Impact of a physical exercise program on resilience level: a longitudinal study[1]

Impacto de um programa de exercícios físicos no nível de resiliência: um estudo longitudinal

Impacto de un programa de ejercicio físico en el nivel de resiliencia: un estudio longitudinal

[Research Article]

Karollyni Bastos Andrade Dantas[2]
Francisco Prado Reis[3]
Marco Antônio Almeida Santos[4]
Aline Geovanna Peixoto Duarte[5]
Luana Santos Costa[6]
Lúcio Flávio Gomes Ribeiro da Costa[7]
Natália de Góes Lima[8]
Raissa Pinho Morais[9]
Estélio Henrique Martin Dantas[10]

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[2] Master and Doctor's Degree Program in Health and Environment - PSA, Tiradentes University - UNIT, Aracaju, Brazil. ORCID: https://orcid.org/0000-0001-6886-6976; e-mail: karollbdantas@gmail.com.

[3] ORCID: https://orcid.org/0000-0002-7776-1831; e-mail: franciscopradoreis@gmail.com.

[4] ORCID: https://orcid.org/0000-0003-0622-6257; e-mail: marcosalmeida2010@yahoo.com.br.

[5] Undergraduate Medical Program at Tiradentes University - UNIT, Aracaju, Brazil. ORCID: https://orcid.org/0009-0001-6495-0385; e-mail: aline.geovanna@souunit.com.br.

[6] Undergraduate Medical Program at Tiradentes University - UNIT, Aracaju, Brazil. ORCID: https://orcid.org/0000-0003-3534-3399; e-mail: luana.scosta@souunit.com.br.

[7] ORCID: https://orcid.org/0000-0002-3437-8701; e-mail: luciojudo@hotmail.com.

[8] Undergraduate Medical Program at Tiradentes University - UNIT, Aracaju, Brazil. ORCID: https://orcid.org/0009-0001-3378-1179; e-mail: natalia.goes@souunit.com.br.

[9] Bachelor's Degree Program in Psychology at Tiradentes University - UNIT, Aracaju, Brazil. ORCID: https://orcid.org/0000-0001-5860-1712; e-mail: raissamorais27@hotmail.com

[10] Doctor's Degree Program in Nursing and Biosciences - PPgEnfBio, Federal University of the State of Rio de Janeiro - UNIRIO, Rio de Janeiro, Brazil. ORCID: https://orcid.org/0000-0003-0981-8020; e-mail: estelio.henrique@souunit.com.br

Abstract

Aging is a physiological process. In view of the changes that affect the elderly, there is a need for resilience in this context, essential for well-being. Objective: To analyze the resilience rates of the elderly, before and after the practice of physical activity. This is a quasi-experimental, quantitative, descriptive cross-sectional study, carried out with 100 elderly people. The participants completed the anamnesis and the "Wagnild and Young Resilience Scale". There is an age group of 65 to 69 years old (37.8%), self-declared white (38.9%), user of UBS Augusto Franco (Augusto Franco) (62.2%), married (40%) , with incomplete primary education (26.7%), retired (40%), with a monthly family income of up to 2 minimum wages (57.8%), with the majority having increased levels of resilience subfacets: serenity, sense of life, self-confidence, self-sufficiency, perseverance. The data obtained indicate an increase in resilience with the practice of exercise, contributing to the improvement of health.

Keywords: resilience, physical exercise, quality of life, elderly, health.

Resumo

O envelhecimento é um processo fisiológico. Tendo em conta as alterações que afectam os idosos, é necessário que haja resiliência neste contexto, essencial para o bem-estar. Objetivos: Analisar os índices de resiliência de idosos, antes e após a prática de atividade física. Trata-se de um estudo *quasi*-experimental, quantitativo, descritivo de corte transversal, realizado com 100 idosos. Os participantes preencheram a anamnese e a "Escala de Resiliência de Wagnild e Young". Verifica-se uma faixa etária de 65 a 69 anos (37,8%), autodeclarados brancos (38,9%), usuários da UBS Augusto Franco (62,2%), casados (40%), com ensino fundamental incompleto (26,7%), aposentados (40%), com renda familiar mensal de até 2 salários mínimos (57,8%), sendo que a maioria apresentou níveis aumentados das subfacetas de resiliência: serenidade, sentido de vida, autoconfiança, autossuficiência, perseverança. Os dados obtidos indicam um aumento da resiliência com a prática de exercício físico, contribuindo para a melhoria da saúde.

