147 - WEIGHT TRAINING AS ONE OF THE DETERMINING FACTORS FOR DECREASING BODY FAT PERCENTAGE IN FEMALE PRACTITIONERS

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INTRODUCTION

The present study addressed the bodybuilding as a factor for weight loss, having the aim to analyse if there is loss of adiposity, i.e. loss of body fat in women who practice this activity, thereby reducing the amount of body fat. Thereby increasing the concern of women wanting to decrease body fat, in the pursuit of weight loss, both in the field of aesthetics and health (ROBERGS & ROBERGS, 2002).

Historically we know that the woman is considered a weaker sex, but this concept has changed from the time when the woman conquered its space in society becoming independent and not forgetting that the factors governing the social environment, worrying about your health and aesthetics. So with the time she spent taking care of yourself physically, because the dissatisfaction with her body have been repeatedly linked to the disharmony of body size and shape (Bosi et al. .2006). This is because of the rounded shapes of the women in the 17th and 18th centuries are considered the standard of beauty, both which were evident in paintings that stimulated this way (LOPES, FIGUEIREDO, CANALS, 2007). Obesity, however is considered one of the oldest diseases that exist. Throughout the history of humanity the exaggerated fat storage and weight gain were seen as signs of prosperity and health among women, so much so that in ancient times the obese woman was taken as a symbol of beauty and fertility, for Repetto (apud Bankoff and Barros, 1998 p. 17).

> Obesity is probably the oldest disease known to man. Paintings and statues in stone with over 20 thousand years already had figures of obese women. The same evidence of obesity were seen in Egyptian mummies, paintings and Chinese porcelains of the pre-Christian era in Greek and Roman sculptures and, more recently, in pots of the Mayas and Incas in pre-Columbian America.

In the general context the excess fat is one of the factors that lead to health problems such as hypertension, dyslipidemias, diabetes and cardiovascular diseases (SAVE, 2006). With globalisation and modernisation aesthetic standards suffered new requirements imposed by the media, which displays bodies turned and defined, doing so grow up every day and the number of women interested in sculpting their bodies seeking weight loss clinics and aesthetics and miracle drugs, and thus invading the academies in order to achieve the perfection of her body through weight training, i.e. weight training also known as resistance training.

As regards health, Barbanti (1990) says that's not the total weight that matters, but the percentage of fat in the muscles and bones. The size, the composition and body Constitution, are essential to the success of the periodization of training of individuals, where they are often inherited by genes of the parents, but the composition may suffer change essentially by day to day habits, such as sedentary lifestyle, diet and exercise type (WILMORE and COSTILL, 2001).

The first work undertaken by Behnke (1942) and Brozek (1953) quoted by Clarys, Martin and Drinkwate (1984), made two excellent results, which are valid until the present day, one of which is the Hydrostatic weighing used as a criterion for the other indirect methods to determine body density and the approval of the two component model, based on body composition studies weight fat and skinny weight. From this is that other methods of analysis were developed, making the diagnosis of subcutaneous body fat.

Second Beunen & Borms (1990), body composition is the amount of the main structural components of the human body, and can be evaluated in different ways, through direct, indirect methods and the doubly indirect, where the most accurate evaluations is the direct analysis, which consists of the dissection of corpses; indirect methods use Hydrostatic weighing, the different techniques of body image that are the CT scans, dexa and MRI; and the doubly indirect method that are body bioimpedance assessment techniques, skinfolds, circumferences and diameters, which are known as field methods, because its cost is more accessible and are more practical, where they are used in different circumstances and environments (QUEIROGA, 2005).

Second Barillo (2005), the skin folds are quite used in the field of study of body composition, with the aim to predict the relative body fat and body fat through some equations. Its use presents some advantages, being that this is not an invasive method, has a low-cost, applies in large groups, and has the easy acquisition of measurements (oak, PIRES NETO, 1999).

The skinfold measures method has been widely used in field situations and clinics, for assessing total body fat over the years. Fold or crease the skin, is used as a measure that tends to indirectly assess the amount of fat inserted into the subcutaneous tissue, and can therefore evaluate the proportion of fat in the body weight of the individual. According to Fernandes (2003, p. 48):

> The measurement of skin folds, for being a simple technique, inexpensive and easy to handle and, above all, by offering high reliability, correlates perfectly with more sophisticated techniques, has been the preferred method of researchers in the area of physical exercise and sports.

