74 - CHANGES IN THE BODY COMPOSITION OF HYDROGINASTIC PRACTICING WOMEN OF AN AQUATIC ACADEMY OF THE CITY OF VITÓRIA / ES

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1 INTRODUCCIÓN

Water has always been the inseparable companion of the man of this origin of the land, the leap, swimming, strength, all this is in the Hydrogynastic, the search for mental and physical strength that man seeks through times remote to the present day. (ARANTE, 1998)

The liquid medium has physical principles that help reduce body weight when immersed, which reduces the risk of traumatic bone trauma, however, water increases resistance against movement, enhancing muscular work. (LOPES; SANTOS 2002).

According to Bonachela (1999), water aerobics is an ideal conditioning program that leads to good physical and mental fitness, intended for people of both sexes, independent or not to know how to swim, also reports that "water and exercise are a combination healthy that has always worked, people who do not feel well in the gym, are comfortable in the pool practicing water aerobics. "

Sova (1998) says that soil exercises offer many benefits, but almost always they are accompanied by pain, overheating, perspiration and a feeling of exhaustion. Water allows you to achieve all the excellent benefits of exercise, with the benefit of eliminating side effects.

According to Arante (1998), after the age of 30, the metabolism tends to slow down and this leads to weight gain. In women, depending on the genetic predisposition, there may also be an increase in localized fat in the hips, thighs, and buttocks. It also states that muscle mass decreases by 6% every decade. In men, there is almost no such loss and therefore the signs of sagging are slower to appear and muscles are defined longer.

Following the facts reported above, the reasons that lead women to seek a physical exercise program may be for different reasons, so pre- and post-workout assessment is seen as a very important means for controlling body composition. Through this, it is possible to diagnose if the values obtained in the measurement are or are not within the standards considered normal.

The measurement of skin folds, as it is a simple technique, inexpensive and easy to handle and, above all, because it presents high fidelity, correlating optimally with more sophisticated techniques, has been the preferred method of researchers in the field of physical exercise and in sports. (FERNANDES FILHO, 2002, page 48)

Scientists use the four-component model they are: greasy mass, bone mass, muscle mass. (POLLOCK & WILMORE, 1998).

Failure to perform evaluations and reevaluations, or lack of criteria during the execution of physical activities, is a problem that spreads throughout the unfolding of physical education, from the commitments with a pedagogical approach, to the work that aims at aesthetics. (LOPES and SANTOS, 2002).

Therefore, the main objective of this study is to evaluate the changes in the body composition of women practicing water aerobics during the 12-week training period.

2 METODOLOGY

The analysis was made from a qualitative-quantitative perspective based on the findings obtained through research and primary data collection, consisting of two stages: the first one was constituted in the anthropometric evaluation and the second one was an anthropometric reassessment, the measurement of the skinfolds was performed through samples that were statistically represented by women practicing water aerobics. (COZER, GOUVÊA 2009)

It is descriptive level, therefore, will describe characteristics of a group of women practicing water aerobics.

According to GIL, 2002, this characteristic has as main objective the description of the characteristics of a certain group, as well as to establish the relations between independent variables. (GIL, 2002)

Based on the technical procedures, this experimental research is the most prestigious eyeliner in scientific circles, which determines an object of study, selecting variables capable of influencing and defining ways of controlling the observation of the effects that the variable produces on the object. (GIL, 2002)

2.1 SAMPLE

The casuistry of the present study is composed of 10 women selected from a group of 23 enrolled in water aerobics classes. According to the training frequency, 3 times a week, the duration of which is approximately 50 minutes, totaling 12 weeks. (GUBIANI et al, 2001, SILVA et al, 2006)

All women were informed about the study proposal and the procedures to be submitted and signed a free and informed consent form. (RAVAGNANI et al., 2007)

Arante (1998), affirms the importance of the practice of water gymnastics accompanied by musical rhythms, being accelerated in the aerobic part and slow in the relaxation phase. The author reports that there have been experiments confirming the influence of music on respiration and circulation, causing the individual to experience respiratory and circulatory reactions always in the same direction, and respiratory reaction precedes circulation. Respiratory rhythm follows music increasing and decreasing without overcoming external variations, increases metabolism, increases and decreases muscle energy and speeds up breathing.

