

**124 - DESCRIPTIVE ANALYSIS OF THE VARIABLES BMI, WHR AND FAT PERCENTAGE OF A GROUP OF CLIMACTERIC WOMEN BODYBUILDERS**

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### INTRODUCTION

The woman during her life cycle undergoes various modifications, either in her body or in her mind, and it is necessary to be aware that these modifications are part of the natural mechanism of the human being.

The climacteric is the phase of transition between the reproductive period and the non-reproductive period of the woman, extending around 65 years of age. Climaterium is a physiological event in a woman's life that manifests itself clearly as regards the loss of the reproductive function, but this modification encompasses several other processes simultaneously in different organs and systems.

Menopause is the climacteric stage, and it is defined as the last menstrual period for a year and is physiologically related to the reduction of estrogen<sup>1</sup> resulting from the loss of follicular function, ie the woman will only be inserted in menopause after her last menstrual period and it has exceeded one year. The cessation of menstruation that will result from loss of ovarian function is a natural event of the aging process, menopause is associated with interruption of menstruation resulting from loss of ovarian follicular function.

The time of menopause is genetically determined and occurs at an average age of 51 years. It is not related to race or nutritional status. However, menopause occurs earlier in nulliparous women<sup>2</sup>, in smokers and in some women undergoing hysterectomies (BEREK, 2002). That is, the menopause is independent of color or race, of nutritional status, it is determined by the genetic factor, or hereditary, and occurs on average from the fifth decade of life of the woman. This is also not a rule, there are cases that it can occur early.

The period before menopause is characterized by varying degrees of somatic changes that reflect changes in normal ovary functioning. Menopause can be diagnosed based on subjective symptoms such as hot flashes, loss of sleep, irritability among others that become more intense when circulating estrogen levels suddenly fall. These symptoms become more intense in women with premature ovarian failure.

According to BEREK (2002) the health problems associated with estrogen deficiency tend to be chronic, not acute. For example, osteoporosis is only clinically evident decades after menopause, when unfortunately, its treatment becomes more difficult. Second, the impact of estrogen deficiency on cardiovascular disease is often confused with age-related changes. Third, due to the peripheral conversion of ovarian and adrenal androgens into estrogen, loss of ovarian function does not result in absolute estrogen deficiency. And we can not forget another symptom of the climacteric that is sarcopenia, which means the loss of strength and muscle mass that occurs with advancing age (ROSENBERG, 1989). Sarcopenia also makes diseases in older people more worrying, because in this state, the use of muscle protein as a source of energy increases drastically - gluconeogenesis (ROUBENOFF, 2001). Poehlman et al. (1995) suggest that, like osteopenia, sarcopenia is accelerated in postmenopausal women.

Guedes apud Guedes (2005) defined bodybuilding as the execution of biomechanical movements located in muscle segments defined using external overload or body weight. Bodybuilding can be defined as a method of sports training. Thus, exercises with weights would be the most used way to practice bodybuilding and the main trained motor capacity would be strength.

During the 1970s and early 1980s, considerable female interest in physical activity was aroused. According to Gianolla (2003) the female public has been growing a lot in recent years in the practice of weight training (weight training), since they realized the importance, both for aesthetic purposes and for the quality of life itself.

Even today, many people associate good physical fitness with the ability to perform in games and sports. It is clear that a certain degree of conditioning is required to perform these activities well, but being able to perform well some sports skills may not be a good indicator of total fitness, as some sports require specific skills for their practice.

Historically, the many definitions of physical fitness referred exclusively to the physical abilities necessary for performance in some sports, even presenting the false idea that in order to be healthy it was necessary to demonstrate a high level of physical fitness.

The concept of the multidimensional model of physical fitness was outlined in the literature around 1960. Physical fitness consisted of several components that could help the effective functioning of the individual in society without excessive fatigue and energy reserve to enjoy free time. Physical development would have two major sub-dimensions: development of athletic abilities and physical fitness. The development of athletic skills includes the acquisition of motor skills related to the complex techniques used in sports and other types of physical performance. Physical fitness would have two major subdimensions: physiological fitness and physical fitness related to health. The physiological aptitude would be composed of variables such as: blood pressure, blood profile, bone integrity, among others. Corbin (1991) cites that physical fitness related to health would include the components: cardiovascular fitness, strength, muscular endurance, flexibility and body composition.

