

Between Steps and Care: an analysis of motor coordination in Senior Dance Practitioners

Entre Passos e Cuidados: uma análise da coordenação motora de praticantes de Dança Sênior

Entre Pasos y Cuidados: un análisis de la coordinación motora de practicantes de Danza Senior

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REVISA

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RESUMO

Objetivo: avaliar os níveis de coordenação motora de mulheres praticantes de Dança Sênior em um projeto de extensão desenvolvido em uma Unidade Básica de Saúde, explorando as possíveis influências dessa prática sobre diferentes habilidades motoras. **Método:** A pesquisa, de natureza quantitativa, envolveu uma amostra de 37 mulheres, com idades entre 40 e 87 anos. A Escala Motora para Terceira Idade foi utilizada para avaliar seis dimensões da aptidão motora: motricidade fina, coordenação global, equilíbrio, esquema corporal, orientação espacial e orientação temporal. As avaliações ocorreram em ambiente controlado, e a análise dos dados foi realizada utilizando o software SPSS. A correlação de Spearman foi aplicada para investigar a relação entre idade e desempenho motor. **Resultados:** Os resultados indicaram que a aptidão motora geral das participantes foi classificada como "Normal Baixa", com destaque positivo para o equilíbrio, que obteve a maior média (11,05), classificado como "Normal Alto". No entanto, o esquema corporal obteve a menor média (5,06), sendo classificado como "Muito Inferior". A análise mostrou uma correlação negativa entre a idade avançada e a diminuição da aptidão motora geral, especialmente nos domínios de coordenação global e esquema corporal. **Conclusão:** As praticantes de Dança Sênior possuem bom equilíbrio, porém o esquema corporal e outros domínios motores exigem mais atenção. A Dança Sênior, quando estruturada adequadamente, pode ser uma intervenção eficaz para promover a saúde e o bem-estar da pessoa idosa.

Descritores: Saúde da Pessoa Idosa; Programa de Atenção à Saúde do Idoso; Coordenação Motora, Dança.

ABSTRACT

Objective: to assess the motor coordination levels of women practicing Senior Dance in an extension project developed in a Primary Health Care Unit, exploring the possible influences of this practice on different motor skills. **Method:** This quantitative study involved a sample of 37 women, aged between 40 and 87 years. The Motor Scale for the Elderly was used to assess six dimensions of motor aptitude: fine motor skills, global coordination, balance, body scheme, spatial orientation, and temporal orientation. Evaluations took place in a controlled environment, and data analysis was conducted using SPSS software. Spearman's correlation was applied to investigate the relationship between age and motor performance. **Results:** The results indicated that the participants' overall motor aptitude was classified as "Low Normal," with a positive highlight for balance, which had the highest average (11.05), classified as "High Normal." However, the body scheme had the lowest average (5.06), classified as "Very Low." The analysis showed a negative correlation between advanced age and decreased overall motor aptitude, especially in the domains of global coordination and body scheme. **Conclusion:** Senior Dance practitioners have good balance, but the body scheme and other motor domains require more attention. When properly structured, Senior Dance can be an effective intervention to promote the health and well-being of older adults.

Descriptors: Elderly Health; Elderly Care Program; Motor Coordination; Dance.

RESUMEN

Objetivo: discutir las dimensiones de la calidad de vida de personas practicantes de Danza Senior en un proyecto de extensión e investigación desarrollado en una Unidad Básica de Salud. **Método:** El estudio cuantitativo involucró a 37 mujeres, con edades entre 39 y 81 años (media de 63,19 ± 8,61), practicantes de Danza Senior. Se utilizó el cuestionario WHOQOL-BREF, que evalúa los dominios físico, psicológico, social y ambiental de la calidad de vida. Los resultados fueron clasificados como: "necesita mejorar" (1 a 2,9), "regular" (3 a 3,9), "buena" (4 a 4,9) y "muy buena" (5). La investigación respetó todas las normas éticas vigentes. **Resultados:** La calidad de vida general fue clasificada como "regular." Los dominios físico y psicológico presentaron una media de 3,8, lo que indica satisfacción moderada, con evaluaciones sobre dolor, energía, sueño, movilidad, actividades diarias, dependencia de medicamentos y capacidad de trabajo, además de aspectos como sentimientos, autoestima e imagen corporal. El dominio de relaciones sociales, que incluyó interacciones interpersonales y vínculos, fue importante para el bienestar emocional, psicológico y físico. El dominio ambiental, que consideró la calidad del aire, acceso a los servicios de salud, seguridad y condiciones de vivienda, tuvo la media más baja (3,4) y fue clasificado con mayor frecuencia como "necesita mejorar," indicando vulnerabilidad en esta área. **Conclusión:** A pesar de desafíos en algunas áreas, el programa de Danza Senior demostró ser eficaz en promover un envejecimiento más saludable y activo, siendo una intervención que podría expandirse a otras regiones, con el potencial de beneficiar a más personas.

