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# The Effect of Sports on Perceived Quality of Life of People with Visual Disorder

# O Efeito do Esporte na Qualidade de Vida Percebida de Pessoas com Deficiência Visual

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**Abstract**

Sports practice improves quality of life of people with different characteristics, but there is still no information about the impact of sport on quality of life among people with visual disorder. The aim of this study was to identify the perceived quality of life of blind football and goalball athletes and to compare it to perceived quality of life of physically inactive people with visual disorder. Thirty seven men with visual disorder, separated into three groups: 12 blind football athletes (age: *M* = 27.3 years, *SD* = 10.2), 13 goalball athletes (age: *M* = 30.3 years, *SD* = 7.0) and 12 physically inactive people (age: *M* = 25.3 years, *SD* = 2.3), answered the WHOQOL-Bref questionnaire. Athletes with visual disorder obtained a higher score in the Overall Quality of Live and General Health and in all domains of the WHOQOL-Bref than physically inactive people. There was no difference between the perceived quality of life of football and goalball athletes. Therefore, despite the type of sport, its practice is related to a better quality of life of people with visual disorder.

**Keywords**: Blind. Blind Football. Football Five-a-side. Goalball. WHOQOL-Bref.

**Resumo**

*A prática esportiva melhora a qualidade de vida de pessoas com diferentes características, mas ainda não há informações sobre o impacto do esporte na qualidade de vida de pessoas com deficiência visual. O objetivo deste estudo foi identificar a percepção da qualidade de vida de atletas cegos de futebol de cinco e de goalball e compará-la com a qualidade de vida percebida de pessoas com deficiência visual fisicamente inativas. Trinta e sete homens com deficiência visual, separados em três grupos: 12 atletas de futebol de cinco (idade: M = 27,3 anos, DP = 10,2), 13 atletas de goalball (idade: M = 30,3 anos, DP = 7,0) e 12 pessoas fisicamente inativas (idade: M = 25,3 anos, DP = 2,3), responderam ao questionário WHOQOL-Bref. Atletas com deficiência visual obtiveram maior pontuação na Qualidade de Vida Global e Saúde Geral e em todos os domínios do WHOQOL-Bref do que pessoas fisicamente inativas. Não houve diferença entre a qualidade de vida percebida dos atletas de futebol e de goalball. Portanto, a despeito do tipo de esporte, sua prática está relacionada a uma melhor qualidade de vida de pessoas com deficiência visual.*

**Palavras-chave***: Cego. Futebol de Cegos. Futebol de Cinco. Goalball. WHOQOL-Bref.*

## 1 Introduction

Although subjective, quality of life has several biological and functional concepts such as health, functional status, incapacity, besides social and psychological concepts such as well-being, satisfaction and happiness[1]. Quality of life is an eminent human notion related to the level of satisfaction due to family life, love life, social life, environmental life, and the individual existence by itself[2]. Thereby, quality of life varies from person to person and depends on intrinsic and extrinsic factors[3].

Physical activity is usually associated with better quality of life as a facilitator factor[4]. Considering that health related quality of life is associated with the ability to live without diseases and with reduced morbidity conditions[2], regular physical activity can promote changes in the physiological, chronic and acute spectrum, reducing the risk of diseases, and influencing the quality of life positively[5][A1] . From this perspective, physical activity can be seen as an essential tool to promote quality of life among people of all ages with different characteristics. Indeed, studies have shown quality of life improvements throughphysical activity practice among teenagers[6], college students[7], middle-aged women[8], elderly women[9,10], people with physical disabilities[4], people with stroke sequel[11], people with multiple sclerosis[12], people with spinal cord injury[13-16], and athletes with cerebral palsy[17]. However, some studies showed no relationship between physical activity and quality of life of people with physical disabilities[18-20].

Considerando que a qualidade de vida relacionada à saúde está associada à habilidade de viver sem doenças e com condições de morbidade reduzidas, a atividade física regular pode promover mudanças no espectro fisiológico

agudo e crônico, reduzindo o risco de doenças e influenciando positivamente a qualidade de vida. A partir desta perspectiva, a atividade física pode ser vista como uma ferramenta essencial para promover a qualidade de vida entre pessoas de todas as idades e com diferentes características. De fato, estudos demonstraram aumento da qualidade de vida por meio da prática de atividade física entre adolescentes, estudantes universitários, mulheres de meia idade, mulheres idosas, pessoas com deficiências físicas, pessoas com sequela de acidente vascular encefálico, pessoas com esclerose múltipla, pessoas com lesão medular e atletas com paralisia cerebral. Entretanto, alguns estudos demonstraram nenhuma relação entre atividade física e qualidade de vida de pessoas com deficiências físicas.

