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Association between physical fitness and mood in 60-year-old women
Asociación entre condición física y estado de ánimo en mujeres de 60 años

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Abstract. Background: It is known that trained individuals have better psychological behavior than less trained individuals, thus, it is speculated that better conditioning would be linked to this phenomenon. This study sought to verify whether better levels of functional capacity are associated with better mood patterns. Methods: Seventy-nine postmenopausal women (age = 70.3 ± 7.1 years) were then divided in four groups according to quartiles of functional capacity. The Brunel mood states scale were used to assess mood state and profile. Functional capacity assessment included measurements of handgrip strength, flexibility (sit and reach test), lower-limb strength (5 sit-to-stand test), balance (timed-up and go [TUG] test), and walking performance (6 minutes walking test). Results: The results showed higher functional capacity values are not associated with a better mood profile, even when the values obtained are classified as good or above average within their reference values. Conclusion: It was concluded that there is no association between the best functional capacity condition with the best mood profile. Perhaps this association is possible, if individuals are included in physical exercise programs.
Keywords: Mood States; Funcional capacity; Psychological Behavior; Aging.

Resumen. Introducción: Se sabe que los individuos entrenados tienen un mejor comportamiento psicológico que los menos entrenados, por lo que se especula que un mejor condicionamiento estaría ligado a este fenómeno. Este estudio buscó verificar si mejores niveles de capacidad funcional están asociados con mejores patrones de humor. **Métodos:** Setenta y nueve mujeres posmenopáusicas (edad = 70,3 ± 7,1 años) fueron divididas en cuatro grupos según cuartiles de capacidad funcional. Se utilizó la escala de estados de ánimo de Brunel para evaluar el estado de ánimo y el perfil. La evaluación de la capacidad funcional incluyó mediciones de fuerza de prensión manual, flexibilidad (prueba de sentarse y alcanzar), fuerza de las extremidades inferiores (prueba de 5 sentarse para levantarse), equilibrio (prueba de cronometraje y andar [TUG]) y rendimiento al caminar (6 minutos). prueba de marcha). Resultados: Los resultados mostraron que los valores más altos de capacidad funcional no se asocian con un mejor perfil del estado de ánimo, incluso cuando los valores obtenidos se clasifican como buenos o por encima del promedio dentro de sus valores de referencia. Conclusión: Se concluyó que no existe asociación entre la mejor condición de capacidad funcional con el mejor perfil anímico. Quizás esta asociación sea posible, si los individuos son incluidos en programas de ejercicio físico.
Palabras clave: Estados de ánimo; capacidad funcional; Comportamiento Psicológico; Envejecimiento.

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Introduction

Studies in the field of psychology show that there is an exposed relationship between the individual's mood and physical health (Dalgalarrondo, 2018). Still demonstrating a greater susceptibility in specific populations to suffer from sudden changes caused by the change in the mood pattern (Cuijpers et al., 2020; de Souza Zanini et al., 2022; Irawan et al., 2020; Solmi et al., 2022), therefore, it is observed that the elderly tends to be more responsive to these changes, both in the positive and in the negative context (Cañas et al., 2021; de Souza Zanini et al., 2022; Valiengo et al., 2016).

In addition, it is important to note that there are numerous changes related to aging, such as reduced quality of life, reduced flexibility, sarcopenia, reduced work capacity, increased arterial stiffness, factors that go beyond behavioral factors such as stress and emotional issues (Wang et al., 2019). Studies today show that there is a direct relationship between the psychological state of the individual and the incidence of heart disease, cancer and diabetes, furthermore, to being associated with conditions and high levels of stress, overweight, smoking, inadequate eating habits and high levels of blood pressure (Firth et al., 2020; Klaperski et al., 2019; Stoduto et al., 2023; Wu et al., 2020).

