these crucial factors becomes essential. The following chapters present what esports is, the history of esports, what the game League of Legends is, and what the Finnish League of Legends scene contains. This knowledge is essential for a comprehensive understanding of the research and its implications.

Esports, short for electronic sports, involves competitive gaming utilizing technology. It involves professional players and teams engaging in organized and structured competitions across various video games (SEUL, 2019). For instance, players might use a computer or a console or any other form of electronic gaming system. Just as traditional sports captivate audiences with the spectacle of physical skill and strategy, esports showcase the intellectual dexterity and reflexes of gamers on virtual battlegrounds.

Esports mirrors the fundamental principles of traditional sports – skill, teamwork, and strategy. Basically, esports covers a wide array of video game genres, each with its own unique mechanics, challenges, and tactics. From first person shooter (FPS) games to massively multiplayer online role-playing (MMORPG) games and multiplayer online battle arena (MOBA) games. They demand precision, reaction times and coordination. Esports has become a cultural phenomenon that connects millions of people from all around the world. (Werder, 2022).

As esports has evolved, it has brought out an entire ecosystem, complete with professional players, coaches, analysts, broadcasters, and dedicated fans (Werder, 2022). Tournaments and leagues draw massive crowds, both in-person and online, creating an atmosphere like traditional sports arenas. The charm of esports lies in its combination of strategic gameplay, cutting-edge technology, and competitive spirit.

In this research the focus will be on the game called League of Legends (MOBA). In the next chapters there will be more information about the game and the history of esports in general. This research is trying to find out if the benefits of cardiovascular exercise help improve League of Legends performance, with Finnish players as the target audience.

2.1 History of esports

The history of esports showcases how competitive gaming has evolved from its humble beginnings to the global phenomenon it is today. The roots of esports trace back to the late 1970s and early 1980s when video games like Space Invaders and Pac-Man began to captivate players in arcades. Esports history starts with the first organized video game tournament called “The National Space Invaders Championship” which was held in November of 1980 by a game publisher Atari (Phillips, 2020).

The 1990s witnessed the rise of competitive play through LAN parties and local tournaments. Games such as Street Fighter II and Quake emerged as preferred selections for competitive esports tournaments. These tournaments laid the foundation for what would become the esports community that we have today (Phillips, 2020). The late 1990s and early 2000s brought major improvements in online gaming. The launch of PC games like StarCraft: Brood War and Counter-Strike progressed online communities and competitive scenes. These games became go-to choices of esports competitions, particularly in South Korea and Europe (Rohan, 2022).

The mid-2010s experienced a notable increase in the popularity of esports. Games like League of Legends, Dota 2, and Overwatch gained massive followings, leading to sold-out arenas and million-dollar prize pools. Traditional sports organizations and media channels started to invest in esports, further establishing the industry. At the same time the introduction of streaming platforms like Twitch allowed players to broadcast their live gameplay to a global audience. This innovation changed esports into a spectator sport, making it accessible to fans worldwide (Rohan, 2022).

According to Statista esports involve a wide range of games across different genres and the esports market was valued at just over 1.38 billion U.S. dollars (Statista, 2022). Esports has continued to expand, with players, teams, and organizations gaining significance. Academic esports leagues, franchised leagues, and corporate sponsorships have contributed to its growth and establishment as a legitimate career path.

2.2 League of Legends

Before jumping into the Finnish category of League of Legends, a description is needed to know what League of Legends (LoL) is. League of Legends (LoL) is a popular free to play online multiplayer video game developed in 2009 by game publisher Riot Games. It belongs to the MOBA (Multiplayer Online Battle Arena) genre. In LoL, players control a champion of their choice from over 160 champions with unique abilities and mechanics. Matches take place on various maps, but the primary map is called Summoner´s Rift. It serves as the 5v5 battleground where teams try to destroy the opposing team's Nexus, which is their base structure while defending their own (“League of Legends,” n.d.). Players earn in-game currency after matches to unlock new champions and cosmetic items for their account. The game combines elements of strategy, teamwork, and individual skill, and it has one of the biggest competitive esports scenes of all time.

The choice between casual and competitive game modes in League of Legends depends on your personal preferences, goals, and skill level. Casual modes are great for learning, having fun, and trying out new champions, while competitive modes offer a more challenging and serious gaming experience for those looking to test their skills and climb the ranks and show a visible rank that reflects their skill. In League of Legends, every match begins with the champion select and draft phase. This important phase allows players to pick their favorite champions and plan team compositions with their teammates. Players take turns selecting their champion of choice, and there is also a ban phase where certain champions are banned from being picked. Both teams have five bans in total to use against the enemy team. In a game of Summoner´s Rift has multiple lanes, each with its unique playstyles. The primary lanes are Top, Mid, and Bottom. However, one player is assigned to the jungle role which is located between the three lanes. Each lane is typically assigned to specific roles such as Top laner, Mid laner, and Bot laner involving an Attack Damage Carry and a Support player (Stryda, 2022). Jungler plays a critical role in controlling the state of the game, supporting teammates, and helping secure victory. The objectives of each lane change, but they all contribute to the overall goal of destroying the enemy team's Nexus. During the game, several objectives must be secured to gain advantages. These objectives include turrets and inhibitors. Destroying turrets and inhibitors grants map control and allows players to push closer to the enemy base and Nexus. "Ganking" refers to surprise attacks by one or more players on an enemy in a different lane. Ganks often involve the jungler, who roams between lanes to assist teammates by ambushing opponents. Effective ganks can lead to a strategic advantage for the team.

Gold is the in-game currency in League of Legends. Players earn gold by taking down minions, champions, and securing objectives. Gold income is crucial for purchasing items that enhance the champion's abilities and effectiveness in the game (Robinson, 2020). Efficient gold management is critical for success. Each champion in League of Legends has different scaling factors that define how their abilities become more powerful as the game progresses. Understanding champion scaling is fundamental for planning strategies and adapting to the game's changing dynamics. Map control involves getting control over different areas of the map, such as the jungle and objectives. Controlling these areas denies the enemy team’s resources and results in strategic advantages, including vision in the map and more gank opportunities. Sharp and timely communication is fundamental in League of Legends. Players use in-game chat and pings to communicate information and make decisions as a team. Effective communication is necessary for executing ganks, coordinating team fights, and ensuring that objectives are secured. These elements collectively contribute to the complex and dynamic gameplay of League of Legends. Success in the game requires not only individual skill but also effective teamwork, strategic thinking, and adaptability.