According to Mcardle, Katch & Katch (1992, p. 48):

"The measures of skinfold thickness in certain places of the body can be a good grant for the prediction of the amount of body fat".

Queiroga (2005) draws attention to the precautions to be taken when the assessment of body composition by indirect methods. And be careful from the beginning the measurement until the protocols to be used, and this assessment should be carried out by experienced people. Total body composition of an individual is the sum of the body fat with fat free mass (bones, muscles and water) (McArdle et al, 1998; Spirduso et al., 2005). The muscle tissue, adipose bone and characterize the Division of the components of body composition, (MORTATTI and ARRUDA, 2007).

For Heyward and Stolarczyk (2000), body composition is the ratio between different body components and the total body mass, expressed by percentages of fat and lean body mass. Fragoso and Vieira (2000), the drill-through analysis of body composition allows the quantification and the variety of body components, becoming important because it establishes the total amount and regional body fat.

According to Maher and Giannichi (2003), the parameters for considering the framework for obesity in the 40 were determined by total body weight, obtained by using a balance and related with the stature, but recent studies show that you need to know first the amount of muscle mass, bone and the total percentage of body fat. But according to the assertion of Gh and Gh (2006), the main objective of the study of body composition of an individual is to differentiate in their body mass the amount of adipose tissue of other components that constitute the body weight since obesity is related to the greater amount of body weight, but rather with the excessive fatness in relation to other bodily components.

For Gh and Gh (1995), we must know how to differentiate the terms obesity and excess body weight, because obesity is characterized as a condition in which the amount of body fat exceeds the desired levels, whereas in excess weight, total body weight is that exceed certain limits.

Wilmore and Costill (2001) classify body fat: essential fat, which plays important roles in the functioning of our body and are in vital organs such as the bone marrow, heart, lungs and kidneys, and is considered part of lean body mass. McArdle et al (2001), agree that this fat is necessary for the correct functioning of the human organism, in women however the essential fat accumulates tits, hips and thighs and non-essential fat, which is found in the subcutaneous region, i.e. in fat tissue, has the function to thermal protection and against trauma, supply and energy reserve, being related directly with the weight loss and obesity.

We know that weight training or resistance training under adequate guidance provides the individual excellent health benefits, since adjusted their reality and objectives. So what are these benefits that training provides women?

The training provides improved strength and physical endurance and cardio respiratory of individuals (HEYWARD and STOLARCZYK, 2000), also promotes the reduction of body fat and decreasing cholesterol and diabetes (FOX, 2000). The practice of bodybuilding prevents heart disease, controls blood pressure and activates the cardiovascular system (FUNCHAL, 2004). According to f. Katch, Katch v. and Mcardle (1998), weight training is indicated for women in fighting osteoporosis, because over time problems arise related to loss in the bone consistency. Weight training is also used for aesthetic purposes, seeking perfection (GHAI, 2003). For Nahas (2001), weight training can be used with prophylactic or therapeutic purposes. And in the therapeutic area is used to handle personal injury and also on postural correction (GODOY, 1994).

For that then is used in the resistance training which is nothing more than a method of exercise that develops through the exercises tailored to specific body parts, using external resistors and gradually (LEIGHTON, 1986 and GODOY, 1994).

Fleck and Kraemer (2006), say that weight training or resistance training is an exercise which requires the musculature of the body move or at least try moving any type of machine or even another type of free weight that has load.

The concept of (GH Jr., 1998 apud GUEDES et al. 2006), resistance training, is the realization of biomechanical movements located by muscle segments using external overload or the body's own weight.

The resistance training (weight training) is constituted by acyclic exercise and inversely proportional to the aerobic workout, with a smaller volume and greater intensity, which involves contraction of the skeletal musculature and who oppose a resistance of a machine, free weights or the body's own weight Winetti and Carpinelli (apud 2001 William and SOUZA JÚNIOR, 2006).

In addition to the increase in basal metabolism, increased strength and other benefits that the resistance training gives people, the training also helps in reducing body fat and maintain lean body mass of the individual, causing this activity affects on body composition favoring thus in weight loss by reducing body fat (DIPIETRO, 1999).

Aerobic training is used as a main activity for the decrease in body fat percentage (fatness), but becomes infeasible by the extended time that this type of activity requires to ensure that the desired results are achieved, and thus the resistance training becomes an interesting modality in this aspect, which in turn collaborates with the decrease in the percentage of fat and increasing and maintaining muscle mass in a smaller uptime (SANTARÉM, 2003).