Pate (1988) commented that physical fitness related to health would be associated with the ability to: (1) perform everyday activities with vigor and energy; and (2) demonstrate traits and abilities associated with a low risk of developing chronic-degenerative diseases.

Within this conception, those components that are related to the best state of health are part of the physical fitness related to health and, in addition, demonstrate positive adaptations to the regular accomplishment of physical activities and

physical exercise programs. Thus, the concept of health-related physical fitness implies the participation of components focused on morphological, functional-motor, physiological and behavioral dimensions (Guedes & Guedes, 1995).

**METHODOLOGY**

This research had a descriptive character, because the objective was to analyze the profile of the percentage of fat, BMI and CR / Q in climacteric women practicing bodybuilding in the Agita Santarém project. Field research was carried out at the Resistance Effort Laboratory of the University of the State of Pará (UEPA), in the city of Santarém, PA. The sampling technique used was intentional sampling. The sample was taken from the Agita Santarém project, which was inaugurated in the year 2001, with the objective of attending the elderly to quality care in the area of nursing, social assistance and physical activity, on the sample was 10 climacteric women with ages 50 to 65 years. The instrument for the collection was through anthropometry and the protocols were the BMI proposed by Bray (1992): Being that the instruments used to measure the weight and the stature was an anthropometric scale with stadiometer of the brand Welmy®. Already in relation to the circumference (CR / Q), which is a simple and practical index to determine the distribution of abdominal fat, we adopted Bray & Grayt's (1988) RC / Q classification norms for women. Since the instrument used to measure waist and hip circumferences was a flexible anthropometric measurement of the Sanny® brand. The fat percentage of the skin folds protocol chosen to measure the fat percentage was that of Faulkner (1968), who used 4 skinfolds: subscapular, tricipital, suprailiac and abdominal. The statistical procedure was the collection of collected data were processed with index features, statistical calculations, tables, tables and charts of the Excel program, component of Office Version 2003, for Windows. Data analysis was performed using descriptive statistics using arithmetic mean, sum, minimum (min), maximum (max) and standard deviation (SD).

**RESULTS**

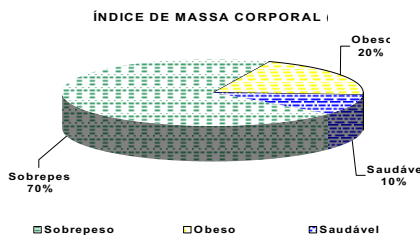
The table 01: characterizes the number of participants in the survey, sum, minimum, maximum, standard deviation and mean age, BMI, R C / Q and G%.

	AGE	BMI	R C/Q	G%
N	10	10	10	10
SUM	569	282,3	8,3	227,5
MEAN	56,9	28,2	0,8	22,7
MIN	50,0	24,2	0,7	18,8
MAX	63,0	38,8	0,9	30,2
DP	4,4	4,1	0,1	3,2

Source: Mendonça e Souza, 2017.

The sample consisted of 10 women who were in the climacteric period who practiced the resistance training program, the table indicates the mean age of 56.9 years with a standard deviation of 4.4. The mean BMI was 28.2 with a standard deviation of 4.1. In the variable R C / Q the average found was 0.8 and the standard deviation of 0.1. In the fat percentage the average found was 22.7 and the standard deviation was 3.2. The minimum age was 50 years and the maximum age was 63 years.

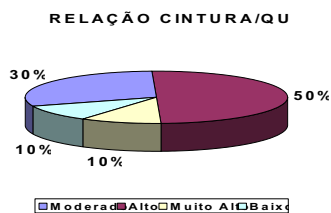
The body 01: mass index of the climacteric women remained.



Source: Mendonça e Souza, 2017.

According to the result related to the percentage of BMI, it was verified that the majority of the individuals were overweight, characterized by about 70% (seventy percent) of the sample, and 20% (twenty percent) were classified as obese and only 10% (ten percent) are at the healthy level.