Palavras-chave: resiliência, exercício físico, qualidade de vida, idoso, saúde.

Resumen

El envejecimiento es un proceso fisiológico. Ante los cambios que afectan a las personas mayores, en este contexto surge la necesidad de resiliencia, fundamental para el bienestar. **Objetivo**: Analizar las tasas de resiliencia de los adultos mayores, antes y después de la práctica de actividad física. Se trata de un estudio cuasiexperimental, cuantitativo, descriptivo, transversal, realizado con 100 personas mayores. Los participantes completaron la anamnesis y la "Escala de Resiliencia de Wagnild y Young". Existe un grupo etario de 65 a 69 años (37.8%), autodeclarado blanco (38.9%), usuario de la UBS Augusto Franco (Augusto Franco) (62.2%), casado (40%), con primaria incompleta educación (26.7%), jubilados (40%), con ingresos familiares mensuales de hasta 2 salarios mínimos (57.8%), presentando la mayoría niveles elevados de subfacetas de resiliencia: serenidad, sentido de vida, confianza en sí mismo, autoestima. suficiencia, perseverancia. Los datos obtenidos indican un aumento de la resiliencia con la práctica de ejercicio, contribuyendo a la mejora de la salud.

Palabras clave: resiliencia, ejercicio físico, calidad de vida, personas mayores, salud.

Introduction

Aging is considered a process that occurs in all living beings, characterized by physiological and morphological changes that are entirely irreversible. In this regard, there are progressive alterations that impair an individual's ability to respond to environmental stress and maintain homeostasis. Consequently, the elderly can be affected by pathological and morbid conditions that can lead to dynapenia, sarcopenia, and a decrease in muscle strength and power (Sousa et al., 2021). Furthermore, mental disorders such as anxiety, which is more prevalent in women, are also associated with this natural aspect of life (Esteso De la Osa & León-Zarceño, 2022).

However, it is important to recognize that aging is not a homogeneous process and depends on factors such as gender, ethnicity, and socioeconomic conditions in the context in which the elderly individual is situated (Silva Júnior & Eulálio, 2022). Nevertheless, there is a need for the elderly to maintain the physical and mental abilities necessary for a self-sufficient and free life. It is evident that resilience is crucial in the current context (Araújo & Faro, 2016).

The concept of resilience should be addressed for healthy aging, which relates to the ability to adapt to obstacles, the ability to mold oneself and confront adverse and stressful conditions. Thus, resilient individuals possess the following characteristics: serenity, perseverance, self-confidence, optimism, self-efficacy (Araújo & Faro, 2016). It is in this scenario that physical activity serves as a non-pharmacological treatment; when seniors remain active, they tend to show better emotional performance, lower prevalence of mental disorders, improved quality of life, and consequently, increased resilience (Alves, 2020).

Furthermore, physical activity proves to be a valid approach in reducing anxiety and improving mental health (Esteso De la Osa & León-Zarceño, 2022). It slows down and attenuates the process of organic function decline, promoting a range of benefits from physiological capabilities, such as muscle strength, to the development of cognition and social skills (Sousa et al., 2021).

Therefore, it is necessary to assess the level of resilience in a group of elderly participants in the current project's exercise program, based on a profile with sociodemographic, occupational, and functional capacity characteristics. Given the limited research on the role of physical exercise in resilience in the elderly, it is essential to investigate this topic with the aim of using exercise in the best possible way for elderly patients to navigate through this biological process of life, aging.

In light of the above, the article aims to evaluate the degree of resilience in elderly individuals before and after the completion of a 16-week physical exercise program.

Methodology

The present study was conducted in the form of a quasi-experimental, quantitative, cross-sectional descriptive research.