The inclusion criteria required to participate in the training program are: to be female, practicing the Hydrogeology modality, to have at least 70% of frequency and to participate in the initial and final evaluation.

2.2 DATA COLLECTION INSTRUMENTS AND PROCEDURES

For the anthropometric evaluation (mass) a balance was used with the brand Balmak mechanical with a maximum

capacity of 160KG, graduation of 0.01kg. Statistical analysis was performed using the stadiometer coupled to the balance previously referenced.

In the evaluation of the skinfold measurements, the double indirect method of skinfold thickness measurement was adopted in the data collection and the instrument used was a Scientific Compass of the Cescorf marca brand, with precision of 0.1mm and 88mm reading range.

In order to obtain the measurements of body circumference, a Sanny® brand tape measure was used, with scales in centimeters and inches, with a total length of 200cm, graduated of 0.1cm.

For the skinfold measurements three successive measurements were performed at the same kineanthropometric point, considering the average of the three as the value adopted for this point.

In this way the data collection of the show was of 7 points of cineanthropometry, being for data analysis the protocol used was 7 folds of Jackson and Pollock 1978 and 1980, they are: triceps, suprailiac, thigh, abdomen, pectoral, subscapular and mid axillary.

The process to obtain the values of the 7 skinfolds were the same ones suggested by Fernandes Filho (2002):

Cutaneous Triceps Fold: A medial point parallel to the longitudinal axis of the arm was determined between the super-lateral edge of the acromion and the olecranon.

Cutaneous Breast Fold: the measurement should be made at half the distance between the anterior axillary line and the nipple.

Suprailiac Cutaneous Fold: should be measured obliquely between the iliac crest and its encounter with the medial axillary line.

Thigh Bending Thigh: It will be measured parallel to the longitudinal axis of the leg over the rectus femoris, at the midpoint between the inguinal ligament and the upper edge of the patella.

Subscapular cutaneous fold: the measurement is executed obliquely in relation to the longitudinal axis, following the costal arcs.

Abdominal Cutaneous Fold: measured 5cm to the right of the umbilical scar parallel to the longitudinal axis.

Axillary Cutaneous Fold: It is measured at the point of intersection between the median axillary line and the imaginary transverse line at the height of the appendix.

The values of the skinfolds are of great importance for the calculation of the relative fat percentage (% G), which is done through the Siri (1961) equation proposed by Jackson and Pollock (1978 and 1980).

Dens (g / ml) = 1.11200000- [0.00043499x (S7CF) + (0.00000055X (S7CF) ²] - (0.00028826 X age).

G% = [(4.95 - 4.50 / DENS] x 100

The values of the skinfolds (CF) will be measured with an adipometer.

The thickness measurements of CF must always be performed on the right side of the evaluated one, with a precision of at least 0,1mm, even if they are obtained by interpolation of the original scale of the compass. It is recommended to carry out a series of three successive measurements, in the same place, considering the average of the three as being the value adopted for this point. (FILHO FERNANDES, 2002, p.49)

Among the main anthropometric indices we can mention: body mass index (BMI), the relation between waist and hip circumferences (WHR).

Height or height is the measure of the straight line distance between two planes, a tangent to the sole of the feet and another tangent to the highest point of the head (vertex point), the subject standing in the fundamental position with the body more elongated and the head positioned with the FRANKFURT plane. (Delgado, 2004, p.14)

According to Delgado (2004), some care should be taken to reduce the margin of error: the evaluator should preferably be positioned to the right of the evaluator, we must record the time at which the measurement was made, make the measurement at the same time or period of the day, prevent the individual from shrinking when the cursor touches his head and observing that between measurements the evaluated change position in the measuring instrument.

