61 - EFFECT OF A TRAINING PROGRAM IN WEATHERED AEROBIC AND TEENS WITH OVERWEIGHT AND OBESITY

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In recent decades the prevalence of obesity and longer seen as a public health problem. Children and adolescents have shown an increase in their body weight, especially in developing countries. Worldwide studies have shown a growing interest in promoting the promotion and detection of positive indicators of child health and adolescent. (RUTLEDGE, 2011).

Reducing the prevalence of overweight among children and adolescents is a complex challenge for families and society, because once installed this condition makes them susceptible to a number of comorbidities, affecting significantly the quality of life of these people, presenting a strong association with various diseases and especially cardiovascular. (BASS; Beresin, 2009).

Obesity has become a challenge for public health, since its incidence and its prevalence has grown substantially in the past 3 decades. The nutritional profile of Brazil points to the need for a model of primary care that incorporates actions of health promotion, prevention and treatment of obesity and chronic diseases (REIS; Vasconcelos, Barros, 2011).

Cardiovascular diseases are a major cause of death and has been growing over the years. In addition, high lipid concentrations is shown in adolescence-correlated with the concentrations of lipids in adverse adulthood and with obesity has contributed to the development of increasingly early atherosclerosis (Franks et al., 2010).

Public policies with development of intervention programs promoting changes in lifestyle, including various combinations of diet, exercise and education programs have been shown to be effective in reducing obesity and its comorbidities where studies have shown the importance and efficacy of exercise programs resistive and aerobic added to the diet in reducing rates of overweight and obesity and risk factors for cardiovascular disease in adolescents. (CAMPUS Monteiro et al., 2013).

Public policies for health have been of great importance to the people of the country, however many have difficulties in stocks with communities. However, these actions in their historical context, one realizes that public policies in Brazil are being conducted through welfare practices, reflecting on not incorporate the recognition of the right to health (Astrand, Rodahl, 1986).

Within the above and understanding physical activity as an ally next to the service of obese adolescents and training for the reduction of obesity, had with the object of study in our work: To assess the effect of concurrent training on body composition and blood markers in adolescent overweight.

MATERIALS AND METHODS

Experimental study, where initially 26 pubertal adolescents (Tanner, 1962) were included, overweight and obesity to (body mass index [BMI]> 85 th percentile), of both sexes, aged between 12 and 16 years . The selection criteria were to be overweight or obese (ONIS et al., 2007) and have no previous experience with weight training exercises. Were excluded from the sample those who reported use of tobacco or alcohol, refusing to perform some evaluation and 15% lacked in training sessions.

Participants were randomized into two groups: Group Intervention (GI) with concurrent training (aerobic + resistance) and a dietary prescription (n = 7) and control group (CG) who did not participate in training sessions (n = 10). The training program and dietary prescription was held at Centre for Obesity Control Jansen Jeferson Diogenes and Medeiros in the city of Natal, RN.

For the anthropometric measurements of weight, height, BMI, waist circumference and body fat percentage were measured. Body weight (kg) was determined in portable electronic TANITA digital scale with a precision of 0.100 kg. For height measurements of a stadiometer SANNY brand with an accuracy of 0.1 cm was used. The BMI calculation is given by the ratio of the weight by the square of height (kg / m2), with the cutoff points, the indices of the World Health Organization (ONIS et al., 2007). Waist circumference was measured with an anthropometric tape SANNY accurate to 0.1cm. The% BF was determined by triceps skin folds (DCTR) and subscapularis (DCSB) measured by skinfold SANNY with 0.1mm accuracy (SLAUGHTER et al., 1988).

Blood tests were performed at the Center for Analysis of Clinical and Immunologic Mossley (CACIM). Blood samples of 5 ml were collected at 7:00 in the morning after a 12-hour period of fasting. Total cholesterol (TC), glucose, lipoproteins, and low high density lipoproteins (HDL-C and LDL-C) and triglycerides (TG) assessed by colorimetric enzymatic method, automated equipment (Model: Hitachi 917 Automatic Analyzer Roche) according to the recommendations of the manufacturer's kit, katal, total cholesterol and glucose, Labtest to HDL and LDL, InVitro to triglyceride. For the calculation of LDL-C, the Friedewald formula was used: LDL-C = TC - HDL-C - TG / 5, valid for values less than 400 mg / dL triglycerides. (SPOSITO et al., 2007).