In this sense, if on the one hand we can observe that there is a relationship between the emotional and quality of life of an individual, we can also establish the relationship between exercise and the improvement of this emotional condition. In a study carried out by Zanini et al (2022) it was observed that there was an improvement in the mood profile of the elderly after an acute training session carried out remotely, the same could be observed in the study by Chan (2019), where it is observed that there is an intrinsic relationship between physical exercise as a therapeutic function for mood modification, and emotional conditions. Therefore, we can see that physical activity is associated with improvements in several markers of psychological/mental health (ie: anxiety, depression, hostility, mood, self-awareness, and decreased reactivity to stress).

These findings also corroborate with questions related to quality of life and well-being in several publics, especially in the elderly. Studies carried out with the elderly seeking to identify the level of habitual physical activity and satisfaction with functional capacity and well-being, and social relationships, observed that individuals with a high level of physical activity have more functional ability and less difficulty in carrying out activities of daily living, in addition to showing greater self-esteem and autonomy, moreover, it was found that the daily practice of exercises stimulates the creation of social bonds, promoting the socio-emotional benefits related to exercise (Parra-Rizo & Sanchis-Soler, 2020; Parra-Rizo & Sanchís-Soler, 2021).

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Thus, it is observed that more active and/or more physically fit individuals tend to have a better mood than more sedentary individuals. However, it is not clearly exposed in the literature how the association between functional fitness is related to psychological health markers, especially in the elderly. In this sense, it is hypothesized that functional capacity is positively associated with a better emotional state in this population. Thus, the present study aims to verify the association between functional capacity and mood in elderly women.

Methods

Population and Study Design

This is a cross-sectional study that analyzed Seventy-nine postmenopausal women (age = 70.3 ± 7.1 years) non-governmental organization participants (*Instituto das Apóstolas do Sagrado Coração de Jesus*). Eligibility criteria study included women over 60 years of age who were previously sedentary. Individuals with any cardiovascular or locomotor limitations that prevented the participation in data collections were not included in the study. The initial selection involved the participation of 115 volunteers, 77 participants being considered for the research, of which they were able to carry out all the batteries of the proposed tests, as well as participating in all stages of the study. in Table 1. The overall picture of the participants was evaluated as variables of mood (Brunel Mood Scale (BRUMS), functional physical skills (handgrip strength, sit-to-stand test five times (FTSTS), timed and go test (TUG) and test 6-minute walk (6MWT)), were evaluated at the beginning of the activities and every 10 weeks of training. The work was submitted and approved by the Research Ethics Committee of the Faculty of Sciences at Universidade Estadual Paulista under registration CAAE: 39473120.5. 0000.5398 Participants were instructed on all procedures and presented the "Term of Free and Informed Consent", which was subsequently signed by all participants. All were evaluated and interviewed "in loco", individually, being guided on how to proceed in the functional tests and how to respond to the questionnaires. Participants were then divided in four groups (Q1 to Q4), according to quartiles of functional capacity, and mood state were compared among groups.

Table 1.
Participant's characteristics

Variables (n = 79)	
Age (y)	70.3 ± 7.1
Race (White/Black/Mixed/Indigenous)	33/28/17/1
BMI (kg.m²)	28,78 ± 6,58
Comorbidities, n (%)	63 (79,7)
Hypertension, n (%)	55 (69,6)
Diabetes, n (%)	36 (45,5)
Obesity, n (%)	18 (22,7)
Others, n (%)	12 (15,1)

Legend: BMI – Body mass index.

Measurements

Mood state assessment

The Brunel mood states (BRUMS) scale developed for a quick measurement of the individual's state (McNair et al., 1971), validated in Brazil by Rohlfs et al. (2008). BRUMS state contains 24 simple mood indicators, such as the feelings of anger, moodiness, nervousness, and dissatisfaction that are perceptible to the individual being evaluated. The participants responded as they were in relation to such sensations, according to the scale d 5 points (from 0 = nothing to 4 = extremely). The questions on the form were "How do you feel now," though another way: "How have you felt this past week, even today," or "How do you normally feel?"

Functional capacity assessment

Flexibility capacity was obtained by the sit and reach test, using a properly calibrated bench, with the participant instructed to sit with legs extended and feet touching the equipment to be used, later instructed to lean forward, projecting as far as possible, sliding your fingers along the ruler. Three attempts were made and the highest value was considere (Ribeiro et al., 2010; Wells & Dillon, 1952).

