111 - PHYSICAL FITNESS RELATED TO HEALTH IN WOMEN PHYSICALLY ACTIVE

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INTRODUCTION

Being healthy is to live with good physical and mental disposition. Besides the good disposition of the body and mind it is included in the definition of health the well-being among individuals. The health of an individual can be determined by their own human biology, the physical environment, social and economic development that is mentioned and your lifestyle, by feeding habits and other behaviors that may be beneficial or harmful.

There are studies that confirm the benefits of physical fitness for the health[1,2]. Researchers in the exercise area have shown that the lack of physical activity such as low physical fitness are harmful to Health[2].

Much of the ill health is caused by the lack of physical activity[2]. Physical activity is defined as any bodily movement produced by skeletal muscles that promotes in energy expenditure, not worrying about the intensity of energy expenditure[3]. This definition can be complemented reporting that exercise has as an objective to improve the components of fitness: aerobic fitness, strength and flexibility[4].

An important factor in individuals practicing physical exercise is your physical fitness, which is the ability to perform physical exertion without exhaustive fatigue[5]. The elements of physical fitness involve different aspects and may turn to health, extolling the physiological variables such as maximal aerobic power, strength, flexibility and body composition, or return to sporting abilities evaluating agility, balance, coordination, power and speed, aiming sports performance6.

Over the past few years, studies[7,8,9,10] have been conducted in order to assess physical fitness, especially in children and adolescents[7], elderly[8], athletes[9] and ill carriers[10]. However, in adults the amount of research with this focus has been greatly reduced11. In view of the importance of measuring fitness levels in individual adult, this paper proposes an analysis of physically active women. Clearly there are reports in adults that demonstrate favorable values of physical fitness of men[9] towards women, however, there are still few studies focusing only on women. Thus, there is need to conduct studies in the population of female physically active, and thus try to get a better understanding of physical fitness and health in women.

Aim

To Assess the physical fitness and health in physically active women.

METHODOLOGY

All signed a consent form authorizing the participation and use of data collected in this study, according to Resolution 196/96 of the National Health Council of Brazil.

Subjects

Data were collected from 35 women volunteers, age between 22 and 49 years, in Aracaju, Sergipe. The average age of the woman that participated of this study was 31,51 ± 6,74 years; hight 1,59 ± 0,05 meters; body weight 63,90 ± 9,20 kg and body mass index (BMI) 25,28 ± 3,18 Kg/m^2. Exclusion criteria was the lack of physical activity regularly, any medical limitation and, or motor incapability to do the physical tests and not having the Will of participating of this study. It was measured the physical fitness through the aerobic capacity, flexibility and muscle strength. The tests made were: Queen's College Bench, Sit and Reach test, push ups, and abdominals.

Queen's College Bench Test

Held in bank with 41 cm high, in Which the individual performs the cadence Increases in pre-established (steps 22 for women and 24 for men, which was 88 and 96 touches at the metronome) for 3 minutes. After finishing the test, the heart rate is measured for 15 seconds (from the 5th to the 20th second), this value was multiplied by 4 in order to obtain the heart rate in beats per minute[12].

Table 1 - Classification for aerobic bench test for females by age group (VO2 max obtained).

Women	Age (years)				
Classification	**20 - 29**	**30 - 39**	**40 - 49**	**50 - 59**	**60 +**
Risk condition	≤ 31	≤ 29	≤ 27	≤ 24	≤ 23
Low level	32 - 34	30 – 32	28 - 30	25 – 27	24 - 25
Normal	35 -41	33 – 39	31 – 36	28 – 32	26 – 31
Athlete	≥ 42	≥ 40	≥ 37	≥ 33	≥ 32

Adapted from: Cooper (1968).

Sit and Reach Test

Consists of a linear method that gets results on distance scales (cm). This test indirectly measures the range of motion of the hip joint, with involvement of the muscles of the lower back and hamstrings. After a brief warm up, the individual is placed in a sitting position, with knees straight, legs apart, barefoot, soles of the feet resting on the bench flexometer sit and reach the mark of 26 cm, running a slow motion of trunk flexion ahead momentarily holding. The head of the individual must pass between the arms and the hands overlap, and the same should push the shield that slides over the tape, indicating the distance achieved. The measurement in inches is read and used the best of two attempts. The assessor must keep the knee extended and evaluated to read the measure. The value obtained is compared with the table provided[13].

Table 2- Classification to the flexibility level by the Sit and Reach test to women between 20 and 69 years.