For the intervention program consisted of concurrent training. The group followed the training protocol was compared to the control group that did not undergo any intervention. All assessments were made at the beginning, after two months and after four months of training.

The protocol followed a training regimen divided into two stages. The first was in the first two weeks of adaptation and learning how to use the equipment, weights and dumbbells in the weight room environment. This step consisted of a frequency of three times a week (not in consecutive days), two sets 15-20 reps, performing eight to 12 exercises per session, with breaks in between sets of a minute, lasting 30 minutes per day, divided into five minute warm up and / or stretching, 20 minutes of strength training and five minutes back calm. After a period of adaptation to resistance training, the load was adjusted by increasing weight and intensity with the decreasing number of repetitions maximum (RM) divided into three sets of eight to 12 repetitions with an interval of one to two minutes between sets (FAIGENBAUM, 2009).

Aerobic Interval Training occurred concomitant with resistance training. Participants warmed up for 10 minutes on a stationary bicycle at 70% of maximum heart rate (MHR) before performing four periods of three minutes (4 x 3) 90-95% of (MHR) with two minutes of active range 70 - 80% (MHR) between each period of three minutes, finishing with 5 minutes back to the calm after the last period of 3 minutes, totaling 33 minutes (TJONNA et al., 2009).

Nutritional analysis for three 24-hour recalls (R24), applied on alternate days, including one weekend day to achieve average consumption of calories, fats and fibers were used weekly (MARCHIONI; SLATER; FISBERG, 2004). The recommendations for the energy distribution of macro nutrient was 15-20% protein, 50-55% carbohydrates and 30% fat (OTTEN;

HELLWIG; MEYERS, 2006). Dietary recommendations were adapted individually to reduce energy consumption by approximately 250 kcal.

Statistical analysis of the distribution normality of data was checked from the Shapiro-Wilk test. Parametric variables are expressed as mean and standard deviation (±). For nonparametric variables (BMI, DCSB,% L and triglycerides) was used median, the minimum and maximum values. The comparison of the variables between the three stages was performed using the General Linear Models (GLM) for repeated measures. The comparison between the values in the moments between the IG and CG at the same time was used for parametric values t test for independent samples and the nonparametric values the Mann-Whitney test. The Spearman correlation coefficient (ρ) was used to assess potential associations between variables. A significance level of p = 0.05 was adopted.

The study design was approved by the University of Rio Grande do Norte (UERN) Committee on Ethics in Research on 03/05/2013, under number 240 550 of the opinion.

RESULTS AND DISCUSSION

Of the 26 adolescents included in the program, 17 completed more than 85% of the training sessions during the four months or were not absent in any evaluation. The sample consisted of late (GI = 7) and (GC = 10) the results will be presented at base line between (GI) x (GC); (GI - After 2meses) x (GC - After 2 months) and (GI - After four months) x (GC - After four months).

At baseline, between (GI) and (GC) found significant differences for DCSB (p = 0.04), ΣDC (p = 0.013) and% BF (p = 0.05) variables. For two months the intervention (GI) showed significant differences with decreased for DCSB (p = 0.005), ΣDC (p = 0.023),% BF (p = 0.043), triglycerides (p = 0.004) and total cholesterol (p = 0.008). The (GC) showed an increase in all variables with significant differences in weight (p = 0.001), DCTR (p = 0.005), DCSB (p = 0.023), ΣDC (p = 0.01),% BF (p = 0.01), triglycerides (p = 0.001), LDL cholesterol (p = 0.018) and total cholesterol (0.011). After four months, (GI) gave significant improvements in weight (p = 0.007), BMI (p = 0.001), DC (p = 0.004), DCSB (p = 0.001), ΣDC (p = 0.001),% F (p = 0.001), triglycerides (p = 0.001), LDL cholesterol (p = 0.021), HDL cholesterol (0.044) and total cholesterol (0.001). In (GC), we observed an increase in weight (p = 0.001), BMI (p = 0.006), CC (p = 0.001), DCTR (p = 0.001), DCSB (p = 0.001), ΣDC (p = 0.001),% F (p = 0.001), triglycerides (p = 0.001), LDL cholesterol (p = 0.004) and total cholesterol (p = 0.001) and HDL cholesterol (p = 0.001) difference was not observed for the height and glucose.

