

## 135 - IDENTIFICATION PARAMETERS THE IMC; STRENGTH AND DYNAMIC BALANCE IN ELDERLY RESIDENTS OF AN ASYLUM BEFORE STARTING AN INTERVENTION PROGRAM IN TOLEDO - PR

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### INTRODUCTION

According to the IBGE (2002), Brazil could reach 31 million elderly in 2020. The Human development Report (2014) brings the Brazilian has life expectancy at 73 years, while Germany, for example, it has 92 years as expected.

The American College of Sport Medicine (1995), the decrease in strength and muscle mass (sarcopenia) with advancing age are prominent features in the aging process by reducing the functional capacity of the elderly and consequently hindering the realization of simple daily tasks in the daily lives of the elderly, such as walking, climbing stairs and carrying small objects. The growth of the elderly population worldwide aroused attention of health professionals to developing strategies to contribute, especially in the prevention and reduction of sarcopenia. Multiple factors which contribute to the development of sarcopenia are metabolic, hormonal, nutritional and immunological. (Silva et al 2006).

Many researches have been developed in order to describe the changes in skeletal muscle resulting from the aging process. The most consistent findings have been on the decline in total number of fibers with the specific atrophy of type II fibers. (Grimby, 1995; Lexell et al 1998).

Regular physical exercise is a primary preventive strategy, attractive and effective to maintain and improve the physical and mental health at any age, having direct and indirect beneficial effects to prevent and slow the functional aging losses, reducing the risk of diseases and disorders common in the third. (POLIDORI, Mecocci, CHERUBINI, 2000).

The systematic practice of weight training for seniors, either for strength or endurance, can promote increases in strength, muscle mass and flexibility. In addition, the strength is a vital skill and can serve as a protective mechanism in drops. (FLECK and Kramer 1999), osteoporosis and maintenance of aerobic power (POLLOCK and WILMORE, 1993). whether this works in high or low intensity, including nonagenarian (CHARETTE, et al. 1991, SHALLOW, V. 2008).

A strong positive correlation between lower limb strength with the speed of travel. So by increasing force to the lower limbs of the elderly, they would find it easier to walk, thus enabling a more effective walks without the need of great efforts (Fiatarone et al. 1994 and Brown et al. 1990). Rebelato and colleagues (2006) have achieved in their study through regular physical activity program and long-term maintenance of bilateral grip strength of the hands of older women, it has not been designed for its development. Colcombe and Kraemer (2003), by analyzing its 18 studies, they might say that the physical training had a positive effect on cognition.

Through literature reviews (very comprehensive and specific) and his research put into practice find that neuromuscular activation is the explanation for the strength gains once the work intensity is 50% 1RM inducing this, the significant increases in muscle strength, which may be similar to the high intensity training programs. (DOF, et al., 1997; DOF, et al., 1999). It has been the general objective of the present study: Identify the BMI parameters; strength and dynamic balance in elderly residents of a nursing home before starting an intervention program in the city of Toledo - PR.

### METHODOLOGY

This study is characterized as descriptive and cross. The study summary to Gil (1999) aims to describe characteristics of a given population or phenomenon or establishing relationships between variables. One of its most significant features is in the use of standardized techniques of data collection. It infers from the above that the descriptive research appears as study intermediate between the exploratory and explanatory, that is, not as primary as the first and not as thorough as the second.

The sample of this study was intentionally and not probabilistic. They were subjects of this study: To compose the Group outreach program of the elderly in the best age of a University in the city of Toledo - Pr, composed initially of 12 elderly, however, only 9 carry out the BMI, the parameter force, and only 7 seniors performed oo Time Up Go. the elderly were selected to participate in a resistive exercise intervention program in a planned and targeted.

After the submission of the project on the ethics committee for humans (7243614.3.0000.010) and authorization of the representative of the asylum and responsible for water aerobics, the collections were individually. Inclusion criteria were: (1) sign the consent form and clarified (IC); (2) be aged over 65; (3) not engage in systematic programs of physical exercise for more than two weeks; (4) present osteoarticular restriction.

### MATERIALS AND METHODS

Data were collected on days before starting the interventions of physical exercise was first measured the weight data; height; Team up go (TUG) and finally the manual pressure dynamometer test.

