Journal of Sports Physiology and Athletic Conditioning (J.S.P.A.C) 2026;1 (19): 65-78

Research Article

Physical activity improves self-confidence in older adults by strengthening social communication

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Received: 5 January 2026
Accepted: 9 March 2026

Abstract

Introduction: The present study aimed to model the relationship between physical activity level, social communication, and self-confidence in the elderly at medical universities in the south of Iran.

Methods: This study was descriptive-correlational and its statistical population consisted of elderly people over 60 years of age living in the southern provinces of the Iran (Fars, Bushehr, Hormozgan, Kohgiluyeh and Boyer-Ahmad, and Sistan and Baluchestan). The sample size was estimated at 384 people using the Krejcie and Morgan table and was selected using the convenience sampling method. The data collection tools included the standard physical activity questionnaire, the social communication questionnaire, and the self-confidence questionnaire. To analyze the data, descriptive statistics (including mean, standard deviation, frequency, and percentage) and inferential statistics including Kolmogorov-Smirnov (data normality), KMO and Bartlett test, Pearson correlation, and linear regression tests were used in SPSS version 26 software, as well as structural equation modeling (SEM) with partial least squares approach (PLS-SEM) in SmartPLS version 4 software. The construct validity of the instruments was also confirmed through confirmatory factor analysis (CFA).

Results: The findings showed that there is a positive and significant relationship between the level of physical activity and social communication ($P<0.001$); such that increasing physical activity is associated with strengthening social communication. Also, a positive and significant relationship was observed between the level of physical activity and self-confidence ($P<0.001$), which indicates the positive effect of physical activity on the self-confidence of the elderly.

Conclusion: Present study confirms that physical activity not only has a positive effect directly on the self-confidence of the elderly, but also indirectly improves self-confidence by strengthening social communication. It is suggested that programs to promote physical activity of the elderly with an emphasis on group and interactive activities be designed and implemented in health-treatment centers and medical universities in the south of Iran.

Keywords:
Elderly, Physical Activity, Social Communication, Self-confidence

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1. Introduction

With the increase in facilities in modern societies, life expectancy has increased and therefore more people experience reaching an older age, which leads to an increase in the elderly population in society. Retirement is a significant event in the lives of individuals, because the working person is separated from the environment and role that has been with him for years and must get used to a new lifestyle (Bok *et al.,* 2022). The retirement age in most countries, including Iran, is 60 years and above, which is considered the period of old age. An elderly person who has been accustomed to the work environment for years may experience anxiety and disorientation when separated from the familiar environment (Azizi *et al.,* 2024). Although most people around them think that retirement means increasing the individual's freedom and increasing the possibility for various experiences and therefore the quality of life after retirement increases, most elderly people face depression after retirement, which causes physical and mental complications and a decrease in the quality of life (Kraaijkamp *et al.,* 2021). Therefore, modern societies face the challenge of increasing the quality of life in a large elderly population, and this challenge will increase in the future, because according to statistical forecasts, by 2030, the elderly will constitute 20% of the world's population over 65 years of age, and the number of elderly people over 85 years of age, which constituted only 1% of the world's population in 1970, will reach 5% of the world's population by 2050 (Verschueren *et al.,* 2019). This population growth rate is significant and requires supportive planning and management of the elderly. In this regard, a program was implemented by the World Health Organization in 2006 that aimed to focus on empowerment processes in the elderly and covered three areas of the elderly including improving health and well-being, developing individuals, and ensuring the creation of empowering and supportive environments (World Health Organization, 2023).

In the current world, the concept of dynamic aging has been considered, based on which, for the welfare of the elderly, in addition to planning to increase their life expectancy (lifespan), one should also think about increasing the quality of life of this growing population. Optimal aging design is another step that some developed countries have taken. Providing an environment for the continuation of the activity of the elderly after retirement within the framework of an optimal aging plan has its own definition, and that is the continuation of activity to maintain social connections and create conditions that are expressed in the disconnection of the retiree's connections with a wide part of the body of society, which can have dangerous psychological consequences for the elderly retiree (Prince *et al.,* 2020).

In traditional societies, the elderly continue to work as long as they are able to do their work. While in contemporary societies, people are forced to retire at a certain age, and this, in addition to affecting their income, causes separation and a decrease in the elderly's connections with other members of society (Azadi *et al.,* 1401). Various studies have shown that with increasing age, due to disorders in various systems, especially due to movement restrictions, the individual's dependence on others in performing daily tasks increases. These factors can have many negative effects on the feeling of well-being and, consequently, on the individual's quality of life (VandeBunte *et al.,* 2022).