Universe, Sampling, and Sample

The study's universe consists of elderly individuals served by the Basic Health Units (UBS) in the following neighborhoods of the city of Aracaju: Aeroporto, Atalaia, Castelo Branco, Coroa do Meio, Farolândia, Grageru, Inácio Barbosa, Jabotiana, and Ponto Novo. The covered UBSs include the following: UBS Antônio Alves; UBS Augusto Franco; UBS Augusto César Leite; UBS Ávila Nabuco; UBS Dona Sinhazinha; UBS Fernando Sampaio; UBS Geraldo Magela; UBS Hugo Gurgel; UBS Dr. Max de Carvalho; UBS Madre Tereza de Calcutá, and UBS Manoel de Souza Pereira.

Initially, all UBSs were visited. Elderly individuals who attend the UBSs were invited to attend an initial lecture held at the Farolândia Campus, during which the project, assessments, expected benefits, ethical aspects, and any existing doubts were explained. At the end of the lecture, an invitation was extended to participate in the project.

Volunteers from the UBSs were requested to bring a medical certificate authorizing them to engage in physical exercise, a referral from their respective UBS, identification, and CPF (Brazilian taxpayer identification number) to the Laboratory of Human Motility Biosciences - LABIMH.

Upon arrival, individuals were screened based on inclusion criteria (being over 60 years old and committing to participate in a physical exercise program by signing the Informed Consent Form) and exclusion criteria (having motor limitations or comorbidities that prevent participation in exercise programs).

All pre-selected individuals were screened for safety in participating in a physical exercise program using the Revised Physical Activity Readiness Questionnaire (rPAR-Q).

The eligible volunteers from the UBSs were randomly distributed into groups using a blind selection method, facilitated through the website www.random.org. Participants were then assigned to their respective classes (Class I - Monday and Wednesday, from 2:00 PM to 3:00 PM; Class II -

Tuesday and Thursday, from 2:00 PM to 3:00 PM; Class III - Wednesday, from 3:00 PM to 4:00 PM; Class IV - Tuesday and Thursday, from 3:00 PM to 4:00 PM).

In light of this, an average of approximately 26.25 volunteers per shift could be accommodated. Thus, activities were developed that encompassed cardiopulmonary training, strength training, and flexibility exercises.

Research ethics

The study complied with the rules of Resolution 466/12 of the National Health Council, dated December 12, 2012 (Resolution No. 466, 2012), which deals with the norms for conducting research involving human subjects, as well as the Helsinki Declaration (World Medical Association [WMA], 2008).

For access to healthcare units, approval was granted by the Coordination of the Center for Continuing Health Education (CEPES). In light of this, each Primary Healthcare Unit (UBS) received an Institution Information Form (TII) specifying all procedures, risks, and precautions.

Furthermore, each voluntary participant expressed their willingness by signing the Informed Consent Form (ICF), which contained the same information as the Institution Information Form (TII) and included all details regarding risks and benefits, as well as the social significance of the research with advantages for the study subjects. These aspects were duly explained to the elderly individuals.

The research was initially approved by the Ethics Committee for Research Involving Human Subjects at the Tiradentes University on March 26, 2020, under opinion number 3.936.886 - CAAE: 26524719.4.0000.5371.

Diagnostic Assessment (DA)

After the completion of preliminary procedures (participant recruitment, ethical precautions, and participant safety measures, stratification into groups), all study participants underwent a diagnostic assessment in which the Resilience variable was measured during the first two weeks of the project.

Resilience Assessment

To collect data regarding the resilience of research participants, the validated resilience scale known as the 'Wagnild and Young Resilience Scale' was used. This is an online instrument

designed to assess beliefs related to resilience. The assessment covers eight domains of beliefs that enable an understanding of the level of resilience of an individual or a team when facing adversity and significant and ongoing stress.

The resilience scale was structured with the foundation of Cognitive Therapy (CT), substantiated by the General Systems Theory (GST) and the Psychosomatic approach. Its content covers beliefs presented in the literature on resilience, which are organized in the Resilient Approach as mental models called Determining Belief Models (DBMs) (Wesner, 2019).

Data analysis was performed by applying the resilience scale based on the theoretical framework of the resilient approach. The results from the Wagnild and Young Resilience Scale, organized into categories, enable the researcher to structure planning strategies for topics - topic selection, thus meeting the research objectives (Serrão, Castro, Teixeira, Rodrigues & Duarte, 2021).