However, the prescription of exercises should always be based on scientific foundations which could help in the development and rationale of the best strength training programs (FLECK and KRAEMER, 2006).

Given the above, the objective of the present study is to verify whether there is loss of body fat weight in practice promoted by women, analyzing levels of fatness in relation to muscle mass.

METHODOLOGY

The survey was in the field, experimental and quantitative type, the sample was composed of 15 females with ages that ranged from 18 to 30 years of age, sedentary and beginners in the sport, with the accompaniment of the same was for a period of 12 weeks. No exclusion criteria were part of the research people who made the use of diets and supplements and also with a frequency below 75% in training. All participants of the sample were informed and signed an informed consent form, confirming they are aware that at any moment they could no longer participate in the study.

The work done with the participants was of muscular hypertrophy, being divided into 3 x weekly and 1:0 per day, in which consisted primarily on work by RML (muscular endurance in), in the first two weeks, being applied alternating training per segment, aiming to increase muscular endurance and thus avoiding the premature muscle fatigue, being recommended for beginners and people who have low fitness level, working with smaller loads and with more repetitions, giving an interval of 40 seconds between sets and keeping a moderate execution speed. The training session was going through the initial phase, where the same heated for about ten minutes, then performed the stretching of the muscle groups to recruit in training, in the main phase was applied forty-five minutes of resisted exercises for the major muscle groups alternating upper limb muscles with the lower limb, and the final stage during the five minutes remaining were given stretching exercises for relaxation of the muscular groups. After the phase of adjustment, was applied the work of muscle hypertrophy, which lasted for 10 weeks, where it was applied practice located by grouping, in which workouts were divided on where training was held workouts for the Pectoral muscles, Dorsal, biceps and triceps, and in practice (B) divided into the thigh, Calf, Shoulder and Abdomen. Were applied in these multiple training series that ranged from 6 to 12 repetitions. The load control was carried out in gradual manner respecting the individuality of each participant, and this loads increase occurred from the moment that they have been given an ease in the execution of the movements.

For the measurement of weight of the participants used a scale of marks Micheletti, with a maximum capacity of 150 Kg and minimum of 2 Kg, being that this was placed on a rigid, flat surface to avoid fluctuations in measurements. For weighing, the participants were wearing appropriate clothing, using the minimum possible clothing, the same were in the upright position, the Centre and back onto the scales with your feet slightly apart and arms stretched along the body. For the collection of the

stature was used a tape measure to 2 meters and with precision of 5 cm to the wall mounted measurement, the participants remained barefoot in upright position, propped up against a vertical flat surface, pending arms with your hands flat on the thighs, the heels and the balls of your feet apart, knees, head set the Frankfurt plane and in deep inspiration. For the measurement of skinfold caliper was used for skin folds, a skinfold scientific Sanny brand, and to collect the skin folds in the participants were made some procedures, how to identify the points of references, mark the points of measures, highlighting the skinfolds, clamp the skin fold, perform reading, remove the caliper, and remove the warp, effectuating the measures always on the right side of the individual. Was made in the fat percentage measurement before the training and was remade after the training of 12 weeks to see if there has been a change in the percentage of fat. Body composition was obtained through the technique of measurement of skinfold thicknesses of 3 specific to women according to the standardization of the Protocol of Gh (SE, SI, CX), at the following locations:

SUBSCAPULARIS: lower portion of the ribs, obliquely to the longitudinal axis of the body, located two inches below the inferior angle of the scapula;

SUPRAILIAC: obliquely in relation to the longitudinal axis, two inches above the iliac Crest;

Round: the anterior surface in the upper third of the distance between the inguinal ligament and the top edge of the patella. And at the end was made a statistical analysis to see the degree of significance in fat percentage loss of participants.

STATISTICAL ANALYSIS

The statistical analysis of the collected data was performed in the software BioEstat 5.0, with student's t test for $p \leq 0.05$ value with presentation of the averages and standard deviation.

RESULTS AND DISCUSSIONS

After the tabulation of the data, the results were organized into charts and table. In each graph are distributed data regarding weight, skinfolds and fat percentage, measured pre and post-training held with the participants of the sample. On the table were inserted the mean values and standard deviation of body weight, fat mass and lean mass women's sample.

Initially the sample was composed of 15 women, being evaluated a total of 13 participants, have occurred to cancellation of two participants in the research.

Observing the chart 1 we can see that there has been a reduction in body weight (kg) women after application of resistance training, considering that at the beginning of the training program the average value of the total body weight was 92.1 kg passing to 87.4 kg, thus losing 4, 7 kg of the total body weight of the samples.

