28 - BODY COMPOSITION BY DXA IN ELDERLY MEN

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INTRODUCCIÓN

Population aging is a global phenomenon and therefore studies in various areas, particularly in health. According to the chronological classification adopted for developing countries and developed (in developing countries, called the elderly aged over 60 years (BRASIL, 2003)and developed countries , called the elderly , may occur at 65 years (PASCOAL et al., 2006)). expectancy is increasing worldwide , and despite the number of individuals in this age group are proportionally higher in developed countries , data from the World Health Organization estimates that by 2030, Brazil will be the sixth country in the world with the highest population percentage elderly(GONÇALVES, E C., 2004; WHO, 2002).

Aging is a natural and inevitable biological process that reflects the evolution of the human being in all his doing and reflects several structural changes that can lead to psychological and social disorders that increase the risk of premature death (CABRERA; JACOB FILHO, 2001).

The aging process has several consequences , among them , the change in body composition(PASCOAL et al., 2006)and increased body fat (LIMA et al., 2008)causing the appearance of physiological problems (CARDONA-ARANGO et al., 2012), chronic diseases and metabolic disorders (obesity , diabetes , cardiovascular disease)(RECH et al., 2010). addition , men have a higher proportion of its mass located fat (WATTANAPENPAIBOON et al., 1998),(BRODLE D A, 1988), (AMARAL; GUERRA, 2010).

There is a decrease in lean body mass and changes in the pattern of body fat, where the fat tissue of the arms and legs decreases , but increases in the trunk . Consequently , anthropometric variables are altered , such as triceps skinfold thickness and mid-arm circumference and calf circumference and decreasing abdominal and trunk increase (CHUMLEA et al., 1992; DURNIN J V G A; J., 1974; KUCZMARSKI et al., 2000; SANTOS et al., 2004).

Among the various indirect methods applied in the study of body composition in vivo densitometry dual energy x-ray absorptiometry (DXA) has emerged as Gold Stand , commonly used to develop equations for estimating body composition (ELLIS, 2000),(BALL et al., 2004; CHEN et al., 2007; DEURENBERG; DEURENBERG-YAP, 2002; DUPLER; TOLSON, 2000; GONÇALVES, E C., 2004; HULL et al., 2009)different age groups and in all health areas (CHEN et al., 2007; ELLIS, 2000),(VISSER et al., 1999),(GOODSITT, 1992). This method does not require from the individual , no effort and their reliability levels are accepted as standard for assessment of body fat , as well as the development and validation of other procedures for assessing body fat (ADMS, 1997; BRODOWICZ G R et al., 1994; KOHRT, 1998; RECH et al., 2010).

Another indirect method, hydrostatic weighing has presented some limitations in elderly groups: 1) does not take into account bone mineral density, 2) establishes the relationship of lean mass and fat mass , as constants, 3) the elderly have difficulty to accurately perform the procedure of submerged weight for not being able to make a maximum expiration under water (BRODOWICZ G R et al., 1994).

According to the IBGE(ESTATÍSTICA, 2004), the elderly population already accounts for 8.6% of the total Brazilian . This growth has drawn the attention of health professionals and researchers in the country. Thus, further studies on the subject of the elderly have become necessary and urgent.

From the need for knowledge about the body composition of the elderly present study aimed to evaluate the body composition by DXA in men aged over 60 years.

METHODOLOGY

Characteristic epidemiological study(THOMAS et al., 2007), which had as intentional sample 85 men aged between 60 and 93 years, living in Vitória (ES - Brazil) . The sample was selected by technique accidental , with purposive sampling (convenience) , statistical , probabilistic , experimental , cross and double-blind .

Were used for sample selection , the following inclusion criteria : a) be male and to have aged 60 years and b) should have all body segments and not presenting scoliosis, metal implants and accessories , as urine bag , and c) signing the Informed Consent Form (ICF) . Prior to testing, all participants received information and clarification and were asked to sign the consent form The tests were performed on the DXA Bone Densitometry clinic of the Espírito Santo(Cedoes)(GONÇALVES, E.C.; FERNANDES FILHO, 2012)with the day and time scheduled.

This study was submitted to the Platform in Brazil with CAAE 16586913.7.0000.5060 and approved in accordance with Resolution 196/96.

Subsequence in the signing of the consent form , anthropometric measurements were taken : a) body weight and height by stadiometer scale with brand Welmy (Brazil), 150kg capacity and accuracy 100g , anthropometric rod with a scale of 2 cm , 00m aluminum; b) bone diameters (OD) : femur , iliocristal , acromial and radio. Caliper was used Cescorf(Brazil) with scale in mm . All anthropometric measurements were performed with subjects wearing shorts and barefoot.

The test was done in the DXA machine Bean Fan Technology (GE - Lunar Prodigy) operated by a qualified Clinical Densitometry of the Holy Spirit . The whole body scanner was performed according to routine techniques and principles of international cross-calibration of maintaining strict protocols recommended by the International Society for Clinical Densitometry (ISCD). We also assessed the percentage of whole body fat sample.