Descriptores: Salud de las Personas Mayores; Programa de Atención a los Ancianos; Calidad de Vida, Danza.

ORIGINAL

Introduction

The aging process is a natural, biological, irreversible and progressive process, which occurs from birth, involving significant factors such as: genetics, habits, psychic and socioeconomic conditions and chronic diseases. Within the biological plan, this process is complex and multifactorial, involving the interaction of different factors and mechanisms, and its understanding is essential for the development of therapies and interventions that can help delay aging and improve the quality of life of the elderly.¹⁻²

Human aging causes declines in physical and psychic aspects due to the various physiological changes that occur in the body, however, although aging is an inevitable process, it is possible to age with health and quality of life.³⁻⁴

Physical inactivity in older people is linked to a number of factors that compromise their health, since the absence of adequate stimuli affects the functioning of vital systems and reduces the ability to perform basic daily activities, thus increasing the risk of chronic diseases.⁵⁻⁶ For healthy aging, the regular practice of physical activities is essential, as it is associated with the proper functioning of the cardiorespiratory system, the reduction of the risk of fractures, the increase in muscle efficiency, in addition to contributing to better joint fitness. Another aspect to consider is that physical activity should also be pleasurable and favor social integration, promoting the overall well-being of the elderly.⁴

In the context of movement modalities, dance is seen as the expression of the unspeakable, which can allow the elderly person to express emotions that are not spoken in the form of words. Thus, in addition to the biophysiological variables, dance can be an effective therapeutic resource in rescuing the quality of life of this population. Thus, it can play an important role in promoting the health and well-being of the elderly, helping to improve the quality of life and increase the independence and autonomy of this population.⁷⁻⁸

Among the numerous types of dances that can be practiced by the elderly, there is a highlight for Senior Dance, which is a physical and social activity aimed at elderly people. This dance is adapted to meet your needs and capabilities, providing a pleasurable and safe activity, which can bring benefits to health and well-being. Some of the possible benefits of Senior Dance include improved mobility, balance, cardiovascular health, self-esteem, confidence, and reduced stress and anxiety. In short, Senior Dance can be a great tool to contribute to the health of the elderly, enabling numerous benefits for physical, mental and social health.⁹⁻¹¹ Senior Dance allows a wide variety of movements that do not require excessive effort, but a good rhythm on the part of practitioners, giving more emphasis to the motor coordination of the elderly person at the time of their practice.¹⁰

Motor coordination can be understood as the ability to perform movements in a harmonious and coordinated way, covering the central nervous system, musculoskeletal and sensory system, and can be divided into fine and gross motor coordination. Fine motor coordination is the motor function that requires dexterity, and requires the use of small muscles, while gross motor coordination comprises the involvement of large muscle groups and greater movements such as running and jumping.¹²⁻¹³

At the regional level of the Unified Health System (SUS), at the Basic Health Unit (UBS) No. 6 of Santa Maria, Brasília/DF, the University Center of

the Central Plateau Aparecido dos Santos (Uniceplac) implemented an extension and research project that aims to develop Senior Dance activities for patients of the unit as a possible proposal for Integrative Health Practice (Pis). To monitor the possible impacts of the practice of Senior Dance, as well as to plan and/or adapt the classes planned for the program, the objective was to investigate the levels of motor coordination of practitioners of this activity.