The instrument was developed through five components identified as factors for resilience: serenity, perseverance, self-confidence, sense of life, and self-sufficiency.

The resilience scale developed by Wagnild and Young is one of the few instruments used to measure levels of positive psychosocial adaptation in the face of significant life events. It consists of 25 positively worded items with Likert-type responses ranging from 1 (strongly disagree) to 7 (strongly agree).

The score range for the Wagnild and Young scale variable is from 25 to 175 points. They are subdivided into 3 categories: 25 - 75 low; 75 - 125 moderate; 125 - 175 high.

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Intervention

The strength training protocol, which the participants underwent, consisted of a two-week familiarization period, followed by 16 weeks of training comprising two weekly sessions held in the afternoon, divided into groups by time slots. These time slots were as follows: Classes 1 and 2 (Mondays and Wednesdays from 2:00 PM to 3:00 PM and from 3:00 PM to 4:00 PM, respectively) and Classes 3 and 4 (Tuesdays and Thursdays from 2:00 PM to 3:00 PM and from 3:00 PM to 4:00 PM, respectively), totaling 32 sessions.

The strength exercises, based on a circuit of resistance exercises using machines (weight training) as shown in Figure 4, were prescribed based on the perceived effort scale of OMNI-Res (Robertson et al., 2003), similar to those used in the study by Kukkonen-Harjula et al. (2007).

The cardiovascular component of the circuit was quantified in terms of intensity based on the Borg Rating of Perceived Exertion scale (1982).

In both perceived effort scales, levels 2 and 3 were used during the familiarization phase. During the 16-week training period, the load was adjusted so that participants perceived the effort at levels 7 to 8 (Strong). This criterion also served as feedback for adjusting the load every two weeks.

The neuromuscular training was conducted with the following exercise sequence: barbell biceps curl, leg extension machine, triceps on the high pulley crossover, leg curl machine, dumbbell shoulder press, bench squat with a weight plate on the chest, chest fly, leg press, front pulldown, plank, and finally, pelvic lift, with a two-minute rest between sets.

Strength exercises were performed at a moderate speed in both the eccentric and concentric phases, taking approximately 2 seconds. The intervals between sets and exercises were always at least 2 minutes apart. Elderly participants in the project performed the proposed physical exercises in a circuit format, which emphasized strength training while respecting individual differences.

Flexibility training, which was performed both in the warm-up and at the end of the training, will also have its intensity assessed using the PERFLEX perceived effort scale (Dantas et al., 2008). In the warm-up, submaximal intensity will be used (stretching - levels 31 to 60 of PERFLEX), and at the end, maximal intensity will be used (flexing - levels 61 to 80 of PERFLEX).

Certified Physical Education and Physiotherapy professionals were responsible for training the elderly participants in the study, ensuring that intensity levels and volumes were respected. Before the start of the training, all participants had to perform a general warm-up, consisting of exercises and stretching (levels 31 to 60 of PERFLEX) and elevating the heart rate for ten minutes.

After the training session, participants engaged in a cool-down, consisting of stretching exercises (levels 61 to 80 of PERFLEX) for approximately 10 minutes. Daily, the following data were collected from the study participants: heart rate (before the training); blood pressure; perceived effort in relation to cardiovascular, neuromuscular, and flexibility training (all after the training).

Summative Assessment (SA)

At the end of the 1st phase of intervention (16 weeks), all research participants underwent a new round of assessments, using the same procedures employed in the diagnostic evaluation.

Statistical Analysis

The data were organized and analyzed using Microsoft Office Excel® 2016. Descriptive statistics were performed to characterize the sampled population. Measures of central tendency and dispersion were used to describe the collected data, following the guidelines from the consulted literature (Costa Neto, 1995; Thomas; Nelson; Silverman, 2007; Triola, 2017).

Subsequently, the normality of the collected data was assessed by conducting the Shapiro-Wilk test. This determined the use of the Mann-Whitney test for non-parametric data.

Level of Significance and Experiment Power

In order to maintain the scientific rigor of the research, the present study adopted a significance level of $p < 0.05$, meaning a 95% probability that the statements and/or negations made during the investigations are correct (α error), thereby allowing for a 5% probability of chance results. The experiment's power (β error) was assessed with an acceptance level of 80%. All statements and/or negations were limited to the specific study, depending on the acceptance level for the universe indicated by the experiment's power.