2.3 Finnish League of Legends

The Finnish League of Legends professional scene is relatively smaller compared to some other regions like South Korea, China, and United States. In Finland, League of Legends has a considerable player base; however, the challenge lies in the fact that the popularity of the CS:GO scene rivals that of League of Legends, much like how ice hockey reigns as the most beloved traditional sport in the country. Another challenge in the Finnish League of Legends scene is the lack of professional players to perform as role models, making it difficult for aspiring talents to find the motivation needed to climb the ranks. “In a scenario where incentives are lacking, reaching the top becomes a challenging task, and without achieving the top, the incentives to succeed remain intangible” (Yle Kioski GAMING, 2023, 5:02). The community's dedication to League of Legends is often showcased through local tournaments, LAN parties, and online gaming groups. These events provide casual players with opportunities to connect, compete, and share their passion for the game, contributing to the growth of the casual League of Legends scene in Finland.

There has been attempts to make the Finnish LoL scene bigger with leagues like Telia Esports Series and Telia master’s, but they have been terminated in 2021 due to the Publisher Riot Games announcing the new NLC league (Lolesports, 2021). Despite the challenges, Finland has produced

talented players who have competed at the highest level of the game in LEC for example players like “Cyanide”, “Hiiva” and “WhiteKnight”.

3 Cardiovascular Exercise

Cardiovascular exercise, often referred to as "cardio," is a foundation of physical activity that includes a range of exercises aimed at improving heart rate and improving cardiovascular fitness. It is an essential part of a balanced fitness program and holds significant effects for both physical health and mental well-being (Bergland, 2020). In esports the typical stereotypical lifestyle is described by extended hours of gameplay, irregular sleep patterns, and a diet often rich in junk food and energy drinks, has raised concerns about its potential impact on players' health. For example, running and jogging are dynamic forms of cardiovascular exercise that elevate heart rate. They are available and adjustable, with options for indoor or outdoor workouts, making them a useful choice for improving cardiovascular fitness. Swimming, for example provides a full-body workout that engages both upper and lower body muscles. Its low-impact nature makes it an ideal choice for those seeking comprehensive cardiovascular exercise while minimizing strain on joints. High-Intensity Interval Training (HIIT) involves varying between short bursts of high-intensity exercise and brief periods of rest. It is known for its efficiency in burning calories and improving cardiovascular fitness in a shorter time frame (Rightmire, 2022).

3.1 Benefits of Cardiovascular Exercise for Overall Health

By understanding the various forms of cardiovascular exercise and their extensive benefits for physical and mental health, highlighting the significance of these exercises into the lives of esports players. Improved health and well-being are beneficial to enhanced cognitive skills, extended gaming sessions, and sustainable esports careers (Seffah, 2023). Regular cardiovascular exercise strengthens the heart, enabling it to pump blood more efficiently. This reduces the risk of heart disease and lowers blood pressure (Cleveland Clinic, 2023). Cardio workouts increase lung capacity, improving oxygen intake and delivery to muscles and organs. This enhances overall respiratory health. Cardiovascular exercise burns calories and aids in weight management. It contributes to maintaining a healthy body weight, reducing the risk of obesity-related health issues. Cardiovascular exercise improves insulin sensitivity and regulates blood sugar levels, reducing the risk of type 2 diabetes. Cardio triggers the release of endorphins, natural mood enhancers that alleviate stress and anxiety, promoting mental well-being. Cardiovascular exercise enhances blood

flow to the brain, leading to improved cognitive function, memory, and mental clarity. Regular cardio workouts can promote better sleep quality, which is crucial for overall health and recovery. Incorporating cardiovascular exercise into one's routine is associated with a longer and healthier lifespan, reducing the risk of chronic diseases (Nystoriak, 2018).

3.2 Key benefits of cardiovascular exercise in League of Legends

Research studies have demonstrated that increased blood circulation, a direct outcome of cardiovascular exercise, supports the brain with a steady source of oxygen and vital nutrients. (Rightmire, 2022) Increased blood flow from cardiovascular exercise sets up for the optimal cognitive function, influencing critical aspects such as reaction times, decision-making, and strategic thinking. The body releases endorphins to not only increase mental well-being but also raise an improved state of mind. (Haataja, 2021, p. 66) With improved concentration from cardiovascular exercises the player can focus effectively on the right things in the game. In most games, situations can change so rapidly that the player must constantly shift their focus to the next play and even variably prioritize their auditory and visual senses. Engaging in physical activity before encountering a stressful experience has been observed to relieve the stress reaction caused by the experience. Cardiovascular exercise elevates mood, and this effect is reflected in the gaming experience and communication with the team, consequently leading to improved in-game performance. (Haataja, 2021, p. 66)

Cognitive skills are key to success in League of Legends, and they cover various aspects of decision-making, problem-solving, and strategic thinking. As mentioned earlier cognitive skills are improved through cardiovascular exercises so here's an exploration of where cognitive skills play a crucial role in League of Legends. Champion selection and draft phase is where the cognitive skills come into play right from the champion selection and draft phase. Players must evaluate the strengths and weaknesses of their team composition and that of the opposing team. This requires the ability to analyze complex information quickly and make strategic decisions regarding champion picks, bans, and team synergy (Brockbank, 2017).

Map awareness in League of Legends is played on a dynamic map with multiple lanes, objectives, and areas of interest. Map awareness is a critical cognitive skill that involves observing the map for the positions of both allies and enemies. Players must make split-second decisions based on this information, such as when to engage in team fights, push lanes, or secure objectives. Decision-Making under pressure in game is fast-paced, and players often find themselves in high-pressure situations. Cognitive skills such as rapid decision-making, risk assessment, and prioritization become crucial during intense moments like team fights, ganks, or objective contests. Strategic planning is crucial in League of Legends. Players must prepare and adjust strategies based on the changing state of the game, including factors like gold income, champion scaling, and map control. Anticipating and countering the opponent's moves requires strategic thinking and adaptability. Objective control in the game revolves around securing objectives like inhibitors and turrets. Cognitive skills like timing, coordination, and communication are essential when deciding when and how to contest or secure these objectives. Adaptability and learning in League of Legends is a game that continuously evolves through game updates. Players need the cognitive capacity to adapt to changes, learn new strategies, and refine their skills over time. Effective communication within a team is a cognitive skill that can determine the outcome of a match. Players must convey information, coordinate actions, and make quick decisions together.

Overall, cognitive skills are the mental tools that enable League of Legends players to process information, strategize, and execute actions successfully in the changing and highly competitive environment of the game. These skills are improved through experience, practice, and a deep understanding of the game's mechanics and dynamics. By recognizing the significance of cognitive skills in League of Legends, the foundation for understanding how factors like cardiovascular exercise can potentially enhance these skills and, consequently, esports performance (Brockbank, 2017).