The muscle function of the participants was assessed by handgrip strength (HG), in order to measure the isometric strength of a single maximum repetition of static contraction in the dominant hand (Ikemoto et al., 2008), as previously done (de Souza Zanini et al., 2021), being measured by an analog dynamometer (Jamar™ Hydraulic Hand dynamometer; Sammons Preston, Bolingbrook, IL, with 0.1 Kgf or 1N resolution; total capacity of 50Kgf or 500N). This test allows obtaining the maximum value of handgrip strength, which is shown to be an excellent index to verify the individual's functional capacity as well as neuromuscular impairments. Patients were instructed to remain seated in a chair, with the elbow flexed at 90º and wrist neutral. At the command of the evaluator, they started to develop strength, squeezing the dynamometer handle as hard as possible

Lower limb muscle strength/power was measured by the FTSTS test, which has been widely used in science as an excellent indicator of postural control, risk of falling, lower limb strength and proprioception. The test consists of sitting down and standing up from a chair in a single attempt of 5 repetitions. The participant was instructed to remain seated, with her legs slightly apart, at the "go" command, they should perform 5 repetitions completely lifting the body, and, sitting down again, the test was performed only once and the time required to perform the test was recorded task.

Balance and agility were measured by the TUG test, the test consists of positioning the participant sitting on a chair, getting up and walking in order to circumvent an obstacle 3 meters ahead and returning to the initial sitting position. The participant was instructed to perform the test as quickly as possible without running, the test was performed only once and the time to perform the task was counted.

The 6MWT test was performed on a 30m long flat surface, using cones and a tape measure to mark the ground, where she must walk continuously for 6 minutes, or until

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she feels some discomfort that does not allow her to continue. All participants were instructed to walk as fast as possible without running, in order to reach the greatest possible distance, the test was timed and the distance reached by the participant during the task was recorded. (Montgomery & Gardner, 1998).

Statistical Analysis

For analysis, the statistical software SPSS 26,0 for Windows (SPSS Inc., Chicago, IL, USA) was used. The Shapiro-Wilk and Levene test will be used to test normality and homoscedasticity, respectively. Parametric and non-parametric variables are expressed as mean ± standard deviation and median (interquartile range), respectively. The data were arranged in interquartile intervals [1 to 4 (considering the first quartile as the best possible condition and the fourth quartile as the worst condition)], fixing the results of the functional capacity findings within these intervals. One-way ANOVA was used to indicate differences in the parametric data, and, Bonferroni's post hoc test was used to identify significant data indicated by one-way ANOVA. The Kruskal-Walli's test and Dunn's post-hoc test was used to identify significant differences in non-parametric data, respectively. The Spearman correlation test was used to verify possible associations between the studied variables

Results

The characteristics of the study participants can be seen in table 1. The studied public presented a percentage predominance of comorbidities, the most prevalent being arterial hypertension, diabetes and obesity. Table 2 shows the data related to the interquartile ranges relating the metrics obtained in the functional tests, this arrangement was made in order to understand whether more conditioned individuals have a better mood profile

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Table 2.
Quartiles of functional capacity and the values referring to the psychological factors of these quartiles