Test was applied Kolmogorov-Smirnov normality and descriptive analysis of the data studied. For all analyzes, we used SPSS version 20.0 for Windows.

RESULTS AND DISCUSSIÓN

The initial physical characteristics were69,55±5,89years, with body mass of 77,32±13,35kg andheight of 1,66±0,06m(GONÇALVES, E.C.; FERNANDES FILHO, 2012).

With the process of aging, there is a tendency for changes in body composition. Body weight tended to decrease with

height, muscle , and other biological capabilities . However, as each population ages is still under study , presenting often behave differently in how this process occurs (HIRANI; MINDELL, 2008; PERISSINOTTO et al., 2002; SANTOS et al., 2004).

Study by Suriah et al found a significant decrease in height of the elderly with advanced age as found in the study with a range from 60 to 93 years old . Thus , there is a trend toward greater decline in stature among the oldest old (SURIAH et al., 1998).

This decrease was due primarily to decreased plantar arch , flattening of the intervertebral discs and increased spinal curvatures (JACOB FILHO; SOUZA, 2004; MENEZES; MARUCCI, 2005).

Table 1 shows the data of the indicators of body composition of elderly men and can observe the high percentage of fat in this population.

Table 1: Description of the characteristics of body composition with the mean and standard deviation of the sample of elderly men

Data	Minimum	Maximum	Average	Standard Desviation
Percent of fat DXA (%G)	13,70	43,20	30,06	7,16
Fat weight (kg)	8,32	47,30	23,73	9,03
Leanbodymass (kg)	35,48	71,80	53,69	6,98
Muscleweight (kg)	21,41	51,58	31,79	4,82
Boneweight (kg)	1,53	4,82	3,34	0,58
Residual weight (kg)	10,51	27,55	18,55	3,20

As the fat percentage measured by DXA, even being created and remains widely used as a clinical tool to evaluate bone mineral density can be applied as a useful technique to measure regional and total body composition during the last 20 years, and thus , the results indicate excellent precision being used in large multicenter studies , including national health (MITCHELL et al.; ROTHNEY et al., 2009; WANG et al., 2010).

In many countries , it is known that the diagnosis of obesity is not the same when compared with the percentage of body fat (SILVEIRA et al., 2009)and the equations by various methods differ among populations.

In Brazil , studies for individuals 60 years or older , revealed higher prevalence of obesity in women when compared to men , and , in the South and Southeast , obesity stands out from the rest of the country by achieving higher prevalence (ESTATÍSTICA, 2004; SILVEIRA et al., 2009; TAVARES; ANJOS, 1999).

Given the differences and difficulties encountered in studies of body composition , some authors have suggested , from studies , population or not , that their results are used as a benchmark site for seniors (KUCZMARSKI et al., 2000; MENEZES; MARUCCI, 2005).

Rrelationship between lean body mass and body fat , and reduction in lean body mass and body fat exceeds , consequently, increases the percentage of fat (LIM et al., 2004).

The high fat% of the sample being evaluated as very bad according to Pollock and Wilmore (1993) , corroborates the review of Hunter et al . , Reports that there is a trend of increasing % fat in elderly subjects(HUNTER et al., 2004).

Reinforced by Aniteli et al. the high amount of body fat has negative effects known to the development of diseases such as cardiovascular disease , obesity , some cancers , among others. Thus, the exact quantification of body fat in the elderly is important for intervention programs targeted to the adequacy of body compartments are established (ANITELI et al., 2006).

CONCLUSIONS

The results suggest a need for changes in public policy employed for the elderly and the body mass of 77,32±13,35kg; height of 1,66±0,06m; the %F of 30,06±7,16; lean body mass of 53,69±6,98kg; fat weight 23,73±9,03kg; muscle weight of 31,79±4,82kg; bone weight of 3,34±0,58kg and residua weight of 18,55±3,2kg.

The results of the percentage of fat and lean mass point to the need for structured programs for the elderly, along with nutritional support , to minimize the risk of developing obesity-related diseases, increasing mortality and morbidity in these individuals.

There is a tendency to extrapolate results from one region to another, so this study can serve as a model to be applied in other regions of thecountry , to be able , in the future , to draw a profile of elderly Brazilians, not depending more performing data comparisons with other situations inconsistent with other regions.

The assessment is a first step towards the implementation of a structured project senior care , but this should be well used , so that the desired results are successive level , a better quality of life and dignity for the elderly population.

The authors thank Cedoes.