4 Methodology

The data was collected through quantitative form of online survey via Google Forms with close-ended and multiple-choice questions to get the most consistent results. The purpose of the survey is to reach casual Finnish League of Legends players and find out the possible benefits of cardiovascular exercise in LoL performance. The intention was specifically to find Finnish League of Legends players who do cardiovascular exercises. The survey is implemented to be quantitative but to send the survey through the Discord communications app to Finnish League of Legends players that play the game casually not professionally. The survey is anonymous and will show the results only in percentages and graphs. The first steps of the thesis process were to plan the theoretical background and sources of all available. The second step was to create a Google Forms survey and testing it before the release.

Quantitative research was chosen for this thesis because it enables accurate measurement and quantification of variables, and I had personal interest in this topic. This precision is fundamental when investigating trends like gaming performance and cardiovascular exercise's impact, where simplicity and accuracy are vital. In this thesis the statistical analysis allowed for a comprehensive examination of how cardiovascular exercise relates to gaming performance (Sreekumar, 2023).

4.1 Quantitative survey

Quantitative research is a research method that focuses on collecting and analyzing numerical data to draw numerical conclusions and identify patterns, relationships, and trends. Quantitative research clarifies issues related to numbers and percentages. Data collection often uses standardized research forms with ready-made answer exchange conditions and helps to map the existing situation, but it is not possible to sufficiently determine the causes of the issues (Sreekumar, 2023).

To get consistent answers, it was best to mainly use closed-ended questions. The questions were created as multiple choice and check box answers, but in a few broader questions there is considered an answer option that allows the respondent to write their own answer if it is not listed in the pre-written options. When questions do not allow the respondent to give an individual or

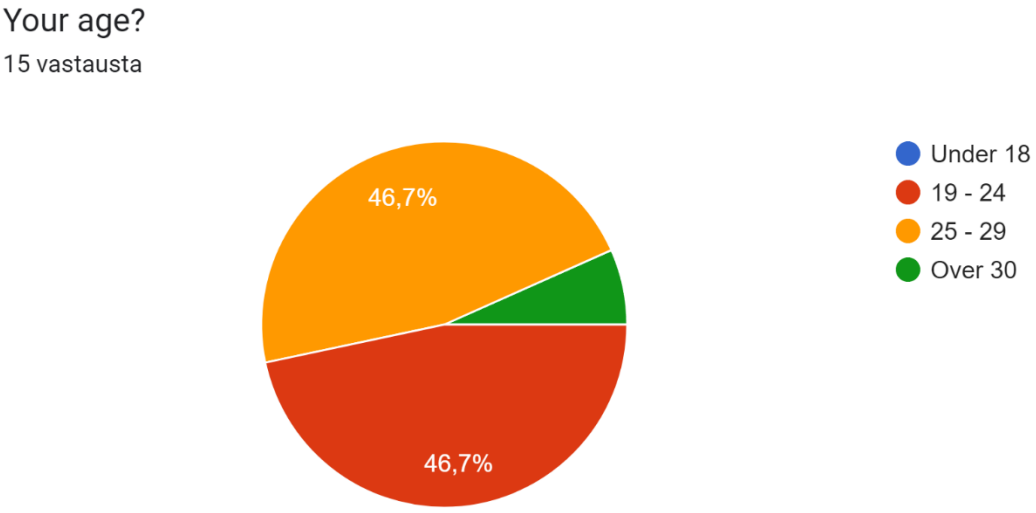
unexpected answer and the answer needs to be chosen from predetermined options, it makes it easier to answer the survey and will also save time.

4.2 Implementation

The survey was conducted using Google Forms, a user-friendly and widely recognized platform for creating and administering surveys. The survey was active from 24th of September until first of October reaching 15 respondents who are Finnish League of Legends players and engage in cardiovascular exercises. The decision to use Google Forms was based on its simplicity and clean interface.

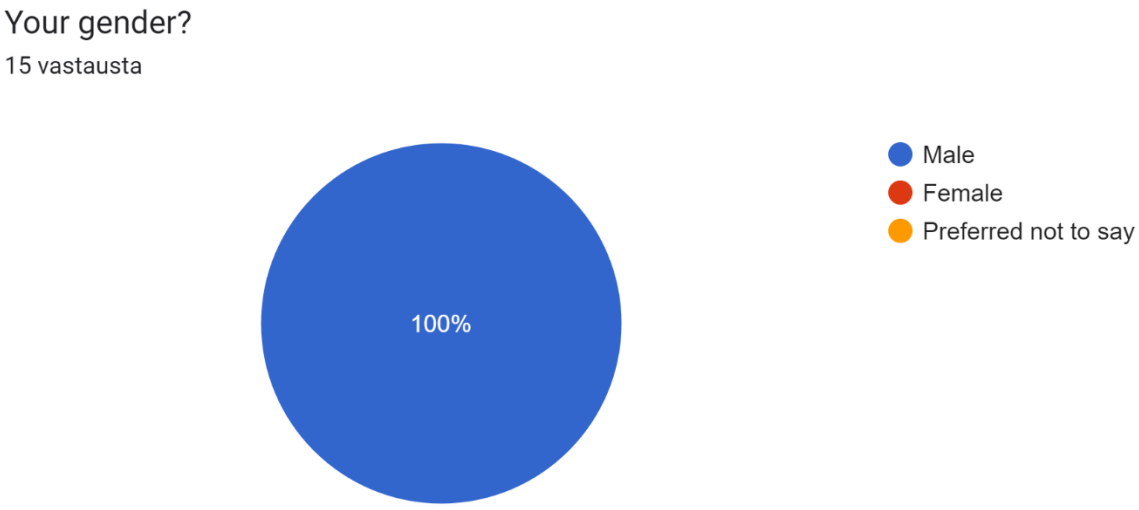
The survey targeted a specific group of respondents, Finnish League of Legends players who engage in cardiovascular exercises. The specific focus was chosen to align with the research's objectives which aimed to investigate the benefits of cardiovascular exercise on Finnish League of Legends performance. The survey reached out to a targeted group, it is important to note that it reached a relatively small number of players, with a total of 20 players being sent the survey and 15 of those responded, providing valuable data and insight for the research. The choice to limit the target group likely contributed to the smaller size of the respondents.