To experience a quality life, all aspects of life, including mental, physical, social, spiritual and economic, must be considered. An unhealthy lifestyle can lead to many problems and diseases in old age, so it is necessary to plan for the implementation of a correct and quality way of life from the early stages of life, and at the same time, it is necessary to provide the elderly with appropriate participation in both society and the family. Successful and healthy aging is possible by creating an appropriate supportive environment in social, economic, and health dimensions (Moxham *et al.,* 2017).

Considering all the above, managing the health development of the elderly is an issue whose importance cannot be ignored. In addition to the increasing number of elderly people, other problems such as the lack of social support for this group, unemployment due to retirement and confusion after it, the lack of sports facilities appropriate to their age, and not receiving the necessary support from family and society are all factors that challenge the lives and mental, physical, and social health of the elderly. In our country, unfortunately, the lack of written and predetermined programs for the health of the elderly has created numerous problems for these people. On the other hand, today's lifestyle and machine life, followed by physical poverty, can double the results of these problems. In this regard, can exercise, as a multifaceted solution, be effective in improving the lives of the elderly in various ways? But are there solutions for exercise for the elderly? In this regard, this study, with a new approach and a perspective based on physical activity, examines the relationship between the level of physical activity, social communication, and self-confidence of the elderly in medical universities in the south of Iran. Since the age of old age is increasing in our society, if the elderly lose their self-confidence and social relationships, they can suffer from numerous physical and psychological problems that will bring a great burden and medical costs to the country and the family. Therefore, it seems that physical activity can be an effective and low-cost solution in this regard. So that this study seeks to answer the question of what is the model of the relationship between the level of physical activity, social communication, and self-confidence of the elderly at medical universities in the south of Iran.

2. Materials and Methods

The research design was a cross-sectional analysis that aimed to determine the relationship between the level of physical activity, social communication, and self-confidence in the elderly covered by the universities of medical sciences in the south of the Iran. The statistical population of this study included all elderly people over 60 years of age covered by the universities of medical sciences in the provinces of Fars, Hormozgan, Bushehr, Sistan and Baluchestan, and Kohgiluyeh and Boyer-Ahmad. Based on the population statistics and the percentage of elderly people in each province, the population of elderly people over 60 years of age in these five provinces was estimated to be about 777,720 people. In order to determine the sample size, the Morgan table was used, and considering the size of the statistical population, 384 people were determined as sample size. The sample size was calculated using the proportional allocation method and based on the share of the elderly population in each province and distributed among the provinces under study. The final distribution of the sample size is presented in Table (1)

Table 1. Distribution of the elderly population over 60 years and sample size

Province	Estimated population of the province	Percentage of elderly people over 60 years	Estimated population of elderly people over	Sample size
Kohgiluyeh and Boyer-Ahmad	700000	12 %	84000	43
Sistan and Baluchestan	3000000	4.92 %	147600	72
Hormozgan	1700000	6.56 %	111520	54
Busheh	1000000	7.71 %	77100	38
Fars	5000000	—	357500	177
Total	11400000	—	777720	384

Inclusion criteria: Age ≥ 60 years, ability to respond (cognitively and linguistically), informed consent to participate in the study.
Exclusion criteria: Severe cognitive impairment, hospitalization in a medical center

The communication strength questionnaire has 20 questions and aims to assess the status of people's social comunication. Its response scale is Likert-type. To obtain the overall score of the questionnaire, the total scores of all questions added together. If the score was 86-100 (level 6): the subject had many communication skills. If the score was 67-48 (level 4): the public relations were high and the suject got along well with others. If the score was 30-47 (level 3): the subject had some skills in communicating with others. If the score was 15-29 (level 2): when facing others, the person seemed arrogant and found it difficult to communicate with people. The results of calculating the Cronbach's alpha coefficient for the entire questionnaire were obtained to be 0.86, which indicates the desired reliability and appropriate internal consistency of the questionnaire questions.

The self-confidence questionnaire was based on a Likert scale and had 32 questions. The scoring method was based on the answers: never (0), rarely (1), sometimes (2), often (3), and very much (4).

In very strong, congratulations, your self-confidence is excellent. In strong, your self-confidence is good. In medium-strong, your self-confidence is relatively good. In medium-weak, you often doubt yourself and your abilities, and in weak, your main problem in life is lack of self-confidence. The results of data analysis showed that the Cronbach's alpha coefficient for the entire questionnaire is equal to 0.88.