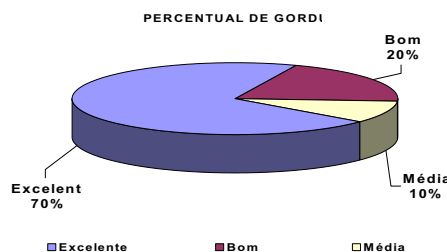
Graph02: Qf the Ratio Waist / Hip Circumference.



Source: Mendonça e Souza, 2017.

The graph features that the in the variable waist / hip has the following results 50% (fifty percent) corresponding to 5 women are classified as high risk, 30% (thirty percent) corresponding to three women are characterized with moderate risk, 10% (ten percent) featuring 1 woman is at very high risk and 10% (ten percent) is at low risk.

The graph 03: Of the Fat Percentage.



Source: Mendonça e souza, 2017.

The results presented give us a north of the profile of the percentage of fat of this population, 70% (seventy percent) of the sample was characterized with the excellent percentage, 20% (twenty percent) is characterized in the good context and 10% (ten percent) are on average.

#### CONCUSSION

As the climacteric brings with it several symptoms and diseases that are only identified when it is too late to treat them, it is necessary to encourage early from the practice of a healthy life, with a diet rich in calcium (osteoporosis), to practice regular resistance exercise weight, that is, bodybuilding, to prevent the loss of muscle mass which is also known as (sarcopenia) that with advancing age tends to be greater.

The study was of great importance, because from this analysis, it can be seen that the climacteric factor contributes to the increase of fat percentage, but with the aid of weathered work it is possible to prevent and reduce this situation, thus improving the quality of life of climacteric women, reducing the number of diseases and causing beneficial changes from both physical and psycho-social point of view.

It was verified that this group had good results in the variables, because the fact that they were practicing these activities had satisfactory results in this context.

It is recommended that new studies that have the evaluations of the variables before the beginning and after a specific training period, for more reliable proofs of this population.

#### BIBLIOGRAPHIC REFERENCES

FERREIRA, José Arnaldo de Souza; WEHBA, Salim; FERNANDES, Cezar Eduardo. Febrasgo gynecology treaty. Rio de Janeiro: Revinter Publishing House, 2001.

FREEDMAN, RR, WOORDWARD, S, SABHARWAL, SC. Adrenergic mechanism in menopausal hot flushes. *Obstet Gynecol*, 76 (4): 573-578, 1990.

Freitas, Fernando. *Routines in gynecology / Fernando Freitas ... [et al]*. 4th ed. Porto Alegre: Artmed Editora, 2001.

LIPPINCOTT; WILLIAMS; WILKINS. *Novak's Gynecology*. 13th ed. Published by arrangement with Lippincott, Williams and Wilkins, Inc, USA.

TATARYN, IV; LOMAX, P; MELDRUN, DR; JAGAREK, JG et al. Objective techniques for the assesment of postmenopausal hot flushes. *Obstet Gynecol*, 57: 340-4, 1981.

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#### DESCRIPTIVE ANALYSIS OF THE VIRIABLES BMI, WHR AND FAT PERCENTAGE OF A GROUP OF CLIMACTERIC WOMEN BODYBUILDERS.

This research aimed to investigate the profile of Climacteric women of a bodybuilding program in the municipality of Santarém / PA, the variables are fat percentage was used Faulker Protocol (1968) adopting the rules of Pollock fat percentage classification and Wilmore (1997), RC / Q was used Larsson protocol and Col. (1984) and the BMI Quatelet protocol in a group of climacteric women. The survey was conducted in July 2006, on = sample was 10 climacteric women participating in the shakes Santarém program was held before the start of the evaluations a lecture and submission to the ethics committee of UEPA, and after his reply held -if such assessments with the research subjects. For data tabulation was used Excel, Office Version 2003, and after data collection had tabulation, the results were found. The mean BMI was  $28.2 \pm SD 4.1$ . In R C / Q the mean was  $0.8 \pm SD 0.1$ . The percentage of fat the average was  $22.7 \pm SD 3.2$ . The age of the studied was between 50 to 63 years with a mean age of  $56.9 \pm 4.4 DP$  according to the result related to the BMI, it was found that most overweight subjects had the rating, and the 10 persons examined seven (7) were overweight, two (2) obese and one (1) healthy, sample classification characterized that 50% of the sample at high risk, 30% with moderate risk, 10% with very high risk and 10% low risk, since the contents of the analyzed group fat percentage are within the acceptable parameter: 70% excellent, 20% good and 10% average. According to the result of the variable under study, in this case, the fat percentage was found that most individuals is above the normal level, thus, excellent overall mean for the group. There was also a change in behavior in patients related to responsibility in caring for your health, recognizing the importance of physical activity as a means supporting the control and treatment of climacteric.