Variables		1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
Sit and Reach (cm)	MFT	32,38 ± 3,99	24,37 ± 144	20,42 ± 1,77	14,12 ± 1,89
	Tension	8,00 (0-15)	6,00 (1-14)	7,50 (1-13)	7,00 (0-15)
	Depression	4,00 (0-16)	2,00 (0-15)	4,50 (0-12)	4,00 (0-12)
	Anger	6,00 (0-14)	4,00 (0-15)	6,00 (0-11)	2,00 (0-12)
	Vigor	10,86 ± 4,01	8,68 ± 3,69	8,61 ± 3,52	8,81 ± 3,39
	Fatigue	8,14 ± 3,08	4,58 ± 2,29	6,44 ± 3,11	6,24 ± 3,62
	Confusion	6,00 (0-13)	5,00 (0-15)	4,00 (0-12)	4,50 (0-12)
	TMD	122,86 ± 18,61	115,79 ± 15,84	121,06 ± 13,68	117,04 ± 17,23
Handgrip (kgf)	MFT	30,19 ± 3,63	24,45 ± 0,99	20,64 ± 1,03	16,84 ± 2,52
	Tension	7,03 ± 3,71	5,61 ± 2,69	7,53 ± 4,37	7,29 ± 3,71
	Depression	2,00 (0-11)	5,00 (0-12)	4,50 (0-15)	4,50 (0-16)
	Anger	4,00 (0-11)	6,00 (0-12)	4,50 (0-12)	5,50 (0-16)
	Vigor	8,87 ± 3,91	9,07 ± 4,02	8,44 ± 3,94	10,43 ± 3,43
	Fatigue	6,00 (0-13)	5,00 (0-11)	5,50 (1-15)	7,00 (0-14)
	Confusion	4,00 (0-11)	4,00 (1-11)	5,00 (0-15)	6,00 (0-15)
	TMD	117,23 ± 16,04	118,07 ± 15,13	120,81 ± 18,62	120,50 ± 16,44
FTSTS (seg)	MFT	8,65 ± 1,02	11,03 ± 0,51	13,01 ± 0,51	16,67 ± 2,31
	Tension	7,37 ± 4,02	6,61 ± 2,63	5,13 ± 3,17	8,64 ± 3,64
	Depression	3,00 (0-14)	5,00 (0-15)	2,00 (0-9)	6,00 (0-12)
	Anger	6,00 (0-14)	5,00 (0-12)	4,00 (0-11)	5,00 (0-12)
	Vigor	9,11 ± 4,31	8,82 ± 3,36	9,21 ± 4,03	9,57 ± 3,58
	Fatigue	4,00 (0-14)	6,50 (1-15)	4,00 (0-9)	9,50 (0-12)
	Confusion	5,16 ± 3,15	4,54 ± 2,29	4,13 ± 2,94	7,29 ± 3,14
	TMD	119,47 ± 17,95	119,43 ± 16,56	112,07 ± 10,64	123,57 ± 17,71
TUG (seg)	MFT	6,57 ± 0,45	7,77 ± 0,36	9,44 ± 0,59	12,73 ± 1,28
	Tension	8,67 ± 4,21	5,44 ± 3,05	6,45 ± 3,65	7,55 ± 4,41
	Depression	6,67 ± 4,11	3,72 ± 1,76	3,86 ± 2,91	5,56 ± 2,83
	Anger	7,39 ± 3,55	4,33 ± 2,71*	4,05 ± 2,04**	5,06 ± 3,12***
	Vigor	10,39 ± 4,11	8,44 ± 3,44	9,08 ± 3,46	7,45 ± 3,07
	Fatigue	7,78 ± 4,05	4,44 ± 2,19	5,91 ± 3,09	7,45 ± 3,01
	Confusion	6,00 (0-13)	4,00 (0-11)	4,00 (0-15)	5,00 (1-11)
	TMD	126,67 ± 17,71	113,28 ± 14,98*	116,01 ± 15,31**	122,21 ± 14,86
6MWT (m)	MFT	503,12 ± 32,18	457,86 ± 12,04	402,13 ± 15,3	273,42 ± 61,26
	Tension	7,01 ± 4,11	6,96 ± 3,08	6,79 ± 4,02	7,05 ± 3,55
	Depression	1,00 (0-12)	4,00 (0-16)	4,00(0-12)	5,00 ± (0-15)
	Anger	5,00 (0-9)	6,00 (0-14)	4,00 (0-12)	5,00 (0-8)
	Vigor	12,44 ± 1,94	8,52 ± 3,81*	8,91 ± 3,31**	8,03 ± 3,17***
	Fatigue	5,33 ± 3,41	6,15 ± 4,02	6,33 ± 3,91	7,29 ± 4,08
	Confusion	5,33 ± 3,02	5,26 ± 3,69	4,85 ± 2,61	5,57 ± 3,73
	TMD	112,86 ± 18,01	120,59 ± 16,94	117,94 ± 15,31	123,05 ± 17,41

