16 - COMPARISON OF LEVEL OF FITNESS CARDIOPULMONARY WOMEN IN DIFFERENT AGE GROUPS

VANESSA VIEIRA SANTOS
DULCE MARI HERBST
MARCOS TADEU GRZELCZAK
DR. LUIS PAULO GOMES MASCARENHAS
Universidade do Contestado-Campus Porto União, Paraná, Brasil
vieirasantos.vanessa77@gmai.com

INTRODUCTION

As years go by, there is, within the aging process, a gradual decline of the capacity of physical performance, mainly cardiorespiratory. In some stages of life this decline is even higher due to genetics and environmental factors. The decline is gradual and takes place in individuals over 50 years of age. Thus aging is featured by a decrease in motor capacity, reduction of strength, flexibility, moving speed as well as VO2 maximum levels, making it hard for daily physical activities and a healthy lifestyle (SPIRDUSO, 2005; TRIBESS AND VIRTUOSO, 2005).

As an individual gets older, these processes are cumulative in the organic function and are expressed by a gradual decline in the functional capacity of the individual. Higher ages add up to the decline of VO2 max, and one of the factors relating to this loss is the intensity level of physical activity along his or her age (SOUZA APUD AKUMA 1998).

The decrease in aerobic potency suggested by the literature gets close to 1 per cent a year, even in the so called active individuals; this aging effect has been observed in both genders as well as ages varying from 20 to 90 years; this effective loss starts manifesting itself significantly around the age of 50.

The decrease in aerobic performance seems to minimize the appearance of degenerative chronic diseases of the organism and thus to avoid the negative effects of aging. Scientists point out the need for physical activity as one of the main factors for promoting health in order to control the diseases caused by aging (MATSUDO, 2000; NAHAS, 2005).

The current study aimed at comparing the cardiorespiratory performance in women differing in age.

MATERIALS AND METHODS

The intentional sampling made up of 40 women, ages 30 to 69, was divided in 3 groups: first group (G1) ages 30 to 45, group 2 (G2) ages 45 to 60 and group 3 (G3) ages 60 to 75. It is a descriptive investigation research ex post facto (ANTONIO 2004).

Instruments and procedures initially used was the IPAQ questionnaire in order to determine the level of physical activity. Afterwards activity readiness questionnaires were applied in order to determine if the individuals evaluated could actually undergo the cardiorespiratory performance test.

The weight and height were evaluated in order to obtain the body mass index added to the formula: BMI = body weight/ height2. When being weighed, as suggested by Fernando Filho (2003), the individual being evaluated must be standing with the back facing the scale display, wearing as little clothing as possible. The height measurement was identified by the biggest value between the vertex and the plantar region according to Frankfurt's plan.

The corporal composition evaluation was made through skin folder of the triceps, abdomen and supra-iliac according to Jackson and Pollock (1980). The triceps skin bend was measured over the midpoint of an imaginary line between point-distal and proximal of the triceps. The measurement of the abdominals skinfold in the vertical fold at 2,5 centimeters to the right of the umbilical scar. The supra-iliac fold was taken in the lateral fold midway between the last rib and the suprailiac.

The equation for calculating body density applied was BD = 1,089733 – 0,0009245 * (sum of three folds) + 0,0000025 * (adding of three folds) 2 – 0,0000979 * (age).

Once the formula was applied, the next step would be determining the body fat percentage through the equation of Siri: %G = [(4,95/DC)-4,50]*10

A 12-minute Cooper test was applied in order to evaluate the cardiorespiratory endurance (FONTOURA, 2008). The testing procedure consisted in having the individual evaluated running and/or walking nonstop for 12 minutes, recording the distance. The ideal way of carrying out the test, concerning moving speed, would be the one where the individual keeps a steady speed along the test. When interrupting the test, the one who is evaluating would keep moving transversally (MARINS, 2003, p.155).

The current test uses equation formula in order to determine the VO2 maximum: VO2 max ml/kg/min = D 504/45. Where D= distance raced in meters.

Concerning data, descriptive statistical tests and percentage were applied. After that the variance analysis with post hoc of Tukey, with a level significance stipulated in 0.05 was made in order to compare different-aged groups.

RESULTS AND ARGUMENTS

The IPAQ showed that the evaluated sampling had a sedentary life style and that all the evaluated ones were actually able to go through the evaluation according to PAR-Q. According to the American College of Sports Medicine (2009), 30 minutes of regular physical activity practice is important for keeping good health. The comparison results among female groups differing in age are shown below in table 1:

TABLE 1: Comparison among evaluated groups.