To assess the balance parameter was used the Time-up-and-Go (TUG) validated by Podsiadlo and Richardson (1991) has proposed its use as a short test and basic skill mobility for frail elderly publishes a residence. This instrument is a test which infers in rising from a chair, walk three meters, turn around, return to the chair and sit down. According to Wall et al (2000) this is an important screening for functional capacity of the elderly. They were demarcated spaces with 3 meters and placed the chair without arms as indicated by the protocol. They were measured three attempts and considered only the best. Only seven seniors participated in this test.

To evaluate the strength was used manual pressure dynamometer Takei® brand Model T-18A SMEDLEY III with a scale from 0 to 100 kilos. The literature points as a reliable instrument. (REIS, ARANTES, 2011). The rules table and classification was proposed by Bohannon et al (2006). Participated in this test eight elderly residents of the Asylum

The test application happened to the evaluated seated in a chair, the member of the elbow to be measured was kept flexing and 90 degrees with the forearm in neutral rotation. Position of the evaluator: The appraiser was positioned beside the rated and zero the instrument. Procedure: The subject pressed the machine with maximum force, which will be played on the device. Score of two attempts with recovery time between measurements was computed was one minute for each hand.

The analysis of the data will be presented descriptively and inferential SPSS 15.0. The descriptive data will be

presented through the average BMI of variables; Age and dynamic balancing. To evaluate the strength was performed Shapiro-Wilk normality test and the data were normal. For comparison of the right and left member of the evaluated strength was carried out the test T dependent. The significance adopted was  $p \leq 0.05$ .

**RESULTS:**

The results are shown in the table and graphs showing a descriptive analysis by averages for the BMI parameters; strength and dynamic balance.

Table 1: Sample descriptive data (Age, Gender, Weight, Height: BMI)

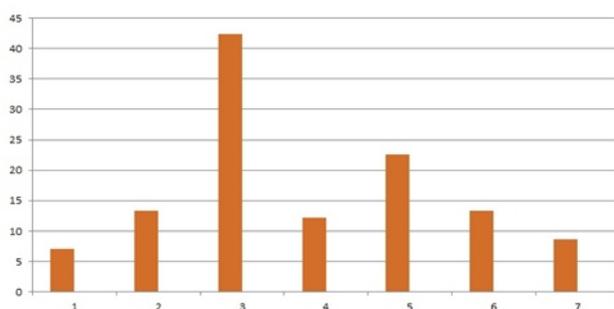
Age (years)	Female	Male	Weight (kg)	Height (m <sup>2</sup> )	Imc(kg/m <sup>2</sup> )
78,2±2,8	3 mulheres	6 homens	66,78	162,75	25,06

The OMS classification (1995) elderly regulates the BMI index: < 18.5 kg / m<sup>2</sup> as low - weight; normal weight, IMC between 18.5 kg / m<sup>2</sup> to 24.9 kg / m<sup>2</sup>; overweight, IMC of 25kg / m<sup>2</sup> and 29.9kg / m<sup>2</sup>; grade I obesity BMI of 30 kg / m<sup>2</sup> and 34,9kg / m<sup>2</sup>; class II obesity, IMC between 35 kg / m<sup>2</sup> and 39,9kg / m<sup>2</sup>; and grade III obesity, BMI > 40kg / m<sup>2</sup>. Under this classification perspective the elderly are considered to Overweight.

Since according to the cutoffs Lipschitz (1994), individuals are classified as low - weight with IMC < 22 kg / m<sup>2</sup>; normal weight, IMC of 22kg / m<sup>2</sup> and 27kg / m<sup>2</sup>; and overweight IMC > 27kg / m<sup>2</sup>. The data from this study indicate that following rules table that the elderly are eutrophic.

The mean IMC found in this study was 25.06 kg / m<sup>2</sup>, these results are similar to the study by Souza et al. (2013) found that BMI results cutoff of 25,5kg / m<sup>2</sup> classified as eutrophic by Lipschitz and as overweight by OMS.