Results and Discussion

Aging involves morphological and functional changes that occur throughout life after sexual maturity, progressively reducing the ability of the elderly to respond to environmental stress and maintain stability. Aging is influenced by various factors such as gender, ethnicity, religion, mental state, and the individual's socio-economic conditions (Araújo, 2016).

Table 1 presents descriptive data for the variables: gender, age, ethnicity, Basic Health Units, marital status, family history of obesity, number of cigarettes per day, high stress control, and educational level of the participants collected through anamnesis, including absolute numbers and their corresponding percentages.

Table 1: Sociodemographic characteristics of the sample group.

SOCIODEMOGRAPHIC DATA	n = 90	
GENDER	**N**	**%**
Female	75	75
Male	15	15
AGE		
60 – 64 years old	25	27.8
65 – 69 years old	34	37.8
70 – 75 years old	17	18.9

75 years old or more	14	15.6

ETHNICITY

White	35	38.9
Black	25	27.8
Mixed	28	31.1
Indigenous	1	1.1
Not specified	1	1.1

MARITAL STATUS

Married	36	40
Single	23	25.6
Divorced	11	12.2
Widowed	20	22.2

FAMILY HISTORY WITH OBESITY

Brother	4	4.4
Mother	2	2.2
Father	1	1.1
No history	68	75.6
Not specified	15	16.7

NUMBER OF CIGARETTES PER DAY

More than 30 cigarettes	1	1.1
11 to 30 cigarettes	1	1.1
Up to 10 cigarettes	4	4.4
Not specified	2	2.2
Doesn't smoke	82	91.1

EDUCATIONAL LEVEL

Completed Higher Education	23	14.4
Incomplete Higher Education	5	5.6
Specialized Postgraduate	2	2.2
Never Studied	4	4.4
Completed Elementary School	7	7.8
Incomplete Elementary School	24	26.7
Completed High School	27	30
Incomplete High School	8	8.9

DAILY ACTIVITIES PERFORMED

Study and Work	4	4.4
Work and Take Care of Family	51	56.7
Study Only	5	5.6
Study and Take Care of Family	4	4.4
Study, Take Care of Family and Work	1	1.1
Not specified	25	27.8

DRINKS CONSUMED PER WEEK

More than 15	1	1.1
Less than 5	27	30
Doesn't drink	62	68.9

OCCUPATIONAL STATUS

Retired	36	40

Shopkeeper	2	2.2
Pensioner	2	2.2
None	2	2.2
Seamstress	3	3.3
Homemaker	16	17.8
General Services	1	1.1
Banker	1	1.1
School Coordinator	1	1.1
Microentrepreneur	1	1.1
Not specified	24	26.7
MONTHLY INCOME		
Up to 02 minimum wages	52	57.8
From 02 to 04 minimum wages	22	24.4
From 04 to 10 minimum wages	15	16.7
Not specified	1	1.1

Author's Own Compilation (2023)

In addition to the sociodemographic information of the elderly, activities related to household chores, active transportation, satisfactory sleep, leisure, prayers, social contact, and problem-solving are actions that often help improve the emotional well-being of the elderly (Da Silva, 2012).

Sociodemographic data have a significant influence on the physical, emotional, and resilience aspects of the elderly population (Sousa et al., 2021). Most of the analyzed patients belonged to the Augusto Franco Basic Health Unit, located in the South Zone. Furthermore, in terms of population profile, the majority fall within the age range of 65 - 69 years, with various levels of education, and their primary source of income being retirement. Additionally, as in other studies, women account for 75%, demonstrating that this demographic group aims for active aging with improvements in well-being and quality of life (Sousa et al., 2021). Furthermore, in terms of population profile, the majority fall within the age range of 65 - 69 years, with various levels of education, and their primary source of income being retirement.

On the other hand, women are more prone to anxiety (Esteso de La Osa, 2022), highlighting the importance of the prevalence of this group in resilience-promoting projects, especially in old age, due to the challenges frequently faced by this age group, such as fear of death, loneliness, and abandonment.

