# PHYSICAL ACTIVITY AND SELF-ESTEEM AMONG PEOPLE WITH PHYSICAL DISABILITIES IN SAUDI ARABIA

*ATIVIDADE FÍSICA E AUTOESTIMA EM PESSOAS COM DEFICIÊNCIA NA ARÁBIA SAUDITA*

*ACTIVIDAD FÍSICA Y AUTOESTIMA EN PERSONAS CON DISCAPACIDAD FÍSICA EN ARABIA SAUDITA*

**Original Article**
***Artigo Original***
***Artículo Original***

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## ABSTRACT

Introduction: Physical activity can play a critical and effective role in the health and self-esteem of the general population. However, the research on the association between participation in physical activity and self-esteem in those with physical disabilities in non-Western countries, especially Saudi Arabia is limited. Objective: To analyze self-esteem levels among those with physical disabilities in Saudi Arabia, and examine the relationship between participation in physical activity and self-esteem among those with physical disabilities in Saudi Arabia. Methods: A participant sample (N = 292) consisting of Saudi Arabian individuals with physical disabilities (male n = 201; female n = 91) aged 18-59 years (M = 36.08 years; SD = 10.64) was recruited to participate in this study. Levels of self-esteem were measured using the Arabic version of the Rosenberg Self-Esteem Scale (RSES). Results: Statistical analysis illustrated that the participants' overall self-esteem was moderate (M = 3.14; SD = 0.56). A stepwise multiple linear regression demonstrated that participating in physical activity (measured by days per week) was the only predictor of the total RSES scale (ß = –0.304; p = <0.001). Conclusions: The findings suggest that participation in physical activity is a statistically significant predictor of self-esteem levels in those with physical disabilities in Saudi Arabia. Therefore, it is essential to increase awareness of the importance of participation in physical activity among people with physical disabilities. ***Level of evidence II; Therapeutic Studies - Investigation of Treatment Results.***

**Keywords:** Disability Studies; Disabled Persons; Physical Inactivity; Quality of Life.

## RESUMO

*Introdução: A atividade física pode desempenhar um papel crítico e efetivo na saúde e autoestima da população em geral. No entanto, a pesquisa sobre a associação entre a participação em atividade física e a autoestima em pessoas com deficiência física em países não ocidentais, especialmente na Arábia Saudita, é limitada. Objetivo: Analisar os níveis de autoestima em pessoas com deficiência física na Arábia Saudita e examinar a relação entre a participação em atividade física e a autoestima nesse grupo. Métodos: Uma amostra de participantes (N = 292) composta por indivíduos sauditas com deficiência física (homens n = 201; mulheres n = 91), com idades entre 18 e 59 anos (M = 36,08 anos; DP = 10,64), foi recrutada para participar deste estudo. Os níveis de autoestima foram medidos usando a versão árabe da Escala de Autoestima de Rosenberg (RSES). Resultados: A análise estatística mostrou que a autoestima geral dos participantes foi moderada (M = 3,14; DP = 0,56). Uma regressão linear múltipla stepwise demonstrou que a participação em atividade física (medida por dias por semana) foi o único preditor da pontuação total da escala RSES (ß = –0,304; p = <0,001). Conclusões: Os resultados sugerem que a participação em atividade física é um preditor estatisticamente significativo dos níveis de autoestima em pessoas com deficiência física na Arábia Saudita. Portanto, é essencial aumentar a conscientização sobre a importância da participação em atividade física entre as pessoas com deficiência física.* ***Nível de Evidência II; Estudos terapêuticos - Investigação dos Resultados do Tratamento.***