5 Results

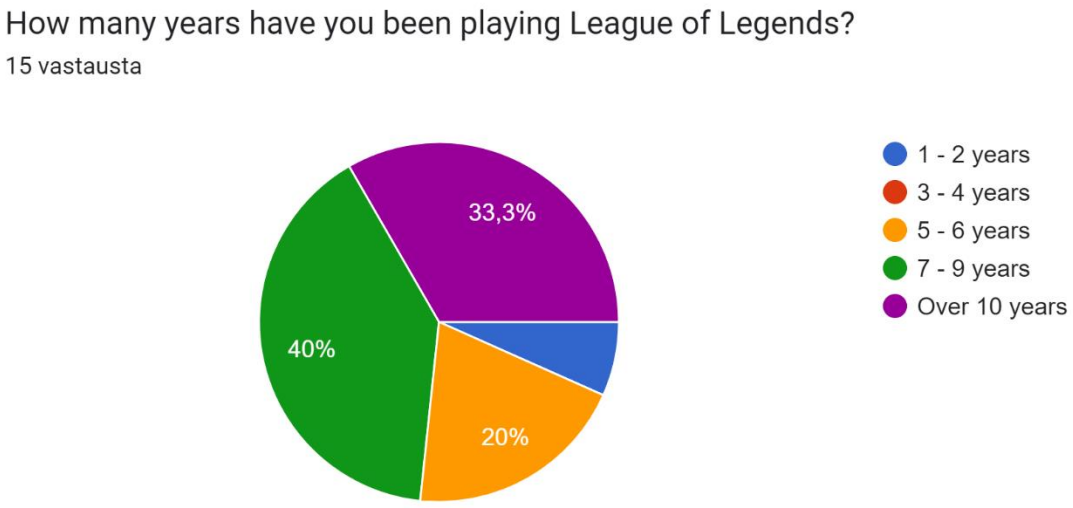


Picture 1 – Age

As for the graphs in picture 1 the survey's age distribution indicates that most respondents are in their mid-to-late twenties, 7 answers in 25-29 years (46,7%) or late teens to early twenties, 7 answers in 19-24 years (46,7%).

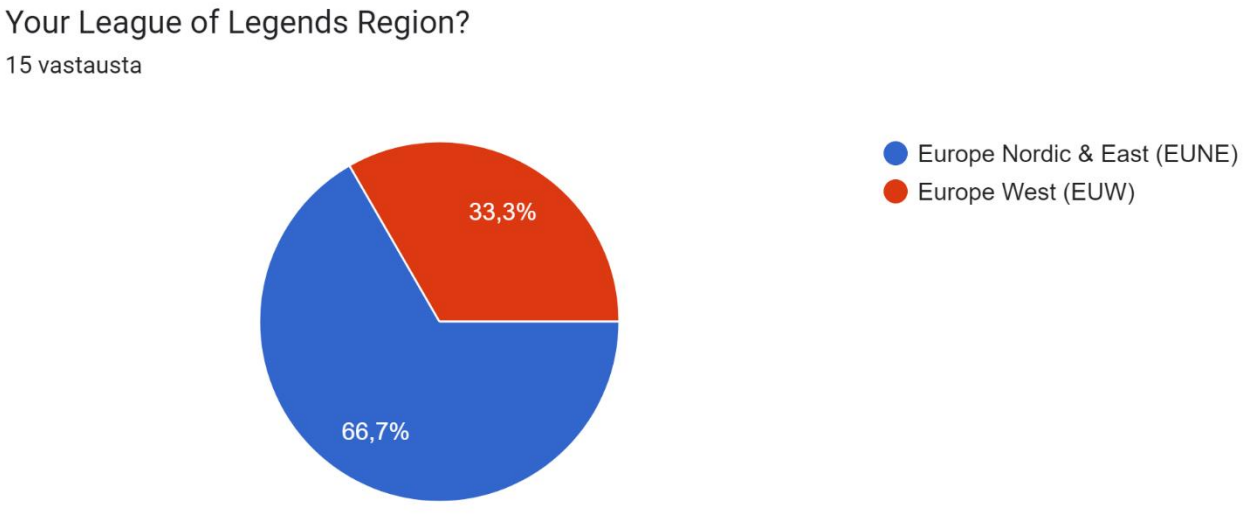


Picture 2 – Gender In picture 2 The survey results reveal that all respondents identify as male, 15 answers in male (100%).



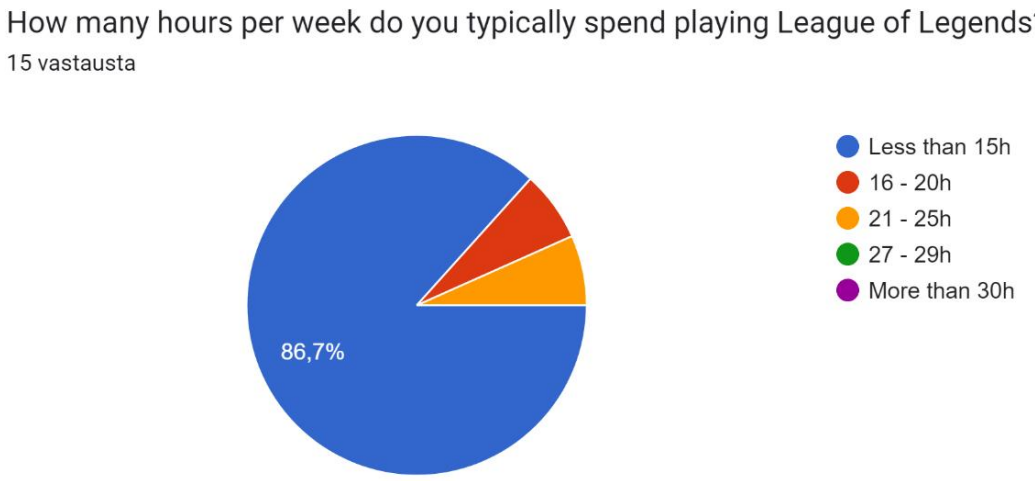
Picture 3 – League of Legends gaming background

In picture 3 five answers (33,3%) has played the game for over a decade or 6 answers (40%) for 7 to 9 years, there are also players with relatively less experience, 3 answers in (20%) 5 to 6 years or only one answer (6,7%) in 1 to 2 years.