Keywords: Bodybuilding. Women. Climacteric. Fat percentage. BMI.

#### ANALISY DESCRIPTIVE DES VARIABLES IMD, WHR ET POURCENTAGE DE GRAISSE D'UM GROUPE DE CULTURISTES FÉMININS CLIMATÉRIQUES.

Cette recherche visait à étudier le profil des femmes climatériques d'un programme de musculation dans la municipalité de Santarém / PA, les variables étant en pourcentage en graisse, on utilisait le protocole de Faulker (1968) adoptant les règles de classification du pourcentage de graisse de Pollock et Wilmore (1997), RC / Larsson protocol et Col. (1984) et le protocole BMI Quatelet dans un groupe de femmes climatériques. Le sondage a été réalisé en juillet 2006, sur 10 échantillons de femmes participant au programme Shakes Santarém qui a eu lieu avant le début des évaluations lors d'une conférence et d'une

présentation au comité d'éthique de l'UEPA, et après sa réponse, si ces évaluations avec les sujets de recherche. Pour la table des données, Excel, Office 2003, et après la collecte des données, les résultats ont été trouvés. L'IMC moyen était de  $28,2 \pm 4,1$  SD. Dans RC / Q, la moyenne était de  $0,8 \pm SD 0,1$ . Le pourcentage de graisse était de  $22,7 \pm 3,2\%$  en SD. L'âge de l'étude était entre 50 et 63 ans avec un âge moyen de  $56,9 \pm 4,4$  SD selon le résultat lié à l'IMC, il a été constaté que la plupart des personnes en surpoids avaient la note et que les 10 personnes examinées sept (7) étaient en surpoids, deux (2) obèses et un (1) taux d'échantillonnage sain, 50% de l'échantillon à risque élevé, 30% avec risque modéré, 10% Le pourcentage de graisse du groupe analysé se situe dans le paramètre acceptable: 70% excellent, 20% bon et 10% en moyenne. Selon le résultat de la variable à l'étude, dans ce cas, le pourcentage de graisse a été constaté que la plupart des individus sont au-dessus du niveau normal, donc un excellent moyen global pour le groupe. Il y avait également un changement de comportement chez les patients liés à la responsabilité dans le soin de leur santé, reconnaissant l'importance de l'activité physique comme moyen de soutenir le contrôle et le traitement du climatère.

Mots-clés: Bodybuilding. Les femmes. Climatère. Le pourcentage de graisse. IMC.

