

The effect of physical activity on self-esteem of people with visual impairments

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Published online: September 30, 2023

(Accepted for publication September 15, 2023)

DOI:10.7752/jpes.2023.09272

Abstract

Introduction: A passive lifestyle raises the risk of acquiring significant health disorders, whereas sports and physical activity may have a positive impact on the well-being and psychological characteristics of people with visual impairments. People with visual impairments can improve their motor and psychosocial abilities through physical activity. The present research aims to investigate the effect of physical exercise on the self-esteem of people with visual impairments. **Methods:** The instruments used for this study were the Rosenberg Self-Esteem Scale for self-esteem and two statements for sports participation and physical activity – exercise level. The participants of the study were 65 adults with visual impairments, aged from 18 to 53 years with an average age of 32.72 years, of whom 35 were athletes and 30 were non-athletes. **Results:** The majority of the participants answered that they exercise very often (26.2%). Statistically significant differences ($p < .05$) were found between athletes and non-athletes in self-esteem. Specifically, the results of the research indicated statistically significant differences in self-esteem depending on being an athlete and the level of physical activity ($p < 0.05$). Individuals with visual impairments who are athletes and exercise regularly, reached a higher score in self-esteem ($p < .05$), compared to people with visual impairments who are non-athletes and exercise occasionally, respectively. Being an athlete, years of involvement with sports and the frequency of physical activity were positively correlated with self-esteem ($p < .05$). **Conclusion:** The findings of the research could be used by sports and health professionals involved in the rehabilitation of people with visual impairments for their motor and psychosocial development. People with visual impairments could improve their motor and psychosocial abilities through physical activity.

Key Words: physical exercise, visual impairments, athletes, self-esteem, well-being, sports psychology

Introduction

While a passive-sedentary lifestyle raises the risk of acquiring significant health problems, sports and physical activity may have a positive impact on the well-being and psychological characteristics of people with visual impairments (Boffoli et al., 2011; Lieberman et al., 2010). However, individuals with visual impairments typically engage in less physical activity, in comparison to people with other disabilities (Longmuir & Bar-Or, 2000), although they could improve their motor and psychosocial abilities through physical exercise (Shapiro et al., 2005).

People with visual impairments face social barriers and obstacles, which discourages them from participating in sport activities or physical exercise (Morelli, et al., 2011; Lieberman & McHugh, 2001; Shapiro et al, 2005; Stuart, et al., 2006). The absence of visual information and visual feedback also makes it more difficult for persons with visual impairments to develop social skills that depend highly on their sight, which could have an impact on how well they adjust to their social environment (Salleh & Khalim, 2010). Therefore, it is advisable for the professionals engaged in rehabilitation or physical exercise of individuals with visual impairments to consider this social factor (Dehghansai et al., 2021, Le Toquin et al., 2022). Additionally, in order for a person with a visual impairment to receive the anticipated benefits mentioned in the literature (Auxter et al., 1997; Martens, 1988; Movahedi et al., 2011; Qasim et al., 2014), professionals involved in the rehabilitation of people with visual impairments could educate and encourage people towards an active lifestyle and physical activity.

Some researchers particularly highlight the positive effects of sport on quality of life (QoL) and psychological wellbeing (PWB) in visually impaired athletes, especially in those who practice dancesport compared to other sound input-based sports (Carretti et al., 2022). On the other hand, other researchers mentioned that sports such as baseball (sound input-based sport) could increase self-esteem, social skills, PWB and QoL of visually impaired people (Mirandola et al., 2019). In addition, similar differences are identified in sport psychology in the field of motivation in blind and visually impaired athletes between individual and team sports (Seyedi et al., 2023).

