114 - EFFECTS OF A PROGRAM OF NEURO-MUSCULAR EXERCISES (METHOD: MUSCULAR ACTIVITY) ON THE SUPERFICIAL VEINED DIAMETER IN HEALTHY INDIVIDUALS

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INTRODUCTION

So that the physical exercise can carry out a beneficial effect to the veined system is fundamental that this doesn't overload the valve apparel that guides the veined return to the heart excessively, as well as it doesn't make possible traumas directly in the vascular wall. This fact could cause the development of varicose veins, phlebitis or veined thromboses that it would disable the apprentice, interfering in the program of physical exercise (SILVA, 1994). Of the pathologies mentioned above, the varicose veins are the most common. Varicose veins are veins permanently extensive, tortuous and prolonged (MELLO, 1998).

In if treating the physical exercise, it is believed that this is a middle of intervention for better levels of the health of the veined system when it doesn't extrapolate the limits of the load used during it practice (SILVA, 1994). As for the effect of the exercise on the veined system, the author gets the attention for the activity type, the intensity, duration and frequency of the sessions, which will depend on the apprentices' current clinical state.

The literature is unanimous in affirming that the characteristic exercises eminently isotonic or dynamics combats the overload ponders, and when associates with diet improve the function of the veined system. However, little it is known about the effects of the exercise in the diameter of the veins and the modification of the morphologic anatomy of this structure when the individuals are submitted to the practice of the muscular activity, being necessary the registration of the possible alterations of the veined diameter and their consequences on the sufficiency of this system, putting an end like this to the myth that exercises with load commit the veined system and that only the aerobic favor the caliber of the same.

Studies on the effects of the muscular activity on the veined diameter are still scarce, what justifies the accomplishment of this research, in order to generate references that can serve as parameter for other studies. In this sense, the guide subject of this work is: Will it be that the practice of the muscular activity produces effects on the veined diameter of the inferior members? The study bases on the hypothesis that the practice of exercises with load doesn't commit the veined diameter and yes they make possible the improvement of the health of this system.

METHODOLOGY

Characterization of the Study

The study is characterized as experimental, no-probabilistic, longitudinal. (Thomas and Nelson, 2002).

Population and Sample

The population of the research was the students of the groups of extension of the courses of the Department of Physical education (DPE) of the Federal University of Paraíba (FUPB). the sample was composed of 20 individuals, being seven men and thirteen women, seemingly healthy, out of the risk group for veined diseases, in the age group from 18 to 30 years, with 21,30±3,16 year-old average, without practice to regulate of exercise (below three times a week), distributed in two groups: Group 1, Apprentices of Muscular activity (G1) and the Group 2, I Control Group (G2), both composed by 10 individuals, being the first composed by six women and four men and the second by three men and seven women. The same was selected in agreement with the criteria for inclusion in the sample, that they are: not to ingest hormones of any nature (contraceptives), not to present signs and or symptoms of outlying veined diseases (OVD), not to have accomplished any veined surgical procedures, not to have index of corporal mass (IMC) above 28 kg/m2 and without pregnancy report.

Instruments for Collection of Data and Variables of the Study

An anamnesis questionnaire composed of open and closed questions was used, elaborated by the researcher together with his advisor, which allowed to the participants to supply the necessary information for the inclusion in the research. For meter of the diameter of the safhenas veins the apparel was used echo-Doppler color (two-story scan) Shimatzu 2200 with transducer lineal multi-frequencies. The variables of the study were the veined diameters of the inferior members.

Procedures for Collection of the Data

After the selection of the sample, exhibition of the project to the participants, the same ones consented his participation in the research through the Term of Free and Illustrious Consent (TFIC). The assembly of the term of illustrious and informed consent assists the guidelines and regulates norms research, involving human beings contained in the resolution nº 196, of October 10, 1996, and no. process. 019/2005, of June 13, 2005, with the approval for the Committee of Ethics in Research. In the sequence the participants were divided in two groups, with numbers similar of subjects. A group (G1), Apprentices of Muscular activity and the Group (G2) Control Group, that they didn't practice any type of physical activity.

In the consecutive moment it was done to the verification of the veined diameters by the angiologist doctor, the same was accomplished at the Academicals Hospital Lauriano Wanderley (AHLW) of the Federal University of Paraíba. For the accomplishment of the exam the volunteers stayed in rest, in the position orthostatic, where the exam was accomplished with the observation of the pervaded and competence of the veined system, and soon afterwards the measurement of the diameters of the veins in the following points: regarding the saphena vein it interns (VSI), the gauging points were: the superior third, the medium third and the inferior, in the thigh and in the leg, the saphena vein expresses (VSE) it was checked in the thirds superior, medium and inferior of the leg. The exam of the echo-Doppler it was accomplished before and after the training program for G1 and after the four months without practice to regulate of exercises for G2, for the same appraiser, with the same equipment and in the same schedule.