Sports practice contributes to socialization of people with visual disorder because it facilitates communication, personal achievement, self-image, and autonomy, which values their potentials instead of their limitations[21]. Nevertheless, it is necessary to facilitate the engagement of those individuals to sport and physical activity regular practice. This understanding had led both for adaptation of traditional sports and for designing of specific sports, as it happens in blind football and goalball, respectively.

Football for people with visual disorder, known as football five-a-side, is a sport adapted by the International Committee of Futsal of International Blind Sports Federation (IBSA), that allows participation of people with different levels of visual disorder, ranging from partially sighted (B2 and B3) to almost or completely blind (B1). The category for the former group is named Partially Sighted Football and adopts the same rules of the International Federation of Association Football (FIFA), with some adaptations[22]. The category for the latter group is named Blind Football and has specific rules[23].

Goalball is a sport designed to people with visual disorder that also allows participation of B1, B2 and B3 class athletes, but players must wear eyeshades to guarantee equal conditions during games. Played on a modified volleyball court with tactile markings with two teams of three players, its purpose is to throw the ball – which has bells inside – from one team's area into the opposing team's goal [24]. Most part of the time, goalball players' body is close to the ground, either lowered or lying down, since they use it to defend their goal line from the offensive team's ball.

Although visual disorder affects about 1 to 6 % of world population, depending on the socioeconomic level[25,26], and despite the fact that the growing Paralympic Movement is a favorable environment to promote social integration, health, and wellness[27], there is still a gap about knowledge concerning quality of life among athletes with visual disorder. Thus, this study aimed to identify the perceived quality of life of blind football and goalball players, comparing to perceived quality of life of physically inactive people with visual disorder.

## 2 Material and Method

### 2.1 Participants

Twelve male athletes of blind football (age: $M$ = 27.3 years, $SD$ = 10.2), 13 male athletes of goalball (age: $M$ = 30.3 years, $SD$ = 7.0) and 12 physically inactive men with visual disorder (age: $M$ = 25.3 years, $SD$ = 2.3) participated in this study. Blind football group (FG) participants were recruited from the Special Recreational Sports Center of the Assunção Neighborhood, city of São Bernardo do Campo, Brazil; goalball group (GG) participants were recruited from School of Arts, Sciences and Humanities of University of São Paulo; and physically inactive group (IG) participants were approached and selected at subway stations in the city of São Paulo. Participants of the FG and GG had, respectively, at least three years and two years of experience in their sports, and had three sessions of two hours of weekly training.

To determine if a person was physically inactive (and then eligible for the IG), the following questions were asked: "Do you exercise? Do you work? Does your job require physical effort or not (active or inactive)? In your everyday life, how much do you have to walk to do your daily tasks?". Those who reported to exercise, had a job that required a lot of physical effort or used to walk a lot were not included in the sample.

All participants provided informed written consent, according to procedures approved by the Institutional Review Ethics Committee (registration # 1.039.606).

### 2.2 Experimental procedures

To assess the perceived quality of life, the validated Portuguese version of World Health Organization Quality of Life questionnaire short version (WHOQOL-Bref) was applied [28]. WHOQOL-Bref has twenty-six questions; two of them compose the general facet (Overall Quality of Life and General Health) and twenty-four questions represent the twenty-four facets of the original instrument (WHOQOL-100) and are grouped into four domains: physical health, psychological, social relationships and environment. Each question has a Likert scale ranging from 1 to 5, being 1 the lowest level and 5 the highest one, except in questions 3, 4 and 26, which use an inverted scale, meaning 1 is the highest level and 5 is the lowest one.

Athletes participants were interviewed individually at their training facilities, and physically inactive participants at the subway stations. Since participants had visual disorder, the usually self-explanatory questionnaire was read aloud by an interviewer, who wrote down the answers.

### 2.3 Data analysis

To obtain the scores, mean values of the answers in the general facet and in each domain, for each participant, were multiplied by 4. So, these scores ranged from 4 to 20. To allow comparison with WHOQOL-100, the scores were normalized on a scale from 0 to 100, by subtracting 4 and then multiplying

by 100 and dividing by 16. Afterwards, means and standard deviations of each group in the general facet and in each domain were calculated.

### 2.4 Statistical analysis

After verifying that assumptions were fulfilled for parametric tests, a multivariate analysis of variance (MANOVA) was performed, using group as factor and the quality of life in the general facet and in each domain as dependent variables.