The physical fitness index questionnaire was used to measure physical activity. This questionnaire has three parts. The first part includes 5 intensity questions, the second part includes 4 duration questions, and the third part includes 5 repetition questions, which are scored in a descending order from 5 to 1. This questionnaire is designed to measure the level of physical activity of individuals and is based on the main components of physical fitness, including intensity, duration, and repetition of physical activity, each of which plays a fundamental role in assessing the level of physical fitness. The Cronbach's alpha coefficient for the entire questionnaire was 0.84, which indicates appropriate internal consistency and acceptable reliability of the instrument.

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After visiting the selected centers, introducing the research, obtaining written informed consent, completing the questionnaire in the form of an interview (if the participant needs) or self-completion. For those who cannot read/write, the interviewer completes the questionnaire. In this study, mean and standard deviation indices were used for quantitative variables and frequency and frequency percentage for qualitative variables such as gender, age, and province of residence. The Kolmogorov-Smirnov test was used to measure the normality of the data distribution. The KMO index and Bartlett test (Kaiser, 1977) were used to examine the adequacy of sampling and the suitability of the data for statistical analyses.

In order to comprehensively analyze the research model and examine the relationships between variables, the structural equation modeling (SEM) method was used in SmartPLS software. In addition, confirmatory factor analysis (CFA) was used to assess the validity of the measurement tool to confirm the conceptual structure of the variables and the correlation between items.

3. Results

Table 2 shows the distribution of subjects by gender. It is observed that 41.1 percent of the subjects are men and 58.9 percent are women.

Table 3 shows the status of the elderly in terms of age range and it is evident that people in the age group of 66- 70 years were the most respondents with a percentage of 32.3.

According to the statistics in Table 4, the average value of the social communication was 66.80, which is in the range of 30- 47 according to the questionnaire scoring. This score indicates that the social communication needs to be improved by the elderly participants in this study. On the other hand, the average value of the self-confidence variable was 44.11, which is in the range of 30- 46 according to the questionnaire scoring. This score indicates the average strong self-confidence of the elderly participants. In addition, the average value of the physical activity level variable was 41.64, which is in the range of 40- 60 according to the questionnaire scoring. This score indicates the acceptable level of physical activity of the elderly participants.

As can be seen in Table 5, since the statistical significance level for all variables is greater than 0.05, the null hypothesis of a normal distribution of the data is confirmed, as a result, the frequency distribution of the variable data is normal.

According to Table 6, given that the KMO index is equal to 0.673 and is greater than 0.6, the implementation of factor analysis is unimpeded, and on the other hand, given that the significance level of the chi-square statistic in the Bartlett test is smaller than 0.05, the implementation of factor analysis is approved.

According to Table 8, the correlation coefficient between the level of physical activity and social communication is 0.403. This correlation coefficient shows that there is a moderate correlation between these two variables. Also, considering the significant level (0.0001) which is less than 0.05, it can be said with a probability of 95% that the relationship between these two variables is significant.

Table 9 shows that the regression coefficients between social comunication (p=0.0001, β=0.40) and physical activity are positive and significant. Therefore, it is concluded that physical activity level positively and significantly predicts social comunication in the elderly.

According to Table 10, the correlation coefficient between physical activity level and self-confidence is 0.305. This correlation coefficient shows that there is a moderate correlation between these two variables. Also, considering the sig level or the significance level (0.0001) which is less than 0.05, it can be said with a probability of 95% that the relationship between these two variables is significant.

Table 11 shows that the regression coefficients between self-confidence (P=0.0001, β=0.30) and physical activity level are positive and significant. Therefore, it is concluded that physical activity level positively and significantly predicts self-confidence in the elderly.

The factor loadings obtained from the measurement model of Figure 1 are presented in Table 12, separated by the indicators of each construct. Based on the results of the measurement model, it has been determined that some questions did not have a factor loading higher than 0.4 and therefore did not have sufficient validity to continue the estimation process and test the hypotheses in the structural model.

The results obtained from the convergent validity study in Table 13 showed that the questionnaire is valid in terms of convergence.

The results obtained from the divergent validity study in Table 14 showed that the questionnaire is valid in terms of divergence.

Figure 2 showed the structural model in the automatic setup mode or in the significant coefficients mode. In this mode, the t-statistic values appear on the paths in the model. Given that the threshold or critical value is 1.96; therefore, the hypotheses that have obtained a t-statistic greater than 1.96 are confirmed.

After implementing the structural model, it is necessary to examine the goodness-of-fit indices of the models, the results of which are reported below. According to the results of Table 15- 17, it can be seen that all the relationships proposed are confirmed in the research.