After the accomplishment of the evaluation of the diameters, the volunteers of G1 were submitted to the practice of exercises, which was carried through by alternate segments, three series for exercises, 10 to 15 maximum repetitions and rest interval from 30 to 50 seconds. and before beginning them it was made a prolongation and a heating of at least 10 minutes in mat or bicycle, in a speed from 4,0 to 6,0 km per hour. The exercise sessions had duration from 60 to 90 minutes, frequently weekly of three days for four months. The following exercises were accomplished: Supine Plan, Pulley Loud Backs, Lateral Rising with Dumbbells, Rosca Biceps, Triceps Pulley, Extending, Flexor, Leg Press 90°, thigh adduce in Cross-over and calf in Leg Press 90°, such exercises were accomplished in the first month of training, in the other three months the bend over exercise was increased.

The group control stayed without practicing regular physical activities during the four months, being accompanied with

questionnaire application, which was applied twice per months, with the objective of obtaining information on the practice of the volunteers' physical activity.

Treatment and Analysis of the Data

According to the collected data, it made the database in a statistical package, where it was removed the descriptive statistics of average, standard deviation, maximum and minimum of the variables of the study. To compare the results of the variables before and after the training it was made the test "t" of Student for matched samples, and to compare the experimental group with the group control the test it was applied "t" of Student for independent samples, both tests "t" with significance of 5%. The data were distributed in tables.

RESULTS AND DISCUSSION

In the table 1, it can be observed that the largest diameter found in the first exam was of 8,00 mm in the right thigh's superior third and in the second exam it was of 7,00 mm in the left thigh's superior third. According to Engelhorn et al (1996), the calibers (diameters) of the saphena interns or great they are directly related to the vascular inadequacy. Diameters of at least 9 mm at the level of the crossa, 7 mm in the thigh and 5 mm in the leg are associated to ebb (inadequacy) in 100% of the cases. When compared the diameters of the first exam with the second, it could be noticed that there were not significant differences. It also observed that, in spite of one of the individuals to present superior diameter to 7 mm, the saphena vein interns of the same was classified as competent, because it didn't present sanguine ebb, what contradicts the literature found just in that point of gauging of measure of the thigh's diameter. All the volunteers presented the competent thigh's VSI, not having any sanguine ebb. According to Teixeira & Pitta (2003), they will be insufficient the segments of veins that present reverse flow with superior duration to middle second and that it crosses a valve breast

TABLE 1 - descriptive Statistics of average, standard deviation, maximum and minimum values of the diameters of VSI of the right thighs and left before and after the program of exercises for G1.

egment	Minimum		Maximum		Medium and SD		p
	Before	After	Before	After	Before	After	
1/3 superior of the ht thigh	1,80mm	3,50mm	8,00mm	6,30mm	3,99±2,02	4,61±1,03	0,381
1/3 superior of the thigh	2,80mm	3,30mm	7,60mm	7,00mm	4,52±1,37	4,88±1,21	0,576
1/3 medium of the ht thigh	2,50mm	2,40mm	5,00mm	4,90mm	3,30±0,87	3,20±0,72	0,972
1/3 medium of the thigh	2,60mm	2,30mm	5,50mm	4,30mm	3,59±0,82	3,35±0,59	0,433
1/3 inferior of the ht thigh	2,00mm	2,40mm	4,50mm	4,40mm	2,95±0,94	3,30±0,70	0,323
1/3 inferior of the thigh	2,10mm	2,50mm	4,90mm	5,7mm	3,34±0,87	3,42±1,03	0,800

p: significância; Se p0,05, significante; Se p>0,05, insignificante.

The table 2 presents the diameters of VSI of the thigh of the group controls, in the which she can observe that the largest found diameter so much in the first as in the second exam it was in the right thigh's of 5,60 mm superior third and of 8.00 mm respectively. When compared the diameters of the first exam and of the second, it could be observed that the found differences are minimum, just presenting significant difference in the right thigh's superior third (p=0,004), and in the left thigh's superior third (p=0,013), not affecting the structure of the vein, once the same was classified as competent, because when appraised they didn't present any inadequacy type in the course.