The impacts of sport on the psychosocial skills of exercisers have been the subject of numerous studies (Ahmed et al., 2016; Alexandr et al., 2016; Ayala, 2020; Belkacem, & Salih, 2018; Bonavolontà et al., 2021;

Choi, & Bum, 2019; Coyne, & Woodruff, 2020; Farren et al., 2021; Gaetano, & Di Tore, 2016; Kim et al., 2015; Kurt et al., 2012; Mariani et al., 2019; Nemček et al., 2017; Orlenko, & Malyk, 2017; Petrovska et al., 2022; Schulze, 2022; Serhii et al., 2020; Yahaya et al., 2021). There are, however, fewer studies in the literature that address the corresponding impact of sports on the psychosocial characteristics of exercisers with visual impairments (Chen, 2012; Dalbudak, 2019; Dalbudak, & Yiit, 2019; Gaetano, 2016; Kurtolu, & Konar, 2021; Mavrovouniotis et al., 2013; Neofotistou et al., 2014). Therefore, the purpose of the present study was to further investigate how exercise and the athletic profile of people with visual impairments could affect their psychosocial traits, particularly self-esteem.

Material & methods

Participants

In the present study, 65 adults with visual impairments participated, 40 of whom were male and 25 female. Regarding the age of the participants, they ranged from 18 to 53 years, with an average age of 32.72 years ($SD = \pm 8.44$). The majority of the participants (45) were individuals with blindness, while the rest (20) were individuals with low vision, (average number of years with vision loss = 28.90 ± 10.77). In this study 35 of the participants were athletes (people with an active sports card from the Hellenic Sports Federation for Persons with Disabilities) and 30 were non-athletes. Regarding their training experience, the athletes mentioned $M = 10.77 \pm 9.00$ years of involvement in their sport.

Procedure

The statistical software G*Power: Statistical Power Analyzes for Windows, Version 3.1.9.7 (Faul, et al., 2007; Faul, et al., 2009) was used in the present study to calculate the required number of participants for the expected statistical power and effect size (ES) of the survey results (Cohen, et al., 2007). The research involved people with visual impairments both athletes and non-athletes. For the collection of data concerning psychosocial characteristics, structured questionnaires that have been used in other relevant researches were used and are presented in detail below. The questionnaires were anonymous and each one took about 10 minutes to complete. All the interviews were conducted individually. Additionally, consent was obtained from the participants and the research was conducted in accordance with the guidelines of the Declaration of Helsinki (Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Subjects).

Instruments

The Rosenberg self-esteem scale (Rosenberg, 1965) consisting of ten questions was used to investigate self-esteem. The ten questions are answered by the respondent on a four-point scale ranging from strongly agree to strongly disagree (e.g., I feel that I have a number of good abilities ("Strongly agree" / "Agree" / "Disagree" / "Strongly disagree"). The score for each participant is calculated by summing his/her responses according to the manufacturer's instructions. Scores range from zero to thirty, with the highest score corresponding to a higher degree of self-esteem. The Rosenberg Self-Esteem scale (Rosenberg, 1965) is widely used due to its reliability and validity (Roth, et al., 2008; Tinakon & Nahathai, 2012) and is weighted to the Greek population (Galanou, et al., 2014). The scale has generally high reliability and control-retest tests range between 0.82 to 0.85 in retests conducted after two weeks (Blascovich & Tomaka, 1991). Cronbach's α ranges from Cronbach's $\alpha = 0.77$ to 0.88 (Blascovich & Tomaka, 1991) and this instrument has been used before in similar surveys with high reliability (Kapinga, & Aloni, 2023). In the present study, the Cronbach's α coefficient on the Rosenberg Self-Esteem Scale (Rosenberg, 1965) to investigate the self-esteem of individuals with visual impairments was Cronbach's $\alpha = 0.78$.