Method

This is a cross-sectional study, of a quantitative nature, involving a descriptive field research.¹⁴⁻¹⁵ The study was carried out with Senior Dance practitioners from the Basic Health Unit (UBS) No. 6, in the neighborhood of Santa Maria, Brasília/DF. The sample consisted of a total of 37 people, with a mean age of 65.03 ± 9.74 years, with a minimum age of 40 and a maximum of 87 years, with all participants being female. To investigate the levels of motor coordination of the practitioners, the Motor Scale for the Elderly (EMTI), developed by Francisco Rosa Neto, was applied.¹⁶

EMTI evaluates fine motor skills, global coordination, balance, body schema, spatial organization, and temporal organization. The tests are composed of ten levels, for each of the six areas evaluated. The levels progressively increase the degree of difficulty of the tests, starting from level 2 and as the person progresses, they can reach level 11.¹⁶

The tests were applied in a sports court located near the health center. The participants wore appropriate clothing for the practice of physical activity, removing the pieces that could hinder the movements and, in the coordination and balance tests, it was recommended that they take off their shoes to prevent them from slipping, in addition to allowing a better observation of the movements. The tests were performed in one day, and the participants were evaluated in all motor tests, going through the six stations, one for each motor domain to be evaluated, and in each of them there was an evaluator responsible and trained to apply the ten levels of the tests.

The collected data were organized in Microsoft Excel spreadsheets and were analyzed using the IBM SPSS version 20 software. Subsequently, they were organized into descriptive statistics using mean, standard deviation, minimum and maximum values, frequencies and percentages. In addition, the Spearman correlation test was performed to verify the relationship between the results of the areas of motor aptitude and the age of the test participants.

The result in relation to motor fitness was obtained through the sum of the scores made in each of the motor fitness areas, being divided into: (AM1) sum of the points achieved in the fine motor tests; (AM2) sum of the points achieved in the global coordination test; (AM3) sum of the points achieved in the balance tests; (AM4) sum of the points achieved in the body schema tests; (AM5) sum of the points achieved in the spatial orientation tests; (AM6) sum of the points achieved in the temporal orientation tests and finally the General Motor Aptitude (GMA) obtained through the sum of the points obtained in the areas of fine motor skills, global coordination, balance, body scheme, spatial and temporal orientation.¹⁶

Chart 1 - General Motor Aptitude Scale. Brasília, 2024.

Pontos	Classificação
130 ou mais	Muito superior
120 – 129	Superior
110 – 119	Normal alto
90 – 109	Normal médio
80 – 89	Normal baixo
70 – 79	Inferior
69 ou menos	Muito inferior

Source: Rosa Neto (2009, p. 126).

Through the result of the (AMG), it was possible to classify the general motor aptitude scale of each participant according to the Motor Scale for the Elderly (EMTI). Therefore, based on the data obtained, a summary of the points achieved by each person in each of the tests was made, so that it was possible to elaborate a motor profile of the entire participant group, due to their individual results, and, thus, classify the group according to the profile of the General Motor Aptitude Scale.¹⁶

In compliance with CNS Resolutions No. 466/12 and CNS No. 510/16 that deal with research with human beings, this study was submitted to and approved by the Research Ethics Committee (CEP) of the Centro Universitário do Planalto Central Aparecido dos Santos (Uniceplac), under the Certificate of Presentation of Ethical Appreciation (CAAE) No. 70434423.0.0000.5058 and all people involved in the study consented to participate voluntarily by signing the Informed Consent Form (ICF).

Results

It is possible to observe that the motor aptitude of the evaluated women who obtained the best classification was MA3 (Balance), with an average of 110.5 and classified as "High Normal", and the aptitude that obtained the worst classification was AM4 (Body Scheme) with an average of 50.6 was classified as "Very Inferior" (Table 1).

Table 1 - Descriptive Statistics and Classification of Motor Aptitude divided by Areas of Senior Dance practitioners at UBS nº 6 de Santa Maria. Brasília, 2024.

Areas	Mean	Standard Deviation	Minimum	Maximum	Averages Classification
AM1 – Fine motor skills	78,0	19,9	60	132	Inferior
AM2 – Global coordination	84,6	39,0	0	132	Low Normal
AM3 – balance	110,5	32,3	0	132	High Normal
AM4 – body schema	50,6	37,2	24	132	Much Inferior
AM5 – spatial orientation	82,7	24,5	48	132	Low Normal
AM6 – temporal orientation	91,1	42,1	0	132	Normal Medium
AMG – General Motor Aptitude	82,9	17,8	48	110	Low Normal

It is possible to observe that almost half of the sample (48.6%) has a lower AMG than normal and none of the participants showed results at higher levels. These data may be related to age, as the most positive classifications were related to participants with less advanced age (Table 2).