	G1	G2	G3	Valor de F	P
AGE	37.5 ± 4.7	52.5 ±4.1[a]	64.5 ± 3.0 [a,b]	133.2	0.001
WEIGHT	72.0 ±11.8	69.5 ±11.8	73.8 ±11.9	0.457	0.637
HEIGHT	1.63±0.053	1.60±0.045	1.62 ±0.03	1.892	0.165
BMI	26.81±4.01	27.15±4.62	27.89 ±4.70	0.187	0.830
% FAT	30.49±3.50	31.33±3.37	34.90 ±2.78 [a,b]	5.818	0.006
VO² Max	26.84±2.70	20.67±2.7[a]	17.11 ±1.08 [a,b]	53.87	0.001

A= different from G! and b= different from G2 with p< 0,05

A similar study to this one involving 109 women ages 10 to 68 in respiratory and cardiovascular variables showed that up to 50 years of age, the difference among different age groups was very little; however, women older than 50 showed aerobic potency values significantly lower comparing to the younger ones (GOMES et al 2011), these results only confirm what this study shows, that is, groups G2 and G3 showed lower aerobic endurance values when paired up with younger ones.

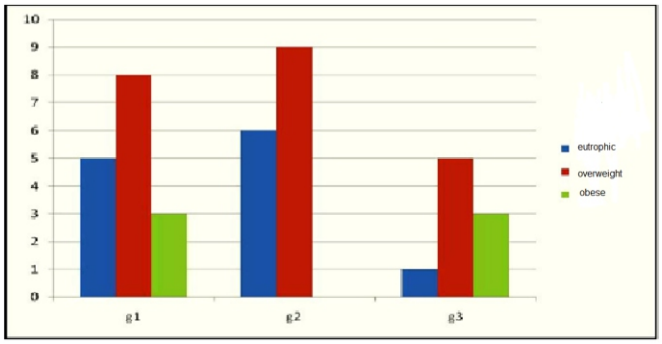
The possible cardiorespiratory endurance decline in women over 50 years old may be relate to alterations in circulation levels of strogenes, progesterone, aldosterone and gonadotropic hormones which affect the energetic metabolism and consequently the aerobic potency. Nevertheless, it was observed that older women, with above-average physical conditioning, showed aerobic potency levels similar to the 20-year-old sedentary ones, suggesting that differences concerning VO2 max have to do more with the level of physical activity on regular basis than with age (MATSUDO, 2000).

According to the revision study, when the main effects of aging in different components of physical endurance were analyzed and also concerning cardiorespiratory endurance, what it suggests is that the decrease of 01 bpm in the maximum heart frequency per year being a variable responsible for the decline of aerobic potency throughout aging (BOOTH et apud MATSUDO, 2000).

Even though the current study shows a physical endurance decline in sedentary women as they get older, the maintenance of high levels of physical activity can actually mitigate this process, for women who find themselves in the moderate category of physical activity generally showed the lowest reduction of cardiorespiratory endurance along the aging process (KRAUSE et. al, 2007).

In graphic 01 it is possible to observe the distributions of the evaluated women along with their BMI, being that in both groups overweight individuals stood out, 30% of whom were classified as eutrophic, 45% overweight and 25% obese.

Graphic 01. Distribution according to the body mass index among the groups.



Just as in other works, no significant difference among BMI values was detected in women differing in age (KURA et. al, 2001). However, the current study showed that around 65% of the women evaluated were overweight.

Alterations in anthropometric variables led to changes in BMI, which gets more influenced by the body weight than by height (WHO, 1998). Although alterations in the current sampling were not observed, the alteration process concerning body mass seems to be faster in women than in men, mainly because of higher presence of osteoporosis after menopause (MATSUDO, 2000).

Jarek and colleagues (2010), by studying women older than 60, identified lower BMI values in those who did regular physical activity comparing to the control, therefore in accordance with this study, in which most women in group 3 (over 60 years of age) show overweight or obesity.

CONCLUSIONS

All women that were evaluated were placed into the sedentary category. This study shows in anthropometric variables the groups did not differ even in BMI. As for the fat percentage it was observed that group 03, with higher ages, showed higher values than the other ones. Concerning cardiorespiratory endurance the younger group (G1) presented higher values than the others, and G3 was the one with the worst result in the Cooper test.

Further researches are needed in order to establish the impact of the habit of practicing physical education on regular basis still during the younger years about general physical endurance and body composition, and it is also necessary further investigation on the relation between sedentary behavior and the physical endurance of Brazilian women, as well as the influence of physical training program.

REFERENCES

American College of Sports Medicine. “Position Stand: Progression models in resistance training for healthy adults.” Medicine and Science in Sports and Exercise (41):687–708, 2009.

FERNANDES FILHO, José. A prática da avaliação física. 2ª Ed. Rio de Janeiro. Shape, 2003.

FONTOURA, S. A. Guia Prático de Avaliação Física- São Paulo: Phorte, 2008.