TABLE 2 - descriptive Statistics of average, standard deviation, maximum and minimum values of the diameters of VSI of the right thighs and left before and after the four months of inactivity for G2.

egment	Minimum		Maximum		Medium and SD		p
	Before	After	Before	After	Before	After	
1/3 superior of the ht thigh	2,20mm	2,50mm	5,60mm	8,00mm	3,46±1,11	4,71±1,81	0,004
1/3 superior of the thigh	2,80mm	2,30mm	5,30mm	7,60mm	3,77±0,85	4,62±1,53	0,013
1/3 medium of the ht thigh	1,37mm	1,60mm	5,00mm	5,00mm	3,09±1,04	3,38±1,00	0,141
1/3 medium of the thigh	2,40mm	1,60mm	4,20mm	5,50mm	3,45±0,56	3,51±1,02	0,815
1/3 inferior of the ht thigh	1,37mm	1,40mm	5,20mm	4,60mm	3,03±1,10	3,11±1,16	0,750
1/3 inferior of the left gh	2,00mm	2,10mm	4,70mm	5,90mm	3,44±0,77	3,34±0,73	0,662

p: significância; Se p0,05, significante; Se p>0,05, insignificante.

The table 3 presents the found diameters of VSI at the level of the leg, before and after the intervention of the training. The same ones were classified as competent, because they didn't present ebb. Could observe that the largest found value was of 5,30 mm in the first exam and of 3,90 mm in the second exam, in the superior third of the left leg and in the superior third of the right leg respectively, and when compared the exams, the measures of the diameters didn't present significant differences, tends smallest p found equal to the (p=0,428).

TABLE 3 - descriptive Statistics of average, standard deviation, maximum and minimum values of the diameters of VSI of the legs right and left before and after the program of exercises for G1.

egment	Minimum		Maximum		Medium and SD		p
	Before	After	Before	After	Before	After	
1/3 superior of the ht leg	1,90mm	1,80mm	4,40mm	3,90mm	2,78±0,77	2,57±0,67	0,566
1/3 superior of the leg	2,50mm	2,00mm	5,30mm	3,60mm	2,99±0,96	2,78±0,43	0,517
1/3 medium of the ht leg	1,90mm	1,70mm	3,50mm	2,90mm	2,36±0,48	2,28±0,46	0,568
1/3 medium of the leg	1,80mm	2,00mm	3,20mm	3,10mm	2,57±0,42	2,50±0,30	0,708
1/3 inferior of the ht leg	1,70mm	2,00mm	4,70mm	3,10mm	2,60±0,93	2,47±0,37	0,535
1/3 inferior of the left	1,70mm	2,00mm	3,80mm	3,60mm	2,56±0,64	2,75±0,51	0,428

p: significância; Se p0,05, significante; Se p>0,05, insignificante.

The table 4 allows to observe us that the largest found value was of 4,10 mm in the first exam and of 5,30 mm in the second exam, in the inferior third of the right leg and in the superior third of the left leg respectively, however when compared the first with the second exam didn't present significant differences, tends smallest p found equal to the (p=0,503). The measures of the diameters came inside of the average for values that associate the competence of the veined system.

TABLE 4 - descriptive Statistics of average, standard deviation, maximum and minimum values of the diameters of VSI of the legs right and left before and after the four months of inactivity for G2.

egment	Minimum		Maximum		Medium and SD		p
	Before	After	Before	After	Before	After	
1/3 superior da na direita	1,58mm	1,90mm	4,00mm	4,40mm	2,68±0,83	2,70±0,74	0,926
1/3 superior da na esquerda	2,00mm	1,50mm	3,96mm	5,30mm	2,66±0,69	2,79±0,98	0,674
1/3 médio da perna eita	1,15mm	1,35mm	3,40mm	3,50mm	2,18±0,57	2,34±0,68	0,503
1/3 médio da perna querda	1,70mm	1,50mm	3,00mm	3,20mm	2,34±0,41	2,41±0,50	0,641
1/3 inferior da perna eita	1,57mm	1,20mm	4,10mm	4,70mm	2,34±0,68	2,38±0,92	0,798
1/3 inferior da perna querda	1,98mm	1,50mm	3,40mm	3,80mm	2,39±0,48	2,48±0,65	0,612

p: significância; Se p0,05, significante; Se p>0,05, insignificante.