Women	20 – 29 years	30 – 39 years	40 – 49 years	50 – 59 years	60 – 69 years
Needs to improve	≤ 27	≤ 26	≤ 24	≤ 24	≤ 22
Regular	28-32	27-31	25-29	25-29	23-26
Good	33-36	32-35	30-33	30-32	27-30
Very good	37-40	36-40	34-37	33-38	31-34
Excellent	≥ 41	≥ 41	≥ 38	≥ 39	≥35

Adapted from: American College of Sports Medicine (ACSM), 2007.

Push ups Test

The individual in the prone position, hands and knees flat on the floor, with legs and feet elevated at an angle of 90 ° between thighs and legs. Extend and flex your arms trying to reach the ground with his chin, maintaining alignment of the trunk. The higher number of repetitions in 60 seconds is recorded[14].

Table 3- Classification of arms muscle resistance to women of different ages.

Women	20 – 29 years	30 – 39 years	40 – 49 years	50 – 59 years	60 – 69 years
Bad	≤ 09	≤ 07	≤ 04	≤ 01	≤ 01
Below average	10-14	08-12	05-10	02-06	02-04
Average	15-20	13-19	11-14	07-10	05-11
Over average	21-29	20-26	15-23	11-20	12-16
Excellent	≥ 30	≥ 27	≥ 24	≥ 21	≥ 17

Adapted from: Pollock e Wilmore (1993).

Abdominals Test

Performed with the individual lying supine, knees bent at 90 degrees, arms along the body, with the palms touching the floor and fingers playing a tape stuck to the ground, with another tape placed 8 cm (≥ 45 years) or 12 cm (<45 years) thereof. It is the maximum number of push-ups in 1 minute, taking the individual to progress from lying position start playing the tape until the tape placed 8 or 12 cm away from the first and returning to touch the shoulders touch the ground (not the head need to touch the ground). The higher number of repetitions in 60 seconds is recorded15.

Table 4- Classification of the abdominals test to women of different ages.

Women	20 – 29 years	30 – 39 years	40 – 49 years	50 – 59 years	60 – 69 years
Needs to improve	≤ 4	≤ 5	≤ 3	≤ 5	≤ 2
Regular	5 – 13	6 - 9	4 - 10	6 - 9	3 - 7
Good	14 – 17	10 – 18	11 – 18	10 – 18	8 - 16
Very good	18 - 24	19 - 24	19 - 24	19 - 24	17 - 24
Excellent	>25	>25	>25	>25	>23

Adapted from: American College of Sports Medicine (ACSM), 2007.

Procedures Pre and Post Exercises

We recorded measurements of height and weight, VO2 maximum (Vo2max) obtained, and Vo2max predicted and FAI (aerobic functional deficit). VO2 is directly related to the condition cardiovascular, respiratory, haematological and oxidation during exercise and is considered a good tool for exercise prescription and analysis treinamento[16,17], as a parameter detection of cardiovascular risk[18]. FAI is an indicator of the variation in percentage of VO2 expected[19], may be more or less. We used a Professional Balance Electronics Welmy W-200th to measure weight and a tape measure to measure the height. The measurements were taken on the same day, the data obtained are shown in Table 5.

RESULTS

The participants had a characteristic compact in with a low average height and BMI featuring an average overweight.

Table 5 describes markers such as abdominal test, bending arm, predicted VO2max, VO2max obtained, and FAI. There was a high standard deviation for the test abdominal, arm flexion and FAI.

Table 5 - Evaluation of physical fitness components. Data expressed as mean and standard deviation (n = 35).

Test	Average and standard deviation
Abdominal	36,68 ± 13,64 repetitions
Push ups	14,82 ± 10,12 repetitions
Flexibility	29,94± 7,36 cm
$Vo2_{max}$ predicted	40,12 ± 2,78 ml.kg.$^{-1}$min.$^{-1}$
$Vo2_{max}$ obtained	38,44 ± 3,87 ml.kg.$^{-1}$min.$^{-1}$
FAI	4,03 ± 13,56 %

The results for the abdominal and arm flexion were rated as excellent and on average, respectively. It was showed a regular flexibility in the results. The analysis indicated a good performance in peak VO2 obtained.

DISCUSSION

The assessment of physical fitness has been very important for the search of a good general state of health, so, this study attempted to evaluate questions of relevance in physically active women as localized muscle strength, flexibility and body composition. Most of the data presented so far about muscle strength resulted from the analysis of cross-sectional samples in men and women with age ranging[20].

The literature shows the inverse relationship between muscle strength and age, especially after 70 years[21]. Monteiro et al. (1999) found samples of physically active women over 60, and there was no significant difference in muscle strength. Were perceived that women with lower weight had lower muscle strength observed in testing abdominal strength and flexing arm. This relationship is also found Rantanen et al. (2000). Andrade et al. (1995) studied women-exercising 30-73 years old and found a decrease in physical fitness over the years. The physically active women who participated in this study were rated excellent result for the abs and the average for the bending arm, according to the tables in ACSM (2007) and Pollock ML and Wilmore JH (1993) corroborating the data found for profile of young adult women in Andrade et al (1995).