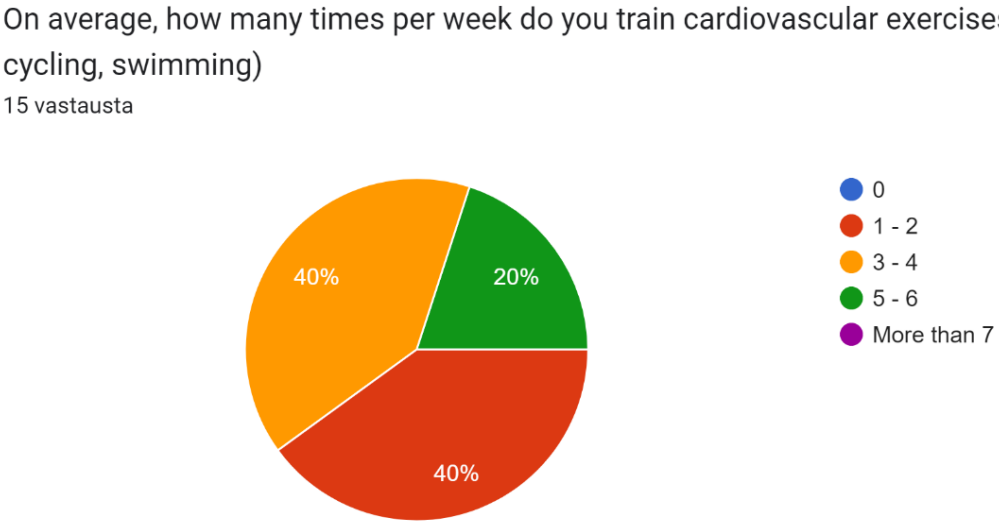
Picture 4 - Region

In picture 4 a significant majority of respondents play on the Europe Nordic & East (EUNE) server, with 10 answers (66,7%) and a smaller but still substantial portion on the Europe West (EUW) server with 5 answers (33,3%).



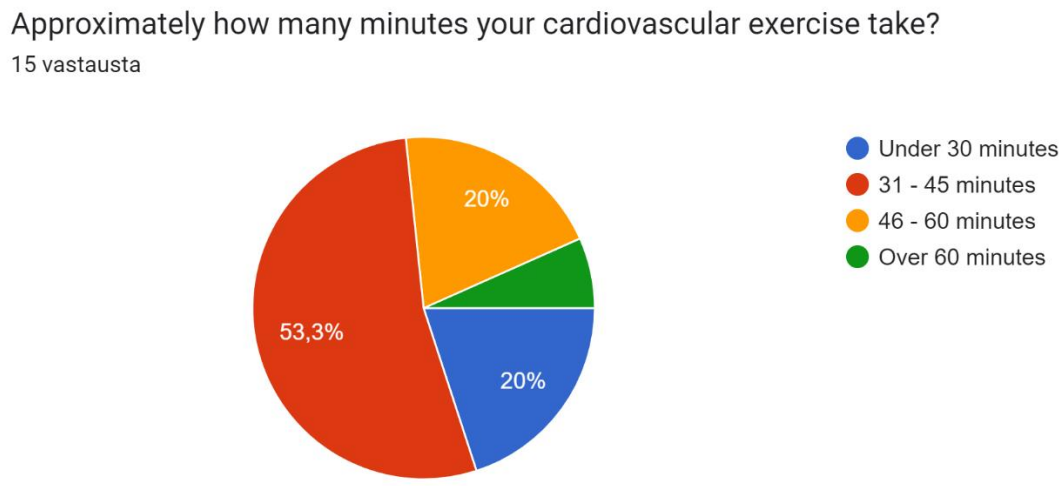
Picture 5 – Hours of League of Legends per week

In picture 5 The data demonstrates that most respondents with 13 answers (86,7%) spend less than 15 hours per week playing League of Legends.

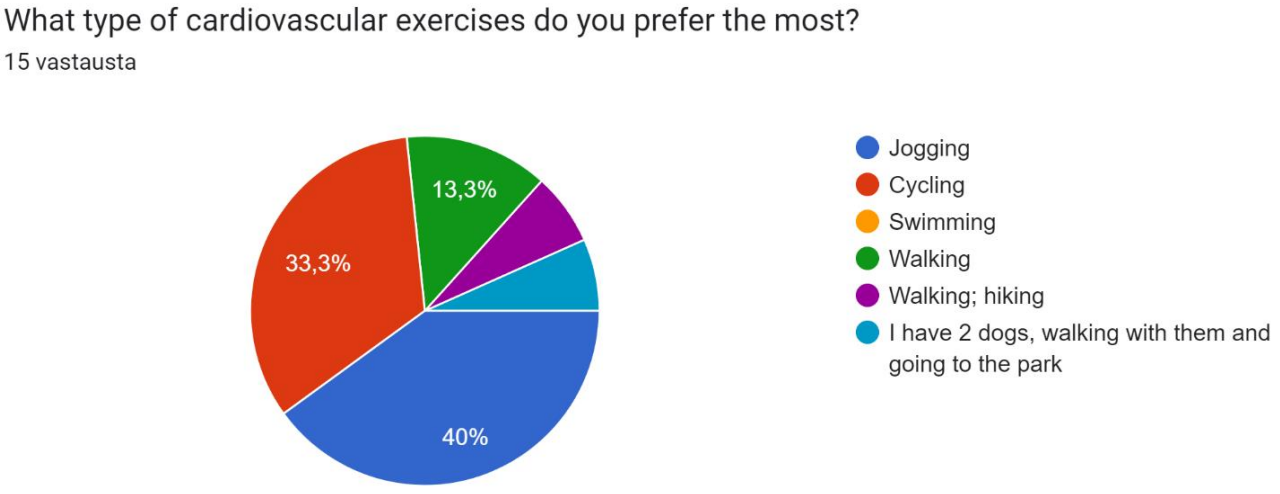


Picture 6 – Cardiovascular exercises per week

In picture 6 a significant portion of respondents: 6 (40%) engage in cardiovascular exercises 1-2 times per week, while an equal proportion: 6 (40%) train 3-4 times per week. A smaller but still notable percentage: 3 (20%) exercise 5-6 times per week.

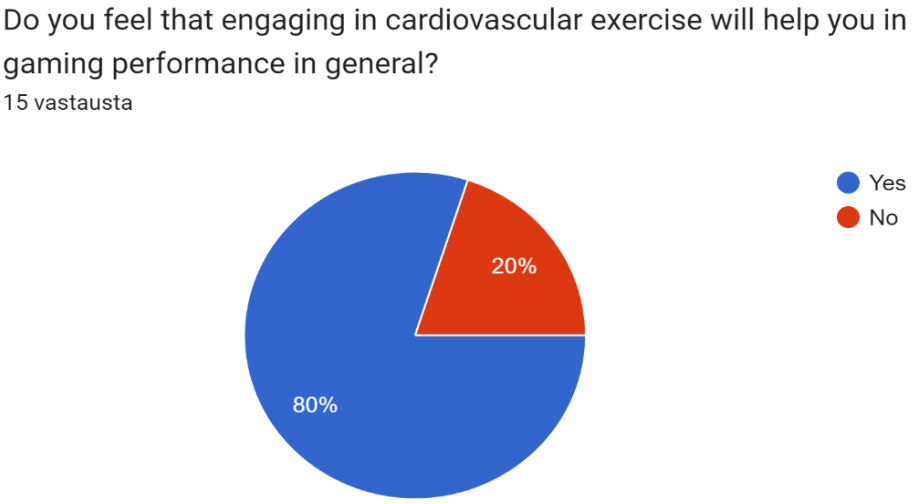


Picture 7 – Number of minutes per cardiovascular exercise. The majority appear to engage in moderate-duration cardiovascular exercises, with 8 answers and 53.3% reporting sessions lasting between 31 and 45 minutes.