This increase in resilience rates could be confirmed after the administration of a new questionnaire (Table 2), which included questions related to the the psychoemotional aspect, such as "How important is it for you to maintain interest in things?" These questions revealed high rates

of positivity among the responses, reinforcing the close relationship between physical exercise and the ability to practice resilience.

Table 2: Descriptive Data for Facets of the psychoemotional aspects.

FACETS	ST	M	DP
PERSEVERANCE			
AD	2.57	28	7.41
AF	1.85	27	5.26
SELF-SUFFICIENCY			
AD	3.18	34	9.00
AF	2.31	34.5	6.59
SELF-CONFIDENCE			
AD	2.71	29	7.60
AF	2.04	31	4.81
MEANING OF LIFE			
AD	2.57	27	7.20
AF	1.91	28.5	4.64
SERENITY			
AD	2.38	25	6.94
AF	1.73	25	5.18

Author's Own Compilation (2023).

Legend: FA - formative assessment; DA - diagnostic assessment; TS - total sum; M - mean; SD - standard deviation.

Regarding Table 2, there are changes in the values of all descriptive criteria. Thus, it can be observed that the mean scores of the facets (perseverance, self-sufficiency, self-confidence, and sense of life) either increased or remained stable, as was the case with the facet measuring serenity during the formative assessment conducted at the end of the first phase of the process to monitor the progress of the elderly group. Furthermore, throughout the study, there was a decrease in the standard deviations of all parameters, indicating that the data are close to the mean or the expected value, with particular emphasis on self-sufficiency, self-confidence, and sense of life. In summary, the results of the current study indicate that the participants have resilient characteristics to cope with life's challenges during the aging process.

Therefore, physical activity is positively related to resilience, as well as social participation, quality of life in old age, and coping with stressful events (Santana et al., 2022). Furthermore, the presence of physical exercise in the life of the elderly is relevant, as it promotes a higher proportion of lean mass, which significantly contributes to increasing cardiorespiratory capacity and improving physical quality during aging (De Matos, 2021).

Resilience encompasses various factors that influence its rate. Among these are maintaining a healthy diet, the production of endorphins (through laughter, physical exercise, sleep, and relaxation), impulse control, optimism, empathy, self-efficacy, discipline, and self-confidence (Araújo, 2016). Maintaining each of these factors significantly contributes to the resilience of the elderly.

In this context, quality aging is defined by setting goals to adapt to life's changes. Thus, knowing how to manage emotions and maintaining a level of serenity when facing certain problems is important for resilience. Similarly, maintaining the production of endorphins through physical exercise significantly contributes to increased perseverance and self-confidence (De Oliveira, 2021; Sousa et al., 2021). Therefore, the significance of physical activity and the role of resilience in improving the well-being of the elderly in the aging process is clear.

Furthermore, physical exercise can be considered a strategy for coping with adversities, such as religion, stress reduction, and strengthening of emotional bonds, as shown in the research (Fontes, 2019).

Aging is a heterogeneous process determined by different aspects of life: the physical, social, environmental, spiritual, and psychological functioning of individuals. For this reason, despite old age presenting losses and health risks, it is essential to maintain an optimistic pattern of adaptive development, a high level of autonomy, subjective well-being, and demonstrate resilience (Silva Júnior & Eulálio, 2022)

The assessment of resilience was conducted before and after the 16-week physical exercise program, with the results presented in Table 3

Table 3: Descriptive Statistics of Resilience

DESCRIPTIVE STATISTICS	DIAGNOSTIC	SUMMATIVE
Count	100	68
Standard Error	3.43	2.66
Sample Variance	1173.81	481.42
Mean	128.82	138.98
Standard Deviation	34.26	21.94
Median	137	143.5
Mode	123	125

The Table 3 revealed an increase in the resilience levels of the participants after engaging in physical exercise, resulting in a total diagnostic evaluation of 128.82, a formative evaluation of 138.98, and a variation level of 7.89% (Benedetti, 2012). The data were analyzed using the statistical software SPSS® 17.0 and MedCalc.

To verify the homogeneity of the sample group, a Shapiro-Wilk test was conducted, as shown in Table 4.