For fasting glucose, no significant differences in baseline after two months and four months of training, it is important to emphasize that there was a reduction in the values for (GI) while (GC) was elevated at both times compared to the line of base (Tables 1 and 2).

Table 1. Variables of body composition in overweight and obese adolescents undergoing an intervention training program and control group.

	Intervention group (n= 7)		
	Baseline	**After 2 months**	**After4 months**
Weight	87,4 (± 21,5)	83,7 (± 20,8)	81,1 (± 20,6) b
Height (cm)	151,2 (±13,4)	154,0 (±13,5)	155,3 (±13,2)
BMI	31,7 (30,6 - 40,5)	30,9 (30,0 - 39,7)	29,9 (28,4 - 38,6) b
CC	102,7 (± 10,7)	100,4 (± 10,3)	96,2 (±11,5) c
DCTR	33,3 (± 3,1)	34,1 (± 2,1)	32,2 (± 2,6)
DCSB	41,1 (37,3 - 42,0)	34,7 (29,2 - 38,8) a	30,5 (29,2 - 33,8)
ΣDC	73,1 (± 1,3)	68,8 (± 3,0) a	63,4 (± 4,1) b
%G	50,4 (49,3 - 60,9)	48,8 (47,9 - 54,5) a	46,6 (42,8 - 53,5) b
	Control Group (n= 10)		
	Baseline	**After 2 months**	**After 4 months**
Weight		87,4 (± 19,4) a	89,1 (± 19,5) b
Height (cm)	163,1 (±8,5)	163,8 (±8,7)	164,5 (±8,4)
BMI	31,3 (23,2 - 38,3)	32,3 (23,5 - 39,4)	33,4 (24,2 - 39,9) b
CC	94,6 (± 11,3)	99,5 (± 13,1) a	104,8 (± 12,7) b
DCTR	29,6 (± 4,5)	33,1 (± 6,0) a	35,0 (± 6,1) b
DCSB	31,5 (23,5 - 41,8) c d	34,7 (27,8 - 48,9) a	38,8 (31,2 - 51,6) b
ΣDC	62,4 (± 9,8) c d	69,0 (± 11,1) a	74,8 (± 10,4) b
%G	47,7 (36,2 - 60,2) c d	51,7 (40,2 - 64,2) a	56,1 (43,7 - 67,8) b

Abbreviations: BMI - body mass index; CC - Waist circumference; DCTR - Dobra triceps; DCSB - subscapular skinfold; ΣDC - sum of skinfolds; % G - Percentage of fat. the Baseline vs. 2 months after p <0.05; BAfter 2 months vs. After 4 months p <0.05. c Line vs. base After two months p> 0.05 vs. base line After 4 months p <0.05; Intervention vs. dGrupo While the control group at baseline.

Table 2. Variables in the lipid profile in overweight and obesity undergoing intervention of a training program and control group.

	Intervention group (n= 7) (n= 7)		
	Baseline	**After 2 months**	**After4 months**
Glucose	88,0 (± 7,5)	82,4 (± 7,3)	81,7 (± 4,8)
Triglycerides	124,0 (104,0 - 232,0)	88,0 (63,0 - 188) a	89,0 (52,0 - 164,0)
LDL-C	88,8 (± 10,7)	78,4 (± 22,0)	60,2 (± 10,4) c
HDL-C	41,5 (± 6,7)	45,4 (± 8,5)	49,7 (± 8,6) c
total cholesterol	168,7 (± 35,2)	148,0 (± 31,8) a	128,1 (± 27,7) b
	Control Group (n= 10)		
	Baseline	**After 2 months**	**After4 months**
Glucose	81,0 (± 9,0)	85,4 (± 7,2)	87,0 (± 4,1)
Triglycerides	143,0 (71,0 - 320,0)	166,0 (102,0 - 345,0) a	187,5 (126,0 - 340,0) b
LDL-C	88,8 (± 10,7)	102,8 (± 16,8) a	114,6 (± 14,7) b
HDL-C	41,5 (± 6,7)	42,4 (± 6,3)	37,4 (± 5,1) b
total cholesterol	168,7 (± 7,3)	186,6 (± 23,6) a	208,1 (± 24, 9) b

Abbreviations: LDL cholesterol - low density lipoprotein; HDL cholesterol - high density lipoprotein. the Baseline vs. 2 months after p <0.05; b After 2 months vs. After 4 months p <0.05; c Line vs. base After two months p> 0.05 vs. base line After 4 months p <0.05.