The anthropometric measures of circumference correspond to the so-called perimeters that can be defined as the maximum perimeter of a body segment when measured at right angles to its largest axis. The anthropometric measures of circumference correspond to the so-called perimeters that can be defined as the maximum perimeter of a body segment when measured at right angles to its largest axis, it will be measured to obtain waist / hip circumference (WHR), a tape measure. However,

"To measure circumferences, an anthropometric tape measure, which must be made of a flexible (preferably metallic) material, which is not stretched with the use of 0.1 cm precision is used" (DELGADO, 2004, p. 26)

The waist measurement should be made at the waist level between the ribs and the iliac crest, taken in a horizontal plane around the waist at the level of the narrowest part of the torso. The measurement of the hip is taken at the level of the right and left trochanteric points, maximum posterior extension of the buttocks, should be parallel to the ground, being evaluated with the feet joined. However,

Delgado (2004) states that q waist-to-hip ratio (WHR) is strongly associated with visceral fat and accepted as infra-abdominal fat, and continues to say that some researchers that waist circumference alone is the best predictor of visceral fat (WHR). And hip circumference, however, is influenced only by deposition of subcutaneous fat, so the accuracy (WHR) in assessing visceral fat decreases with increasing fat levels.

The WHR may change in the woman, depending on the stage of menopause in which she is, ie postmenopausal women have a more masculine pattern of fat distribution than premenopausal women. With these discrepancies, no standard has been established for waist circumference. Therefore, we recommend that individuals should be classified into high-risk or low-risk categories using WHR. (Delgado, 2004, p.49)

2. 3 COLLECTION PROCEDURE

The hydrogymnastics was recreated in a way that motivated the women to practice this physical activity without worrying about the performance, corresponding to the expectations. Most of them obtained more than 80% of frequency, although in the beginning they found many difficulties, as the performance of the exercises with safety and correction, being liquid a new experience and therefore, need new adaptations.

The water aerobics sessions were held in morning classes, in the thermal pool of a water academy in the city of Vitória / ES bi-weekly and tri-weekly and duration of approximately 50 minutes, with 12 weeks of training, totaling 60 sessions.

Each training session consisted of the following parts: warm-up with duration of 5 minutes, aerobic part with duration of 25 minutes, 15 minutes of localized exercises and 10 minutes of relaxation and stretching. During the aerobic sessions aerobic exercises and exercises of displacement in different directions and rhythms were developed according to the music. Using some

materials such as plank, dumbbells of various sizes made of EVA and aquatube, to make water work more efficient and motivating.

With regard to music, these were chosen in such a way that they presented characteristics necessary to benefit the aerobic work in the water. Specific CD's of 60's, 80's, 80's, 80's, 80's, 80's and 80's rock music styles were chosen, as music is a positive stimulus especially for women older women practicing water aerobics, these being the majority.

2.4 Statistical Analysis

Data were analyzed descriptively using absolute and relative frequency and parametric t test ($p \leq 0.05$).

3 RESULTS AND DISCUSSION

The results of the research are presented in this chapter, as well as their analysis for the answer to the question: if the practice of hydrogymnastics when correctly administered is a reduction in the% F, BMI, WHR and FW / MW indices of the students. Therefore the population was initially formed by 23 women, of these 10 students did not have a 70% presence in class and 3 women did not participate in the reevaluation. Thus, only 10 women participated effectively in the work. Whose age ranges from 29 to 60 years. Therefore, to deepen the knowledge about the symptoms of stress in public administration workers, is a motivation for this research, when the data in discussion of these will be presented, based on the results gathered in the research.

Table 1 shows the measurements and evaluations performed at the beginning and end of the study, which included data such as: age, weight, height, waist and hip circumference measurements, skinfold measurements and mean of these variables.

	%F	FW	MW	BMI	W
Av2	34,04	23,31	43,52	27,78	0,78
Av1	37,14	26,21	42,73	28,53	0,80
%M	8,35	11,08	1,86	2,63	2,36
Dife	3,10	2,91	0,80	0,75	0,02

As for fat percentage, women are at a high level, but in absolute frequency, the percentage and fat weight decreased, with the practice of water aerobics, which corroborates with Santos and Cristianini (2003), the effects of regular physical activity on weight loss and body fat, has been indicated for people of all ages and levels of physical fitness.

According to Björntorp, (1991) the increase in waist / hip circumference ratio in women is related to the adverse levels of plasma lipids and lipoproteins. Abdominal fat cells, for example, have a high lipolysis rate, which leads to the release of free fatty acids into the portal circulation, exposing the liver to high lipid concentrations. This factor also seems to be related to the topography aspect of body fat. Corroborates with that found in the study in which women are close to increased risk of heart disease (0.80).