Given the increase in the resilience rate of the project participants following 16 weeks of physical practice, the importance of exercise in improving health perception, reducing stressful events, and enhancing resilience is evident, thereby promoting a more effective and satisfying old age (Mazo, 2016).

Table 4: Assessment of homogeneity of the sample group

SHAPIRO-WILK TEST	DIAGNOSTIC	SUMMATIVE
W-stat	0.85	0.92
p-value	1.495E-08	>0.001
alpha	0.05	0>05
normal	no	No

Table 4 presents the results based on the Shapiro-Wilk test to assess the normal distribution of both diagnostic and summative resilience assessment based on the questions asked using the Wagnild and Young Resilience Scale. Shapiro-Wilk tests assume the hypothesis of normality with a p-value > 0.05 (Miot, 2017). In the case of the study conducted, the diagnostic assessment was performed at 2 weeks after the start of the physical activity program, obtaining a value well above and within normality, while the summative assessment was conducted at the end of the first phase, at 16 weeks.

Continuing with the statistical analysis, Table 5 shows the D'Agostino-Pearson test to handle larger samples (n > 100), which performs similarly to the Shapiro-Wilk test with p > 0.05 (Miot, 2017).

Table 5: d'Agostino-Pearson Test

D'AGOSTINO-PEARSON TEST	DIAGNOSTIC	SUMMATIVE

DA-stat	19.62	19.88
p-value	5.50 E-05	4.82 E-05
alpha	0.05	0.05
normal	no	no

<div align="right">. Author's Own Compilation (2023).</div>

Table 6 presents the results based on the Mann-Whitney test to assess the normal distribution of both diagnostic and summative resilience assessments (Silva, 2013).

Table 6: Mann-Whitney U Test for Two Independent Samples.

MANN-WHITNEY TEST	DIAGNOSTIC	SUMMATIVE
Count	100	68
Mean	137	143.5
Sum of Ranks	8055	6141
U	3795	3005

<div align="right">Author's own work (2023).</div>

Therefore, the increase in the level of resilience in the elderly participants of the project can be observed through the formative and summative assessment of different aspects of individuals' lives, based on the participants' anamnesis, descriptive data for resilience facets, and the performance of Descriptive Statistics, Shapiro-Wilk, d'Agostino-Pearson, and Mann-Whitney tests.

Thus, the results indicate the relevance of physical exercise in the resilience of the elderly, as well as in improving other aspects of their lives. Studies conducted in the article have ensured that regular physical activity, regardless of the modality, has positive effects on improving the quality of life and reducing depressive traits in the elderly (Oliveira, 2022). Therefore, physical activity is seen as a non-pharmacological intervention to enhance the mental, physical, emotional, and social health of the elderly

Conclusion

The conclusions drawn from this study shed light on the intricate relationship between physical activity and resilience levels in the elderly. The participants, predominantly women over 60 years old, identified as belonging to the white ethnicity, married, and attendees of the Augusto

Franco Basic Health Unit, shared homogeneous and specific socioeconomic and health characteristics that provide a solid foundation for analysis.

By meticulously exploring the initial assessments and subsequent ones after 16 weeks of dedicated participation in physical activities, results emerged that attest to the positive influence of exercise in building resilience in the elderly. This increase became particularly significant in the fundamental sub-facets of resilience, such as serenity, sense of life, self-confidence, self-sufficiency, and perseverance. The significant improvement observed in these intrinsic elements of resilience reflects the ability of regular physical exercise not only to enhance physical endurance but also to nurture a resilient mindset, essential for facing the challenges associated with aging.

Furthermore, it is essential to recognize the broad social impact of this research. Among future healthcare professionals, notably medical students at Tiradentes University (UNIT) in Aracaju, this investigation serves as a fundamental milestone in understanding the interconnection between resilience and physical activity. This heightened insight not only enriches the knowledge base but also signals a promising shift in the approach to elderly healthcare.

In summary, this study has clearly unveiled that the systematic practice of physical exercise boosts resilience in the elderly, paving the way for a more holistic and effective approach to caring for these individuals. The results offer a renewed and deeply informed perspective on healthy aging, with implications that extend beyond academia, touching the lives of those who can now apply these insights in their pursuit of a full and resilient life in old age.

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