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BODY COMPOSITION BY DXA IN ELDERLY MEN
ABSTRACT

The increase in life expectancy is increasing the amount of elderly population comes in recent decades and consequently related studies, especially those related to health. One aspect is the change in body composition aiming the goal of the study that aimed to assess body composition in elderly men by means of the technique of X-ray absorptiometry (DXA). The methodology is epidemiologically with 85 men with 69,55±5,89 years residents in Big Vitoria. Measured the percentage of fat (%F) determined by DXA. The results were: body mass77,32±13,35kg; height 1,66±0,06m; %F de 30,06±7,16; lean body mass of53,69±6,98kg; weightfat 23,73±9,03kg; muscle weight of 31,79±4,82kg; bone weight of 3,34±0,58kg and residual weight 18,55±3,2kg. It was concluded that the percentage of fat is high according to Pollock and Wilmore (1993) and it is important to broaden the debate and the development of research on the anthropometric assessment of elderly patients with clinical applicability in the context of epidemiological and basic network health.

KEYWORDS: Body Composition, DXA, elderly

LA COMPOSITION CORPORELLE ENDXACHEZ LES HOMMES AGES
RÉSUMÉ

L'augmentation de l'espérance de vie a augmenté le montant de la population âgée a au cours des dernières décennies et les études connexes , par conséquent , en particulier ceux liés à la santé. Un aspect est celui des changements dans la composition corporelle visant l'objectif de l'étude qui vise à évaluer la composition corporelle chez les hommes âgés au moyen de la technique de l'absorptiométrie à rayons X (DXA) . La méthodologie est épidémiologiquement avec 85 hommes avec 69,55±5,89 années de résidants du Grand Vitoria. Mesuré le pourcentage de graisse (%G) déterminée par DXA . Les résultats étaient les suivants: masse corporelle 77,32±13,35kg , hauteur 1,66±0,06m; % G 30,06±7,16 ; la masse maigre de 53,69±6,98kg , le poids Fat 23,73±9,03kg , le poids de muscle de 31,79±4,82kg ; le poids de os de 3,34±0,58 kg et le poids résiduel de 18,55±3,2 kg . Il a été conclu que le pourcentage de matière grasse est élevé selon Pollock et Wilmore (1993) et il est important d'élargir le débat et le développement de la recherche sur l'évaluation anthropométrique des patients âgés atteints d'application clinique dans le cadre du réseau épidémiologique et fondamentale santé.

MOTS-CLÉS:la composition corporelle,DXA, les personnes âgées

COMPOSICIÓN CORPORAL POR DXA EN HOMBRES ADULTOS MAYORES
RESUMEN

El aumento de la esperanza de vida ha ido en aumento la cantidad de la población anciana tiene en las últimas décadas y los estudios relacionados con la consecuencia , especialmente los relacionados con la salud. Un aspecto es que los cambios en la composición corporal con el objetivo evaluar la composición corporal en los hombres adultos mayores por medio de la técnica de absorciometría de rayos X (DXA). La metodología es epidemiológicamente con 85 hombres con 69,55 ± 5,89 años residentes en la Gran Vitoria. Medido el porcentaje de grasa (%G) determinada por DXA. Los resultados fueron: masa corporal 77,32±13,35kg, altura de 1,66±0,06m ; %G 30,06±7,16; masa corporal magra de 53,69±6,98kg , peso de la grasa 23,73±9,03kg , el peso muscular de 31,79±4,82kg ; peso del oso de 3,34 ± 0,58 kg y el peso residual de 18,55 ± 3,2 kg . Se concluyó que el porcentaje de grasa es alto según Pollock y Wilmore(1993) y es importante ampliar el debate y el desarrollo de la investigación sobre la evaluación antropométrica del anciano con aplicabilidad clínica en el contexto de la red de vigilancia epidemiológica y básica la salud .

PALABRAS CLAVE:composición corporal,DXA, adultos mayores

COMPOSIÇÃO CORPORAL PELO DXA EM HOMENS IDOSOS
RESUMO

O aumento da expectativa de vida vem aumentando o quantitativo da população idosa vem nas últimas décadas e consequentemente estudos relacionados, principalmente os ligados à saúde. Um dos aspectos são as mudanças na composição corporal objetivando o objetivo do estudo que se propôs a avaliar a composição corporal em homens idosos por meio da técnica de absortometria radiológica de dupla energia (DXA). A metodologia é epidemiológica com 85 homens com 69,55±5,89 anos residentes na Grande Vitória. Foi mensurado o percentual de gordura determinado pela DXA. Os resultados encontrados foram: massa corporal de 77,32±13,35kg; estatura de 1,66±0,06m; o %G de 30,06±7,16; massa magra de 53,69±6,98kg; peso gordo de 23,73±9,03kg; peso muscular de 31,79±4,82kg; peso ósseo de 3,34±0,58kg e peso residual de 18,55±3,2kg. Concluiu-se que o percentual de gordura encontra-se elevado de acordo com Pollock e Wilmore (1993) e que é importante ampliar o debate e o desenvolvimento de pesquisas sobre a avaliação antropométrica de idosos com aplicabilidade clínica, epidemiológica e no âmbito da rede básica de saúde.

PALAVRAS CHAVE: Composição Corporal, DXA, idosos