The participation in sports or physical activity was measured through two statements answered in a 5-point scale adapted from Alexandris, et al., 2020. Sports participation was measured using a similar methodology in previous surveys (Stafylidis, et al., 2023). In particular:

- i) "How often do you exercise or engage in your sport?". Answering possibilities adapted from (Alexandris, et al., 2020): [1. I don't exercise at all (I am not interested in exercise, I almost avoid it), 2. I only exercise occasionally (If it happens, I exercise with my friends occasionally), 3. I exercise a few times (Only a few days a month), 4. I exercise often (A few days a week), 5. Very often (Regularly-Systematically)].
- ii) "How often did you exercise or engaged in your sport during the last month?" (1. Occasionally = less than 3 times, 2. Sometimes = 4 to 5 times, 3. Often = 6 to 8 times, 4. Very Often = 9 to 11 times, 5. Regularly = 12 times or more).

Statistical analysis

Initially, an analysis of the expected statistical power was performed based on statistical data, in order to calculate the required number of participants. The calculation of Effect Size (ES) and statistical power (power) was performed in the environment of G*Power: Statistical Power Analyzes for Windows, Version 3.1.9.7 (Faul, et al., 2007; Faul, et al., 2009). The statistical processing was done using the IBM SPSS version 25 (IBM, New York, USA). Frequencies, means, standard deviations, minimum and maximum values were calculated for all factors and variables of this research and the proper statistical tests were applied. The statistical significance for all the data examined was set at $p \leq .05$.

Results

Statistically significant differences ($p \leq .05$) were found between athletes and non-athletes (Fig. 1). Athletes had significantly higher scores in self-esteem 22.1 ± 3.02 , 95% CI [21.11-23.18], in comparison to non-athletes participants ($M=19.1 \pm 4.59$, 95% CI [17.35-20.78], $t(63) = -3.23$, $p = 0.002$, $p \leq .05$, $d = 0.80$).

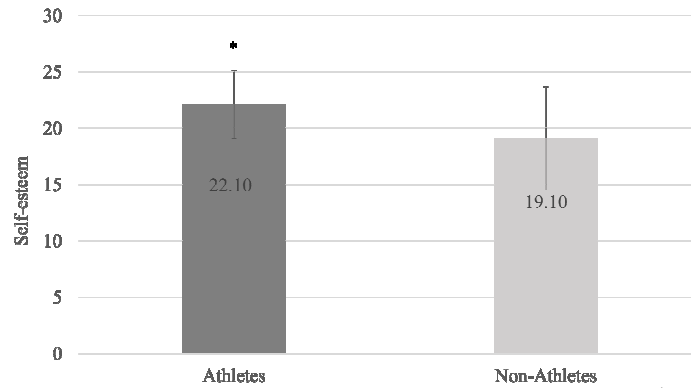


Fig. 1. Differences in self-esteem between athletes and non-athletes ($p \leq .05$).

Differences were also found in the percentages of the sports participation statement “How often do you exercise or engage in your sport?” (Fig. 2). The majority of the participants answered that they exercise very often (26.2%). Individuals who reported higher scores in sports participation (cat.⁵) had statistically significant ($p \leq .05$) higher scores in self-esteem 22.5 ± 3.73 , 95% CI [20.55-24.39], in comparison to the ones who reported lower scores $F(4, 60) = 3.57$, $p = 0.011$, $p \leq .05$, $\eta^2 = 0.192$, (Fig. 4). However, not statistically significant differences in self-esteem (Fig. 3) were noted amongst cat.⁴, ($M=22.1 \pm 3.81$), 95% CI [20.09-24.16], in cat.³ ($M=20.5 \pm 2.24$), 95% CI [19.08-21.92], in cat.² ($M=18.2 \pm 5.18$), 95% CI [14.87-21.46], and in cat.¹ ($M=18.4 \pm 3.34$), 95% CI [15.59-21.16].