The (GI) showed a significant negative correlation between weight and HDL-C (ρ = - 0.855, p = 0.01) positive correlation was also found between the variables and DCTR ΣDC (ρ = 0.782, p = 0.04) and between variables and DCSB ΣDC (ρ

= 0.782, p = 0.04) and% G and ΣDC (ρ = 0.912. p = 0.001).

Table 3. Correlation between the variables of the lipid profile and body composition after 4 months of overweight and obese adolescents undergoing an intervention training program and control group.

		BMI	ΣDC	%G	LDL-C	HDL-C
Weight	GI	0,385	0,236	0,236	-0,018	-0,855*
	GC	0,833*	-0,381	-0,28	0,596	-0,061
BMI	GI	-	-0,055	-0,055	-0,128	-0,037
	GC	-	0,061	0,115	0,685*	-0,12
CC	GI	0,245	-0,411	-0,411	-0,561	0,411
	GC	0,442	-0,006	-0,042	0,697*	-0,236
DCSB	GI	0,367	0,455	0,455	-0,164	0,564
	GC	0,442	-0,006	-0,042	0,697*	-0,236
ΣDC	GI	-0,055	-	0,912*	0,2	-0,091
	GC	0,061	-	0,821*	0,061	-0,322
LDL-C	GI	-0,128	0,2	0,2	-	-0,127
	GC	0,685*	0,061	0,152	-	-0,648*

Abbreviations: BMI - body mass index; CC - Waist circumference; DCSB - subscapular skinfold; ΣDC - sum of skinfolds; % G - Percentage of fat; LDL cholesterol - low density lipoprotein; HDL cholesterol - high density lipoprotein. * Significant at p ≤ 0.05 Correlations.

The (GC) found a positive correlation between the variables of weight and BMI (ρ = 0.833, p = 0.003), but also a positive correlation between the variables of BMI with LDL-C (ρ = 0.685, p = 0, 03) to DC and LDL-C (ρ = 0.697, p = 0.02), and DCSB ΣDC (ρ = 0.760, p = 0.01), and% ΣDC L (ρ = 0.821, p = 0.004) and a negative correlation involving LDL-C and HDL-C (ρ = -0.648, p = 0.043) (Table 3).

Studies show that regular physical activity is one of the most important non-pharmacological ways to treat overweight and reducing cardiometabolic risk, because it improves quality of life, regulates weight, causes decreased blood glucose and lipid profile (ANTIĆ et al., 2009).

The benefits of concurrent training were well evidenced by observing a reduction in body fat and central adiposity on markers of lipid profiles in subjects undergoing an intervention study. Studies indicate that the use of concurrent training in the treatment of overweight and obesity has shown better results than the use of a method of training alone. (MELO et al. 2011).

The benefits of concurrent training were well evidenced by observing a reduction in body fat and central adiposity on markers of lipid profiles in subjects undergoing an intervention study. The studies indicate that the same authors compared two methods of training (aerobic and Competitor isolated) in two groups of subjects with metabolic syndrome. The results showed a reduction in all cases of metabolic syndrome in the group that underwent concurrent training compared to 80% of the group that performed aerobic exercise alone. Short-term comparisons revealed that the group that conducted concurrent training improved body mass, BMI, body, visceral fat and inflammation; while the other group was improved only in visceral fat.

Davis et al., (2009), evaluating the effect of 16 weeks of different intervention components, including training and competing both resistance training combined with nutritional intervention in addition to nutritional intervention alone resulted in greater reduction of body fat in concurrent training. One of obesity-related disorders are metabolic syndrome addition of excess weight takes into consideration the blood markers and blood pressure.