When applicable, Tukey's Honestly Significant Difference (HSD) post-hoc tests were performed. The significant level was maintained at 0.05 and analyses were performed using SPSS software.

## 3 Results and Discussion

Perceived quality of life scores of both athletes groups (FG and GG) were higher than perceived quality of life scores of IG in all domains, and there was no difference between FG and GG scores. Table 1 shows the means and standard deviations of the scores of the general facet and the four domains for the three groups.

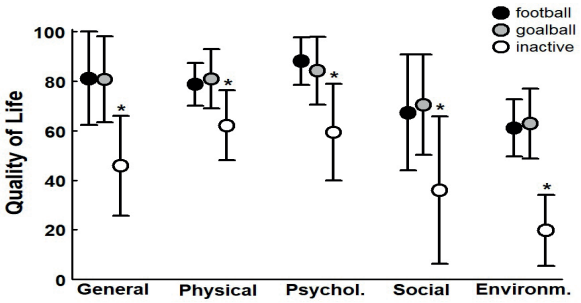
**Table 1** - Means and standard deviations of scores of quality of life domains for Football Group (FG), Goalball Group (GG) and Inactive Group (IG)

| Domain | FG | GG | IG |
|---|---|---|---|
| Overall Quality of Life and General Health | 81.3 (±18.8) | 80.8 (±17.4) | 45.8 (±20.2) |
| Physical Health | 78.9 (±8.7) | 81.0 (±12.0) | 62.2 (±14.2) |
| Psychological | 88.2 (±9.5) | 84.3 (±13.6) | 59.4 (±19.6) |
| Social Relationships | 67.4 (±23.4) | 70.5 (±20.3) | 36.1 (±29.8) |
| Environment | 61.2 (±11.6) | 63.0 (±14.1) | 19.8 (±14.4) |

**Source**: The authors.

Figure 1 depicts the scores of the general facet and the four domains for the three groups. MANOVA revealed a group effect, Wilk's Lambda = .244, $F(10, 60) = 6.14$, $p < .001$. Univariate tests indicated that there were significant differences among groups in all domains: Physical Health, $F(2, 34) = 9.24$, $p = .001$, Psychological, $F(2, 34) = 13.5$, $p < .001$, Social Relationships, $F(2, 34) = 7.24$, $p = .002$, and Environment, $F(2, 34) = 40.4$, $p < .001$. Univariate tests also revealed significant differences among groups in the general facet, $F(2, 34) = 14.2$, $p < .001$. Post-hoc tests using Tukey's HSD indicated both FG and GG had higher perceived quality of life than IG in all domains. Post-hoc tests also revealed that there was no difference between FG and GG in all domains, nor in the general facet of WHOQOL-Bref.

**Figure 1 -** Means and standard deviations of scores of the general facet and domains of the WHOQOL-Bref for Football Group, Goalball Group and Inactive Group. *$p < .05$.




**Source:** The Authors.

This study aimed to identify the perceived quality of life level in both blind football and goalball athletes, and compare it to perceived quality of life level in people with visual disorder physically inactive. Results showed that both FG and GG had higher scores than IG in the general facet and in all domains of WHOQOL-Bref.

The general facet higher scores in FG and GG indicate the athletes with visual disorder, regardless of the sport performed, have a positive perception of their quality of life and are satisfied with their health status. Such claim is reinforced by the domains analysis for the group, which presents scores significantly higher for FG and GG.

Concerning physical health domain, the highest scores for both FG and GG highlights the importance that physical fitness improvements[29], as well as better motor skills[30] and hearing benefits[31] on goalball players, might have had in the athletes' perception. Although physical fitness is not a facet on physical health domain, which lists facets as mobility, sleep and rest, work capacity, and energy and fatigue, it is known that benefits of physical activity and sports regular practice can work as moderator on general health status[32]. Furthermore, athletes with visual disorder of high-performance sports related improvements on their mobility and spatial orientation after their engagement into the sport routine training[21]. People with disabilities generally are less healthy compared to people without disabilities, thus, the physical activity engagement by people with disabilities may be more valuable for their quality of life in relation to people without disabilities, once it provides physiological, emotional, cognitive and social benefits to those individuals[33]. Thus, the impact of goalball and blind football practice on physical health perception of FG and GG participants is stressed.

