10 - IMPACT OF WEIGHT TRAINING ON THE BODY COMPOSITION IN SEDENTARY MEN

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1.0 PRESENTATION

The weight training has been one of the physical exercises model more used by different populations, mainly, because of its benefits to develop the strength, power and muscular endurance, besides, it provides important modifications to the body composition and health (ACSM, 2002). During the weight training, in response to the stimulus, the muscles answer by a neural action. The neural adaptation is predominant during the initial phases of the strength workout, however, in the intermediary and advanced phases of the weight training, the priority is the muscular adaptation, in other words, the hypertrophies factor, decreasing the neural action, related to the beginning of the workout (WILMORE & COSTILL, 1999).

The body composition is, in its definition, the fragment of the corporal weight in its diverse components, as an example, the bones weight, the muscles weight, the remainder weight, and the fat weight is also one of the five physical aptitude components connected with the health, often evaluated by trainers and athletes as a reference to the aptitude and health (WARNER et al. 2004). Quantify and evaluate the body composition indicators is quite important, either for the esthetics or the prescription and physical workout (BORGES, 2004).

Besides, as the time goes by, the corporal weight suffers modifications, mainly in the old people, where the environmental aspects are presented, between them the practice of the physical exercises and alimentary habits cause the lean mass loss, the corporal fat increase and a bone mass loss, therefore, it has a negative influence over the way and quality of peoples lives (NASCIMENTO, 2002; SALVE, 2005).

Researches have showed that over twenty-five years old the muscular mass loss starts, having a variation of 7% - 10% each decade, this way, it affects straight the body composition indicators (MARCHAND, 2001). The corporal weight is what suffers the biggest variations as the time goes by, because with the muscular mass loss the basal metabolism rate decreases, occurring the increase in the fat deposits inside the body. The weight training favors the increase of the mass with no fat, the increase of the calories spend and the basal metabolism rates maintenance, decreasing the damage for the body as the time goes by (MARCHAND, 2001; MATHIAS et al. 2002; MEIRELLES et al. 2004). This way, the objective of this study consists in verifying the possible modifications over the body composition, after 12 weeks of weight training practiced by sedentary adults.

2.0 METHODS

Eight subjects of the male gender registered in the Transpiração Fitness Center in Caçador - SC were intentionally selected for the research, with age between 30 to 40 years (average of 33,5 ± 3,07 years), being that, none of the participants mentioned that they have been participated of some kind of physical exercise in the last six months that anteceded the beginning of the experiment. Beyond this, the subjects did not show any kind of metabolic problem or disease in the months that anteceded the research.

During the experiment the subjects didn't carried throught any kind of exercise and not receive orientation of a nutritionist , all the participants after being informed about the suggestions of the research and procedures that they were submitted, agreed to participate of the research and all subjects signed the term of free and illustrious consent.. .

The corporeal weight was gotten on a weighing-machine FILIZOLA, with exactness of 100g and all the subjects were weighed, barefoot, wearing only swimming trunks. The body composition was evaluated by the technical of thickness of the subcutaneous tissue. Three measures were taken in each point, in row, of the right side of the body, being registered the average value. The following skinfolds by Jackson et al. (1978) were verified: pectoral, abdominal and thigh. For the equation of the prediction of the fat percentual, was used the equation suggested by Siri (1962), from the body density determined by the equation of Jackson et al. (1978).

All the measures were evaluated by just one avaluer, with one scientific adipomethry - Cescorf, with constant pressure of 10g/mm² on the contact surface and exactness of 0,1 mm. The coefficient test-retest exceeded 0,95 for each one of the anatomic points with measure error of, at maximum ± 1,00 mm.

The weight training program was performed during 12 weeks in row, comprehending two weekly sections in alternated days. At about 24 sections of training were executed with 100% of attendance of the participants. Previously to the beginning of the study, the subjects were undergo by a period of one week of adaptation to the weight training program , with the purpose of learning the motor tasks and familiarization with the technical aspects (execution movements speed, the counting of the repetitions, intervals of recuperation during the exercises), characterizing two sections in this period.