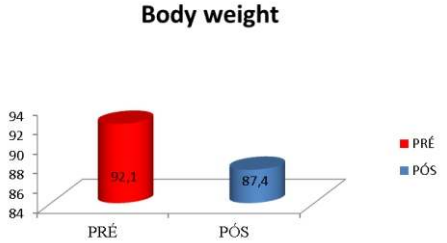


Chart 1-Bw pre and post training of women in the sample (n = 13)

In graph 2 we can see the values collected from the Subscapular and Iliac, Supra folds Thigh. By analyzing the data we find that there was a considerable decrease in the measures after the training performed with the Group of women, so much so that on the circumference of the thigh adiposity loss number was significant compared with the other circles, where the value of the initial measure was of 55.6 cm to 49 cm.

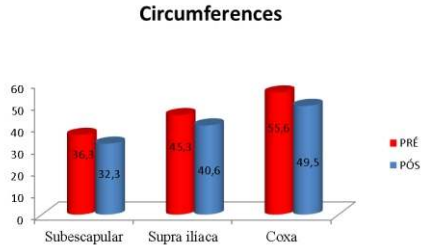
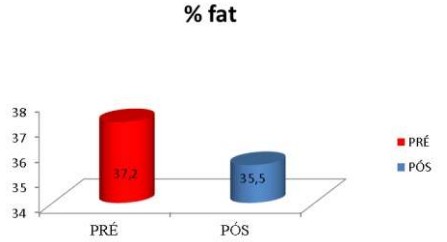


Chart 2 – measurement of circumference and Subscapular, iliac Supra Thigh pre-and post-training of women in the sample (n = 13)

As to the chart 3, was analyzed the results of the variable percentage of fat, we observed that there was a significant decrease of fatness after the 12 weeks of weight training, where initially the fat percentage value was 37.2% to 35.5% being considered the statistical value in comparison with $p \leq 0.05$.



Graph 3-fat percentage pre and post training of women in the sample (n = 13)

In the following table to see the values of the mean values and standard deviation of body weight, fat mass and lean mass.

Table 1. Average values of body weight, fat mass and lean mass of women in the sample (n = 13). Campo Grande-MS, 2013.

Variables	bodyweight (kg)		fat mass (kg)		lean body mass (kg)	
	Pre	Post	Pre	Post	Pre	Post
Average	91.8	30.8	57.1	34.1	87.5	55.5
Standard deviation	11.3	11.0	6.0	5.8	5.6	5.6
Value of p	<0.0001		< 0.0001		< 0.0001	

After evaluation and realization of statistic data, it was verified that all the variables above have achieved significant results. In the table are the values of body weight, fat mass and lean mass, of the 13 evaluated, in the pre and post training. Regarding the data of the general average of the body weight pre and post-workout noted a reduction of 4.7 Kg, compared to the fat mass the average obtained was of 3.3 kg and in lean body mass was average reduction of 1.6 kg, showing an index of significance of $p < 0.0001$.

From the data obtained was possible verify that after 12 weeks program of resistance training there was a reduction in the percentage of fat from the participants. Fleck and Kraemer (1999) report that the change in body composition, happens in programs of training that lasts between 6 and 24 weeks.

Santarém (1999) adds that the anaerobic work lose weight as much as the aerobic work, because during the training with weight is not recruited the fat in its execution using that large amounts of glycogen. The glycogen used should be replaced in the muscle from the carbohydrate sources provided by food, not being used in the basal metabolism, where the maintenance is done by the use of calorie sources of fat deposits. Noting that the sum of the expenses over time is that induces the negative calorie deficit causing changes in body weight, due to the work of force that is imposed to the Agency (NIGHTJAR et al., 2008, p. 141).

Is it possible to make a comparison of the data of this study with the information described by East and Costa (2004), where he developed a study that had as purpose to see if the weight training promotes change in body composition, having the same duration of 12 weeks. The study used the intensity of next training which is recommended by literature, obtaining significant results in muscle mass gain.

Knew et al. (2004) describes the use of weight exercises for losing body fat has been widely disclosed, because in addition to maintaining and increasing lean body mass, it also causes an increase in the metabolism for several hours after the end of the exercise.

According to Suplicy (2007) physical activity when associated to the diet Gets the best results, so when more intense the loss of body fat, the greater the loss of lean body mass in obese individuals. (ABESO – Brazilian Association for the study of obesity and the METABOLIC SYNDROME, 2007).