Psychological domain results are in agreement with a study with people with physical disability, where psychological was the highest scored domain[4], indicating its important influence on quality of life perception[A2] . Os resultados do domínio psicológico estão de acordo com estudo realizado com pessoas com deficiência física, no qual o domínio psicológico apresentou maior pontuação, indicando sua importante influência para a percepção da qualidade de

vida.Reduction on anxiety, stress and depression levels are reported as an outcome of the regular exercise practice, as well as improvement in mood, and an increased physical and psychological wellbeing[34]. Hence, the major psychological benefits of successful physical activity experiences, which are enhanced self-perception, varying ranging from global self-esteem to more discrete and specific competence, and self-efficacy judgments[33] explain the positive findings for FG and GG in psychological domain[A3] . Consequentemente, os maiores benefícios psicológicos de experiências positivas com a atividade física, que são a melhoria da auto-percepção e o julgamento da auto-eficácia, explicam os resultados positivos para o FG e o GG no domínio psicológico. The sport engagement, whether with goalball or blind football, played an important role on athletes' perception over psychological issues.

Regarding the social relationships domain results, they differ from those found by Noce et al.[4] in a study comparing wheelchair basketball players and sedentary people who use wheelchairs, where the social domain results had no significant difference between the groups. On the other hand, a study with athletes of different sports (team and individual sports) found scores significantly higher in social relationships domain among individuals engaged in team sports rather than individual sports. Unlike individual sports, team sports activities require commitment and social interactions among players, providing meaningful social relations[3]. Since goalball and blind football are team sports, the assumption that they address facets of social relationship domain such as personal relationships and social support can be made. In addition, a qualitative research about leisure with 185 participants with a range of different disabilities, listed the main benefits those individuals obtained through participation in physically active leisure experiences: escape from their family or others; involvement in group or structured activities; involvement in casual participation; challenge their abilities and achieve their goals; meet others; entertainment or fun; and to relax [35]. Therefore, the difference verified in FG and GG stresses the role that physical activity engagement plays in the athletes' social relationships perception, when compared to IG.

Studies have shown that environmental domain was found as the lowest scored among active and inactive people[3], people with physical disability[4], and among elderly[36]. WHOQOL-Brefenvironmental domain facets address physical safety, home environment, financial resources, health care, opportunities to obtain information, physical environment, transportation and leisure as important issues for quality of life. Estudos demonstraram que o domínio ambiental foi o menos pontuado entre pessoas ativas e inativas, entre pessoas com deficiência física e entre idosos. As facetas do domínio ambiental do WHOQOL-Bref abordam segurança física, ambiente familiar, recursos financeiros, cuidado em saúde, oportunidades de obter informação, ambiente físico, transporte e lazer como questões importantes para a qualidade de vida. [A4] Mostly, they relate to infrastructure issues with implications on accessibility and social inclusion, which may offer greater restrictions to people with disability, and hence to people with visual disorder. Nevertheless, FG and GG presented higher scores than IG in environmental domain. The Global action plan statement for physical activity 2018-2030 that reducing physical activity disparities requires a "systems-based" approach, where actions aim improvements in social, cultural, economic and environmental factors to support physical activity[37], reveals the complexity to sustain a physically active behavior.[A5] A afirmação do Plano de Ação Global para a atividade física 2018-2030 de que reduzir as disparidades em atividade física requer uma abordagem sistêmica, onde as ações tenham por objetivo melhorias em fatores sociais, culturais, econômicos e ambientais que visem apoiar a atividade física, revela a complexidade para manter um comportamento fisicamente ativo. Since sport engagement requires commuting to training facilities, buying sport equipment and so forth, such requirements force the athletes to overcome environmental barriers. Therefore, physical activity itself may not explain the difference found among the groups; however social processes that athletes need to perform in order to maintain their active lifestyle provides a better understanding of our findings.

## 4 Conclusion

The results of this study provide evidences that engagement in blind football and goalball has positive effects on quality of life perception of people with visual disorder. Like worldwide disclosures about physical activity benefits for people's quality of life, these outcomes, as well as previous studies results aforementioned, support that such statement also applies to people with visual disorder. Moreover, considering that those individuals accessibility to basic social services is usually harmed, it is suggested herein that sport and physical activity engagement has an amplified impact on quality of life perception of people with visual disorder. Future studies with similar approach which evaluate and compare individual to team sports are suggested. Thus, it is hoped that the findings of this study will contribute to the efforts of people and organizations to minimize the problem of physical inactivity among people with visual disorder, and therefore, improve their quality of life[A6] . Assim sendo, espera-se que os achados deste estudo contribuam com os esforços de pessoas e organizações em minimizar o problema da inatividade física entre pessoas com deficiência visual e, portanto, melhorem sua qualidade de vida.

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