#### DESCRIPTIVO DE ANÁLISE DE LAS VARIABLES BMI, WHR EL FACTOR DE CRECIMIENTO DEL GRUPO DE LOS HOMBRES CULTURISTAS.

Esta investigación tuvo como objetivo investigar el perfil de las mujeres Climatéricas de un programa de musculación en el municipio de Santarém / PA, las variables estudiadas fueron% de grasa fue utilizado el protocolo Faulker (1968) adoptando las normas de clasificación de porcentaje de grasa de Pollock y, Wilmore (1997), RC / Q fue utilizado protocolo Larsson y Col. (1984) e IMC el protocolo de Quatelet, en un grupo de mujeres climatéricas. La encuesta fue realizada en el mes de julio de 2006, on = muestral fue 10 mujeres climatéricas que participaban del programa Agita Santarém, se realizó una pre-evaluación y una conferencia explicativa y la sumisión al comité de ética de la UEPA, y tras su respuesta, si las evaluaciones con los sujetos de la investigación. Para la tabulación de los datos se utilizó Excel, Office versión 2003 y después de la recolección de datos tuvo su tabulación, los resultados encontrados fueron a. La media del IMC fue de  $28,2 \pm DP 4,1$ . En el RC / Q la media encontrada fue  $0,8 \pm DP 0,1$ . En el porcentaje de grasa la media encontrada fue  $22,7 \pm DP 3,2$ . La edad de las encuestadas fue entre 50 a 63 años con la media de edad de  $56,9 \pm 4,4$  DP, Según el resultado relacionado al IMC, se verificó que la mayoría de los individuos tuvieron la clasificación sobrepeso, siendo del 100% analizadas, El 70% estaba en sobrepeso, 20% obesas y 10% sano, ya la clasificación de la muestra caracterizó que 50% de la muestra con riesgo alto, 30% con riesgo moderado, 10% con riesgo muy alto y 10% riesgo bajo, ya los índices del porcentaje de grasa del grupo analizado estaban dentro del parámetro aceptable: 70% excelente, 20% bueno y 10% promedio. Según el resultado de la variable en estudio, en el caso, el porcentaje de grasa, se verificó que la mayoría de los individuos se encuentra por encima del nivel de normalidad, siendo así, excelente la media general del grupo. Se verificó también un cambio de comportamiento en los pacientes relacionada con la responsabilidad en el cuidado con su salud, reconociendo la importancia de la actividad física como medio coadyuvante en el control y tratamiento del climaterio.

Palabras clave: Musculación. Mujeres. Climaterio. Porcentaje de grasa. Actividad física. Salud.

#### ANÁLISE DESCRITIVA DAS VARIÁVEIS DO IMC, WHR E PERCENTAGEM DE GORDURA DE UM GRUPO DE CULTURISTAS CORPORAIS CLIMATERICAS.

Esta pesquisa teve como objetivo investigar o perfil das mulheres Climatéricas de um programa de musculação no município de Santarém /PA, as variáveis estudadas foram% de gordura foi utilizado o protocolo Faulker (1968) adotando as normas de classificação de percentual de gordura de Pollock e Wilmore (1997), RC/Q foi utilizado protocolo Larsson e Col. (1984) e IMC o protocolo de Quatelet, em um grupo de mulheres climatéricas. A pesquisa foi realizada no mês de julho de 2006, o n=amostral foi 10 mulheres climatéricas que participavam do programa Agita Santarém, foi realizado uma pré avaliação e uma palestra explicativa e a submissão ao comitê de ética da UEPA, e após sua resposta realizou-se as avaliações com os sujeitos da pesquisa. Para tabulação dos dados foi utilizado o Excel, Office Versão 2003 e após a coleta de dados teve sua tabulação, os resultados encontrado foram a. A média do IMC foi de  $28,2 \pm DP 4,1$ . No R C/Q a média encontrada foi  $0,8 \pm DP 0,1$ . No percentual de gordura a média encontrada foi  $22,7 \pm DP 3,2$ . A idade das pesquisadas foi entre 50 a 63 anos com a média de idade de  $56,9 \pm 4,4$  DP, Segundo o resultado relacionado ao IMC, foi verificado que a maioria dos indivíduos teve a classificação sobrepeso, sendo de 100 % analisadas, 70% estavam em sobrepeso, 20% obesas e 10% saudável, já a classificação da amostra caracterizou que 50% da amostra com risco alto, 30% com risco moderado, 10% com risco muito alto e 10% risco baixo, já os índices do percentual de gordura do grupo analisado estavam dentro do parâmetro aceitável: 70% excelente, 20% bom e 10% média. Segundo o resultado da variável em estudo, no caso, o percentual de gordura, verificou-se que a maioria dos indivíduos encontra-se acima do nível de normalidade, sendo assim, excelente a média geral do grupo. Verificou-se também uma mudança de comportamento nos pacientes relacionada à responsabilidade no cuidado com a sua saúde, reconhecendo a importância da atividade física como meio coadjuvante no controle e tratamento do climatério.

Palavras-chave: Musculação. Mulheres. Climatério. Percentual de gordura. Atividade Física. Saúde.