Flexibility was evaluated in this study by testing "Sit and Reach", according to Daley and Spinks [25]. There is a loss of flexibility over the individual's age. The physically active women had a regular result in flexibility.

The measurement of VO2 is considered a good parameter for observing physiological adaptations during exercise through pulmonary ventilation can get the reflection of changes in systemic O2 transport and muscle metabolism26. The results between the predicted VO2 obtained and showed no significant difference. Thus, it is indicated that physically active women can achieve the capacity to consume oxygen desirable when training regularly, at least three times a week.

Maria et al. (2007) conducted a study of maximum oxygen uptake in female college students aged 20 to 35 using cardiopulmonary exercise test on the treadmill and cycle ergometer with a group of sedentary and physically active. Estimated values of 30.26 ± 3.15 ml.kg.-1min.-1 to the mat and 32.07 ± 4.44 ml.kg.-1min.-1 for the cycle ergometer, most likely by the study have used sedentary in their sample, the data do not reach those obtained in the present study, which included only in physically active women.

The FAI showed no deficit aerobic significance in this study. Henry and colleagues (2011) in their study obtained the FAI through the cycle ergometer to measure the gains of patients in a study on a cardiac rehabilitation program (CRP), obtaining meaningful data improvement between the pre and post implementation of the program. The fact that this study was conducted in physically active women may have been the reason for not finding a significant FAI.

CONCLUSION

The physically active women had a good physical fitness, despite being qualified in BMI as overweight.

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PHYSICAL FITNESS RELATED TO HEALTH IN WOMEN PHYSICALLY ACTIVE

ABSTRACT

Introduction: Lack of physical activity is not good to health. Physical fitness promotes health benefits. Aim: The objective of the study was to evaluate the physical fitness related to health in physically active women. Methodology: Data were collected from 35 female volunteers between 22 and 49 years in the city of Aracaju, state of Sergipe, Brazil. The average age of women participating in the study was 31.51 ± 6.74 years with a mean and standard deviation in height of 1.59 ± 0.05 meters, body mass 63.90 ± 9.20 kg and body mass index (BMI) of 25.28 ± 3.18 kg/m2 . The tests performed were: Bank of Queen's College Test, Sit and Reach Test, Resistive Force Test Extension and Flexion of the elbow (arm flexion) and Abdominal Strength Test. It was also evaluated the VO2 max obtained, VO2 max predicted, aerobic functional deficit (FAI). Results: It was found the following tests values for: abdominals 36.68 ± 13.64 repetitions, in the arm flexion 14.82 ± 10.12 repetitions, in flexibility 29.94 ± 7.36 cm, in VO2max predicted 40 , 12 ± 2.78 ml.kg.- 1min.- 1, in VO2max obtained 38.44 ± 3.87 ml.kg. -1min. - 1 and FAI of 13.56 ± 4.03 % . This shows good results for testing abdominal strength , excellent for arm flexion, regular to flexibility and good for VO2max . The FAI showed no significant deficit. Conclusion: The physically active women had a good physical fitness, despite being qualified in BMI as overweight.

KEY WORDS: Health, physical fitness, exercise.

SANTÉ LIÉS DE CONDITIONNEMENT PHYSIQUE CHEZ LES FEMMES PHYSIQUEMENT ACTIFS

RÉSUMÉ

Introduction: Le manque d'activité physique est bénéfique pour la santé. La forme physique favorise bienfaits pour la santé. Objectif: L'objectif de l'étude était d'évaluer la condition physique et la santé chez les femmes physiquement actives. Méthodologie: Les données ont été recueillies auprès de 35 volontaires de sexe féminin entre 22 et 49 ans dans la ville d'Aracaju, État de Sergipe, Brésil . L'âge moyen des femmes participant à l'étude était de 31,51 ± 6,74 années avec une moyenne et l'écart en hauteur de 1,59 ± 0,05 mètres , la masse corporelle 63,90 ± 9,20 kg et l'indice indice de masse corporelle (IMC) de 25,28 ± 3,18 kg/m2. Les tests ont été effectués: Test Bank du Collège de la Reine, test " flexion du tronc " Extension résistif de force d'essai et la flexion du coude (flexion du bras) et abdominale essai de résistance. Nous avons également évalué le VO2 max obtenu, VO2 max prédit, déficit fonctionnel aérobie (FAI). Résultats: Nous avons trouvé le résultat final de l'essai ab 36,68 ± 13,64 répétitions , dans les bras de répétitions de flexion 14,82 ± 10,12 ; flexibilité dans 29,94 ± 7,36 cm; VO2max prédit 40, 12 ± 2,78 ml.kg. - 1min. -1, VO2max obtenue en 38,44 ± 3,87 ml.kg. -1min. -1 et FAI 13,56 ± 4,03% . Cette montre de bons résultats pour le test force abdominale , flexion du bras , de la souplesse et de VO2 . Le FAI n'a pas montré de déficit important . Conclusion: Les femmes physiquement actives avaient une bonne condition physique, en dépit d'être qualifié dans l'IMC en surpoids.

