

# Contributions of Sport Psychology to the Competitive Gaming: An Experience Report with a Professional Team of League of Legends

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**Abstract** With the growth of competitive electronic gaming in Brazil, cyberathlete teams must find new ways to stand out in this environment. This research aims to investigate how cognitive tasks affect the performance of cyberathletes, and evaluate the impacts that developing a routine, which includes physical activity and mental training, have on the results of cognitive performance. Furthermore, it seeks to verify if the use of current methods of Sport Psychology might be useful to achieve better results in electronic sports. The research was conducted on 5 cyberathletes of a professional team of the game “League of Legends”. In order to analyze the cognitive tasks, a Computerized Neuropsychological Monitoring System – ProA was used, and a questionnaire designed to investigate if the participants noticed any difference in individual and/or team performance after starting the proposed activities. The results demonstrate that in the months that the participants followed the proposed activities, they produced higher results in ProA, indicating an improvement in selective attention, memory, visuospatial and math abilities, while diminishing anxiety during competition. However, during the months the participants were not participating in the proposed activities, the results showed decreases in the same cognitive abilities. The participants also indicated that the activities influenced a higher level of group cohesiveness and a more objective communication during game play. Considering the above, it is expected that this research will contribute both to the body of research about electronic sports, and for Sports Psychology studies, thus emphasizing the importance of dialogue between these two areas.

**Keywords** League of Legends, Cognitive tasks, Sport Psychology, Electronic sports

## 1. Introduction

In recent years, the popularity of a different kind of sport, which is typically not considered a sport, has increased in Brazil. This new kind of sport includes individual and group games, however, computers are the platform for the competition scenario. We may think of electronic sport, or *eSport*, as a new kind of sport, because there is a game, competition, it is a high performance activity, there is physical and mental strain, and there are rules.

The growth of *eSport* is apparent when analyzing the competitive scenario. The game *League of Legends* that will be used in this project, has several professional *eSport* teams participating in a Brazilian league, whose prize for first place in 2015 was R\$60,000 (US\$15,472). Furthermore, the main teams have great structure, providing a house to players, where they live and train during the competition season. Also, computers, last generation equipment and technical staff are

provided to the teams to improve their gaming abilities.

Sport Psychology is a professional interventional field focused on working with athletes or physical activities practitioners. According to Jordão (2006) “It is a Psychology field that aims to promote health, communication, interpersonal relations, leadership and improvement in sport performance”. According to Rubio (2003), the programs developed by the psychologist with a sports background are more than just contact with the athletes, but also with coaches and staff that aim to produce the best performance in competitions. The developed activities are, mainly, for the management of competitive stress, attention and concentration control, leadership development, and team cohesion.

Therefore, our goal with the current research is for psychology to include the *eSport* context as a way to amplify the sport psychology field while *eSport* is still growing. With some adjustments, we can use psychology techniques that aim to optimize the players’ performance, with regard to their cognitive skills used in gaming, their relations as a team, investigating new demands, and creating new instruments for intervention.

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Published online at <http://journal.sapub.org/ijap>

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## 2. Theoretical Basis

### 2.1. Sport Psychology

According to Weinberg and Gould (2008, p.22) “sport psychology is the scientific study of people and their behaviors in sport settings and exercise and the practical application of this knowledge”. For the researchers, the study of sports psychology is guided by two main objectives: to understand the effects of psychological factors on performance and to understand the effects of participation in physical activities on psychological development, health and wellness. The first objective is to examine factors such as anxiety, self-confidence, group cohesiveness and mental training that are used for high-performance athletes, who are the subject of focus in this research.

The athletes’ performance is a product of the interaction between the physical skills, technical, tactical, psychological and socio-environmental factors. A key factor of psychological capacities is cognitive processes, which qualify the responses of the athlete to the demands of the sport that he practices. Cognitive processes include memory, attention, and decision-making, among others. These processes are essential to do a “reading of the game,” coordinating “what to do” and “how to do it” (Matias e Greco, 2005).

Sports psychology also works with athletes’ issues, such as anxiety and stress. The main source of athletes’ stress and anxiety is the competitive environment, where they need to demonstrate their skills in pursuit of a goal: to win. This stress can be generated by internal factors, such as level of personal preparation and dedication to training, or external factors, such as the preparation of the team - in the case of team sports and comparisons with other athletes (Junior, 2002; Fabiani, 2009). Breathing techniques, mentalization and relaxation can be used to reduce stress and anxiety.

In team sports, group cohesiveness is vital for the team's performance. Cohesiveness is a process that is reflected in the group's tendency to remain united in pursuit of a common goal (Rubio, 1999). In team sports all players are interdependent, so mutual trust is vital, and this can only be obtained within a cohesive group; therefore, psychology also acts accordingly. Another factor this research examines is concentration, which is especially critical in electronic sports. In a match, dynamic factors can modify a fight in fractions of a second, so it is essential that cyberathletes be focused to enable reactions as fast as the competitive scenario requires.