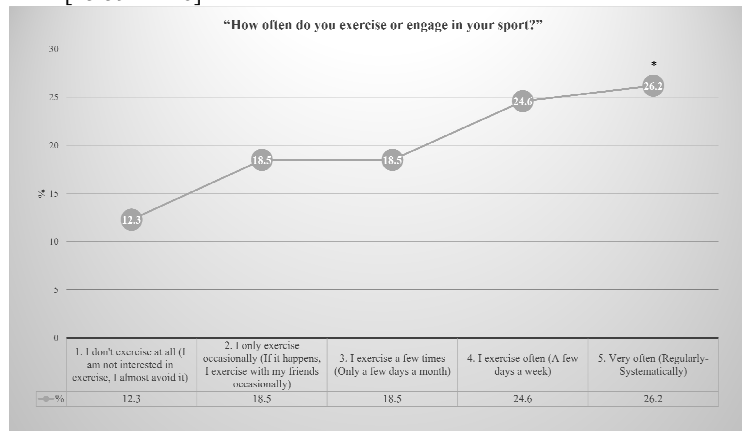


Fig. 2. Percentages of the sports participation question (How often do you exercise or engage in your sport?).

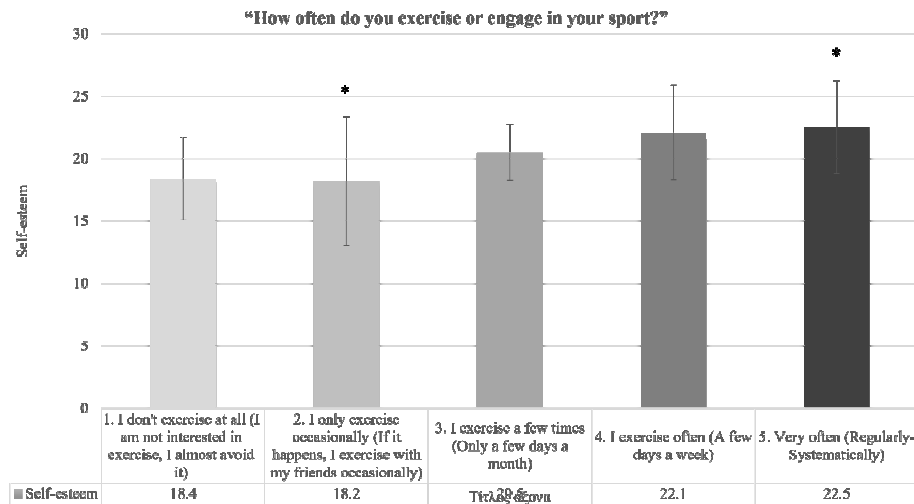


Fig. 3. Differences in self-esteem according to sports participation ($cat.^2 \neq cat.^5$, $p \leq .05$).

Differences in the percentages of the sports participation during the last month question “How often do you exercise or engage in your sport during the last month?” (Fig. 4). The majority of the participants answered that they exercise regularly (12 times or more/last month, 30.8%). The individuals who reported higher scores in sports participation (cat.⁵) had statistically significant ($p \leq .05$) higher scores in self-esteem 22.3 ± 3.48 , 95% CI [20.67-23.93], in comparison to those who reported lower scores, $F(4, 60) = 4.07$, $p = 0.005$, $p \leq .05$, $\eta p^2 = 0.214$, (Fig. 5). Statistically significant differences were also noted in self-esteem between cat.⁴ in which people exercised Very Often = 9 to 11 times ($M = 21.8 \pm 3.65$), 95% CI [19.43-24.07], and cat.¹, where individuals reported that they exercised occasionally = less than 3 times ($M = 17.0 \pm 4.69$). In cat.² people reported that they exercised Sometimes = 4 to 5 times ($M = 20.9 \pm 3.97$), 95% CI [18.53-23.32], and in cat.³ they mentioned that they exercised Often = 6 to 8 times ($M = 20.5 \pm 2.33$), 95% CI [18.55-21.45], but there were not statistically significant differences in these categories (Fig. 5).