Graphic1 (below) in turn refers to analysis of the balance of asylum group, watching the group being susceptible to balance problems to meet the everyday task (mean = 16,09s), while this average time to comply the second test Podsiadlo and Richardson (1991) have a strong relationship with the possible use of walkers or other devices that help them in physical mobility. These findings corroborate positively with these individuals, as some have great difficulty in mobility and independence of one's been walker use.



Graphic 1 balance parameter by testing Team -Up -And -Go. Presented by asylum group.

The imbalance is part of the aging process and the cause of frequent falls is with advancing age. Falls can and should be prevented (Hobeika, C. 1999).

The authors conclude that, as Podsiadlo and Richardson, 1991 (The timed "Up & Go"), which people meet the test within the 10 seconds of time are independent in relation to physical mobility. The test of time taken for the risk groups is larger than 10s.

SILVA, et al (1999) proposed a gymnastics program with weights for 26 women, previously sedentary, aged 54 to 81 years old; the program consisted of calisthenics classes (low-impact aerobic activities, stretching and localized exercises), held twice a week, lasting 50 minutes / session; subjects selected overload halter and shin, according to the perception itself, and the majority of subjects selected for 1kg body both ends. After six weeks of training, statistically significant improvement was observed ( $p < 0.05$ ) for the balance (34.8%) and walking speed (15.3%), while the ability to get up from the chair tended improvement (15.4%).

In the Table 2, reference to the power parameter (kg) Manual hold of his right hand and left the asylum group

Age	Genre	Right hand (kg)	Classification	Left hand (kg)	Classification
80	Female	17	Good	18	Good
86	Female	13	Regular	13	Regular
90	Female	7	Regular	15	Good
70	Male	40.5	Good	13	Regular
73	Male	18	Regular	4.5	Regular
65	Male	17.5	Regular	32	Good
72	Male	24.5	Regular	5	Regular
81	Male	33	Great	17.5	Good

\* Test T Dependent. ( $p=0,244$ )

Table 2, above, reference to the power parameter (kg) Manual hold of his right hand and left the asylum group. It is observed that the right and left hand does not differ much. The t test was performed dependent and statistically significant differences were found between the hemisphere's strength right and left, with  $p = 0.244$ . Right hand 5 seniors are regular; 2 are

good and 1 excellent and left hand are 4 regular and 4 good, according to strength rating of Hold the left and right manual proposed by Bohannon et al (2006).

Some studies suggest that intervention can be beneficial for improving the strength. The relevance of these parameters are maintained and improved through exercise interventions (whatever the modality proposal) in the different groups is the list of neuromotor variables, flexibility, balance and strength, be presented in the literature as lost physical abilities during adulthood (ACSM, 1998.; GALLAHUE, et al 2013; SHEPARD, 1998; KONRAD, et al, 1999) in addition to regular physical exercise is a primary preventive strategy, attractive and effective to maintain and improve the physical and mental health at any age, having direct and indirect beneficial effects to prevent and slow the functional losses of aging, reducing the risk of diseases and disorders common in the third. (POLIDORI, Mecocci, CHERUBINI, 2000).

Rebelato, et al (2006) suggested a regular program of physical activity and long-term (58 weeks) with older women 60-80 years (participants Geriatric Revitalization Program this writing weekly frequency of three weeks with session having duration of 50 minutes) contributed to maintaining the handgrip strength in the two-year period.

Benedetti et al (2004) analyzed the effects of a program of physical activity five months with women and men 59-73 years of age, realizing that there were no significant changes in grip strength, however, there were improvements in other parameters investigated. It is believed that the program has not been intense enough to improve grip strength. The program application time was not enough.

Dias et al (2006) revise some studies conducted intervention process through TP and found the answers in strength, balance, flexibility and aerobic endurance. Find that changes in muscle strength are observed after a few weeks of weight training. This improvement can help not only the independence of the elderly, but also in reducing the incidence of falls.

### CONCLUSION

Based on the results of this study it can be concluded that the evaluated group had BMI a little higher rated Overweight. There was little difference between the grip strength of right hand and left hand. But the most worrying finding was the dynamic balance with an average of 16,09 the 2nd can be a worrying value for the evaluated group

Based on the study, it is recommended for future studies continuing research, with an assessment not only pre-intervention as well as post-intervention in order to meet then, the benefits associated with the evaluated parameters.