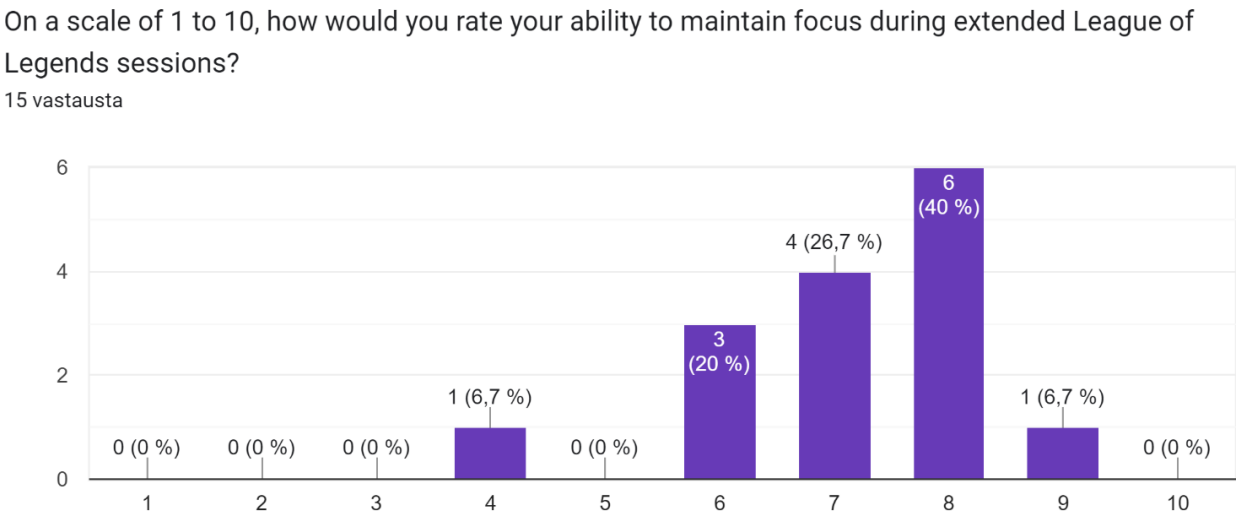


Picture 8 – Preferable cardiovascular exercise. In picture 8 jogging and cycling emerged as the top two preferred types of cardiovascular exercise among respondents. Jogging won with 6 answers (40%) and after that comes cycling with 5 answers (33,3%). Walking got 2 answers (13,3%) but the curious thing is that 2 answers were selected into the “other” section where the respondents

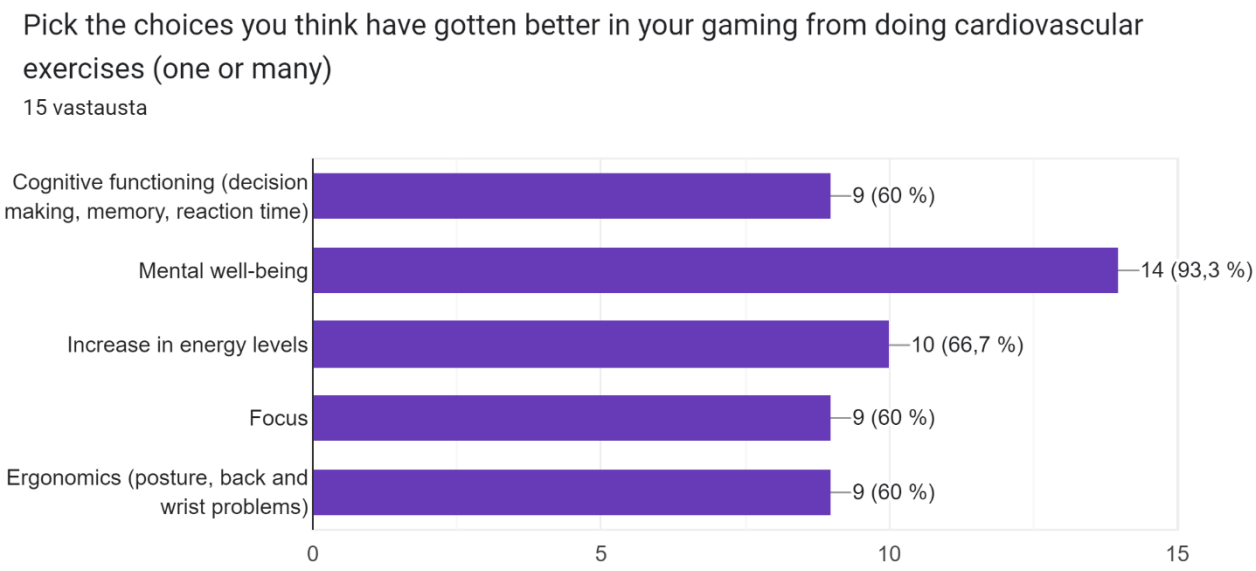
can write freely and the answers were 1 in “walking: hiking” (6,7%) and 1 in “I have 2 dogs, walking with them and going to the park” (6,7%).



