130 - EFFECTS ON BODY COMPOSITION OF WEIGHT TRAINING BODY PUMP.

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INTRODUCTION

Actually, people who searches for an physical activity major goal is the attempt to reduce their total body weight. However, to lose weight not always means that the individual is becoming healthier, because is possible that this individual may be losing weight by the free fat mass. Besides, a lot of people appeal to Ketogenic diets, fast or to a brand new hypo caloric diet, with little or none concern about the general effects about the health or about the real loss of fat weight (11).

Through the evaluation of the body composition is possible to quantify for the individuals, the alterations in the body composition, as well as to indicate the best way to reach their goals.

In this context, we intend to observe how the BodyPump localized gymnastics can help us in this fat reduction and maintain or increase the fat free mass in a solid and continuous way, without damages for our students.

BodyPump consists of a gymnastics class with variable weights, music and choreographies. Besides, the BodyPump system is a closed circuit, where only the licensed gyms have the right to use the trademark and the routines of exercises that are prepared for a neo-Zealander team specialized in training with weights. Each routine of exercises is tested with a group of 1.000 people for 3 months before being transmitted to the licensed gyms of the whole world. The routines stay the same for three months. The exercises accomplished with the BodyPump equipment present weights that vary between 2 and 42 kilos, a larger overload than used in ordinary localized gymnastics.

The results intended by BodyPump are already known in muscular activity programs, as increase of the fat free mass and reduction of fat percentile. The difference is that BodyPump makes that inside the gymnastics room and in group, presenting characteristic of located muscular resistance.

The best values for female from 20 to 29 year-old group are from 20 to 28% (3).

The weight loss in fat by giving emphasis only to long duration and low intensity aerobic works is being very questioned in the current literature, the priority would be a general muscular incentive associated with aerobic exercises and a balanced diet (11).

A recent study, presents as result an average expense of 440 kcal for students in that age group for each class of BodyPump, affirming that this kind of exercise is very recommended for fat loss and improvement of the muscular conditioning (5).

In consequence , this study had as objective verifies and to quantify the alterations in the body composition concerning the percentile of fat, circumferences and fat free mass, before and after the practice of BodyPump.

MATERIALS AND METHODS

The population of this I study was constituted by individuals who practice the BodyPump.

The sample was constituted by 10 women in beginner level, in age group from 20 to 30 years-old, from the MobyDick Gym.

The BodyPump program was applied for 16 weeks, with bi-weekly frequency and duration of about 50 minutes. The students accomplished the default class, the same for all and weight load proposed by the teacher for beginners.

The work sequence in the class of BodyPump was of heating, specific musculatures (divided by muscular groups: breastplate, triceps, back, biceps, shoulders, legs and abdominal) and lengthen the muscles.

The choreographies are associated to the movements and the weight load freely developed during the classes where the students determined the used weight (2 to 42 kg, depending on the used muscular group), just with the recommendation of not allowing the weight load to be too much light.

The instruments used for data collection to the study were: a CESCORF scientific compass to measure the skinfolds, a scale FILIZOLA to measure the body weight, a 3M measuring tape fastened in the wall to measure the height and a CARDIOMED tape to measure the circumferences.

The data were collected in the MobiDick Gym, in Curitiba/Pr. Initially the students were submitted to the evaluation of the weight and height, barefoot, with shorts and top, the weight measurement was accomplished with the students with backs to the scale, and the height with the heels leaned in the wall measured with maximum aspiration.

The standardization used to check the skinfolds and the calculus to predict the percentile of fat in that study were standardized by JACKSON & POLLOCK (3) for seven skinfolds and two perimeters. The standardization used to check the circumferences in that study were proposed by POLLOCK & WILMORE (6). The used perimeters were: Abdominal, Brachial, Lame Waist, Leg, Hip and Chest.

STATISTICAL ANALYSIS

All of the values were tabulated in the form of averages and standard deviation. To evaluate the alterations in the variables of the body composition was utilized the test t student, and the significance level of $p < 0,05$.

RESULTS AND DISCUSSION

The table 1 refers to variables of the body composition, considering total weight, free fat mass, fat percentile and total fat mass.

Table 1 - Anthropometric Variables of Female Subjects Practicing BodyPump.

TRAINING	Total Weight	Free Fat Mass	Fat %	Fat Mass
BEFORE X	55,48	41,19	24,98	14,04
SD	6,12	3,17	5,16	4,14
AFTER X	55,02	42,34	22,57	12,61
SD	5,61	2,98	5,8	4,36

* $p < 0,05$

Table 1 - Anthropometric Variables of Female Subjects Practicing BodyPump.