In untrained people any physical activity when practiced collaborates for weight loss because of spending calories. To have a calorie expenditure, which should take into consideration beyond the exercise type is the physical shape of the practitioner (MELBY, 1999).

CONSIDERATIONS

From the results obtained in this research it was possible to observe that the weight training promotes caloric expenditure sufficient to produce Burns of subcutaneous fat and maintain lean body mass, but was also evidenced that the training must be associated with a balanced diet so that there is balance in the energy balance to be preserved muscle mass.

In addition to preserve lean muscle mass and promote weight loss, improve the self-esteem of those who practice the exercise with weights presents advantages over other activities, because you do not need large space of time before their results are achieved.

We have come to the conclusion that the application of practice acts positively in the weathered modification of body composition and health-related benefits, seeking body satisfaction and improvement in quality of life. So physical activity when well-geared provides healthy habits by bringing various physical, mental and social benefits.

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WEIGHT TRAINING AS ONE OF THE DETERMINING FACTORS FOR DECREASING BODY FAT PERCENTAGE IN FEMALE PRACTITIONERS

ABSTRACT

The present study evaluated in practice the effect of weight training as a weight-loss factor, aiming to analyze if the resistance training has been effective in altering body composition in female individuals. Materials and methods: a field research, experimental and quantitative, with data obtained by measurement of skinfolds in a group with 13 participants with age range between 18 and 30 years of an Academy in Campo Grande-MS. results and discussions: the analysis of the collected data was possible to verify that there has been a significant reduction in the composition and maintenance of body weight.

KEYWORDS: weight loss, muscle mass, bodybuilding

POIDS FORMATION COMME UN DES FACTEURS DÉTERMINANT POUR DIMINUER LE TAUX DE GRAISSE CORPORELLE EN PRATICIENS FEMELLES

RÉSUMÉ

Dans la pratique, la présente étude a évalué l'effet des exercices de musculation comme un facteur de perte de poids, visant à analyser si la formation de résistance a été efficace dans la modification de la composition corporelle chez les individus femelles. Matériels et méthodes : une recherche sur le terrain, expérimentale et quantitative, avec les données obtenues par la mesure des plis cutanés dans un groupe avec 13 participants par tranche d'âge entre 18 et 30 ans d'une Académie à Campo Grande-Mme résultats et discussions : l'analyse des données recueillies a été possible de vérifier qu'il y a eu une réduction significative de la composition et l'entretien de poids corporel.

MOTS CLÉS : perte de poids, la masse musculaire, musculation.

PESO ENTRENAMIENTO COMO UNO DE LOS FACTORES DETERMINANTES PARA DISMINUIR EL PORCENTAJE DE GRASA CORPORAL EN MUJERES PRACTICANTES

RESUMEN

El presente estudio evaluó el efecto del entrenamiento con pesas como un factor de pérdida de peso, con el objetivo de analizar si el entrenamiento de resistencia ha sido eficaz en la alteración de la composición corporal en individuos femeninos en la práctica. Materiales y métodos: una investigación de campo, experimental y cuantitativa, con datos obtenidos por medición de pliegues en un grupo con 13 participantes con edades entre 18 y 30 años de una Academia en Campo Grande-MS. resultados y debates: el análisis de los datos recogidos se pudo verificar que ha habido una reducción significativa en la composición y el mantenimiento del peso corporal.

PALABRAS CLAVE: pérdida de peso, masa, muscular culturismo.

A MUSCULAÇÃO COMO UM DOS FATORES DETERMINANTES PARA DIMINUIÇÃO DO PERCENTUAL DE GORDURA CORPORAL EM PRATICANTES DO SEXO FEMININO

RESUMO

O presente estudo avaliou na pratica o efeito da musculação como um fator de emagrecimento, tendo como objetivo analisar se o treinamento resistido foi eficaz na alteração da composição corporal em indivíduos do sexo feminino. Materiais e métodos: Foi realizada uma pesquisa de campo, experimental e do tipo quantitativo, com dados obtidos através da mensuração de dobras cutâneas, em um grupo com 13 participantes com faixa etária entre 18 e 30 anos de uma academia de Campo Grande-MS. Resultados e Discussões: Com a análise dos dados coletados foi possível verificar que houve redução significativa na composição e manutenção da massa corporal.

PALAVRAS-CHAVE: Emagrecimento, massa muscular, musculação.