### 2.2. eSport and League of Legends

Electronic sport, or eSport, is a term designated to organized competitions of electronic gaming. There are several genres in eSport, such as fight games, FPS (First-person shooter), real-time strategy games and MOBA (Multiplayer Online Battle Arena). *League Of Legends* (LoL), which is the game this research focuses on, is of the MOBA genre.

LoL is a game produced by Riot Games. It was launched in October 2009, and started its fifth season on November

11<sup>th</sup>, 2014. Every match needs 2 teams with 5 players each, whom battle each other in a virtual arena called *Summoner's Rift*. This arena has monsters and minions that, when killed, provide funds for the purchase of items that strengthen a player's character. The game's main goal is to destroy the enemy turrets that prevent the arrival of the player's character in the *Nexus*, the enemy's base. The arena is divided in 3 main routes, *Top Lane*, *Mid Lane*, and *Bot Lane*. The game has more than 120 champions, unique characters to use, of which each has 5 unique skills that the *Summoner*, or player, uses at will. Each player plays a position in the game, and each position has a role that requires the player to use specific skills.

In addition to individual skills of each player, it is indispensable that there is clear communication during the match. For this reason, the team has a captain, also known as the *shot caller*. The shot caller gives orders about the plays the team will do and the goals that will be given priority.

### 2.3. League of Legends as Sport

With the growth of competitive electronic gaming, we consider the similarities of LoL with the known “traditional sports”. LoL is a social game, in which a team competes toward a common goal. Therefore, several psychological processes already presented, such as efficiency, anxiety, stress and the need of group cohesiveness, are necessary in this environment. Players are regulated by team strategies and socially constructed strategies, since each plays a role within the team (Costa, 2013).

In the competitive scenario, the game is not limited to only championships. Professional players live together in a house that functions as training center. Training ranges from *scrims*, which are training sessions with other professional teams, to replays, which are recorded matches the team watches as a group. Replays are either of the team's own matches or of other teams' matches, to analyze errors and learn new techniques, respectively.

Despite the game being online, the main championship in Brazil, known as CBLLoL, is in person with live broadcast over the Internet. Furthermore, its Finals are conducted in a live location with a public audience. Teams rely on sponsorships and fans for support at these events. T-shirts are sold at events, players participate in advertisements for brands that sponsor them, and players have their own fans present to encourage their success. Championships have an excellent infrastructure, with interviewers and commentators for the matches that are broadcasted online. The players receive salaries and rewards like any other athlete, and they also suffer physical and emotional exhaustion like other athletes (Pereira, 2014).

## 3. Methodology

### 3.1. Location and Participants

This research is being conducted in a *Gaming House*, a place where the players live and train during the

championship season. The Gaming House of this research is located in São Paulo, Brazil.

The participants are members of a professional LoL team, composed of five players. The players' ages range from 18 to 22. Also, the support of the technical team, comprised of team directors and a coach, is present.

### 3.2. Procedure

The researchers conducted monthly visits to the Gaming House, with each visit lasting three days. During each visit, individual interviews were conducted with players to identify requests, of the individuals and the team. Following interviews, a group of techniques were used in effort to provide the requested demands of the players, and some anxiety control techniques were implemented. There is also data collected through heart rate monitors, which is a special belt and smartphone app. To collect this data daily, athletes were taught how to use the equipment and send reports.

A daily routine was prepared for the players, which included waking up, performing a physical activity or exercising, free time, time for lunch, mental activation period, LoL training, time for dinner, night training (either tactical or game, depending on the day of the week), more free time, and a minimum of eight hours for sleep. The routine was outlined to the players earlier in the year, but was adapted according to the needs of the players or coaching staff, due to their need to attend events during the week. On Wednesdays, athletes didn't train at night, instead they chose a group activity outside the training environment. These

activities aim to strengthen the group cohesiveness.

To measure cognitive abilities, the ProA test was used biweekly. The ProA evaluates the performance in selective attention, working memory, visuospatial ability, arithmetic ability and it works in game format. The results were offered to each athlete, and activities were suggested to improve the cognitive abilities that were most deficient.

### 3.3. Data Collection

To evaluate the athletes' perception about their participation in the proposed activities and the importance and impact of the activities on their performance, we used a questionnaire with 9 open questions. The questions asked the athletes about their participation in the proposed activities and their perception of how it affected their overall performance.