With increased muscle weight, it can be explained by Hammir and Head (2003) who say that Hydrogynas improves blood circulation, increases the resistance of the cardio-respiratory system, strengthens muscles and improves flexibility. Paulo (1994) states that water, due to its physical properties and natural overload, provides the individual with a sensation of decreased body weight, freeing of joints, good functioning of the thermoregulatory system, better irrigation activating veins, arteries and capillaries and still, involvement of most muscle groups. In addition to toning the muscles by the resistance of the water in several directions, in the Hydroginastic it is possible to increase the intensity of the work and to provide a greater consumption of energy transforming the weight of fat in muscular weight.

4 CONCLUSION

The results showed that all the indices evaluated presented changes in the percentage of skinfold fat, before the average was 37.4% F and after the water gymnastics program were 34.74% F. The analyzed data of the overweight there was a reduction of 11.08% which equates to 2.91kg less in body weight. At the lean weight, it obtained an improvement of 1.86% equivalent to a gain of 800g of lean body mass. In the body mass index there was an improvement of 2.63% and in the waist / hip ratio improvement was 2.36%.

It should be noted that other variables inherent to training, such as food and practices of other activities, were not controlled. The experimental was oriented not to change his routine of life (food and person), to be really sure that the results were due to the benefit provided by the practice of water aerobics. Duration of 50 minutes per session and frequency bi and tri-weekly during a period of 12 weeks.

With these data it was concluded that the substantial hypothesis (H1) that states that hydrogymnastics alters the body composition of women practitioners of this modality and affirmative.Com esses dados foi concluído que a hipótese substancial (H1) que afirma que a hidroginástica altera a composição corporal de mulheres praticantes desta modalidade e afirmativa.

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CHANGES IN THE BODY COMPOSITION OF HYDROGINASTIC PRACTICING WOMEN OF AN AQUATIC ACADEMY OF THE CITY OF VITÓRIA / ES

The water aerobics has been a great resource in promoting the quality of life of its participants. This study aimed to analyze the practices of a water aerobics program changes possible indices% Fat, fat weight / mass weight, Body Mass Index and WHR of the students of aquatic gym in the city of Vitória/ES. Was used as a tool for collecting the anthropometric measures of seven (7) skinfolds, applied before the program and 12 weeks after implantation reassessing. The study sample consisted of 10 students of the academy. The data were analyzed descriptively and quantitatively. Data were analyzed descriptively using absolute and relative frequency and parametric t test (p≤0.05).The results showed that the water aerobics class significantly reduced such measures being such a significant improvement of 34.74%F, there was a reduction of 11.08% which is equivalent to 2,91kg less on body weight in lean weight achieved an improvement of 1.86% equivalent to a gain of 800g this, the body mass index was an improvement of 2.63% and waist and hip ratio improved by 2.36% There was no statistical difference. The conclude that the results of this study were significant, as can be inferred that the water aerobics class brought improvement in reduction measures and consequently an improvement in the quality of life of the students.

Key words: hydroginastic, fat percent (%F), body mass index (BMI)

CHANGEMENTS DANS LA COMPOSITION CORPORELLE DES FEMMES PRATICIENNES HYDROGINASTIQUES D'UNE ACADÉMIE AQUATIQUE DE LA VILLE DE VITÓRIA / ES

L'aérobic aquatique a été une excellente ressource pour promouvoir la qualité de vie de ses participants. Ainsi, cette étude avait comme objectif d'analyser si la pratique d'un programme d'hydrogymnastique change les index possibles de pourcentage de graisse, gros poids, poids maigre rapport de taille de hanchedes étudiants d'une académie aquatique dans la ville de Vitória / ES. Les mesures anthropométriques de 7 (sept) plis cutanés, appliquées avant le programme et 12 semaines après son implantation, ont été utilisées comme instrument de collecte d'une nouvelle réévaluation. L'échantillon de l'étude était composé de 10 étudiants de l'académie. Les données ont été analysées de manière descriptive et quantitative. Les données ont été analysées de manière descriptive en utilisant la fréquence absolue et relative et le test t paramétrique (p≤0,05). Les résultats ont montré que la classe hydrogymnastique réduit significativement ces mesures étant une amélioration significative de 34,74% G, il y avait une réduction de 11,08% ce qui équivaut à 2,91 kg de moins en poids corporel, en poids maigre a eu une amélioration de 1,86% équivalent à un gain de 800 g, une amélioration de 2,63% dans l'indice de masse corporelle et une amélioration de 2,36% dans le rapport taille / hanche. Il n'y avait pas de différence statistique. De cette étude étaient significatifs, car on peut en déduire que la classe de gymnastique aquatique a apporté une amélioration dans la réduction des mesures et par conséquent une amélioration de la qualité de vie des élèves.