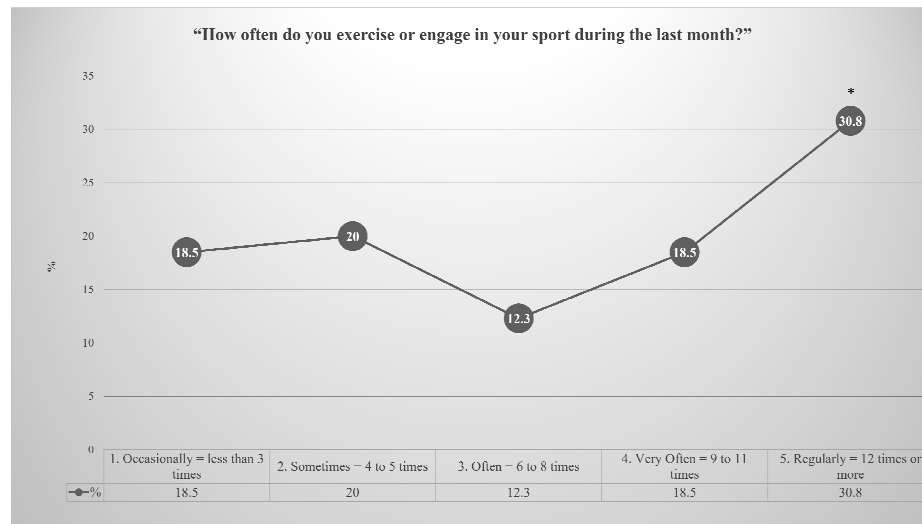


Fig. 4. Percentages of the sports participation during the last month.

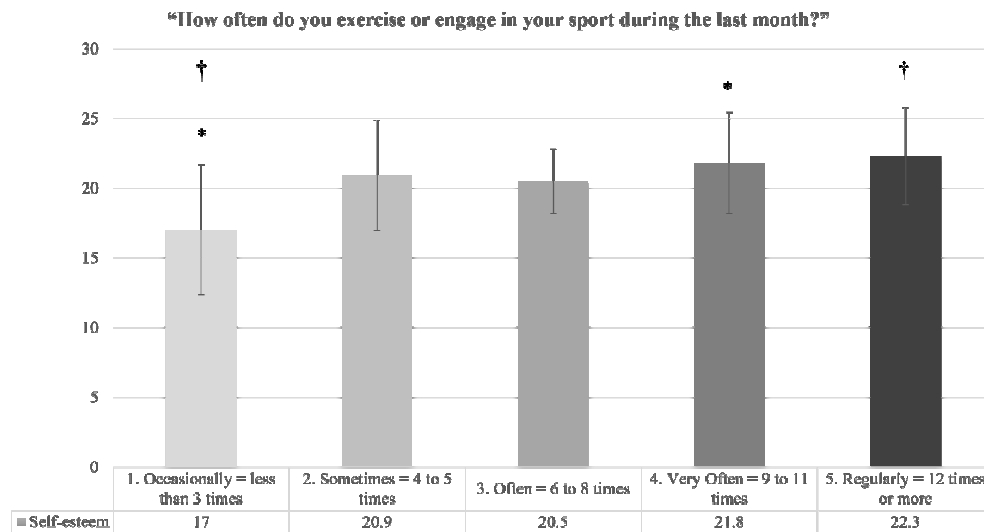


Fig. 5. Differences in self-esteem according to sports participation during the last month (*cat.¹ ≠ cat.⁴, $p \leq .05$, †cat.¹ ≠ cat.⁵, $p \leq .05$).

Statistically significant differences in self-esteem were mentioned between systematical and occasional sports participation ($p \leq .05$). For this analysis, people who chose the statement of cat.⁵ and cat.⁴ in the question “How often do you exercise or engage in your sport?” (Fig. 3) were included in the category “Systematical sports participation”, while people who chose one of the statements of cat.¹, cat.² or cat.³, were included in the category “Occasional sports participation”. Individuals who reported higher scores in sports participation (Systematically) had statistically significant ($p \leq .05$) higher scores in self-esteem ($M = 22.0 \pm 3.78$), 95% CI [20.73-23.33], in comparison to those who reported lower scores (Occasionally) ($M = 19.2 \pm 3.99$), 95% CI [17.71-20.68], $t(63) = -2.93$, $p = 0.005$, $p \leq .05$, $d = 0.73$, (Fig. 6).