The table 5 allows observing us that the largest values found in VSE for the experimental group were 3,70 mm, in the superior third of the left leg so much in the first as in the second exam. The veins were classified as competent for they present not sanguine ebb. According to Franco (1994), in the evaluation of the external saphenas, it is important to point out the largest observed incidence of ebb source in the collateral tax veins. When compared the diameters of the first exam with the second after the training, it can be observed that the found differences are not significant (p=0,070).

TABLE 5 - descriptive Statistics of average, standard deviation, maximum and minimum values of the diameters of VSE of the legs right and left before and after the program of exercises for G1.

egment	Minimum		Maximum		Medium and SD		p
	Before	After	Before	After	Before	After	
1/3 superior da na direita	1,80mm	1,90mm	3,40mm	3,50mm	2,49±0,45	2,55±0,47	0,633
1/3 superior da na esquerda	1,40mm	1,90mm	3,70mm	3,70mm	2,57±0,72	2,67±0,56	0,708
1/3 médio da perna eita	1,70mm	1,60mm	2,90mm	2,80mm	2,33±0,40	2,24±0,38	0,630
1/3 médio da perna querda	1,25mm	1,50mm	3,50mm	2,90mm	2,26±0,63	2,34±0,47	0,745
1/3 inferior da perna eita	1,46mm	2,00mm	2,60mm	3,00mm	2,07±0,33	2,35±0,31	0,070
1/3 inferior da perna querda	1,00mm	1,60mm	2,60mm	2,70mm	2,02±0,46	2,15±0,39	0,563

p: significância; Se p0,05, significante; Se p>0,05, insignificante.

The table 6 allows us to observe that the largest values found in VSE for the group control were 3,20 mm in the first exam and 3,70 mm in the second exam in the medium third of the right leg and in the superior third of the left leg respectively. The veins were classified as competent for they present not sanguine ebb in any moment of the evaluation. When compared the diameters of the first exam with the second after the four months of inactivity, it can be observed that the found differences were minimum, just presenting a significant difference in the inferior third of the left leg (p=0,012). The values here found also if they find inside of the average for joined values the veined competence.

TABLE 6 - descriptive Statistics of average, standard deviation, maximum and minimum values of the diameters of VSE of the legs right and left before and after the four months of inactivity for G2.

egment	Minimum		Maximum		Medium and SD		p
	Before	After	Before	After	Before	After	
1/3 superior da na direita	1,20mm	1,40mm	2,70mm	3,60mm	2,10±0,43	2,56±0,75	0,053
1/3 superior da na esquerda	1,90mm	1,20mm	2,90mm	3,70mm	2,59±0,47	2,86±0,80	0,125
1/3 médio da perna eita	1,77mm	1,20mm	3,20mm	3,20mm	2,24±0,45	2,14±0,57	0,552
1/3 médio da perna querda	1,05mm	1,30mm	2,90mm	3,50mm	2,12±0,55	2,30±0,60	0,177
1/3 inferior da perna eita	1,15mm	1,20mm	2,80mm	3,00mm	2,11±0,42	2,19±0,53	0,664
1/3 inferior da perna querda	1,15mm	1,50mm	2,60mm	2,50mm	1,84±0,42	2,17±0,30	0,012

p: significância; Se p0,05, significante; Se p>0,05, insignificante.

The great anatomical variation found in the foolish saphena is one of the causes common of difficulty in the surgical treatment of varicose veins of the inferior members and of the recurrence, the preoperative evaluation through the ultrasound scan Doppler is the best form of characterizing the veined ebb in foolish saphena and of locating the junction saphenopoplítea accurately (LABROPOULOS et al., 2000).

The presence of veined ebb in saphenas, perforates veins and in deep veined system has the role described thoroughly in the literature as cause of the formation of varicose veins, so much primary as secondary to the deep veined thrombosis (LEES & LAMBERT, 1993; LABROPOULOS et al., 2000). I Marry this, that it was not found in this study, because all of the analyzed veins, so much of the group controls as of the experimental group they were classified with competent, evidencing that the practice of the muscular activity doesn't cause damage to the veined system.

When compared the experimental group with the group control, it can be observed that there were not significant differences, could evidence that the practice of the muscular activity didn't affect the structure of the vein, putting an end to the myth that the muscular activity causes varicose veins, which is consequence of the veined inadequacy. It can also be evidenced that the muscular activity apprentices introduced most of the measures of the smaller diameters in the second exam in relation to the first; already the group control introduced most of the measures regarding the second larger exam when compared with the first exam. Based on the data mentioned above one can affirm that the physical activity is beneficial for the independent veined system of being

cardio-respiratory or neuromuscular, that in the group to credit that the sedentary people tend to increase the diameter of the veins and consequently they take the veined inadequacy.