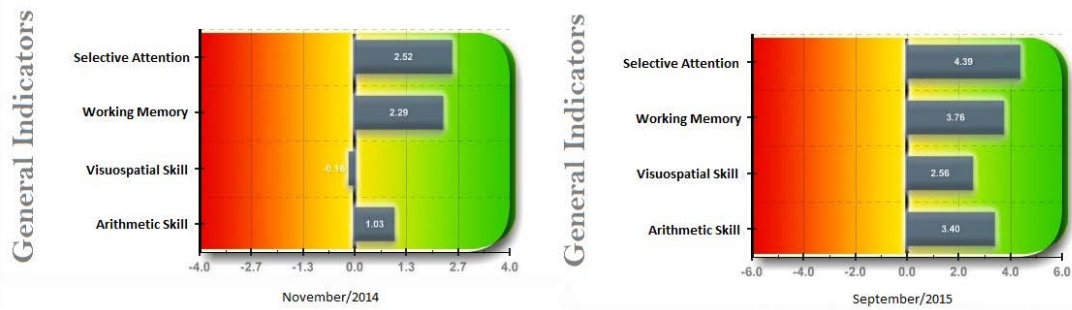
Regarding the ProA, a comparison of the results compiled before starting the recommended testing activities was made with the results produced after the use of the recommended testing activities for multiple months.

## 4. Results and Analysis

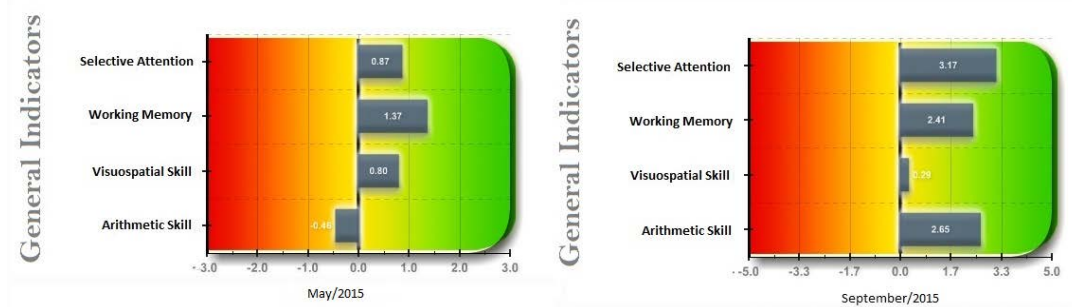
Of the five players participating in the survey, three started their consultations in November 2014, one began in April 2015 and the last player started in May 2015. The answers of the questionnaire were divided into 3 categories and 7 subcategories, as shown below:

**Table 1.** Response Categories

Categories	Subcategories	Content
Routine activities	Participation in activities	Good; Good, considering the fact that my health is not helping; I consider it good, falter sometimes, the biggest problem is when I lose the rhythm 'cause it takes me to get it back.
	Cognitive games	I always used, but at the moment not much use because of my arm injury; nearly every day; I do not see much improvement in some activities as cognitive games. But I also did not trained a lot, so I do not know
Performance	Activities	I feel that my performance is improving slowly, especially in relation to focus; Best performance in the game; I feel more prepared when I do it right.
	Group	improves performance coz u will, like it or not, know better the person that u are playing with
Interaction	Team time	Important because it is a moment out of our day to day when everyone will have fun; I think good, approaching everyone on the team and it's good to relax; I'd better leave the "focus" sometime; it makes the team more united outside the game.
	Group dynamics	Important, to create more proximity between players; It makes us think about coming to conclusions in team, in addition to the guys choke out something that is bothering; we see another point of view; reduce attrition; I think the dynamics should be a little more frequent
	Group cohesiveness	It seems more united; All in the same way of thinking; Team is more united; Time is more cohesive



**Figure 1.** Difference between levels of initial and final cognitive abilities of the player who followed the activities proposed with greater rigor



**Figure 2.** Difference between levels of initial and final cognitive abilities of the player who joined the team most recently

Of the three players who started the first follow-up protocol, the one who most followed the proposed activities had increased in all cognitive skills that had been targeted for improvement and measured.

In the first figure, the player who followed the activities with greater rigor, who is also one of the longest on the team, showed a substantial improvement in all of his cognitive skills. The second figure, which represents the player who came to the team more recently, expressed improvements in all skills but one. The researchers believe this is due to the short time he received the protocol and, therefore, hadn't trained all the skills the same way.

## 5. Conclusions

The popularity of eSport in Brazil is growing, but is still viewed by many with prejudice because it is generally considered to be a game for fun, and not a competitive sport. However, for cyberathletes it is a job, and they face adversity like any other athlete. It is important to encourage psychologists to view Electronic Sports similarly to that of traditional sports.

Through the results obtained from the survey, we can observe that the planned techniques are achieving positive effects on the performance of athletes, and the athletes are able to realize this improvement. One of the main challenges at the beginning of the project was that the team was recently redesigned, so players did not have a long-term bond with each other, but today we can already see that they are very close, and they report feeling bonded, as well. Due to the fact that this project is still under development, new demands may arise which require the need for further research and

development of new techniques to expand and improve this body of research.

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