The weight training program consisted of fourteen exercises, done in three sets of 8 to 10 maximun repetitions, except in the abdominal where it happened three sets with 20 repetitions alternado por segmento, 1 to 2 minutes of intervals of recuperation between set and 2 minutes of intervals of recuperation between exercises. The exercises that composed the program were the following: bench press and incline chest fly (muscle pectoral), back pull up and sitting paddled T-bar row (back muscle), preacher curl (biceps), pulley triceps (triceps), dumbbell side shoulder raise (deltoids), extensor table and incline leg press (quadriceps), flexor table (ishqmus-tibial), abductor and adducer table (adducers and abductors of the thigh), horizontal leg press to calf and previously flexion of the body in dorsal decubitus with equipment (abdomen). During the experiment, the weights were periodically set, corresponding to the additional gains of strength, keeping the intensity of the training.

The descriptive analysis (means, standard deviations) was used, the normality test was applied over the entire variable. and for the changes that happened on the before and after training periods, the test “t” by Student to compare samples was used. The signifying level used for all compilations was $p<0,05$, all rates were conducted by program SPSS 10.0.

3.0 RESULTS

The obtained results before and after experiment are presented on the Tables 1. The changes happened among

these two moments are expressed in perceptual values (%). The results in the body composition reveled a signified statistically difference from the pre period to the post period on lean mass (p=0,03) with increase of 6,35% and the others variables body mass, percentual of fat and fat mass, not occurring signified statistics difference (p>0,05).

Tabela 1: Manner of body composition indicators before and after 12 weeks of weight training.

	Body Composition			
	Pre-test	Post-test	T	%
Body Mass (Kg)	79,55 ± 11,27	79,71 ± 11,89	-,273	0,15 ± 2,05
Fat (%)	19,52 ± 4,57	15,48 ± 3,61	3,294	19,40 ± 13,57
Fat Mass (Kg)	18,51 ± 5,54	12,20 ± 2,47	2,690	29,29 ± 20,87
Lean Mass (Kg)**	63,51 ± 10,75	67,48 ± 11,23	-4,819	6,35 ± 3,82

** Significative effect of pre-test period for the post-test period (p<0,05).

4.0 DISCUSSION

Lots of researches were done talking about the influence of the weight training over the body composition (BUTTS et al, 1994; SANTOS et al, 2002; NASCIMENTO, 2002; PASSOS et al, 2003) either including the masculine gender or the feminine gender, with its principal reference the influence of the training at short term in the lean mass and percentual of fat.

According to Butts et al. (1994) that did a research with 68 women over 30 years olds, using a circuit program with 12 exercises, three times a week, in 12 weeks, there were statistics differences in the development of the lean mass (44,3 Kg versus 45, 6 Kg) and the percentual of fat (29,8% versus 27,6%), these results are in accordance with this research regarding the variations including the lean mass and the total body mass. The percentual of fat didn't have a significant difference on this research, although the fat loss tendency.

In a study done by Santos et al. (2002), including seventeen men during 10 weeks of weight training, he found out the significant development of the lean mass (3,8 %) and the total body mass (4%), either the fat or the fat mass didn't present any modification. The results of Santos et al. 2002 study over the lean mass, percentual of fat and fat mass are in accordance with this research, however, the total body mass didn't show any modification, contrasting the discovery of both narrations.

A research done by Marx et al. (2001), including 34 women during twenty four weeks of weight training in circuit, being divided into groups, 12 of them doing a unique series, three times a week, 12 doing a multiple series four times a week, and 10 as a controlled group. The results were significative either in the group unique series as the group multiple series in the first twelve weeks of training over the percentual of fat, the results found are different from this research, in which the percentual of fat didn't get any great modification. Related to the total body mass, both researches didn't show any modification on its results, however, the muscular mass increase in the group multiple series (42,3 Kg versus 44,4 Kg) after twelve weeks of the circuit training, this conclusion is similar with this research.

5.0 CONCLUSION

The alterations in the body mass depends on many factors, directed or undirected, related to the physical workout. Between those factors the duration of the study, the protocols of the training, the intensity and volume applied, the size of the samples, the age and the nutritional control of the research can affect positively or negatively this study. Although the existence of those factors, it can be concluded that the weight training at short term is effective over the decrease of the lean mass (6,35%), therefore, partially influencing the body composition.