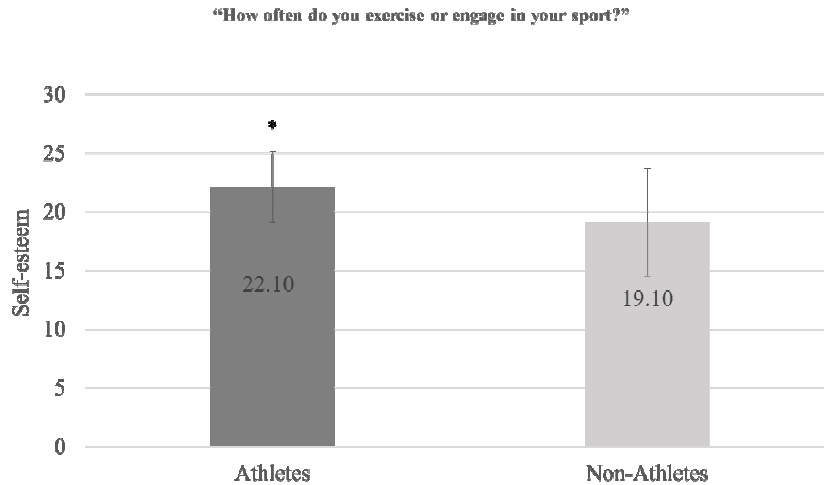


Fig. 6. Differences in self-esteem between systematical and occasional sports participation (* $p \leq .05$).

Statistically significant differences in self-esteem were also mentioned between systematical and occasional sports participation during the last month ($p \leq .05$). For this analysis, people who chose the statement of cat.⁵ and cat.⁴ in the question “How often do you exercise or engage in your sport during the last month?” (Fig. 6) were included in the category “Systematical sports participation during the last month”, while people who chose one of the statements of cat.¹, cat.² or cat.³, were included in the category “Occasional sports participation during the last month”. Individuals who reported higher scores in sports participation during the last month (Systematically) had higher scores in self-esteem ($M=21.80 \pm 3.56$, $p \leq .05$), 95% CI [20.58-23.07], in comparison to those who reported lower scores (Occasionally) ($M=19.5 \pm 4.36$), 95% CI [17.92-21.11], $t(63) = -2.35$, $p = 0.022$, $p \leq .05$, $d = 0.58$, 95% CI [-2.31-0.34], (Fig. 7).

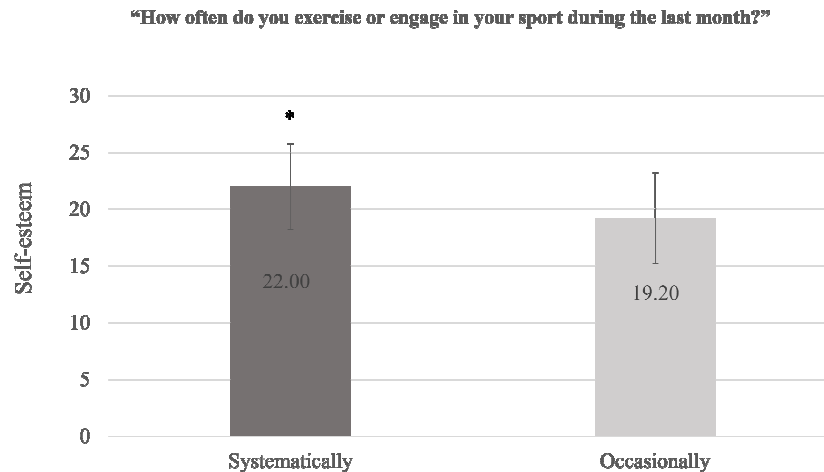


Fig. 7. Differences in self-esteem between systematical and occasional sports participation during the last month (* $p \leq .05$).