Table 2 - Frequency (n) and Percentage (%) of the General Motor Aptitude (AMG) Classification of Senior Dance practitioners at UBS nº 6 of Santa Maria. Brasília, 2024.

Classification (AMG)	Frequency (n)	Percentage (%)
Far Superior	-	-
Superior	-	-
High Normal	2	5,4
Normal Medium	13	35,1
Low Normal	4	10,8
Inferior	9	24,3
Much Inferior	9	24,3
Total	37	100

Observing the negative correlations found in Table 3, it is possible to say that advancing age is significantly and strongly related to the worsening of AMG and among the areas of fitness, age is related to the worsening of global motor skills (AM2), body schema (AM4) and general motor fitness (AMG).

Table 3 - Correlation between Age, Motor Fitness Areas and AMG Classification of Senior Dance practitioners at UBS nº 6 de Santa Maria. Brasília, 2024.

	AM1	AM2	AM3	AM4	AM5	AM6	AMG	Classificação
Age	-,158	-,491**	-,302	-,389*	-,089	-,159	-,517**	-,486**

*p<0.05 **p<0.01. AM1 = Fine Motricity. AM2 = Global Motricity. AM3 = Balance. AM4 = Body Schema. AM5 = Spatial Organization. AM6 = Temporal Organization. AMG = General Motor Aptitude. Classification of general motor aptitude = Classification.

Discussion

Global motor coordination refers to the ability to perform broad and comprehensive movements, involving larger muscle groups of the body. This skill involves the proper integration and synchronization of muscles, joints, and sensory systems such as vision and proprioception.¹⁷⁻¹⁸

Regular dance practice can promote improvements in motor coordination, and helps to improve the ability to perform complex and coordinated movements, contributing to the improvement of overall motor coordination. In addition, dancing also requires the involvement of different parts of the body, which stimulates muscle strengthening and joint mobility. These are essential aspects for maintaining good global motor coordination, especially in elderly people, who may have decreased muscle strength and joint stiffness.¹⁰

In accordance with KLEBIS et al.,¹⁹ in the domain of fine motor coordination, a notable improvement in this skill was observed in individuals practicing senior dance. Fine motor skills went from "Medium Normal" to

"High Normal", indicating a positive evolution in this area. However, it is worth mentioning that, although there was a significant improvement in other aspects evaluated, such as body schema and global motor skills, no statistically significant difference was found in balance, possibly due to the good level of initial balance of the participants.¹⁹

Balance refers to the body's ability to maintain a stable posture, where the interaction between the senses and movements plays a crucial role. To maintain balance, the sensory systems provide specific information such as vision, touch, labyrinth (the organ of the inner ear responsible for balance) and neuromuscular and joint stimuli, and it is the function of the central nervous system to organize this information and control the body's posture, both when static and in displacement.²⁰⁻²¹

In the study by Mendonça et al.,²² it was found that most elderly people had below-normal levels of balance, and the Motor Assessment Scale for the Elderly (IMS) was used to determine the results. Aging causes changes that affect balance, such as reduced vestibular function, hearing, vision, and muscle strength, increasing the risk of falls. However, older people who regularly participated in activities such as forró at the community center scored better in balance. Therefore, interventions and programs aimed at improving balance and promoting physical and social activities are important for the quality of life of the elderly population.²²

The practice of Senior Dance can generate positive impacts on the balance of the elderly, in addition to contributing to the prevention of falls, which is an important concern and is associated with good balance, proper posture, generating more fluid movements and a lower probability of injuries.⁹

Regarding the body scheme, for modern psychology it can be understood as the notion that the human being has about his own body, involving proprioception of the body, correct posture and positioning of each part. The body schema is totally focused on motor activity and manifests itself in movement and through movement and is the result of various body and sensory experiences acquired throughout life.²³⁻²⁴

According to Venâncio et al.,²⁵ they found a classification of the body schema as "much superior", concluding in the study that the practice of physical activity, including rhythms, one of the practices used in the study, influences the improvement and maintenance of psychomotor components, especially in the body schema of the elderly.