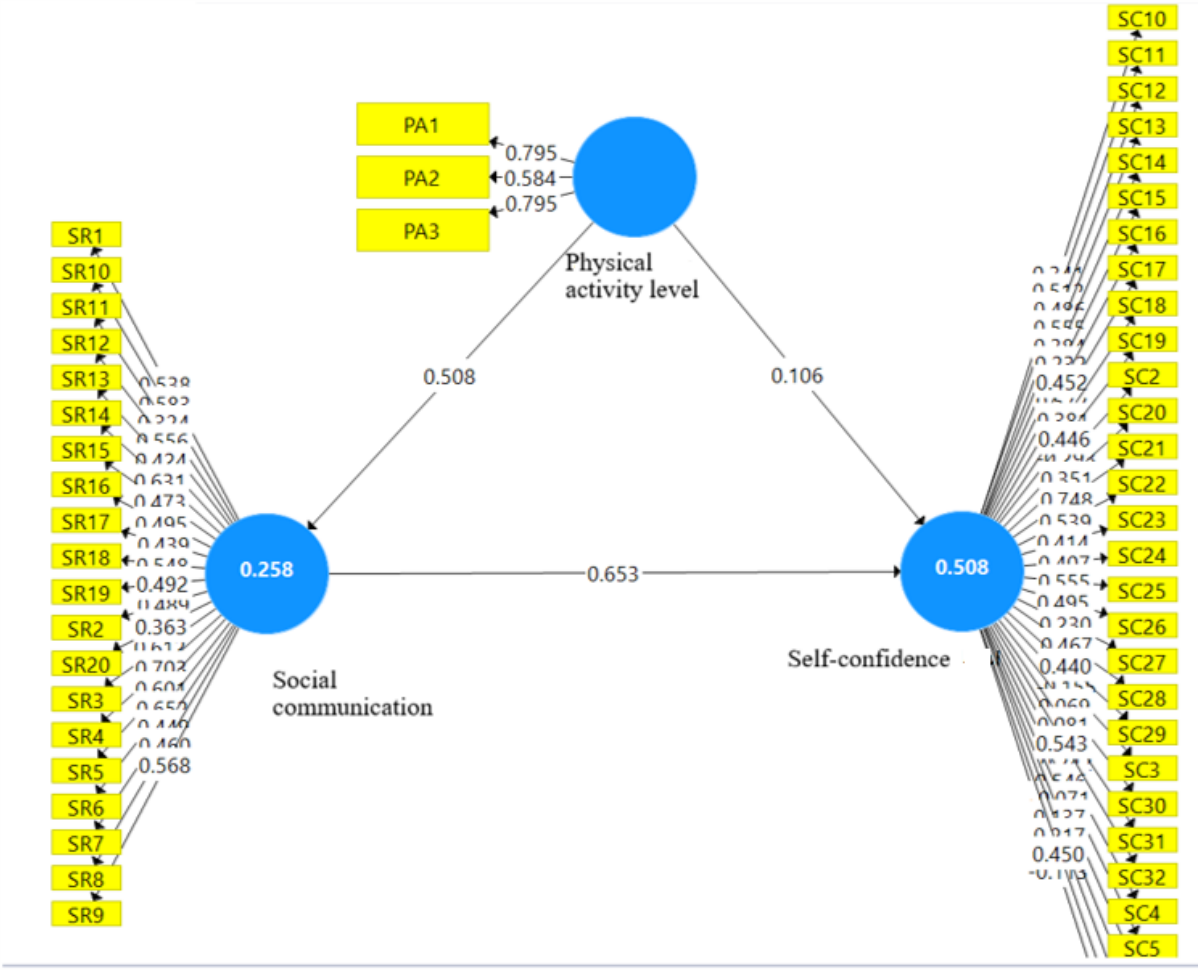

Figure 1. Measurement model of research questions

Table 12. Factor loadings of research questions

Result	Factor Loading	Question Code
Unacceptable	0.113	SC1
Unacceptable	0.293	SC2
Unacceptable	0.155	SC3
Unacceptable	0.242	SC4
Acceptable	0.546	SC5
Unacceptable	0.071	SC6
Unacceptable	0.137	SC7
Unacceptable	0.217	SC8
Acceptable	0.450	SC9
Unacceptable	0.341	SC10
Acceptable	0.512	SC11
Acceptable	0.486	SC12
Acceptable	0.555	SC13
Unacceptable	0.384	SC14