Myers et al., (1995), in his experiment with 1.653 inferior members, it verified that about 88,0% of the same ones came insufficient regarding the superficial veined system. Being the responsible circulatory illnesses for a great number of removal of the work, indisposition for daily tasks, even deaths for more aggravating states, it is clear the importance of stimulating the adhesion to the practice of the exercise, under the most different modalities (activities neuromusculares and aerobic exercises), in the sense of controlling diseases as well as to prevent them.

CONCLUSION

The study with base in the sample allowed ending that:

The diameters of the veins great and foolish saphena of the experimental group didn't have significant differences after the training of four months, which were classified as competent, because they didn't present sanguine ebb, could conclude that the practice of the muscular activity doesn't affect the hemodynamic of the veined system, already the diameters of the veins of the group control presented small significant differences, tends significance just in three points of measurement of the segment of the vein, that were in the right thigh's superior third and left and in the inferior third of the left leg, in spite of they present significant differences, the veins didn't present ebb.

When compared the experimental group with the group control, it could be observed that there was not significant difference among the groups, could conclude that the practice of the muscular activity doesn't affect the structure of the veins of the inferior members. This work cannot be conclusive, for treating of a small sample, being necessary works with a larger sample for the confirmation of the obtained results. However, it can her, starting from this observation, to avoid that opinions are emitted, which affirm that neuro-muscular exercises commit the veined system and that only the aerobics favor the caliber of the same.

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ABSTRACT

So that the physical exercise can carry out a beneficial effect to the veined system is fundamental that this doesn't overload the valve apparel excessively. The study had as objective analyzes the effects of exercises program neuromuscular on the veined diameter of the greater and short saphenous vein of the inferior limbs, which elapses of a study experimental, longitudinal, accomplished with 20 individuals, with average of (21,30±3,16) years old, distributed in two groups: Practicing G1 of Muscular activity and G2 Control Group, composed by six women and four men and three men and seven women respectively. It was used color-flow Doppler to measure the diameters of saphenous veins. Soon afterwards, the volunteers were submitted to practice exercises by four months, frequently weekly of three days, lasting 60 min, in muscular activity machines and free weights, alternate for segments, with three series of 12 repetitions and intervals of 40seg, with heating of 10min. The group control didn't practice regular physical activities. When appraised the diameters of G1, it was observed that the examined veins came competent after the training period, and when compared the first with the second exam weren't found significant differences in any measurement point. G2, when appraised presented significant differences in three points of gauging of diameters: superior third of the right thigh (p=0,004), left thigh's superior third (p=0,013) and inferior third of the left leg (p=0,012). In spite of the measure of the diameters be larger in the second exam, the veins were classified as competent for not present sanguine ebb. The results concluded that the muscular activity didn't affect the structure of the veins, once they were classified as competent and people that don't practice activities tend to have an increase in the diameter of the veins.

Word-key: muscular activity, veined system, diameters of the veins.

RÉSUMÉ

Afin que l'exercice physique puisse emporter un effet salutaire au système veiné est fondamental que cela ne surcharge pas le vêtement de la valve excessivement. L'étude eue comme objectif analyse les effets de programme des exercices neuromusculaire sur le diamètre veiné du plus grand et court saphenous veinez des membres inférieurs qui s'écoulent d'une étude expérimental, longitudinal, accompli avec 20 individus avec moyenne de (21,30±3,16) années vieux, a distribué dans deux groupes: G1 pratiquant d'activité Musclée et Groupe témoin G2, composé respectivement par six femmes et quatre hommes et trois hommes et sept femmes. Il a été utilisé le couleur courant Doppler pour mesurer les diamètres de veines saphenous. Bientôt après, les volontaires ont été soumis pour pratiquer des exercices par quatre mois, fréquemment hebdomadaire de trois jours, durer 60 min, dans les machines de l'activité musclées et les poids libres, remplaçant pour segments, avec trois séries de 12 répétitions, intervalles

de 40seg, avec chauffer de 10min. Le contrôle groupe n'a pas pratiqué d'activités physiques régulières. Quand estimé les diamètres de G1, il a été observé que les veines examinées sont venues compétent après la période de la formation, et quand a comparé le premier avec le deuxième examen n'a pas été trouvé de différences considérables dans tout point de la mesure. G2, quand estimé des différences considérables présentées dans trois points de mesurer de diamètres: supérieur troisième de la cuisse droite (p=0,004), cuisse gauche supérieur troisième (p=0,013) et inférieur troisième de la jambe gauche (p=0,012). Malgré la mesure des diamètres soyez plus grand dans le deuxième examen, les veines ont été classées comme compétent pour pas reflux sanguin présent. Les résultats ont conclu que l'activité musclée n'a pas affecté la structure des veines, une fois ils ont été classés comme compétent et les gens qui ne pratiquent pas d'activités ont tendance à avoir une augmentation dans le diamètre des veines.