***Descritores:*** *Estudos sobre Deficiências; Pessoas com Deficiência; Inatividade Física; Qualidade de Vida.*

## *RESUMEN*

*Introducción: La actividad física puede desempeñar un papel crítico y efectivo en la salud y autoestima de la población en general. Sin embargo, la investigación sobre la asociación entre la participación en actividad física y la autoestima en personas con discapacidad física en países no occidentales, especialmente en Arabia Saudita, es limitada. Objetivo: Analizar los niveles de autoestima en personas con discapacidad física en Arabia Saudita y examinar la relación entre la participación en actividad física y la autoestima en este grupo. Métodos: Se reclutó una muestra de participantes (N = 292) compuesta por individuos sauditas con discapacidad física (hombres n = 201; mujeres n = 91), con edades comprendidas entre 18 y 59 años (M = 36,08 años; DE = 10,64) para participar en este estudio. Los niveles de autoestima se midieron utilizando la versión árabe de la Escala de Autoestima de Rosenberg (RSES). Resultados: El análisis estadístico mostró que la autoestima general de los participantes fue moderada (M = 3,14; DE = 0,56). Una regresión lineal múltiple stepwise demostró que la participación en*




Associate Editor responsible for the review process: André Pedrinelli

*actividad física (medida por días por semana) fue el único predictor de la puntuación total de la escala RSES (ß = −0,304; p = <0,001). Conclusiones: Los resultados sugieren que la participación en actividad física es un predictor estadísticamente significativo de los niveles de autoestima en personas con discapacidad física en Arabia Saudita. Por lo tanto, es esencial aumentar la conciencia sobre la importancia de la participación en actividad física entre las personas con discapacidad física.* ***Nivel de Evidencia II; Estudios terapéuticos - Investigación de los Resultados del Tratamiento.***

***Descriptores:*** *Estudios de la Discapacidad; Personas con Discapacidad; Inactividad Física; Calidad de Vida.*

DOI: http://dx.doi.org/10.1590/1517-8692202430022022_0116i Article received on 03/02/2022 accepted on 04/17/2023

## INTRODUCTION

Being physically active provides a range of health benefits, including a better quality of life and a lower risks of chronic disease.[1,2] Those with physical disabilities also enjoy health and self-esteem benefits from participating in exercise, sport, and other physical activity (PA) as part of their free time interests.[3] Compared to adults without disabilities and the general population, adults with sensory or physical disabilities tend to participate less in PA.[3,4] Therefore, there is an urgent requirement to improve the available opportunities for those with disabilities and to encourage more participation in PA to improve their quality of life[5] and self-esteem.

In general, it is accepted that encouraging the participation of those with disabilities in PA is critical to raising their self-esteem[6,7] as levels of self-esteem are linked to participation in PA such as sport and exercise.[8-10] Exercising regularly has been shown to benefit mental and physical health by reducing stress, increasing confidence, and minimizing feelings of isolation.[1] By increasing Fndc5/irisin activity in the brain, exercise boosts self-esteem and cognitive performance and helps to overcome negative emotions like stress. Researchers have discovered that regular exercise has immediate effects on mood and cognition and longer-term effects on self-confidence via enhanced judgments of physical well-being and competence. Self-esteem, as a factor affecting quality of life, forms a critical aspect of emotional well-being[11] and is a key factor in life satisfaction and psychological well-being.[12] Self-esteem can be considered as a global self-assessment characterized by a continuum of self-attitude ranging from positive to negative. High self-esteem indicates that individual regard themselves as good and worthy, while low self-esteem involves dissatisfaction with themselves and self-rejection.[12]

The *Exercise Self-Esteem Model* provides a tool to analyze PA's effects on global self-esteem and self-esteem, whereby engagement in PA results in positive shifts in self-esteem, leading to enhanced global self-esteem.[13] This concurs with the positive relationship between self-esteem and athletic ability.[14] A comparative study of self-esteem among high-level athletes, amateur sportspeople, and those who remain physically inactive found that members of the former two groups reported higher self-esteem levels.[15] Similarly, a study on Italian teenagers found that those who reported having higher fitness levels also reported higher self-esteem levels than their less active counterparts.[9] A further study found that active Slovakian citizens with physical disabilities reported higher self-esteem levels than those who were inactive.[16] These studies provide a strong indication that higher levels of PA play a crucial part in enhancing levels of self-esteem of those with disabilities and thus improving the quality of life.