Unacceptable	0.232	SC15
Acceptable	0.452	SC16
Acceptable	0.572	SC17
Unacceptable	0.381	SC18
Acceptable	0.446	SC19
Unacceptable	0.351	SC20
Acceptable	0.748	SC21
Acceptable	0.539	SC22
Acceptable	0.414	SC23
Acceptable	0.407	SC24
Acceptable	0.555	SC25
Acceptable	0.495	SC26
Unacceptable	0.230	SC27
Acceptable	0.467	SC28
Acceptable	0.440	SC29
Unacceptable	0.069	SC30
Unacceptable	0.081	SC31
Acceptable	0.543	SC32
Acceptable	0.538	SR1
Acceptable	0.489	SR2
Acceptable	0.612	SR3
Acceptable	0.703	SR4
Acceptable	0.601	SR5
Acceptable	0.652	SR6
Acceptable	0.449	SR7
Acceptable	0.460	SR8
Acceptable	0.568	SR9
Acceptable	0.583	SR10
Unacceptable	0.324	SR11
Acceptable	0.556	SR12
Acceptable	0.424	SR13
Acceptable	0.631	SR14
Acceptable	0.473	SR15
Acceptable	0.495	SR16
Acceptable	0.439	SR17
Acceptable	0.548	SR18
Acceptable	0.492	SR19
Unacceptable	0.363	SR20
Acceptable	0.795	PA1
Acceptable	0.584	PA2
Acceptable	0.795	PA3

Table 13. Convergent validity study

CR	Cronbach's alpha	AVE	Variable
0.882	0.861	0.579	Social communication
0.796	0.761	0.568	Self-confidence
0.772	0.770	0.535	Physical activity level

Table 14. Divergent validity study

Self-confidence	Social communication	Variable
	0.756	Self-confidence
0.629	0.70	Physical activity level