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IMPACT OF WEIGHT TRAINING ON THE BODY COMPOSITION IN SEDENTARY MEN

ABSTRACT

The present research had as objective to evaluate the effect of weight training on body composition indicators in sedentary men. Eight sedentary men (33,5 ± 3,7 years), but apparently healthy, were intentionally chosen for the research. The weight training happened during twelve weeks (two weekly sessions, in random days). Fourteen exercises composed the weight training program, each one made in three sets of 8 to 10 maximum repetition (RM). Measure skinfolds were collected before and after the intervention period. The results through Student test "t" compared revealed significant statistically difference $p<0,05$ on the lean mass with increase of 6,35%, the others variables total body mass, fat mass, percentual of fat, not occurring significant statistical differences ($p>0,05$). Longitudinal researches with a bigger number of samples and duration, using different weight training program should be done.

KEY-WORDS: Body Composition, Weight Training, Skinfolds.

RESUMÉ

Le présent étude a eu par but avalier l`impact de l`entraînement avec des poids sur les indicateurs de la composition corporelle parmi les hommes sedantaires. Huit hommes (33,5 ± 3,07 annés) sedantaires, mais ils sont apparentement salutaires, ils sont choisis intentionnellement pour l´étude. L`entraînement avec des poids ont été realizé pendant 12 semaines ( deux fois par semaine, alternativement). Quatorze exercices ont composé le programe d`entraînement avec des poids, chacun realizé par trois séries de 8 à 10 répétitions maximales (RM). Mesure de plies cutanées ont été colectées avant e depuis la periode de l`intervention. Les résultats à travers du teste « t » apparié a revelé une différence statistique significative $p<0,05$ sur la masse maigre avec une augmentation de 6,35%, les autres variables de masse corporelle totale, masse grasse et la pourcentage de graisse n`ont pas soufri des changements significatives $p>0,05$ pendant la période derrière expérience. Les recherches longitudinales et avec un grande número d`échantillons, en utilisant de différents protocoles d`entraînement avec des poids doivent être faites pour verifier melheurs les résultats.

MOTS CLES: Composition Corporalle, Entraînement avec des Poids, Plies Cutanées.

RESUMEN

El presente estudio se estableció como objetivo evaluar el impacto del entrenamiento con pesos sobre los indicadores de la composición corporal en hombres sedentarios. Ocho hombres (33,5 ± 3,07 años) sedentarios, pero aparentemente saludables, fueron escogidos intencionalmente para el estudio. El entrenamiento con pesos ocurrió durante 12 semanas (dos secciones semanales, en días alternados). Catorce ejercicios compusieron el programa de entrenamiento con pesos, cada cual realizado en tres series de 8 a 10 repeticiones máxima (RM). Medidas de doblas cutáneas fueron colectadas antes y después del periodo de intervención. Los resultados a través del teste "T" pareado reveló diferencias estadísticamente significativas $p<0,05$ en la masa flaca con aumento de 6,35%, las otras variables masa corporal total, masa gorda y porcentaje de grasa no sufrieron cambios significativos $p>0,05$ durante el periodo pos-experimento. Investigaciones longitudinales y con mayor número de muestras, utilizando diferentes protocolos de entrenamiento con pesos deben ser hechas para verificar mayores resultados.

PALABRAS CLAVES: Composición Corporal, Entrenamiento con pesos, Doblas Cutáneas.

IMPACTO DO TREINAMENTO COM PESOS SOBRE A COMPOSIÇÃO CORPORAL EM HOMENS SEDENTÁRIOS.

RESUMO

O presente estudo teve como objetivo avaliar o impacto do treinamento com pesos sobre indicadores da composição corporal em homens sedentários. Oito homens (33,5 ± 3,07 anos) sedentários, mas aparentemente saudáveis, foram escolhidos intencionalmente para o estudo. O treinamento com pesos ocorreu durante 12 semanas (duas sessões semanais, em dias alternados). Catorze exercícios compuseram o programa de treinamento com pesos, cada qual realizado em três séries de 8 a 10 repetições máximas (RM). Medidas de dobras cutâneas foram coletadas antes e após o período de intervenção. Os resultados através do teste "t" pareado revelou diferença estatisticamente significativa $p<0,05$ na massa magra com aumento de 6,35%, as outras variáveis massa corporal total, massa gorda e percentual de gordura não sofreram mudanças significativas ($p>0,05$) no período pós experimento. Pesquisas longitudinais e com maior número de amostras, utilizando diferentes protocolos de treinamento com pesos devem ser feitas para verificar maiores resultados.

PALAVRAS-CHAVES: Composição Corporal, Treinamento com Pesos, Dobras Cutâneas.