Although a plethora of research has examined the relationships between PA and self-esteem, this topic remains under-investigated in the Saudi context among those with physical disabilities. Additionally, there is a lack of research on the levels of self-esteem among such Saudis individuals. Therefore, to address this research gap, the present study aims to (i) analyze self-esteem levels among people with physical disabilities in Saudi Arabia; and (ii) examine the relationship between participation in PA and self-esteem among such individuals. It is hoped that this research will offer valuable data on self-esteem levels among adults with physical disabilities in Saudi Arabia, as well as a guide to enhance the opportunities for increased participation in PA among adults with disabilities in order to improve their self-esteem levels among comparable non-Western populations more broadly.

## METHODS

### Participants

Saudi Arabian subjects with physical disabilities who were permanent residents of Saudi Arabia were invited to participate in this study. A total of 292 participants (male: $n$ = 201; female: $n$ = 91) aged 18–59 ($M$ = 36.08 years; $SD$ = 10.64) agreed to participate and completed an Arabic version of the Rosenberg Self-Esteem Scale (RSES).[12]

### Measures

#### Demographic Form

The demographic form was used to gather data on age, gender, education level, involvement in PA, and daily duration of such PA.

The Rosenberg Self-Esteem Scale (RSES)

An Arabic version of the Rosenberg self-esteem scale (RSES) was used to examine the participants' self-esteem level and its relationship to their engagement in PA.[12] This scale was previously translated and utilized in Arab countries.[6,17]

The RSES scale featured ten statements: (1) On the whole, I am satisfied with myself; (2) At times, I think I am no good at all; (3) I feel that I have a number of good qualities; (4) I am able to do things as well as most other people; (5) I feel I do not have much to be proud of; (6) I certainly feel useless at times; (7) I feel that I'm a person of worth, at least on an equal plane with others; (8) I wish I could have more respect for myself; (9) All in all, I am inclined to feel that I am a failure; and (10) I take a positive attitude toward myself. Participant responses were recorded using a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Five items (2, 5, 6, 8, and 9) were negatively worded. These items were recoded so that higher scores reflected more positive self-esteem. The participants' overall scores were added, resulting in scores ranging from 10 to 40. The following schema was used to analyze the participants' level of self-esteem: 10–20: low self-esteem, 21–30: moderate self-esteem, and 31–40: high self-esteem. Exploratory factor analysis (EFA) was used to determine the validity of the items on the Arabic RSES version so that these were appropriate for the participants in the present study. EFA was performed using the principal component analysis (PCA) extraction technique as per Field before Varimax rotation was applied to maximize the total variance.[18]

#### Reliability and Validity

The EFA and PCA highlighted two components on the Arabic RSES scale: (i) items 1, 3, 4, 7, and 10 were labeled *positive feelings*; (ii) items 2, 5, 6, and 9 were labeled *negative feelings*. Item 8 (i.e., *'I wish I could have*

*more respect for myself*') was deleted because its loading factor (– 0.01) was <0.30.[19] This indicated that nine items achieved an acceptable corrected item-total correlation of >0.30.[20] Component (i) (positive feelings) accounted for 27.70% of the total variance; component (ii) (negative feelings) accounted for 25.80% of the total variance; combined, both components achieved cumulative eigenvalues of 53.50% of the total variance. The reliability of each component of the Arabic RSES scale was subsequently examined using Cronbach's alpha. The results indicated good internal consistency for the first and second components (0.79 and 0.77, respectively).[21] The overall Cronbach's alpha for the remaining nine items on the RSES scale was 0.83, considered acceptable.[22] These results indicated that the Arabic RSES scale provided a reliable and valid measure of the participants' self-esteem.

### Procedure

Ethical approval was sought and granted by the Research Ethics Committee, King Faisal University, Saudi Arabia (KFU-REC-2021-DEC-EA000307). The participants voluntarily participated in the study. Questionnaires were distributed via email, with a Google Forms link to a page detailing the study's aims and participant instructions. Informed consent was obtained by asking the participants to begin the questionnaire. The participants were informed that the questionnaire would take approximately ten minutes to complete. On completion of the questionnaires, the results were downloaded ($N = 355$) and checked for errors and completeness. Incomplete questionnaires (n = 63) were removed, and the completed questionnaires (n = 292) were analyzed.