The relevance of the study identify those parameters it becomes an important tool for teachers involved to seek condition, to maintain or improve the physical abilities of strength, balance and to detect and standardize techniques of anthropometric measurements.

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### **IDENTIFICATION PARAMETERS THE IMC; STRENGTH AND DYNAMIC BALANCE IN ELDERLY RESIDENTS OF AN ASYLUM BEFORE STARTING AN INTERVENTION PROGRAM IN TOLEDO - PR.**

#### **ABSTRACT**

**INTRODUCTION:** According to Brazil's Institute of Geography and Statistics (IBGE) of 2004 Brazil may achieve 31 million of elderly in the year of 2020. The Human development Report (2013) points that Brazilians life expectancy is currently about 73 years old, while in Germany, for instance is 92 as life expectancy. **OBJECTIVE:** The current study has as a general goal to identify the BMI (body mass index) parameters; strength and dynamic balance in elderly residents of an asylum before starting a program in the city of Toledo – PR. **METHODOLOGY:** The sample was intentional and not based on probabilistic compound by 9 asylum residents; 6 males and 3 medium age 78,2±2,8 years, who will go through to a localized gymnastic program that takes part of an extension Project in Toledo. The dynamic balance was classified by the test Time up and Go (PODSIADLO E RICHARDSON, 1991) and the strength by manual removal using one dynamometer (BOHANNON et al., 2006). **RESULTS:** Based on the results the BMI in the elderly was detected as overweight. A slight difference was found between manual removal of both right and left hand. Yet, the most concerning data was the dynamic balance with an average of 16,09 seconds; which may be a concerning value for the assessed group. **CONCLUSION:** The relevance of the study becomes one important tool for the teachers involved to seek conditions, through maintenance or improvement of the physical capacities of strength and balance, in order to detect and standardize anthropometrical evaluations techniques.

**KEYWORDS:** Elderly; IMC ; Force; Balance.

### **IDENTIFICACION PARAMETROS DE LA IMC ; FUERZA Y EQUILIBRIO DINÁMICO EN RESIDENTES MAYORES DE UN ASILO ANTES DE INICIAR UN PROGRAMA DE INTERVENCIÓN EN TOLEDO – PR.**

#### **RÉSUMÉ**

**INTRODUCTION:** Selon l'Institut brésilien de géographie et de statistique ( IBGE ) de 2004, le Brésil pourrait atteindre 31 millions de personnes âgées dans l'année de 2020. Le Rapport sur le développement humain (2013 ) souligne que l'espérance Brésilienne de vie est actuellement âgé d'environ 73 ans, alors que dans l'Allemagne, par exemple, est que 92. **METHODOLOGIE:** L'échantillon était intentionnelle et non par rapport au composé probabiliste de 9 résidents d'asile ; 6 mâles et 3 femelles, médium 78,2±2,8 ans , qui passera par un programme de gymnastique localisée qui participe d'un projet d'extension à Tolède . L'équilibre dynamique a été classé par le temps de test et Go ( Podsiadlo E RICHARDSON , 1991 ) et de la force par l'enlèvement manuel à l'aide d'un dynamomètre (BOHANNON et al., 2006). **RÉSULTATS:** Basé sur les résultats de l'IMC chez les personnes âgées a été détecté comme étant en surpoids . Une légère différence n'a été trouvée entre l'enlèvement manuel à la fois à droite et à gauche . Pourtant , la plupart concernant les données était l'équilibre dynamique avec une moyenne de 16,09 secondes ; qui peut être une valeur relative pour le groupe évalué. **CONCLUSION :** La pertinence de l'étude devient un outil important pour les enseignants concernés à rechercher les conditions , par le biais de maintenance ou à l'amélioration des capacités physiques de force et d'équilibre, afin de détecter et de normaliser les techniques de évaluations anthropométriques.