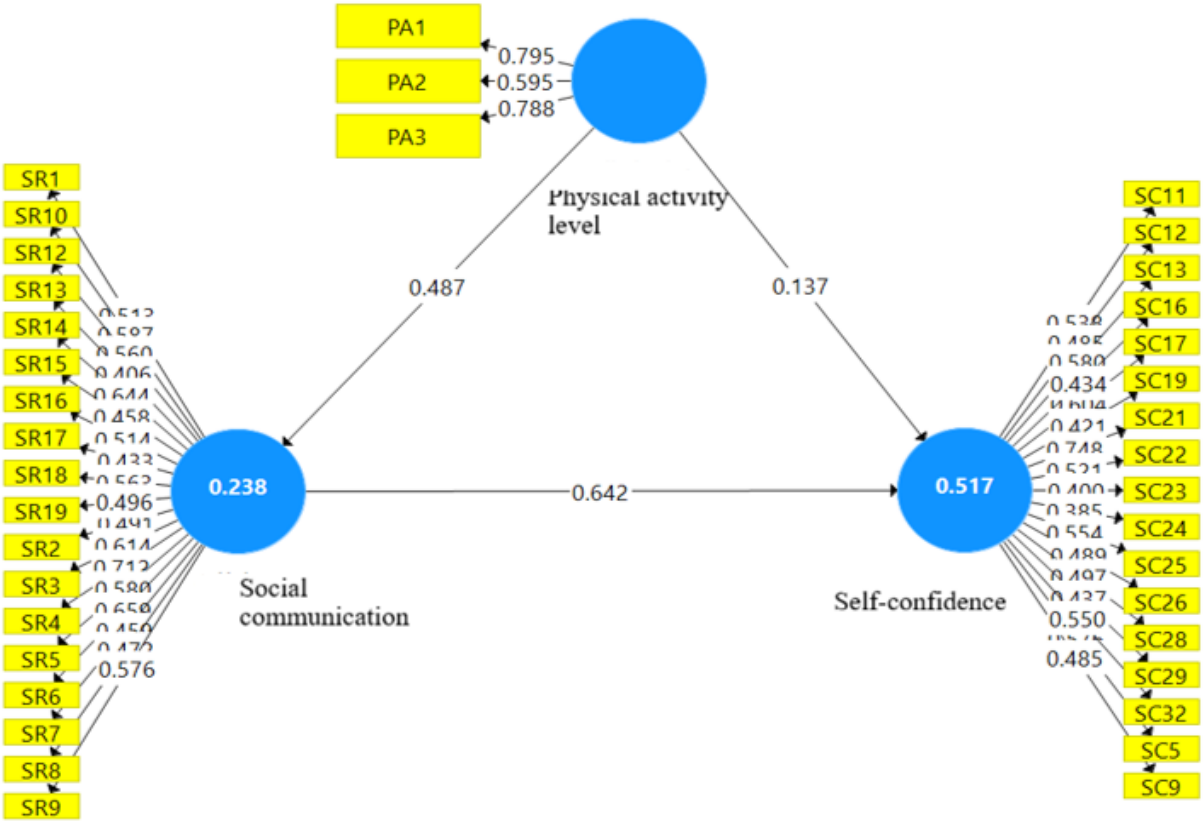

Figure 2. Structural Model of Research Hypotheses in Path Coefficient Mode

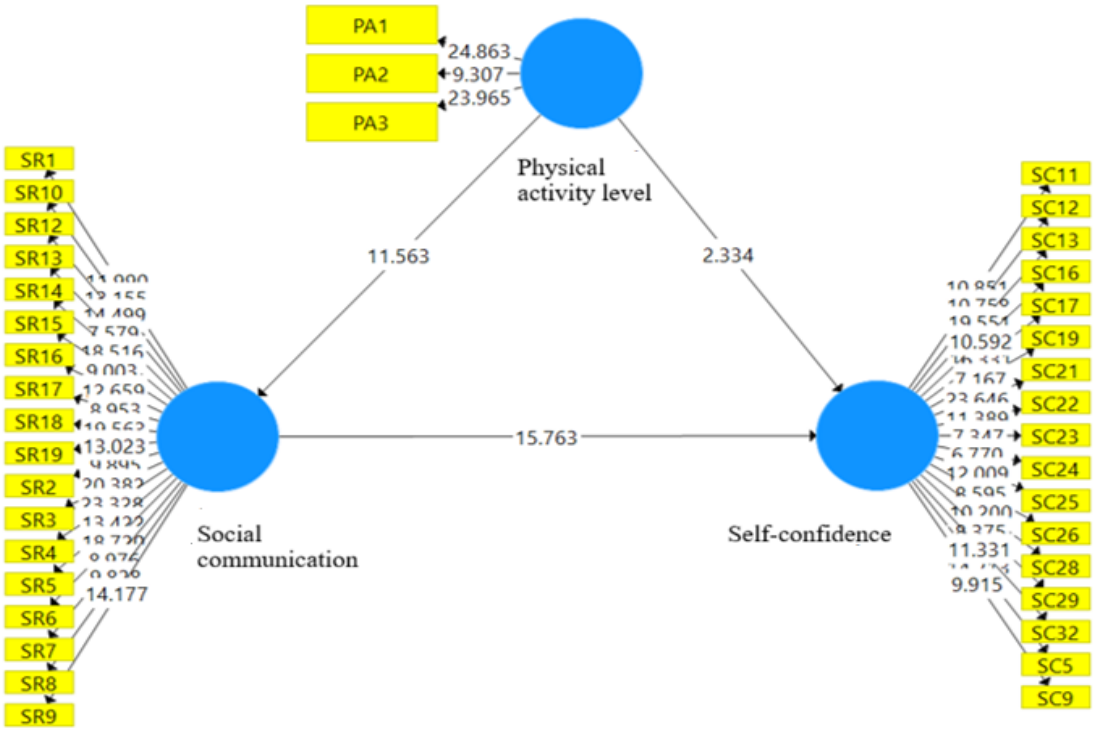

Figure 3. Structural model of research hypotheses in standard mode

Table 15. Structural Model Fit Indices

Result	Value	Index Name
Desirable	0.86	NFI
Desirable	0.03	SRMR

Table 16. Coefficient of determination of structural model research hypotheses

Adjusted coefficient of determination	Coefficient of determination	Endogenous variable
0.236	0.238	Social communication
0.515	0.517	Self-confidence

Table 17. Examination of relationships proposed in the research

Result	P	Coefficient	t	Relationships Proposed in the Research
Confirmed	0.001	0.642	15.763	Social communication -> Self-confidence
Confirmed	0.001	0.487	11.563	Physical activity level -> Social communication
Confirmed	0.020	0.137	2.334	Physical activity level -> Self-confidence