Furthermore, statistically significant positive correlations ($p \leq .05$) were found between the variables: years of involvement with sports, being an athlete, individual/team sport, exercise frequency and exercise frequency during the last month (Table 1). The variables gender, age and years since vision loss were not significantly correlated with self-esteem ($p > .05$), (Table 1).

Table 1. Correlations of self-esteem with participants' individual characteristics.

Variable	Self-esteem
Gender	-.001
Age	-.173
Years since vision loss	-.034
Years of involvement with sports	.368*
Being an athlete	.377**
Individual/Team Sport	.482**
Exercise Frequency	.417***
Exercise Frequency during the last month	.404***
Physical Exercise (¹ Systematically, ² Occasionally)	.347**
Physical Exercise during the Last Month (¹ Systematically, ² Occasionally)	.283*

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Discussion

There are several studies referring to the impact of sports on the psychosocial skills of exercisers (Ahmed et al., 2016; Alexandr et al., 2016; Ayala, 2020; Belkacem, & Salih, 2018; Bonavolontà et al., 2021; Choi, & Bum, 2019; Coyne, & Woodruff, 2020; Farren et al., 2021; Gaetano, & Di Tore, 2016; Kim et al., 2015; Kurt et al., 2012; Le Toquin et al., 2022; Mariani et al., 2019; Nemček et al., 2017; Orlenko, & Malyk, 2017; Petrovska et al., 2022; Schulze, 2022; Serhii et al., 2020; Yahaya et al., 2021). Respectively, in this study, individuals with visual impairments who reported higher scores in sports participation had statistically significant higher scores in self-esteem in comparison to those who reported lower scores. At the same time, blind and visually impaired athletes had also significantly higher scores in self-esteem in comparison to the non-athletes. Similar effect of sports and physical exercise on the psychosocial characteristics of individuals with visual impairments was mentioned by the researchers before (Chen, 2012; Dalbudak, 2019; Dalbudak, & Yiğit, 2019; Gaetano, 2016; Kurtoglu, & Konar, 2021; Mavrovouniotis et al., 2013; Mirandola et al., 2019; Neofotistou et al., 2014).

To conclude, participating in sports and physical exercise, as well as being an athlete could benefit people with visual impairments. Professionals involved in the rehabilitation of people with visual impairments and sports professionals could educate and encourage individuals with visual impairments towards an active lifestyle and physical activity in order to obtain the expected benefits (Auxter et al., 1997; Martens, 1988; Movahedi et al., 2011; Qasim et al., 2014).

Conclusion

People with visual impairments face social barriers and obstacles, which discourages them from sports activities or physical exercise (Morelli, et al., 2011; Lieberman & McHugh, 2001; Shapiro et al, 2005; Stuart, et al., 2006). The absence of visual information also makes it more difficult for persons with visual impairments to develop social skills that are highly dependent on it (Salleh & Khalim, 2010). Furthermore, a passive lifestyle increases the risk of developing serious health pathologies (Boffoli et al., 2011; Lieberman et al., 2010), whereas physical exercise is a way of developing both motor and psychosocial skills of people with visual impairments (Dehghansai et al., 2021, Le Toquin et al., 2022; Shapiro et al, 2005).

In the present study, statistically significant differences were found between non-athletes and athletes. Specifically, individuals with visual impairments who are athletes or exercise regularly showed higher scores in self-esteem, compared to non-athletes or persons who exercise occasionally, respectively. Furthermore, the importance of physical activity for individuals with visual impairments and specifically participating in organized sports clubs was highlighted by the fact that the variable being an athlete was positively correlated with self-esteem. The findings of the present research could be used by sports and health professionals involved in the rehabilitation of people with visual impairments for their motor and psychosocial development. Further research should be conducted in larger samples or groups of people who are visually impaired and future research could include and other psychosocial characteristics in their investigations.

Conflicts of interest

The author declares, no conflict of interest.

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