**MOTS-CLÉS:** Personnes âgées; IMC ; Obliquer; Équilibre.

### **IDENTIFICACIÓN PARÁMETROS DE LA IMC ; FUERZA Y EQUILIBRIO DINÁMICO EN RESIDENTES MAYORES DE UN ASILO ANTES DE INICIAR UN PROGRAMA DE INTERVENCIÓN EN TOLEDO – PR.**

#### **RESUMEN**

**INTRODUCCIÓN:** Según el Instituto de Geografía y Estadística ( IBGE ) de 2004 Brasil s Brasil podría alcanzar los 31 millones de personas de edad en el año de 2020. El Informe de Desarrollo Humano (2013 ) señala que la esperanza de vida de los brasileños es actualmente de unos 73 años de edad, mientras que en Alemania, por ejemplo, es 92 como la esperanza de vida. **METODOLOGÍA:** La muestra fue intencional y no basado en compuesto probabilístico por 9 residentes de asilo ; 6 hombres y 3 mujeres, 78,2±2,8 años , quienes irán a través de un programa de gimnasia localizada que forma parte de un proyecto de extensión en Toledo . El equilibrio dinámico se clasificó por el tiempo de prueba y Go ( Podsiadlo E RICHARDSON , 1991 ) y la fuerza de extracción manual utilizando uno dinamómetro (BOHANNON et al., 2006). **RESULTADOS:** En base a los resultados del índice de masa corporal en los ancianos se detectó como sobrepeso. Se encontró una ligera diferencia entre la extracción manual de ambas manos derecha e izquierda . Sin embargo , los datos más preocupante era el equilibrio dinámico con un promedio de 16,09 segundos ; que puede ser un valor relativo para el grupo evaluado. **CONCLUSIÓN:** La relevancia del estudio se convierte en una importante herramienta para los profesores implicados a buscar condiciones , a través de mantenimiento o mejora de las capacidades físicas de fuerza y equilibrio, a fin de detectar y estandarizar técnicas evaluaciones antropométricas

**PALABRAS CLAVE:** Anciano ; IMC ; Fuerza; Balance.

**IDENTIFICAÇÃO DOS PARÂMETROS DE IMC; FORÇA E EQUILÍBRIO DINÂMICO EM IDOSOS DE RESIDENTES DE UM ASILO ANTES DE INICIAREM UM PROGRAMA DE INTERVENÇÃO NA CIDADE DE TOLEDO – PR.****RESUMO**

**INTRODUÇÃO:** Segundo dados do IBGE de 2004, o Brasil pode chegar a 31 milhões de idosos no ano de 2020. O HumandevlopmentReport (2013) nos traz que o brasileiro tem a expectativa de vida em 73 anos, enquanto a Alemanha, por exemplo, possui 92 anos como expectativa. **OBJETIVO:** O presente estudo teve como objetivo geral: Identificar os parâmetros de IMC; força e equilíbrio dinâmico em idosos residentes de um asilo antes de iniciarem um programa de intervenção na cidade de Toledo – PR. **METODOLOGIA:** A amostra foi do tipo intencional e não probabilística composta por 9 moradores de um asilo, sendo eles: 6 do gênero masculino e 3 do gênero feminino, com média de idade de  $78,2 \pm 2,8$  anos, que serão submetidos a um programa de intervenção de ginástica localizada de um projeto de extensão na cidade de Toledo-Pr. Classificou-se o equilíbrio dinâmico pelo teste Time Upand Go (PODSIADLO E RICHARDSON, 1991) e a força pelo emprego do teste de preensão manual utilizando o dinamômetro e classificação proposta por Bohannon et al (2006). **RESULTADOS:** Com base nos resultados pode-se identificar que o IMC dos idosos indica Sobrepeso. Houve pouca diferença entre a força de preensão manual da mão direita e da mão esquerda. Já o dado mais preocupante foi do Equilíbrio dinâmico com uma média de 16,09 segundos podendo ser um valor preocupante para o grupo avaliado. **CONCLUSÃO:** A relevância do estudo identificar esses parâmetros se torna uma importante ferramenta de trabalho aos professores envolvidos para buscarem condicionar, pela manutenção ou aprimoramento, as capacidades físicas de força, equilíbrio e a fim de detectar e padronizar técnicas de avaliações antropométrica.

**PALAVRAS-CHAVE:** Idosos; IMC; Força; Equilíbrio.