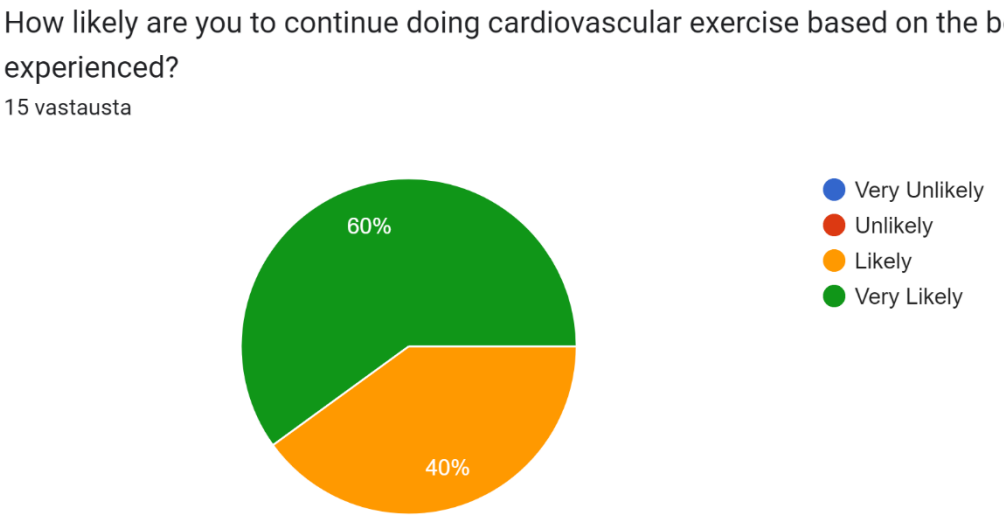
Picture 9 – Impact of cardiovascular exercise in League of Legends. An overwhelming majority of respondents: 12 (80%) hold the belief that engaging in cardiovascular exercise can have a positive impact on their gaming performance in League of Legends or gaming in general.



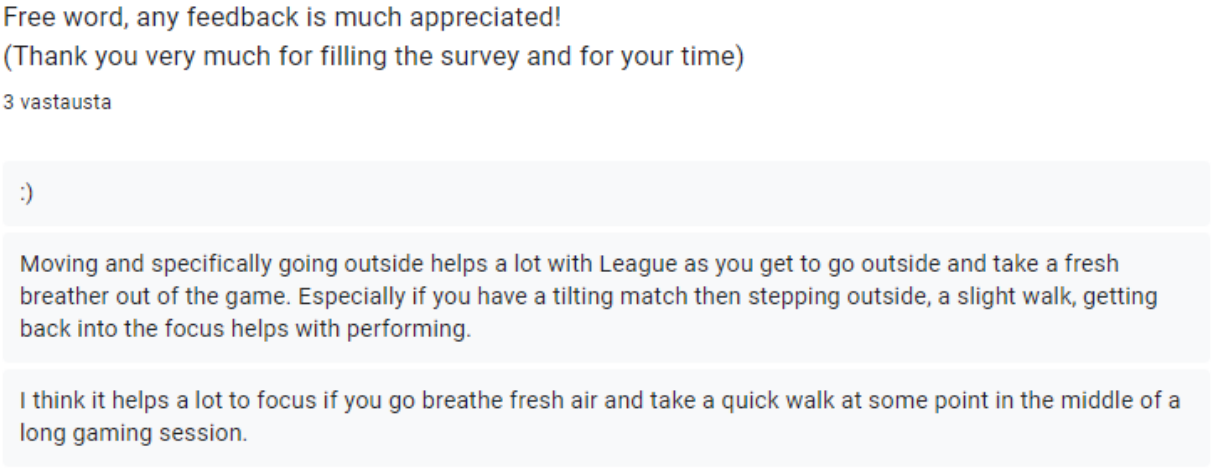
Picture 10 – Maintaining focus during extended League of Legends sessions. Most respondents rate their focus fairly high, with 6 out of 15 (40%) selecting an 8.



Picture 11 – Benefits of cardiovascular exercises in gaming. The most reported benefit is improved mental well-being with 14 answers (93,3%), which aligns with the earlier finding that many believe exercise positively impacts gaming performance. 10 answers in increase in energy levels (66,7%), 9 in cognitive functioning (60%), 9 in focus (60%) and lastly 9 in ergonomics (60%)



Picture 12 – Continuance of cardiovascular exercises. A significant portion: 9 answers (60%) expressed that they are "very likely" to continue, and an additional 6 answers (40%) indicated that they are "likely" to do so.



Picture 13 – Free word

5.1 Analysis

As stated before, the survey was active from 24th of September until first of October reaching 15 respondents who are Finnish League of Legends players and engage in cardiovascular exercises. The survey was split into four main topics. The results are introduced in graphs with two exceptions being the Maintaining focus question and the benefits of cardiovascular exercises in gaming question.

In picture 1 It's noteworthy that there is only one answer in the section over 30 years old (6,7%). Picture 2 indicates lack of gender diversity, but it was expected because the survey was sent to different people privately. In picture 3 This diverse experience level provides an interesting perspective on how cardiovascular exercise might impact players with varying levels of familiarity with the game. In picture 4 the distribution is consistent with the geographical regions served by these servers and is reflective of the server choices made by Finnish League of Legends players. Picture 5 suggests that they may fall into the category of casual players who engage in the game as an entertaining activity alongside other responsibilities. The rest of the two answers were divided into the 16-20h (6,7%) and 21-25h (6,7%) Picture 6 variation in exercise frequency provides

insights into the diverse exercise habits of the survey participants. Data in picture 7 shows a variety of exercise durations among respondents. This suggests a balanced approach to exercise duration among the surveyed players. The rest of the answers were divided into under 30 minutes with 3 answers (20%), 3 in 46-60 minutes (20%) and lastly 1 answer in 60 minutes (6,7%). Understanding the duration and type of cardiovascular exercise preferred by respondents is needed for assessing how these factors might relate to their esports performance. Picture 8 shows different exercise types and durations may have varying effects on physical and mental well-being, which can impact gameplay in League of Legends. Picture 9 suggests a strong conviction among most participants regarding the benefits of exercise for esports performance. Obviously, the rest of the respondents answered no with 3 answers (20%). Picture 10 shows that the respondents' self-assessments of their ability to maintain focus during extended gaming sessions vary. It's interesting to note that the distribution of ratings is relatively high, indicating that many respondents feel confident in their ability to concentrate during prolonged gameplay. These insights provide valuable context for understanding how respondents perceive the relationship between cardiovascular exercise and their gaming performance, as well as their own self-assessments of focus during gaming sessions. The beliefs and self-perceptions of participants may have an impact on how they engage in both exercise and gameplay. Picture 11 shows that the data reveals that a substantial majority of respondents feel several positive effects from engaging in cardiovascular exercises. Picture 12 of the survey indicates a strong purpose among respondents to continue cardiovascular exercise. This implies a high degree of motivation among participants to maintain their exercise routines.

The findings of the survey highlight the recognized benefits of cardiovascular exercise, particularly in terms of mental well-being and energy levels, and the strong commitment of respondents to continue with their exercise routines. These insights emphasize the potential impact of cardiovascular exercise in the lives of Finnish League of Legends players and its observed positive impact on their gaming performance.