In a recent meta-analysis evaluating the effectiveness of different training programs (aerobic and combined) in children and adolescents are overweight on lipid profile found that aerobic training program showed moderate effect on LDL-C and large effect on concentrations of triglycerides, whereas studies using the combined training programs (aerobic, resistance and flexibility) had moderate effect on improving HDL-C. (ESCALANTE et al., 2012)

Observing our results we can see that compared to the control group, the lifestyle seems to have changed since this group showed worsening both in body fat, central obesity and lipid profile, especially after four months. This fact can be explained by the maintenance of unhealthy habits (physical inactivity and diet rich in fats). These results confirm that behavioral factors may explain these teens cardiovascular risk even in this stage of life as well as in later adulthood (HUANG; BALL; FRANKS, 2007).

CONCLUSION

Thus we conclude that the method of concurrent training was effective in reducing body weight, central adiposity, body fat and lipid profile after 16 weeks of intervention. Blood glucose despite having presented significant changes among the three evaluations observed a trend toward greater reduction in the first two months. It is expected that public policies are encouraged in younger populations so that they can incorporate healthy style of aims and consequently a better quality of life.

REFERENCES

ANTIĆ, S. et al. Exercise as a therapeutic option in cardiometabolic risk reduction]. Medicinski pregled, v. 62, p. 59, 2009.

ASTRAND, P. O.; RODAHL, K. Textbook of work physiology. New York: 1986.

BASS, L. M.; BERESIN, R. Qualidade de vida em crianças obesas. Einstein, v. 7, n. 3, p. 295-301, 2009.

CAMPUS DE MONTEIRO, P. A. et al. Efeito de um protocolo de treinamento concorrente sobre fatores de risco para o acúmulo de gordura hepática de adolescentes obesos; Effect of a concurrent training on risk factors for the accumulation of hepatic fat of obese adolescents. Medicina (Ribeirão Preto), v. 46, n. 1, 2013.

DAVIS, J. N. et al. Aerobic and strength training reduces adiposity in overweight Latina adolescents. Med Sci Sports Exerc, v. 41, n. 7, p. 1494-503, Jul 2009.

DE MELLO, M. T. et al. Long-term effects of aerobic plus resistance training on the metabolic syndrome and adiponectinemia in obese adolescents. J Clin Hypertens (Greenwich), v. 13, n. 5, p. 343-50, May 2011.

ESCALANTE, Y. et al. Improvement of the lipid profile with exercise in obese children: a systematic review. Prev Med, v. 54, n. 5, p. 293-301, 2012.

FAIGENBAUM, A. D. Resistance training for overweight and obese youth: Beyond sets and reps. Obesity and Weight Management, v. 5, n. 6, p. 282-285, 2009.

FRANKS, P. W. et al. Childhood obesity, other cardiovascular risk factors, and premature death. New England journal of medicine, v. 362, n. 6, p. 485-493, 2010.

HUANG, T. T.-K.; BALL, G. D.; FRANKS, P. W. Metabolic syndrome in youth: current issues and challenges. Applied

Physiology, Nutrition, and Metabolism, v. 32, n. 1, p. 13-22, 2007.

MARCHIONI, D. M. L.; SLATER, B.; FISBERG, R. M. Aplicação das Dietary Reference Intakes na avaliação da ingestão de nutrientes para indivíduos; Application of Dietary Reference Intakes for assessment of individuals. Rev. nutr, v. 17, n. 2, p. 207-216, 2004.

ONIS, M. et al. Development of a WHO growth reference for school-aged children and adolescents. Bulletin of the World Health Organization, v. 85, n. 9, p. 660-667, 2007.

OTTEN, J. J.; HELLWIG, J. P.; MEYERS, L. D. DRI, dietary reference intakes: the essential guide to nutrient requirements. National Academy Press, 2006. ISBN 0309100917.

RUTLEDGE, T. F. School Health Guidelines to Promote Healthy Eating and Physical Activity. Morbidity and Mortality Weekly Report. Recommendations and Reports. Volume 60, Number 5. Centers for Disease Control and Prevention, 2011.

SLAUGHTER, M. H. et al. Skinfold equations for estimation of body fatness in children and youth. Human biology, v. 60, n.5, p. 709-723, 1988.

SPOSITO, A. C. et al. IV Diretriz brasileira sobre dislipidemias e prevenção da aterosclerose: Departamento de Aterosclerose da Sociedade Brasileira de Cardiologia. Arquivos Brasileiros de Cardiologia, v. 88, p. 2-19, 2007.