Subtitle: MFT - mean of functional capacity test. FTSTS - five-time sit-to-stand test; TUG - timed up and go test; 6MWT - 6-minute walk test; * - Denotes significant differences between Q2 and Q1; ** - Denotes significant differences between Q3 and Q1; *** Denotes significant differences between Q4 and Q1

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The findings showed that there was an interquartile difference in the results obtained by the TUG test, where the anger factor showed significant differences between Q1 and Q2 quartiles (41,40 ± 30,99%, Z = 2.380, p = 0.017), Q1 and Q3 (45,19 ± 42,53%, Z = 2.841, p = 0.004) and, Q1 and Q4 (31,52 ± 12,11%, Z = 2.334, p = 0.020). However, the data did not demonstrate that a better score on the TUG test would be related to a better behavioral pattern of mood. Still observing the data obtained by the TUG, it was verified that the TMD also showed differences between the Q1 and Q2 quartiles (10,57 ± 15,41%, Z = 2.526, p = 0.012), and, Q1 and Q3 (8,41 ± 13,55%, Z = 2.275, p = 0.023), this finding again demonstrated that individuals allocated in the best quartile of this physical capacity did not present a better pattern of this mood factor. In the 6-minute walk test, it is possible to observe that the individuals allocated in the first quartile were those with the highest level of vigor throughout the study. Statistical analyzes showed that there was a difference between Q1 and Q2 quartiles (31,51 ± 96,39%, Z = 2.847, p = 0.042), Q1 and Q3 (28,37 ± 70,61%, Z = 2.539, p = 0.004), and Q1 and Q4 (35,45 ± 63,41%, Z = 2.495, p = 0.013), in this case it is possible to verify that the highest value of this factor is allocated in the best quartile of the cardiorespiratory capacity test (6MWT), but it was not maintained in the other quartiles.

This finding discards the initial hypothesis, where a better level of conditioning would be related to a better mood profile. However, when observing Figure 1, we can verify that the behavior of the mood variables, show a slight improvement in the graphic pattern of the "iceberg profile", but not enough to support the initial hypothesis.

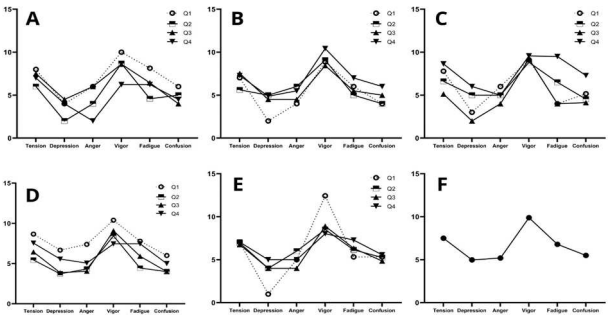

Figure 1. Iceberg profile obtained by the BRUMS test separated between the quartiles of the functional capacity tests.
Legend – A - Iceberg profile plotted between the quartiles derived from the Sit and Reach test; B - Iceberg profile traced between the quartiles derived from the Hand Grip Strength test; C - Iceberg profile plotted between quartiles derived from the FTSTS test; D - Iceberg profile plotted between quartiles derived from the TUG test; E - Iceberg profile plotted between quartiles derived from the 6MWT; F - Iceberg profile generated by the general average of the sample without the division between functional capacities and without quartiles

Furthermore, when performing the correction test between the functional capacities and the mood variables (Table 3), it is verified that there was a significant and inversely proportional correlation between the "depression" factor and all the functional capacities (P < 0, 05), except for the handgrip strength obtained by the handgrip test, the same could be observed for the TMD, which proved to be significant in the correlation with the TUG test. In addition, the findings also demonstrated that all participants allocated in Q1, Q2 and Q3 are classified as having a "good" or "excellent" performance in all tests performed, according to the reference tables for those tests.