In a study that evaluated the motor fitness of elderly people practicing ballroom dancing, it was possible to observe a positive classification of the body scheme, the study used groups that performed another practice of physical activity in addition to dance and a group that did not practice any physical activity, as a result, the elderly people who practiced ballroom dancing obtained the best results. Therefore, through the results of the study, it was possible to observe that the practice of ballroom dancing contributes significantly to the maintenance of motor fitness in the elderly, especially the body schema.²⁶

Spatial organization represents the orientation of an individual in space, that is, the reference they have of themselves in relation to the world around them, where all sensory modalities participate in this orientation of space, which allows the human being to evolve towards essential behaviors related to the ability to move, orient and explore.^{16,27}

The study by Costa²⁸ concluded that elderly people had a moderate degree of difficulty in spatial orientation, which highlights the importance of interventions that help improve this valence, especially those with some type of neurodegenerative disease.

Dance has great potential to contribute to the improvement and maintenance of spatial organization, since, in a study that analyzed the contribution of dance practice to the development of functional autonomy of elderly people, it was possible to conclude through the applied tests that the intervention through the practice of Senior Dance contributed to an improvement in the cognitive aspects of elderly people, especially in the concentration and spatial orientation of the most assiduous participants in the classes.²⁹

Temporal orientation can be understood as the individual's ability to situate himself as a function of the occurrence and succession of events, the duration of intervals, the cyclical renewal of periods and the irreversible character of time, being inseparable from temporal orientation because it is related to the space-time in which the individual is in constant movement.²⁷

Neto et al.,³⁰ classified the general motor aptitude of the elderly investigated in their study as "much inferior", including temporal organization, which is related to the passage of time, which may be linked to a number of factors, including the fact that the elderly people who were evaluated were institutionalized, because when the same test was applied to non-institutionalized people, the results were more positive. Therefore, through the exemplified study, it was possible to observe that the negative results related to the motor aptitude of the elderly may be related to the emotional, because regardless of the characteristics of the nursing home institutions, it is an area that, if compromised, generates a great impact on the psychomotor aspects.

Dance can influence a significant improvement in the temporal organization of the elderly, since in a study that evaluated the motor profile of dance practitioners, the components most used in dance were those that obtained the best results, such as spatial and temporal structuring, with emphasis on the temporal organization of people, which was classified as "much superior". Through the data of the study, it is noted that dance can improve the temporal organization of the elderly, especially if dance works on the components of spatio-temporal structures, as is the case of Senior Dance.³¹

Conclusion

The objective of this study was to evaluate the levels of motor coordination of Senior Dance practitioners in an extension project implemented in a Basic Health Unit. The research used the Motor Scale for the Elderly (EMTI) to assess domains such as fine motor skills, global coordination, balance, body schema, spatial and temporal orientation. The sample consisted of 37 women aged between 40 and 87 years. The tests were applied in a controlled environment, with statistical analysis of the results obtained through Excel spreadsheets and the SPSS software, using Spearman's correlation to verify the relationships between age and motor aptitude.

The results indicated that the general motor aptitude (GMF) of the participants was classified as "Low Normal", with a positive emphasis on balance (AM3), which presented the best average (11.05), classified as "High

Normal". On the other hand, the body schema (AM4) obtained the lowest mean (5.06), classified as "Very Inferior". There was a significant negative correlation between advanced age and worsening in general motor fitness, especially in the domains of global coordination and body schema. These results indicate that, although the practice of Senior Dance may favor some motor skills, such as balance, other areas, such as body scheme, need more attention.

Based on these results, it is concluded that the practice of Senior Dance can contribute to the maintenance and improvement of some motor skills in elderly people, especially in balance. However, the time of practice and the heterogeneity of the sample suggest that the impact of dance on motor coordination may vary, and a longer period of intervention could bring more consistent results. Senior Dance, by working on multiple motor components, can be a valuable intervention to improve the quality of life and general motor fitness of older people, especially if accompanied by appropriate adjustments and progressions in the proposed activities.

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