TANNER, J. M. Growth at Adolescence: With a General Consideration of the Effects of Heriditary and Environmental Factors Upon Growth and Maturation from Birth to Maturity. Blackwell Scientific Publications, 1962.

TJONNA, A. et al. Aerobic interval training reduces cardiovascular risk factors more than a multitreatment approach in overweight adolescents. Clinical Science, v. 116, p. 317-326, 2009.

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EFFECT OF A TRAINING PROGRAM IN RESISTIVE AND AEROBIC TRAINING PROGRAM AND TEENS WITH OVERWEIGHT AND OBESITY

ABSTRACT

Aimed to assess the effect of concurrent training on body composition and blood markers in adolescent overweight. Experimental study with adolescents of both sexes, aged between 12 and 16 years pubescent, randomized into two groups: (GI) concurrent training 2:04 months (n = 7) and (GC) and non-participant training (n = 10) to the Center of Obesity in Natal, RN. We evaluated weight, height, BMI, WC, DCTR, DCSB, ΣDC and% G and lipid profile, glucose, triglycerides, LDL-C, HDL-C, Total cholesterol. We used the General Linear Models (GLM) for repeated measures, between the nonparametric and parametric t test groups U test and Spearman (ρ) p = 0.05. In outcome between the intervention groups after 02 months and found significant differences for DCSB, ΣDC and G%, triglyceride and total cholesterol, and control groups after 02 months Weight, DCTR, DCSB, ΣDC and G%, Triglycerides, LDL-C, HDL-C and Total Cholesterol in the intervention groups and after 4 months for weight, BMI, WC, DCSB, ΣDC and G%, Triglycerides, LDL-C, HDL-C, Total Cholesterol. In the control group after 04 months and did not find significant differences for height and glucose. Thus we conclude that the method of concurrent training was effective in reducing body weight, central adiposity, body fat and lipid profile after 16 weeks of intervention. Blood glucose despite having presented significant changes among the three evaluations observed a trend toward greater reduction in the first two months.

KEYWORDS: Physical Activity; school; obesity; training.

EFFET D'UN PROGRAMME DE FORMATION AÉROBIE ET DU FORCE DU ADOLESCENTS ATTEINTS DE SURPOIDS ET D'OBÉSITÉ

RÉSUMÉ

Visait à évaluer l'effet de la formation simultanée sur la composition corporelle et les marqueurs sanguins du surpoids chez les adolescents. Etude expérimentale avec les adolescents des deux sexes, âgés de 12 et 16 ans pubescent, randomisés en deux groupes: (GI) de formation simultanée 02h04 mois (n = 7) et (GC) et non-participant formation (n = 10) au Centre de l'obésité dans le Natal, RN. Nous avons évalué le poids, la taille, l'IMC, WC, DCTR, DCSB, ΣDC et% G et le profil lipidique, glycémie, les triglycérides, LDL-C, HDL-C, cholestérol total. Nous avons utilisé les modèles linéaires généraux (GLM) pour les mesures répétées, entre les groupes test t non paramétriques et paramétriques test U et Spearman (ρ) p = 0,05. En résultat entre les groupes d'intervention après 02 mois et trouvé des différences significatives pour DCSB, ΣDC et G%, de triglycérides et de cholestérol total, et des groupes de contrôle après 02 mois Poids, DCTR, DCSB, ΣDC et G%, les triglycérides, LDL-C, HDL-C et du cholestérol total dans les groupes d'intervention et après 4 mois pour le poids, l'IMC, WC, DCSB, ΣDC et G%, de triglycérides, de LDL-C, HDL-C, cholestérol total. Dans le groupe de contrôle après 04 mois et n'a pas trouvé de différences significatives pour la hauteur et le glucose. Nous en concluons donc que la méthode de la formation simultanée était efficace dans la réduction de poids de corps, l'adiposité centrale, la graisse corporelle et le profil lipidique après 16 semaines d'intervention. La glycémie malgré avoir présenté des changements importants entre les trois évaluations ont observé une tendance vers une plus grande réduction dans les deux premiers mois.