GOMES, Igor Conterato et al. Aptidão Cardiorrespiratória e Envelhecimento como Indicadores de Risco de Obesidade. Rev Bras Cardiol., São Paulo, n. , p.233-240, 16 ago. 2011.

JACKSON, A.S., POLLOCK, M.L. AND WARD A: Generalized equations for predicting body density of women. Med Sci Sports Exerc. V.12, p. 175-182, 1980.

JAREK, C.; OLIVEIRA M. H., NANTES W. R., ULBRICHT L., MASCARENHAS L P M. Comparação antropométrica, força muscular e equilíbrio entre idosos praticantes e não praticantes de musculação. RBCEH, Passo Fundo, v. 7, n. 2, p. 173-180, maio/ago, 2010.

KRAUSE P. M., BUZZACHERA ,F. C., HALLAGE, T., PULNER B. S.,SILVA G. S., Influência do nível de atividade física sobre a aptidão cardiorrespiratória em mulheres idosas, Rev. Bras. Med. Esporte Vol. 13, Nº 2 – mar /abr 2007.

KURA, G G., RIBEIRO, L S P., NIQUETTI, R., TOURINHO FILHO, H. Nível de atividade física, IMC e índices de força muscular estática entre idosas praticantes de hidroginástica e ginástica Revista Brasileira de Ciências do Envelhecimento Humano, v. 1 n.1, p.30-40 - jul./dez. 2004.

MARINS, João Carlos Bouzas; GIANNICHI, Ronaldo Sérgio. Avaliação & prescrição da atividade física: guia prático.

5 ed. Rio de Janeiro: Shape, 2003.

MATSUDO, Sandra Mahecha; MATSUDO, Victor Keihan Rodrigues; BARROS NETO, Turíbio Leite. Atividade física e envelhecimento: aspectos epidemiológicos. São Caetano do Sul: Revista Brasileira de Medicina e Esporte, 2000.

SOUSA, Luís Gustavo Oliveira de. Estudo transversal de variáveis antropométricas e da aptidão física de mulheres idosas do Recife-PE. Revista Mackenzie de Educação Física e Esporte. V.9, n.2, p.121-133, set. 2010.

SPIRDUSO, W. W. Dimensões Físicas do Envelhecimento. São Paulo: Manole, 2005.

WORLD HEALTH ORGANIZATION. Obesity: preventing and managing the global epidemic. Report of the WHO Consultation on Obesity. Geneva: WHO; 1998.

End.: Rua Rogério Marques No1109,
Bairro Tolachinski, Papanduva, Santa Catarina, Brasil.
E-mail: vieirasantos.vanessa77@gmail.com

COMPARISON OF LEVEL OF FITNESS CARDIOPULMONARY WOMEN IN DIFFERENT AGE GROUPS

ABSTRACT

Along the years the aging process has been followed by a progressive loss of the individual's physiological capacity. There is also at this stage the cardiorespiratory endurance that undergoes changes according to aging, thus decreasing the amount of oxygen that an individual is able to capture and transport into the body tissues. By evaluating women, this paperwork aimed at making a comparison between different ages and checking what happens with the cardiorespiratory endurance in the aging process. The subjects of the research were women ranging from 30 to 69 years of age. PAR – Q and IPAQ questionnaires were used and they identified the level of physical activity practiced by the sample. The women had their weights and heights evaluated, the body mass index calculated, which pointed out a potential overweight, measuring of the fat percentage that are triceps, abnominal and iliacus muscles, as well as Cooper tests applied to evaluate the cardiorespiratory endurance of the sample, descriptive statistical and variance tests were taken with post-hoc analysis of TUKEY, with a significance level stipulated in 0,05. It was observed that in antropometric variables the groups did not differ including the BMI (Body Mass Index). As for the percentage of fat it was noted that group 3, with higher ages, showed higher amounts than the others. Concerning cardiorespiratory endurance, the younger group (G1) showed higher values that the others, and group 3 (G3) had the worst result in the COOPER test,.

KEYWORDS: Cardiorespiratory, physiological capacity, aging.