## Data Analysis

The first research objective (analysis of self-esteem levels) was addressed by calculating the mean and standard deviation for the components on the RSES scale. Skewness and kurtosis testing was performed to check for normality of the data. The data were compared using nonparametric Mann–Whitney U testing, a Kruskal–Wallis test, and one-way ANOVA testing. The second research objective (relationship between self-esteem levels and PA) was addressed using a stepwise multiple linear regression, which found that the assumptions were met. Statistical analysis was performed with SPSS 26 (IBM, USA) using a significance level of $p < 0.05$.

# RESULTS

## Demographic Data

A sample of Saudi Arabian participants ($N = 292$) with various physical disabilities (cerebral palsy: 9.24%; spinal disease: 9.93%; progressive muscular dystrophy: 7.19%; sclerosis multiplex: 3.76%; poliomyelitis: 23.90%; others: 45.80%) aged 18–59 ($M = 36.08$ years; $SD = 10.64$) were recruited (female: approximately 30%). Seventy-one percent (210) of the total participants reported secondary school education or higher (Table 1), while approximately 40% reported not being involved in any PA. Additional data on the participants' characteristics and baseline self-esteem scores are shown in Table 1.

## Self-Esteem Levels among Participants with Physical Disabilities

Table 1 illustrates the relationships between the self-esteem levels of the participants with disabilities and the independent variables. The results indicated that, overall, the participants reported a moderate level of self-esteem ($M = 3.14$; $SD = 0.56$). Notably, the mean self-esteem level of the participants relative to the *positive feelings* factor was 3.21 (± 0.58), while the mean self-esteem level relative to the *negative feelings* factor was 3.04 (± 0.73). Table 1 also shows that significant differences were found at various levels of the independent variables. A significant difference was found between male and female participants in relation to the *negative feelings* factor and total RSES scale ($p = 0.021$; $p = 0.041$, respectively), while male participants reported higher levels of self-esteem than female participants (3.25±0.58; 3.14±0.57, respectively)

**Table 1.** Exploring the level of self-esteem scores for independent variables (N = 292).

| Independent Variables | n | Factor1 (positive feelings) | | | Factor2 (negative feelings) | | | Total RSES scale | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M ± SD | F/$\chi^2$/z | p Value | M ± SD | F/$\chi^2$/z | p Value | M ± SD | F/$\chi^2$/z | p Value |
| **Age (years)** | | | | | | | | | | |
| 18–31 | 114 | 3.27±0.59 | 0.823 [a] | 0.440 | 2.99±0.81 | 0.558 [a] | 0.573 | 3.14±0.60 | 0.047 [a] | 0.954 |
| 32–45 | 109 | 3.18±0.57 | | | 3.05±0.67 | | | 3.12±0.55 | | |
| 46–59 | 69 | 3.18±0.75 | | | 3.10±0.66 | | | 3.14±0.52 | | |
| **Gender** | | | | | | | | | | |
| Male | 201 | 3.25±0.58 | −1.389 [b] | 0.165 | 3.09±0.75 | −2.304 [b] | 0.021 * | 3.18±0.57 | −2.044 [b] | 0.041 * |
| Female | 91 | 3.14±0.57 | | | 2.92±0.65 | | | 3.05±0.53 | | |
| **Educational level** | | | | | | | | | | |
| Primary | 40 | 3.08±0.57 | 6.310 [c] | 0.097 | 2.78±0.62 | 9.486 [c] | 0.023 * | 2.95±0.52 | 9.053 [c] | 0.029 * |
| Intermediate | 42 | 3.13±0.49 | | | 3.03±0.58 | | | 3.09±0.39 | | |
| Secondary | 120 | 3.21±0.63 | | | 3.05±0.81 | | | 3.14±0.62 | | |
| University level and above | 90 | 3.32±0.52 | | | 3.14±0.71 | | | 3.24±0.53 | | |
| **PA/Exercise (day)** | | | | | | | | | | |
| 1–2 days a week | 64 | 3.30±0.47 | 41.144 [c] | <0.001 * | 3.26±0.62 | 35.693 [c] | <0.001 * | 3.28±0.48 | 50.591 [c] | <0.001 * |
| 3–4 days a week | 48 | 3.50±0.50 | | | 3.29±0.59 | | | 3.41±0.45 | | |
| +4 a week | 57 | 3.41±0.53 | | | 3.22±0.75 | | | 3.32±0.55 | | |
| No | 123 | 2.97±0.58 | | | 2.74±0.72 | | | 2.87±0.53 | | |
| **PA/Exercise (min)** | | | | | | | | | | |
| 10–30 mins a day | 79 | 3.26±0.54 | 43.478 [c] | <0.001 * | 3.14±0.69 | 37.121 [c] | <0.001 * | 3.21±0.50 | 52.882 [c] | <0.001 * |
| 31–60 mins a day | 39 | 3.43±0.46 | | | 3.31±0.60 | | | 3.38±0.46 | | |
| +60 mins a day | 51 | 3.55±0.47 | | | 3.37±0.66 | | | 3.47±0.48 | | |
| No | 123 | 2.98±0.57 | | | 2.75±0.71 | | | 2.88±0.54 | | |