MOTS-CLÉS: santé , conditionnement physique, exercice.

CONDICIONAMIENTO FÍSICO RELACIONADO A SALUD EN MUJERES FÍSICAMENTE ACTIVASAPTIDÃO FÍSICA

RESUMEN

Introducción: La falta de actividad física es beneficiosa para la salud. La aptitud física promueve beneficios para la salud. Objetivo: El objetivo del estudio fue evaluar la aptitud física y la salud en las mujeres físicamente activas. Metodología: Se recogieron datos de 35 mujeres voluntarias entre 22 y 49 años en la ciudad de Aracaju, Sergipe, Brasil. La edad media de las mujeres que participaron en el estudio fue de 31,51 ± 6,74 años, con una desviación estándar y media de altura de 1,59 ± 0,05 m, la masa corporal 63.90 ± 9.20 kg y el índice de índice de masa corporal (IMC) de 25,28 ± 3,18 kg/m2. Se realizaron las pruebas: Banco de prueba de la universidad de la reina , prueba de " sit and reach " fuerza de resistencia de extensión Prueba y flexión del codo (flexión del brazo) y la prueba de resistencia abdominal. También se evaluó la obtenida VO2 max , VO2 max predijo , déficit funcional aeróbica (FAI). Resultados: Se encontró que el resultado final de la prueba ab 36,68 ± 13,64 repeticiones, en el flexión del brazo 14,82 ± 10,12 repeticiones ; flexibilidad en 29,94 ± 7,36 cm; VO2max predijo 40,12 ± 2,78 ml.kg. - 1min. - 1, VO2max

obtenido en 38,44 ± 3,87 ml.kg. -1min. - 1 y FAI 13,56 ± 4,03 %. Esto muestra buenos resultados para probar la fuerza abdominal, muy bueno para flexión de brazo , regular para la flexibilidad y el bueno para él VO2 . FAI no presenta ningún déficit significativo.Conclusión: Las mujeres físicamente activas tenían un buen estado físico, a pesar de estar clasificado en el IMC como sobrepeso.

PALABRAS CLAVE: salud, condición física, ejercicio.

APTIDÃO FÍSICA RELACIONADA À SAÚDE EM MULHERES FISICAMENTE ATIVAS

RESUMO

Introdução: A falta de atividade física não é benéfica à saúde. A aptidão física promove benefícios à saúde. Objetivo: O objetivo do estudo foi avaliar a aptidão física relacionada à saúde em mulheres fisicamente ativas. Metodologia: Foram coletados os dados de 35 mulheres, voluntárias, entre 22 e 49 anos, na cidade de Aracaju, estado de Sergipe, Brasil. A idade média das mulheres que participaram do estudo foi de 31,51 ± 6,74 anos com uma média e desvio padrão na altura de 1,59 ± 0,05 metros, massa corpórea 63,90 ± 9,20 kg e índice de massa corporal (IMC) de 25,28 ± 3,18 Kg/m2. Os testes realizados foram: Teste de Banco do Queen's College, Teste de “Sentar e Alcançar”, Teste de Força Resistiva de Extensão e Flexão do Cotovelo (flexão de braço) e Teste de Força Abdominal. Também foram avaliados o VO2 máximo obtido, VO2 máximo previsto, déficit aeróbico funcional (FAI). Resultados: Foram encontrados como resultado final do teste de abdominais 36,68 ± 13,64 repetições; no de flexão de braços 14,82 ± 10,12 repetições; no de flexibilidade 29,94± 7,36 cm; Vo2máx previsto 40,12 ± 2,78 ml.kg.-1min.-1; no Vo2máx obtido 38,44 ± 3,87 ml.kg.-1min.-1 e no FAI 4,03 ± 13,56%. Isso revela bons resultados para os testes de força abdominal, flexão de braço, flexibilidade e VO2. O FAI apresentou ausência de déficit significativo. Conclusão: As mulheres fisicamente ativas apresentaram uma boa aptidão física, apesar de terem sido qualificadas no IMC como indivíduos com sobrepeso.

PALAVRAS-CHAVE: Saúde, aptidão física, exercício.