There was not observed significant statistical differences in any of the components of the table, however it was observed that the the subjects total weight obtained 460g reduction on average, and increase of the free fat mass in 1.150 kg on average, while the reduction of the fat mass was of 1.430 kg and the percentile of fat lowered in 2.41%.

The increase of free fat mass is a very important factor because a comparative study accomplished with 20 year-old youths on average and 61 year-old women on average verified reduction of 7,3% of the free fat mass per decade starting from the 20 years, therefore a muscular reinforcement in that age can prevent problems decurrent of the muscular loss with the age (18).

A study accomplished with women from 20 to 30 years, where the training was executed with weights in the muscular activity during 10 weeks and hypertrophy function (3 series of 10 repetitions) didn't observe reduction of the body fat deposits, but it observed great increase of free fat mass (9). However, in the training with BodyPump, it was not observed great earnings of free fat mass, but it provided decrease of the percentile of fat.

However, in another study accomplished with young women and high overloads (80% of MR), were found as much loss of total fat percentile as increase of free fat mass (16).

A study accomplished with women from 20 to 30 years old verified the reduction of 0,98kg fat (1,63%) in comparison with the control group and muscular earnings of 0,89kg in 15 weeks. However, the main conclusion of that study was the verification of the maintenance of those values for 6 months with the muscular work avoiding the subsequent fat earnings and loss of the muscular earnings (17).

Alterations in the relative and absolute body composition, as well as in the anthropometric variables were mentioned in study involving college students practicing of "Step training" for 10 weeks, presenting similar values to the present study with BodyPump (10).

As there was not feed control during the exercises period with BodyPump and the work was of muscular emphasis, there was not loss of fat free mass, contrarily an increase of the free fat mass occurs, agreeing with recent study where three groups were divided in control, training and diet, it was inferred that if the muscular incentives didn't exist, just the diet, the weight loss would also be given by the free fat mass, even reducing the fat mass(15).

The table 2 presents results of the circumferences of: calf, waist, thigh, abdomen, hip and thorax.

TABLE 2 Circumferences before and after 4 months of BodyPump training

TABLE 2 – Circumferences before and after 4 months of BodyPump training

Circumferences	Calf	Waist	Thig	Abdomen	Hip	Chest
BEFORE X	35,1	69,08	55,98	76,58	96,76	82,98
SD	1,98	5,9	4,12	7,13	4,79	5,41
AFTER X	34,65	68,46	55,48	77,28	95,41	83,48
SD	1,6	4,73	3,35	7,93	4,53	4,31

* p < 0,05

There were not significant statistical differences in the analyzed circumferences, however they presented reduction in calf 0,45 cm, waist 0,62 cm, thigh 0,5 cm and hip 1,35 cm on average. The measures that presented increase of the segment were: abdomen 0.7 cm and chest 0,5 cm on average.

The reductions of thigh, calf and hip circumferences, are probably characterized by the fact of the largest fat concentration in the women is present in inferior members, known as gynoid fat (13).

The increases of the analyzed diameters were observed in the superior portion of the body, probably due to predominantly gynoid fat distribution in women, this way the continuous work of muscular resistance probably made the muscular hypertrophy compete and overcame the fat loss, increasing analyzed perimeters (8).

The table 3 presents the skinfolds sum average, the inferior and superior members skinfolds averages. It was verified significant statistical differences (p <0,05) in all of the sums of skinfolds.

TABLE 3 Total Skinfolds Sum and Splited in Members

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Skinfolds	TOTAL SUM	Inferior members	Superior members
BEFORE X	130,53	28,56	16,99
SD	35,6	8,16	5,9
AFTER X	116,43*	24,27*	15,36*
SD	38,72	7,08	6,32

The total sum of skinfolds was reduced in 14,10mm, the sum of inferior members skinfolds was reduced in 4,29mm and the sum of superior members skinfolds was reduced in 1,63mm.

In this study we could also analyze that the outlying fat is larger than the chest fat in women agreeing with a similar study where the women almost present the double of outlying body fat in comparison with the men of all age groups (14).

CONCLUSION

By analyzing the presented data, we identified that the regular practice of located muscular exercises of the BodyPump kind can increase the free fat mass and simultaneously reduce the fat mass . The significant statistical differences (p <0,05) happened in the sum of the inferior and superior members skinfolds and general sum of skinfolds too.