Note: [a] One-way ANOVA; [b] Mann–Whitney U Test; [c] Kruskal–Wallis Test; * the mean difference is significant at the 0.05 level; PA = physical activity; Negatively worded items (Factor 2) were recoded, so that higher scores reflected more positive self-esteem.

although without statistical significance. With respect to the participants' educational level, the data showed significant differences in the mean scores for the *negative feelings* factor and the overall self-esteem levels for those with physical disabilities among the different education levels ($p = 0.023$; $p = 0.029$, respectively). Importantly, significant differences ($p = <0.001$) were found when comparing the *positive feelings* factor, the *negative feelings* factor, and the total scale among different levels of engagement in PA.

### Self-Esteem and Physical Activity

A stepwise multiple linear regression was applied to investigate whether engagement in PA and exercise (measured in number of days and minutes per day) significantly affected the level of self-esteem among participants with physical disabilities. To investigate the relationship between the overall levels of self-esteem among the participants and its two related subdomains (the *positive feelings* factor and the *negative feelings* factor) in relation to engagement in PA (PA/exercise [day] and PA/exercise [min]), a stepwise multiple regression was used. All significant sociodemographic variables were included in the model. However, the results indicated that only *educational level* was significant in the final model. The multiple linear regression analysis showed that the regression model was significant for the *positive feelings* factor ($F_{(3,288)} = 8.735$, $p < 0.001$), *negative feelings* factor ($F_{(3,288)} = 10,899$, $p < 0.001$), and *total physical disabilities' self-esteem* ($F_{(3,288)} = 13.332$, $p < 0.001$). The results for $R^2$ were 0.074, 0.093, and 0.113 for the *positive feelings* factor, *negative feelings* factor, and the total scale, respectively. This indicates that the independent variables accounted for 7.4%, 9.3%, and 11.3% of the variation in the self-esteem of the participants for the *positive feelings* factor, *negative feelings* factor, and the total scale, respectively. Table 2 illustrates the significance, direction, and strength of performing PA (PA/exercise [day] and PA/exercise [min]) on the self-esteem of the participants. Daily, PA was the only predictor of the *positive feelings* factor, *negative feelings* factor, and the total scale ($ß = –0.243$; $p = 0.005$; $ß = –0.285$; $p = 0.001$; $ß = –0.304$; $p = <0.001$, respectively) that achieved negative standardized beta values.