COMPARAISON DU NIVEAU DES FEMMES D'ADAPTATION CARDIOPULMONAIRES DIFFERENTS GROUPES D'AGE

RESUMEN

Le processus de vieillissement est accompagné d'une perte progressive des capacités physiologiques. Avec cette étape pour trouver la capacité cardiorespiratoire qui change selon l'âge, réduisant ainsi la quantité d'oxygène que l'individu est capable de capturer et de transport vers les tissus du corps. Cette étude visait à effectuer au moyen d'évaluations chez les femmes un comparatif entre les différents âges et voir ce qui se passe avec la forme physique cardiorespiratoire dans le processus de vieillissement. Les sujets étaient des femmes âgées de 30 à 69 ans. Nous avons utilisé des questionnaires Q-AAP à l'état de préparation à l'activité physique pratique ainsi que le questionnaire IPAQ, qui a identifié le niveau d'activité physique pratiquée par exemple, où les sujets ont été soumis à l'évaluation du poids et taille calculée IMC qui a identifié la surcharge pondérale possible, fat mesure du pourcentage qui sont des triceps, abdominaux et iliaque, précité et le test de Cooper pour évaluer cardiorespiratoire d'échantillondes tests statistiques ont été effectuée et descriptive analyse de variance avec Tukey après coup, avec le niveau de significativité 0,05 a déclaré. A noté que les groupes ne différaient pas anthropométriques variables, y compris en IMC. En ce qui concerne le taux de graisse, on a fait observer que le groupe 3, avec l'âge plus avancé, ont montré des valeurs plus élevées que les autres. Dans cardiorespiratoire, le groupe le plus jeune (G1) a montré des valeurs plus élevées que les autres groupes, le G3 avec le plus mauvais résultat au test Cooper.

MOTS CLÉS : vieillissement, capacities physiologiques, cardiorespiratoires , âge, oxygène

COMPARACIÓN DE LOS NIVELES DE APTITUD DE LA MUJER CARDIOPULMONAR EN DIFERENTES GRUPOS DE EDAD

RESUME

El proceso de envejecimiento se acompaña de una pérdida gradual de las capacidades individuales fisiológicas. Junto con este paso para encontrar la capacidad cardiorrespiratoria que cambia según el envejecimiento, reduciendo la cantidad de oxígeno que el individuo es capaz de capturar y transportar a los tejidos del cuerpo. El objetivo de este estudio fue realizar a través de las evaluaciones en las mujeres una comparativa entre las diferentes edades y ver qué pasa con la aptitud cardiorrespiratoria en el proceso de envejecimiento. Los temas de investigación son mujeres de entre 30 y 69 años. Se utilizaron cuestionarios PAR Q a la disposición a la actividad física de la práctica y el cuestionario IPAQ, que identifica el nivel de actividad física practicada por ejemplo, cuando los sujetos fueron sometidos a evaluación del peso y estatura calcula IMC que identifica posible sobrepeso, grasa medición de porcentaje que son tríceps, abdominales e ilíaca, supra y el test de Cooper para evaluar la aptitud cardiorrespiratoria de muestrapruebas estadísticas fueron descriptiva y realizó análisis de varianza con Tukey post hoc, con nivel de significancia 0.05 declarado. Señaló que los grupos diferían variables antropométricas no incluidos en el IMC. En cuanto a la proporción de grasa se observó que el grupo 3, con la mayor edad, mostraron valores superiores a los demás. En fitness cardiorrespiratorio al grupo más joven (G1) mostraron valores superiores a los demás grupos, el G3 con peor resultado en la prueba de Cooper.

PALABRAS CLAVES: Capacidad fisiológicas, cardiopulmonares, envejecimiento, edad, oxígeno.

COMPARAÇÃO DO NÍVEL DE APTIDÃO CARDIORRESPIRATÓRIA EM MULHERES DE DIFERENTES FAIXAS ETARIAS

RESUMO

O processo de envelhecimento vem acompanhado com uma perca progressiva das capacidades fisiológicas do individuo. Juntamente com esta etapa encontrasse a capacidade cardiorrespiratória que sofre alterações de acordo com o envelhecimento, diminuindo assim a quantidade de oxigênio que o individuo consegue captar e transportar aos tecidos do corpo. O objetivo deste estudo foi realizar através de avaliações em mulheres um comparativo entre as diferentes faixas etárias e verificar o que ocorre com a aptidão cardiorrespiratória no processo de envelhecimento. Os sujeitos da pesquisa foram

mulheres de faixa etária entre 30 e 69 anos. Foi utilizado os questionários PAR-Q para a prontidão a pratica de atividade física e o questionário IPAQ, que identificou o nível de atividade física praticado pela amostra, onde os sujeitos foram submetidos a avaliação do peso e da estatura calculado o IMC que identificou possível sobrepeso, mensuração do percentual de gordura que são tríceps, abdômen e supra ilíaca, e o teste de Cooper empregado para avaliar a aptidão cardiorrespiratória da amostra, foram realizados os testes estatísticos descritivos e de analise de variância com post hoc de Tukey, com nível de significância estipulado em 0,05. Observou que nas variáveis antropométricas os grupos não diferenciaram incluindo no IMC. Quanto ao percentual de gordura observou-se que o grupo 3 , com maior idade, manifestou valores mais elevados que os demais. Na aptidão cardiorrespiratória o grupo mais jovem (G1) apresentou valores mais altos que os demais grupos, sendo o G3 com pior resultado no teste de Cooper.

PALAVRAS CHAVES: Cardiorrespiratória, capacidades fisiológicas, envelhecimento.