MOTS - CLÉS: Activité Physique; École; L'obésité; Formation.

EFECTO DE UN PROGRAMA DE PROGRAMA DE ENTRENAMIENTO AERÓBICO Y RESISTIDO Y ADOLESCENTES CON SOBREPESO Y OBESIDAD

RESUMEN

Tuvo como objetivo evaluar el efecto del entrenamiento concurrente en la composición corporal y la sangre marcadores en el sobrepeso de los adolescentes. Estudio experimental con adolescentes de ambos sexos, con edades comprendidas entre 12 y 16 años pubescentes, al azar en dos grupos: (GI) entrenamiento concurrente 2:04 meses (n = 7) y (GC) y no participante de formación (n = 10) para el Centro de obesidad en Natal, RN. Se evaluó peso, talla, IMC, WC, DCTR, DCSB, ΣDC y% G y perfil lipídico, glucosa, triglicéridos, LDL-C, HDL-C, colesterol total. Se utilizaron los modelos lineales generales (GLM) para medidas repetidas, entre los grupos t pruebas no paramétricas y paramétricas U test y de Spearman (ρ) p = 0,05. En los resultados entre los grupos de intervención después de 02 meses y encontró diferencias significativas para DCSB, ΣDC y G%, los triglicéridos y el colesterol total, y los grupos de control después de 02 meses de peso, DCTR, DCSB, ΣDC y G%, los triglicéridos, LDL-C, HDL-C y el colesterol total en los grupos de intervención y después de 4 meses para el peso, el IMC, WC, DCSB, ΣDC y G%, triglicéridos, LDL-C, HDL-C, colesterol total. En el grupo de control después de 04 meses y no encontró diferencias significativas en la altura y la glucosa. Así llegamos a la conclusión de que el método de entrenamiento concurrente

fue eficaz en la reducción de peso corporal, la adiposidad central, la grasa corporal y perfil lipídico después de 16 semanas de intervención. La glucosa en sangre a pesar de haber presentado cambios significativos entre las tres evaluaciones observó una tendencia hacia una mayor reducción en los dos primeros meses.

PALABRAS - CLAVE: La Actividad Física; Escuela; Obesidad; Entrenamiento.

EFEITO DE UM PROGRAMA DE TREINAMENTO RESISTIDO E AERÓBIO EM ADOLESCENTES COM SOBREPESO E OBESIDADE

RESUMO

Objetivou-se avaliar o efeito do treinamento concorrente sobre a composição corporal e marcadores sanguíneos em adolescentes com excesso de peso. Estudo experimental, com adolescentes de ambos os sexos, idades entre 12 e 16 anos púberes, randomizados em dois grupos: (GI) treinamento concorrente 02 e 04 meses (n=7) e (GC) e não participante do treinamento (n=10) atendidos no Centro de Obesidade em Mossoró, RN. Avaliou-se Peso, Estatura, IMC, CC, DCTR, DCSB, ΣDC e %G e no perfil lipídico, Glicose, Triglicerídeos, LDL-C, HDL-C, Colesterol total. Utilizou-se o teste General Linear Models (GLM) para medidas repetidas, entre os grupos teste t paramétricos e teste U não paramétricos e a correlação de Spearman (ρ) $p \leq 0,05$. Nos resultado entre os Grupos intervenção e após 02 meses encontrou-se diferenças significativas para DCSB, ΣDC e %G, triglicerídeo e colesterol total, Grupos controle e após 02 meses o Peso, DCTR, DCSB, ΣDC e %G, Triglicerídeos, LDL-C, HDL-C e Colesterol total, nos Grupos da intervenção e após 4 meses para o Peso, IMC, CC, DCSB, ΣDC e %G , Triglicerídeos, LDL-C, HDL-C, Colesterol total. No Grupo controle e após 04 meses não se encontrou diferenças significativas para a estatura e a glicose. Assim concluímos que o método de treinamento concorrente foi eficaz na redução do peso corporal, adiposidade central, gordura corporal e no perfil lipídico após 16 semanas de intervenção. A glicemia apesar de não ter apresentado mudanças significativas entre as três avaliações observou-se uma tendência a maior redução nos primeiros dois meses.

PALAVRAS - CHAVE: Atividade Física; Escolares; Obesidade; Treinamento.