## DISCUSSION

The present study aimed to investigate self-esteem among Saudi Arabians with physical disabilities and its relationship with engagement in PA. The results indicated that, on average, Saudi Arabians with physical disabilities reported a moderate level of self-esteem. Other researchers have argued that those with physical disabilities reported lower levels of self-esteem than those without disabilities.[23,24] However, another study found no significant differences in self-esteem levels between those with and without disabilities.[25] Therefore, these current findings indicate the need for further research into how self-esteem is affected by the presence or absence of physical disabilities in the Saudi Arabian context. The present study also demonstrated statistically significant differences between the two genders in the total scale, where male participants reported higher levels of self-esteem than female participants. However, these results are inconsistent with a previous study where no significant differences in self-esteem levels between male and female participants were found.[25] Further, the present study found a statistically significant relationship between self-esteem and educational level in those with physical disabilities. This finding, however, contradicts an earlier observation that participants' educational level was not associated with self-esteem. An explanation for this inconsistency could be that educational achievement, as examined in the present study, currently plays a more significant role in determining one's self-worth due to the better employment opportunities it affords.[24]

Crucially, the present study findings showed a positive relationship between engaging in PA and self-esteem among Saudi Arabians with physical disabilities. Being involved in PA appears to be a critical predictor of self-esteem. In other words, those with physical disabilities who are physically active tend to report a higher level of self-esteem than those who are inactive. This finding broadly supports the work of other studies on different types of disabilities. For example, a study indicated a positive relationship between frequent PA and self-esteem in deaf athletes.[26] Further, another study reported that active individuals with visual or hearing impairments showed a higher level of self-esteem than their physically inactive counterparts.[10] Moreover, a qualitative study revealed that the physical-activity-related experiences of participants with physical disabilities appeared to positively impact their feelings of empowerment, consequently improving their quality of life.[1] These results reinforce the importance of engagement in PA for those with physical disabilities generally, as well as in the Saudi Arabian context, as advocated by the World Health Organization, due to the positive impact of PA on the quality of life for those with other disabilities.[2,27]

### Study limitations and future directions

The study examined the relationship between participation in PA and self-esteem among those with physical disabilities and did not assess the type of PA involved. Further research should be conducted to evaluate the effect of the type of PA on self-esteem and quality of life among people with physical disabilities. Also, the current study sampled a greater number of male participants than females, which may have impacted the resulting statistical comparisons. Therefore, future research should include more female subjects to avoid biasing the statistical distribution of the results.

## CONCLUSION

The present study's findings demonstrated that encouraging those with physical disabilities to engage in PA could play a critical role in improving quality of life and self-esteem. These findings underline the requirement for providing appropriate and safe environments for individuals with physical disabilities in Saudi Arabia to engage in

**Table 2.** Multiple linear regression analysis to predict people with physical disabilities' self-esteem.

| RSES scale | Independent Variables | Unstandardized Coefficients | | Standardized Coefficients | | | |
|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | *t* value | *p* value | Partial *R* |
| Factor1 (positive feelings) | PA/Exercise (day) | –0.118 | 0.041 | –0.243 | –2.858* | 0.005 | –0.166 |
| | PA/Exercise (min) | –0.007 | 0.039 | –0.014 | –0.166 | 0.868 | –0.010 |
| Factor 2 (negative feelings) | PA/Exercise (day) | –0.175 | 0.051 | –0.285 | –3.39* | 0.001 | –0.196 |
| | PA/Exercise (min) | –0.003 | 0.049 | –0.005 | –0.055 | 0.956 | –0.003 |
| Total | PA/Exercise (day) | –0.143 | 0.039 | –0.304 | –3.648* | <0.001 | –0.210 |
| | PA/Exercise (min) | –0.005 | 0.037 | –0.011 | –0.129 | 0.897 | –0.008 |

* Results of regression model between PA and self-esteem were adjusted by all socio-demographic and disability characteristics (only education level was remained).

PA, with the resulting benefits of improved self-esteem and quality of life. The present study's findings may also provide a set of valuable guidelines for the Saudi Ministry of Sports and other organizations and associations for people with physical disabilities to assist them in raising the level of awareness of the importance of daily PA among those with disabilities.


## ACKNOWLEDGEMENTS

This research was supported by the Deanship of Scientific Research, King Faisal University, Saudi Arabia [GRANT3289].


All authors declare no potential conflict of interest related to this article

**AUTHORS' CONTRIBUTIONS:** The author made significant individual contributions to this manuscript. Majed M. Alhumaid: writing; data analysis; article review and intellectual concept of the article.

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