Table 3.
Correlation between the psychological variables of the mood profile and variables of functional capacity

	Tension	Depression	Anger	Vigor	Fatigue	Confusion	TMD
SR	-0,152	-0,047*	-0,081	-0,138	-0,232	-0,159	-0,129
HG	-0,158	0,058	-0,045	-0,147	-0,249	-0,138	-0,134
FTSTS	0,173	-0,046*	0,114	0,231	0,229	0,131	0,112
TUG	0,167	0,006**	0,102	0,262	0,207	0,131	0,045*
6MWT	-0,168	-0,0138*	-0,046	-0,255	-0,215	-0,123	-0,085

* R Significant correlation (p <0.05) **Significant correlation (p<0,01). *Subtitle:* SR: Sit and Reach, HG: HandGrip, FTSTS: Sit-to-Stand; TUG: "Timed-up and Go"; 6MWT: 6-Minutes' Walk Test.

Discussion

The present study investigated the association between functional capacity and mood in elderly women. Its main findings were that individuals classified as the best (Q1) in each test did not guarantee a mood profile as expected, which would indicate that the level of physical capacity is not associated with a better mood profile. And, although the findings demonstrate that the level of physical capacity is not enough to guarantee a good mood profile, the iceberg profile curves of the general average of the group were close to what was expected. In addition, individuals allocated in Q1 and Q2 quartiles were classified as "good or excellent" in all tests, following the classic references and their respective classification tables.

The relationship between level of physical activity, functional capacity and healthy aging is widely established in the literature (AuYoung et al., 2016; Tada, 2018; Tomás et al., 2018). However, understanding the aspects related to physical capacity and its impact on the mood profile is still very scarce. Our results were not significant when compared numerically, however, analyzing each case, visualizing the "iceberg profile" curves, a great variation was noted in relation to the reference values of physical abilities and the mood profile.

High levels of physical capacity are correlated with the reduction of damage secondary to aging, such as reduced susceptibility to chronic diseases and loss of muscle mass, increased bone density, in addition to helping the coordination function (Ngomane et al., 2019; Rodrigues da Silva et al., 2017). Likewise, studies on the relationship between stress factors, mood swings and physical activity levels show that correct "doses" of physical exercise help reduce stress, in addition to releasing hormones related to the individual's

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well-being (Chan et al., 2019; Santos, 2019).

However, our findings were not enough to demonstrate that a higher level of conditioning would be enough for a better level of mood. It is therefore speculated that the sample was made up of previously sedentary volunteers and the expected effects could not occur, since the physiological and hormonal regulation mechanisms that physical exercise promotes are not present. Studies have shown the importance of physical exercise for hormonal action and regulation in individuals under training, directly contributing to physical and emotional well-being (Chan et al., 2019; Mangine et al., 2017; Santos, 2019).

The results of functional capacity can be described as the ability to perform tasks, it is presumed constantly that these capacities are tied to the level of conditioning of the subject, and therefore, the higher the present value, the more physically conditioned the individual is. But when analyzing the results obtained it is possible to observe that the values allocated as greater (Q1) are within normative values, or higher, as in the case of Handgrip, the reference value is> 25kgf (de Souza Zanini et al., 2021). In addition, when observing the flexibility results, the first and second quartiles which would be allocated higher than expected for women over 60 years of age (Hoeger & Hopkins, 1992), even in sedentary individuals.

In this way it is observed that the results of the functional capacities that are within Q1 and Q2 are within the normality standards, but when looking at the results of the humoral factors (BRUMS), it appears that the groups do not reach the expected curve of "iceberg profile", which would demonstrate a process of disorder in the mood profile (McNair et al., 1971). These conditions of the "iceberg profile" can be seen in Figure 1, however, a pattern of this profile was not observed in any of the cases, even in the best condition of the curve, as seen in Q1 of the HG, it is noteworthy that the appropriate profile does not occur due to the high values of stress and fatigue factors.