Mot clef: activité musclée, système veiné, diamètres des veines.

EL RESUMEN

Para que el ejercicio físico pueda llevar a cabo un efecto beneficioso al sistema venoso que es fundamental que esto no carga excesivamente la ropa de la válvula excesivamente. El objetivo del estudio es analiza los efectos de programa de ejercicios neuromuscular en el diámetro venoso vetee saphenous mayor y corto de los miembros inferiores que pasan de un estudio experimental, longitudinal, con 20 individuos con promedio de (21,30±3,16) años, distribuido en: G1 practicando de actividad Muscular y G2 Grupo Controle, compuesto respectivamente por seis mujeres y cuatro hombres y tres hombres y siete mujeres. Se usó el color-flujo Doppler para medir los diámetros de venas del saphenous. Después, los voluntarios fueron sometidos a practicar los ejercicios por cuatro meses, frecuentemente semanalmente de tres días, durando 60 min., en máquinas de actividad musculares y los pesos libres, el alternante para los segmentos, con tres serie de 12 repeticiones e intervalos de 40seg, con calentar de 10min. El grupo controle no practicó las actividades físicas regulares. Cuando estimó los diámetros de G1, fue observado que las venas examinadas vinieron competentes detrás del período de entrenamiento, y cuando comparó el primero con el segundo examen no se encontró las diferencias significantes en cualquier punto de la medida. G2, cuando estimó las diferencias significantes presentadas en tres puntos de calibrar de diámetros: el tercio superior del muslo directo (el p=0,004), el tercio superior de muslo izquierdo (el p=0,013) y tercio inferior de la pierna izquierda (el p=0,012). A pesar de la medida de los diámetros sea más grande en el segundo examen, las venas eran clasificadas como competente para no menguante de la sanguina presente. Los resultados concluyeron que la actividad muscular no afectó la estructura de las venas, una vez ellos eran clasificados como competentes y las personas que no practican las actividades tienden a tener un aumento en el diámetro de las venas.

Palabra-importante: la actividad muscular, el sistema venoso, los diámetros de las venas.

RESUMO

Para que o exercício físico possa desempenhar um efeito benéfico ao sistema venoso é fundamental que este não sobrecarregue excessivamente o aparelho valvular. O estudo teve como objetivo analisar os efeitos de um programa de exercícios neuromusculares sobre o diâmetro venoso da veia safena magna e parva dos membros inferiores, o qual decorre de um estudo experimental, longitudinal, realizado com 20 indivíduos, com média de (21,30±3,16) anos, distribuídos em dois grupos: G1 Praticantes de Musculação e o G2 Grupo Controle, sendo composto por seis mulheres e quatro homens e por três homens e sete mulheres respectivamente. Utilizou-se um eco-Doppler colorido, para mensuração dos diâmetros das veias safenas. Em seguida, os voluntários foram submetidos à prática de exercícios por quatro meses, com freqüência semanal de três dias, durando 60 min, em máquinas de musculação e pesos livres, alternados por segmentos, com três séries de 12 repetições e intervalos de 40seg, com aquecimento de 10min. O grupo controle permaneceu sem praticar atividades físicas regulares. Quando avaliados os diâmetros do G1, pôde-se observar que todas as veias examinadas apresentaram-se competentes após o período de treinamento, e quando comparados o primeiro com o segundo exame não foram encontrado diferenças significativas em nenhum ponto de medição. Já o G2 quando avaliado, apresentou diferenças significativas em três pontos de aferição dos diâmetros: terço superior da coxa direita (p=0,004), no terço superior da coxa esquerda (p=0,013) e no terço inferior da perna esquerda (p=0,012). Apesar da medida dos diâmetros serem maiores no segundo exame, as veias foram classificadas como competentes por não apresentarem refluxo sanguíneo. Diante dos resultados pôde-se concluir que a musculação não afetou a estrutura das veias, uma vez que todas elas se classificaram como competente e que as pessoas que não praticam atividades tendem a ter um aumento no diâmetro das veias.

Palavras-Chave: musculação, sistema venoso, diâmetros das veias.