6 Discussion

When I was thinking about the subject of the thesis, I knew I wanted to do something esports related because I wanted to make the subject interesting to me so it would help a lot writing and gathering data through the internet and Google Forms survey. I also knew by searching the internet that there have not been many research studies relating to cardiovascular exercises benefits to gaming or in League of Legends specifically. I have had this thought over the years that exercising must be some kind of helpful tool to increase gaming performance especially in highly competitive intense ranked games and this study was indeed investigating that. The planning of the research started in July, and I did not experience any pressure towards the thesis because of good planning. Of course, there were times were finding sources and citating them while figuring out what to write was very difficult, I still stayed confident about my progression. The research findings say that according to the participants' opinions, engaging in cardiovascular training, such as walking, running, or cycling, can positively impact their performance in League of Legends. Notably, most respondents reported improved mental well-being, enhanced cognitive skills, increased energy levels, and better focus as potential benefits of cardiovascular exercise. These perceived benefits align with the theory that physical activity can have a positive influence on cognitive function and overall well-being.

6.1 Thoughts

One of the significant strengths of this research lies in its targeted approach. By specifically focusing on Finnish League of Legends players engaged in cardiovascular exercises, I was able to gain valuable insights into a niche but relevant side of esports performance. I wanted to see other people’s opinions regarding the benefits of cardiovascular exercises in League of Legends and the result in this study showed that doing cardio might help you in your League of Legends gaming performance in more indirect ways. All research done in esports will broaden the esports scene and make it even more popular than it is today.

Weaknesses of this study were the narrow target group and the number of respondents. Another thing to mention was the lack of earlier research regarding the topic of the thesis. It was hard to

gather information through different sources regarding League of Legends and cardio studies together with. I searched sources in English and Finnish and a book throughout the making of the theoretical background.

The online survey conducted to gather information for this thesis was successful but had some problems I realized only after the results. First to mention was the hours spent playing League of Legends in weeks period (picture 5). My lowest option was less than 15 hours per week, and it got 86,7% of the answers so the problem is that the hours weekly were simply too highly adjusted in my opinion. I think the better option would be to start with five hours and decrease the other options to spread the results more evenly. In picture 11 I would add a section where one can indicate that there was no benefit or none of the options were effective. This is because the responses were mandatory, and I don't know how many people would have chosen the option "no benefit."

In my personal experience this thesis allowed me to gain practical research skills, research into the world of esports and exercise habits of Finnish League of Legends players and contribute valuable insights into the potential benefits of cardiovascular exercise in Finnish LoL performance. It also emphasized the importance of maintaining a healthy balance between gaming and physical well-being in the esports industry.

6.2 Reliability and validity

At the beginning of my thesis, I had considered conducting a qualitative study and using approximately five individual interviews as the data collection method to obtain broader data. However, the data would have been more limited and potentially more challenging to handle compared to the quantitative research method I used, which involved a Google Forms survey.

A centered approach, targeting Finnish League of Legends players who engage in cardiovascular exercises, reduced variations and promoted data reliability. The survey was administered within a specified timeframe as stated before from 24th of September to first of October, ensuring that all data were collected under in time. Close-ended questions were used broadly, minimizing response variability, and enhancing the consistency of data collected.

For the validity of the thesis the survey was thoughtfully constructed to align precisely with the research objectives, addressing questions about gaming habits, exercise routines, and

perceptions concerning cardiovascular exercise's impact on League of Legends performance. While the survey offers valuable insights into the assessments of Finnish League of Legends players regarding cardiovascular exercise, it's essential to recognize its limitations. The results should be taken cautiously and performed as a starting point for further research.

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Appendices

The Benefits of Regular Cardiovascular Exercise in Finnish League of Legends

- Atte Veko, thesis in Bachelor of Business Administration, Esports Business, Kajaani University of Applied Sciences

Quantitative survey for Finnish League of Legends players for KAMK Bachelor of Business Administration, Esports Business thesis. Answers will be published in related with the thesis.

The survey is anonymous and will show the results only in percentages and graphs. The purpose of the survey is to reach Finnish League of Legends players and find out the possible benefits of cardiovascular exercise in LoL performance.

1. Demographic Information

Your age? *

- ◯ Under 18
- ◯ 19 - 24
- ◯ 25 - 29
- ◯ Over 30

Your gender? *

- ◯ Male
- ◯ Female
- ◯ Preferred not to say

2. League of Legends Gaming Background

How many years have you been playing League of Legends? *

- ◯ 1 - 2 years
- ◯ 3 - 4 years
- ◯ 5 - 6 years
- ◯ 7 - 9 years
- ◯ Over 10 years

Your League of Legends Region? *

- ◯ Europe Nordic & East (EUNE)
- ◯ Europe West (EUW)

How many hours per week do you typically spend playing League of Legends? *

- ◯ Less than 15h
- ◯ 16 - 20h
- ◯ 21 - 25h
- ◯ 27 - 29h
- ◯ More than 30h

3. Cardiovascular Exercise Routines

On average, how many times per week do you train cardiovascular exercises (e.g. walking, running, cycling, swimming) *

- ◯ 0
- ◯ 1 - 2
- ◯ 3 - 4
- ◯ 5 - 6
- ◯ More than 7

Approximately how many minutes your cardiovascular exercise take? *

- ◯ Under 30 minutes
- ◯ 31 - 45 minutes
- ◯ 46 - 60 minutes
- ◯ Over 60 minutes

What type of cardiovascular exercises do you prefer the most? *

- ◯ Jogging
- ◯ Cycling
- ◯ Swimming
- ◯ Muu: _____

4. Impact of Cardiovascular Exercise in League of Legends

Do you feel that engaging in cardiovascular exercise will help you in League of Legends or any gaming performance in general? *

- ◯ Yes
- ◯ No

On a scale of 1 to 10, how would you rate your ability to maintain focus during extended League of Legends sessions? *

	1	2	3	4	5	6	7	8	9	10	
Very Poor	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	Excellent

Pick the choices you think have gotten better in your gaming from doing cardiovascular exercises
(one or many) *

- ☐ Cognitive functioning (decision making, memory, reaction time)
- ☐ Mental well-being
- ☐ Increase in energy levels
- ☐ Focus
- ☐ Ergonomics (posture, back and wrist problems)
- ☐ Muu: _____

How likely are you to continue doing cardiovascular exercise based on the benefits you have experienced? *

- ○ Very Unlikely
- ○ Unlikely
- ○ Likely
- ○ Very Likely

Free word, any feedback is much appreciated!
(Thank you very much for filling the survey and for your time)

Oma vastauksesi

Lähetä

Tyhjennä lomake