Another point to be highlighted is the behavior of the "iceberg profile" curves present in the TUG test. When comparing the curves obtained, it can be noted that Q1 has one of the highest vigor values present in all surveys, but also has the highest values for tension, depression, anger, tiredness and confusion, in addition to having the highest TDM of all. When the values of the other quartiles are observed, there is a reduction in these mean values, but not statistically significant, which would indicate the same emotional state for all participants, regardless of the quartile of this functional capacity that they fit.

However, the mean mood of the group, in general (figure 2), showed an "almost ideal" behavior, showing high vigor, with slight changes in the stress and fatigue factors, but with a more homogeneous behavior for the other factors. The observation of this result alone would verify a pattern to be considered "normal", if compared with the data presented in Table 1 and Figure 3, contrasting this premise. In any case, high values of vigor are always welcome, as this is a significant indicator, as it measures overall satisfaction, self-efficacy, and is also responsible for keeping the individual motivated and willing (Codonhato et al., 2017; Martins, 2017).

In addition, we could observe an association between physical capacity and the depression factor (Table 3), which is a relevant finding, as this factor would indicate a depressed mood, representing feelings of devaluation such as emotions isolation, sadness, difficulty in adapting and negative self-image (Erickson et al., 2018; Hossain et al., 2020; Rohlfs et al., 2008). It is therefore speculated that this would occur given the possible difficulties that occur during aging, such as reduced work capacity, loss of people, health complications, difficulty in relating (Beutel et al., 2019). Again, what attention is indicative of functional capacity is not the main factor for an improvement in mood and behavior, but the usual practice of exercises. In this sense, a study carried out by Long et al. (Long et al., 2021) it was verified that the physical exercise was enough to reduce the negative emotional effects in individuals after a training session, in the literature it is still possible to verify that the exercise has a direct influence on the individual's behavior and mood, being more the more effective to improve the mood (de Souza Zanini et al., 2022; Ligeza et al., 2021).

Another important data to be highlighted is the " total mood disorder" (TMD), which indicates the general state of the mood factors, this high value being directly associated with high levels of stress It is observed that TMD values <110 are ideal, demonstrating a normal pattern for this variable, however, TMD values >110 would indicate a greater susceptibility to mood swing events in stressful events (McNair et al., 1971). Thus, with the findings it can be said that, even the individual presented levels of physical capacity considered within the values of normality or higher were not sufficient for a good maintenance of the psychophysiological health, being therefore, the level of physical activity and exercise programs the protagonists for health promotion and healthy aging.

Furthermore, our study is limited because there is no support in the literature that seeks to observe and support the association of the tests used, in addition, another limiting issue of the findings is the cross-sectional design with which the study was conducted. Thus, the data showed us that, in fact, the level of physical capacity is not decisive for a good emotional health and maintenance of the mood, but it can be considered that the habitual practice of physical exercises is the influencer for the improvement of the profile of mood, and not just the physical condition that the individual may present at the time. On the other hand, even with the limitations of the study, the findings of this study are of great relevance to the clinical environment, since it is necessary not only to understand the individual's physical capacities, but mainly the need to associate physical exercise programs with promotion of health, such as the psychological aspects.

Conclusion

It was concluded that there is no association between the

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best functional capacity condition and the best mood profile. It is only possible to establish this relationship once the individual is included in regular physical exercise programs. Therefore, the importance of the regular practice of physical exercises is emphasized, also during the aging process, either to minimize the damage caused by aging or to maximize emotional and mood control in this public.

Competing interests

The authors declare that they have no competing interests.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

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Practice Impact Statement (PIS)

The original article entitled "Association between physical fitness and mood state in ageing." is a pioneering study in the behavior of the physical and functional capacities of older women. The results of this study demonstrate that there are no associations with the level of functional capacity and its influence on behavioral variables.

In this sense, we were able to demonstrate that, in the case of ageing individuals, the level of functional capacity is not preponderant for a good behavioral profile, but rather, the processes related to the practice of physical exercise. This demonstrates the importance of including exercise programs to improve the overall quality of life, not only impacting the physical process, but also the individual's behavior.