4. Discussion

Studying the mechanisms of the effects of lifelong physical activity on aging is complex because it is difficult to distinguish secondary aging (the effects of disease and injury on reduced functional capacity) from primary aging (the breakdown of physiological systems in the absence of these confounding factors). A person who is 70 years old in terms of calendar age may be relatively disease-free and physically active, with a biological age close to 50 years. Conversely, a 50-year-old person with a chronic debilitating disease or a person who is inactive and obese may have the same functional capacity (biological age) as a 70-year-old. The problems in distinguishing primary from secondary aging are the main problem of researchers interested in discovering the mechanisms of aging (Namazizadegan *et al.,* 1402). What is certain is that physical activity cannot stop the aging process, but by doing exercises in life, the working capacity of each person at any age can be expanded. In addition, many characteristics that are proportional to age cause a decrease in working capacity and cause a loss of readiness or lack of physical activity. Considering the definition of health, we realize that health is a multidimensional issue, even today, in addition to the physical, psychological and social dimensions, the spiritual aspect is also considered, and it should be noted that different dimensions of health or disease affect and are influenced by each other. If physical problems affect the individual's psyche, psychological problems affect his or her body, and both of them affect society, and disorders existing in society affect both other dimensions of health, then measures taken to promote health should pay attention to all aspects of individual health (physical, mental, and spiritual) and the overall health of society (Mohammadi *et al.,* 2025). Successful aging, like any other social phenomenon, is affected by a series of causes and factors. The establishment of social relationships of the elderly in society and family, as well as the degree of their functional independence, can affect this. Education in its most basic sense has been described as an interaction between the learner, the teacher, and the content (Zhang *et al.,* 2023).

Aging is a specific pattern of natural life changes that occurs as humans age, and with age, the elderly experience several problems, including decreased hope, happiness, and self-esteem, which may affect self-care. Self-confidence is a term in psychology that reflects an individual's assessment or estimation of their own values. Self-confidence is a belief that an individual has about their own worth and importance and improves health and ability.

In present study, there was a significant relationship between the level of physical activity and social communication of elderly people at medical universities in the south of Iran, which means that increasing the amount of physical activity strengthens and develops social communication. These results are consistent with the findings of studies by Hosseini *et al.,* (2018), Mexam *et al.,* (2017), Pederson *et al.,* (2015), and Chiu *et al.,* (2013). Physical activity not only contributes to a person's physical health, but also plays an important role in improving their mental and social status. Cooperative physical environments and activities, such as group sports and exercise groups, provide an excellent opportunity to establish and strengthen social connections. In addition to physical activity, people in these environments engage in emotional and social exchanges, which expands their friendship network and deepens social bonds. These interactions, in turn, strengthen social skills, increase the sense of belonging to the group, and provide social support. Based on psychological theories, these processes help develop interpersonal and social skills and introduce physical activity as an effective medium for shaping and stabilizing social relationships. The level of physical activity and self-confidence of elderly people in medical universities in the south of Iran have a significant relationship, indicating that a person who has more physical activities experiences higher self-confidence. These results are consistent with the findings of studies by Mangpasan *et al.,* (2010), Pedersen *et al.,* (2015), and Nedri *et al.,* (2016).

Regular physical activity is known as one of the key factors in improving self-image and increasing self-confidence. From the perspective of positive psychology and self-efficacy theory, continuous physical exercise gives an individual a sense of control and empowerment, which plays an important role in the structure of self-confidence. Also, sports activities help reduce stress and anxiety and improve feelings of mental health, all of which lead to an increase in a person's positive self-evaluation. In addition, individual successes in the field of sports, although small, can help strengthen a sense of self-efficacy and play a stimulating role in promoting self-confidence in other areas of life. Many studies show that physical activity, by creating successful experiences and increasing personal efficacy, fosters the process of strengthening self-esteem and self-confidence and can be considered an effective strategy for supporting mental health.

These studies suggest strategies to develop team sports such as volleyball, soccer, or group cycling that increase social interaction in educational or work settings. Creating places for group sports (parks and local clubs) for social contact opportunities, promoting sports not only as a health tool but also as a means of solidarity, and organizing family walks or friendly competitions. Also, implementing sports programs with workshops to increase positive body image, positive feedback from coaches and officials on individual progress, not just physical performance, and designing small, achievable goals in sports so that people experience a sense of progress and gain more self-confidence.

Although the effect of GA also seems to be dose-dependent and was not investigated in this study. However, since it was significantly lower in the AT+GA group than AT and GA groups, it seems that these two interventions can enhance each other's effects in reducing inflammatory factors. Given the more favorable effect of exercise compared to GA, it seems that the lack of investigation of different doses of GA along with exercise is a limitation of the present study. Therefore, it is suggested that different doses be compared in future studies. Considering the antioxidant role of GA and the contrasting effects of exercise on inflammation and oxidative stress, it seems that the lack of evaluation of these markers is another limitation of the present study. Therefore, it is suggested that more related pathways be evaluated in future studies. Given the need to prove changes in tumorigenic and pathological studies, the lack of evaluation of prostate tissue pathology was another limitation of the present study. Therefore, it is suggested that pathology and physiologic studies be evaluated together in future studies.

5. Conclusion

In the final conclusion, it can be noted that given the increase in the elderly population in our country, by implementing pilot programs, building and developing the necessary infrastructure, and conducting social communication and cooperation workshops, a good and suitable environment for the lives of the elderly should be provided.