Is Important to emphasize that 80% of the evaluated students reduced their fat weight and increased the free fat mass.

It should also be considered that for the program to present significant results, the used weight loads should be high, and the frequency in the training is of relevant importance for the success.

However more studies should be accomplished for a good attendance regarding the data about practicing of physical activities in gymnastics room, to motivate and help students and teachers to better understand the results and their implications in the body composition.

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ABSTRACT

The objective of this study was to analyse the effects of a Body Pump program on antropometric and body composition variables of womans. Subjects were 10 womans, aged 20- 30 years old, and enrolled on a regular gym Mobi Dick. Stature and body mass, perimeters (adomen at umbilicus and wais level, buttock, thigh and calf); sum of total skinfolds and limbs skinfolds (upper and lower limb skinfolds). The % fat were estimated accordingly to Jackson & Pollock (1983) equations. Subjects were pre-and-pos evaluated after 32 Body Pump classes that met twice times a week for about 50 minutes each. Descriptive statistics and a Stundent dependent t-test were used for data interpretation. It was conclude that Body Pump training significantly promoved reduction ($p<0,05$) on total sum of skinfolds.

EFFETS DANS LA COMPOSITION CORPORELLE DU ENTRAINEMENT BODYPUMP AVEC POIDS

RÉSUMÉ

L'objectif de la recherche est vérifier des altérations dans la composition corporelle chez des femmes soumis à un programme BodyPump. L'amostra se forme de 10 femmes, à la âge entre 20 et 30 ans, qui ont fréquentée l'académie MobiDick. Il y a été mesuré peso corporel et l'estatura; les périmètres (Abdomen, Ceinture, Fessier, Coxa, Panturrilha et Thorax), bien aussi l'addition de les plis cutanés de les membres (supérieurs et inférieurs) et la somme totale de les plis cutanés. 0% de gras a été estimé vers l'equation de Jackson et Pollock (1983). Il y a realizé 32 séances de les activités « BodyPump », à la fréquence bihebdomadaire, de durée environ 50 minutes. Il y a utilisé l'estatistique descritif, le test t Student pour l'analyse des dados. La conclusion est qu'il n'y a differences estatistiques significatives ($p<0,05$) que pour l'addition de les plis cutanés.

EFECTOS EN LA COMPOSICIÓN CORPORAL EM EL ENTREINAMIENTO CON PESAS BODY PUMP

RESUMEN

El objectivo deste estudio fue verificar alteraciones em la composición corporal en mujeres, integrantes de un programa de BodyPump. La amuestra constitui-se de 10 mujeres, con edad entre 20 y 30 anos, que frecuentaran la academia Mobi Dick. Fue evaluado el peso y la talla corporales; perímetros (Abdomen umbilical, cadera, glútea, muslo, panturrila y tórax) y somatório de pliegas cutaneas de miembros (inferior y superior) y de todas las pliegas cutâneas. El % de grasa fue estimada a traves de la ecuación de Jackson & Pollock (1983). Realizaran-se 32 sesiones de atividad de " BodyPump", con frecuencia bi-semanal, duración aproximada de 50 minutos. Utilizó-se la estadística descritiva, el test t Student para muestras dependentes, para el analise de los dados. Concluio-se, con base em los resultados, que hubo diferencias estadisticamente significativas ($p < 0,05$) apenas em el somatório de las pliegas cutaneas.

EFEITOS NA COMPOSIÇÃO CORPORAL NO TREINAMENTO COM PESOS BODY PUMP

RESUMOO objetivo deste estudo foi verificar alterações na composição corporal em mulheres, integrantes de um programa de BodyPump. A amostra constitui-se de 10 mulheres, com idade entre 20 e 30 anos, que freqüentaram a academia Mobi Dick. Foi mensurado peso e estatura corporais; perímetros (Abdome umbilical, cintura, glútea, coxa, panturrilha e tórax) e somatório de dobras cutâneas de membros (inferior e superior) e de todas as dobras cutâneas. O % de Gordura foi estimada através da equação de Jackson & Pollock (1983). Realizaram-se 32 sessões de atividades de " BodyPump", com freqüência bi-semanal, duração aproximada de 50 minutos. Utilizou-se a estatística descritiva, o teste t Student para amostras dependentes, para análise dos dados. Conclui-se, com base nos resultados, que houve diferenças estatisticamente significativas ($p < 0,05$) apenas no somatório de dobras cutâneas.