Mots clés: Hydro gymnastique, pourcentage de graisse (% G), indice de masse corporelle (IMC).

ALTERACIONES EN LA COMPOSICIÓN CORPORAL DE MUJERES PRACTICANTES DE HIDROGIMNASIA DE UM GIMNASIO ACUÁTICO DE LA CIUDAD DE VITORIA / ES

La hidrogimnasia viene siendo un excelente recurso en la promoción de la calidad de vida de sus participantes. En este estudio se analizó si la práctica de un programa de hidroginástica altera posibles índices de% Grasa, PG / PM, IMC y Relación cintura-cadera de las alumnas de una academia acuática en la ciudad de Vitória / ES. Se utilizó como instrumento para el colecta las medidas antropométrica de 7 (siete) pliegues cutáneos, aplicado antes del programa y 12 semanas después de su implantación una nueva reevaluación. La muestra del estudio fue compuesta por 10 alumnas de la academia. Los datos fueron analizados de manera descriptiva y cuantitativa. Los datos fueron analizados de manera descriptiva siendo utilizado frecuencia absoluta y relativa y el test t paramétrico (p≤0,05). Los resultados mostraron que la clase de hidroginástica redujo significativamente estas medidas siendo estas una mejora significativa de 34,74% G, hubo una reducción del 11,08% lo que equivale a 2,91 kg menos en el peso corporal, en el peso delgado, obtuvo una mejora de 1,86% equivalente a una ganancia de 800 g en este, en el índice de masa corporal hubo una mejora del 2,63% y en la relación cintura / cadera una mejora del 2,36%. No hubo diferencia estadística. Se concluye que los resultados de este estudio fueron significativos, pues se puede inferir que la clase de hidroginástica trajo mejora en la reducción de medidas y consecuentemente una mejora en la calidad de vida de las alumnas.

Palavras – chave: Hidroginmasia, percentaje de grasa (%G), índice de masa corporal (IMC).

ALTERAÇÕES NA COMPOSIÇÃO CORPORAL DE MULHERES PRATICANTES DE HIDROGINÁSTICA DE UMA ACADEMIA AQUÁTICA DA CIDADE DE VITÓRIA/ES

A hidroginástica vem sendo um excelente recurso na promoção da qualidade de vida dos seus participantes. Assim, este estudo teve como objetivo analisar se a pratica de um programa de hidroginástica altera possíveis índices de %Gordura, PG/PM, IMC e RCQ das alunas de uma academia aquática na cidade de Vitória/ES. Utilizou-se como instrumento para o coleta as medidas antropométrica de 7(sete) dobras cutâneas, aplicado antes do programa e 12 semanas após sua implantação uma nova reavaliação. A amostra do estudo foi composta por 10 alunas da academia. Os dados foram analisados de maneira descritiva sendo utilizado frequência absoluta e relativa e o test t paramétrico ($p \leq 0,05$). Os resultados mostraram que a aula de hidroginástica reduziu significativamente tais medidas sendo estas uma melhora significativa de 34,74% G, houve uma redução de 11,08% o que equivale a 2,91kg a menos no peso corporal, no peso magro (PM) obteve uma melhora de 1,86% equivalente a um ganho de 800g neste, no índice de massa corporal houve uma melhora de 2,63% e na relação cintura/quadril uma melhora de 2,36%. Nao houve diferença estatística. Conclui-se que os resultados deste estudo foram significativos, pois se pode inferir que a aula de hidroginástica trouxe melhora na redução de medidas e consequentemente uma melhora na qualidade de vida das alunas.

Palavras – chave: Hidroginástica, percentual de gordura (%G), índice de massa corporal (IMC).

Temática 2 – Fisiologia: artigos estritamente de Medicina, Fisiologia do Esporte, Biomecânica, Treinamento e atuação em Saúde