Acknowledgements

The authors would like to thanks all individuals who participated in this research.

Funding

This study did not have any funds.

Compliance with ethical standards

Conflict of interest None declared.

Ethical approval the research was conducted with regard to the ethical principles.

Informed consent Informed consent was obtained from all participants.

Author contributions

Conceptualization: M.B.R, A.T; Methodology: M.B.R, A.T ; Software: M.B.R, A.T; Validation: M.B.R, A.T ; Formal analysis: M.B.R, A.T ; Investigation: M.B.R, A.T; Resources: M.B.R, A.T ; Data curation: M.B.R, A.T ; Writing - original draft: M.B.R, A.T ; Writing - review & editing: M.B.R, A.T; Visualization: M.B.R, A.T ; Supervision: M.B.R, A.T ; Project administration: M.B.R, A.T ; Funding acquisition: M.B.R, A.T.

References

Azizi M, Salehian M, Ghanbarimoghadam A, Mazloom S. The Effect of Leisure Time Physical Activity Program on Activities of Daily Living and Hope in Elderly Men. joge 2023; 8 (2) :86

Bok, D, Rakovac, M, and Foster, C. An examination and critique of subjective methods to determine exercise intensity: the talk test, feeling scale, and rating of perceived exertion. Sports Med. (2022) 52:2085–109. doi: 10.1007/s40279-022-01690-3

Hoseini T, Heydari Nezhad S, Azmsha T. The Role of Motivation on the Rate of Participation Elders in Sport for All. JRSM 2018; 8 (16) :103-111

Kraaijkamp, JJM, Van Dam Van Isselt, EF, Persoon, A, Versluis, A, Chavannes, NH, and Achterberg, WP. eHealth in geriatric rehabilitation: systematic review of effectiveness, feasibility, and usability. J Med Internet Res. (2021) 23:e24015. doi: 10.2196/24015

Mohammadi Samani P, Safavi Hamami Sh, Nazakat Al-Husseini M. Comparison of mental health in active and inactive elderly people after COVID-19. 2024. 8th International Conference on Sport Sciences, Physical Education and Social Health, Tehran,

Moxham L, Patterson C, Taylor E, Perlman D, Sumskis S, and Brighton R. A multidisciplinary learning experience contributing to mental health rehabilitation. Disability & Rehabilitation, 2017;39(1):98-103. https://doi.org/10.3109/09 638288.2016.1146358.

Muangpaisan, W. Assantachai, P. Intalapaporn, S.et al (2010) Health expectancies in the older Thai population. Archives of Gerontology and Geriatrics. AGG-2277; P: 5.

Nadri A, Safania A, Amritash A. Determinant of the implementation of physical activities in elderly in Tehran. joge 2016; 1 (2) :66-79

Organisation WHo (2023). Ageing. Available at: https://www.who.int/health-topics/ageing#tab=tab_1

Pedersen BK, Saltin B. Exercise as medicine evidence for prescribing exercise as therapyin 26 different chronic diseases. Scandinavian Journal of Medicine and Science Sports, 2015;25:1–72. DOI: 10.1111/sms.12581. https:// doi.org/10.1111/sms.12581//

Prince, SA, Cardilli, L, Reed, JL, Saunders, TJ, Kite, C, Douillette, K, et al. A comparison of self-reported and device measured sedentary behaviour in adults: a systematic review and meta-analysis. Int J Behav Nutr Phys Act. (2020) 17:1–17. doi: 10.1186/s12966-020-00938-3

Sahebozamani M, Daneshjoo A, Bahiraei S, Sheikhbahaie S, Namazi Zadegan S, Firouzi F, et al . Acute effect of proprioceptive exercises on balance, joint position sense and muscle strength among elder and adult. EBNESINA 2024; 26 (1) :38-49

VandeBunte, A, Gontrum, E, Goldberger, L, Fonseca, C, Djukic, N, You, M, et al. Physical activity measurement in older adults: wearables versus self-report. Front Digit Health. (2022) 4:869790. doi: 10.3389/fdgth.2022.869790

Verschueren, S, Buffel, C, and Vander, SG. Developing theory-driven, evidence-based serious games for health: framework based on research community insights. JMIR Serious Games. (2019) 7:e11565. doi: 10.2196/11565

Zhang, Y., Li, X., & Wang, L. (2023). Effects of a structured physical activity program on self-esteem and social engagement among community-dwelling older adults: a randomized controlled trial. Journal of Aging and Physical Activity, 31(4), 523–535. https://doi.org/10.1123/japa.2023-0078.