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COMPARISON OF THE EFFECT OF TWO-WAY TRAINING COMPONENT AND RESISTANCE ON DENSITY AND ENZYME OF LIVER AND LIPOPROTEINS BLOOD IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER

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ABSTRACT

Background: Nonalcoholic fatty liver disease is the most common chronic liver condition in today's society because of lifestyle changes are on the rise
The aim of this study was The Comparison of The effect of two-way training component and resistance on density and enzyme of liver and lipoproteins blood in patients with non-alcoholic fatty liver
Methods: the number of 45 boys students from Azad University Bebahan branch that they had overweight were chosen And then randomly divided into three groups (two experimental groups combined (N = 15) and resistance (N = 15) and a control group (N = 15)), as sample Purposefully participated in this study.In the first session anthropometric measurements, body composition and peak oxygen consumption (VO2max) (adjusted Bros test) of subjects were measured.. Blood samples before and after training for measure the indices of research were collected.
Results: The results showed that between the three groups there were a significant difference in the level of liver enzymes (AST, ALK.PH and ALT) and lipoproteins in the blood of patients with non-alcoholic fatty liver (05/0> p).On the other hand ten weeks of resistant training and the combination causes significant reduction in the level of liver enzymes (AST, ALK.PH and ALT), triglycerides, LDL and VLDL and increasing in levels of HDL were significantly (05/0> p
Conclusion: on Based of present results that tow ways training combines and resistance exercises can improve cell density, the level of liver enzymes and blood lipoproteins in patients with non-alcoholic fatty liver is.

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Introduction

The causes of fatty liver disease Nonalcoholic fatty liver and alcoholic fatty liver in two divided(1) Alcoholic fatty liver disease in people with alcoholism and excessive alcohol consumption caused by alcohol withdrawal symptoms, complications and to improve viewed; Disease Nonalcoholic fatty liver is the most common chronic liver that in today's society is emerging, which is associated with insulin resistance and frequently with a view of the metabolic syndrome occurs, the direction and the range of illness from above go asymptomatic liver enzyme levels and liver cirrhosis and acute liver failure and cancer, along with complaints from liver cells introduced(2) As growing evidence from cross-sectional studies have shown that physical activity and exercise is a promising treatment for fatty liver disease has developed. As a relatively major intervention studies the relationship between fatty liver and sports activities in conjunction with a calorie restricted diets and have been tested Studies in mice showed beneficial effect of exercise on fat in the liver, mainly has been made in situations with high-fat diet and obesity. So an independent partnership, sporting activities on the types of fat in the liver is unknown, but there is hope that the left interventional studies that require review and further research. Evidence also suggests that liver fat and regular physical activity and exercise show an independent association with cardiovascular disease and type II diabetes. Relative cooperation related to sports and liver fat was unclear, but both should be considered when

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therapeutic interventions for chronic metabolic disease and treated (6) According to contents listed on the dangers of the disease and the rising trend of fatty liver in the current society as well as determine the impact of the exercise on the disease and because of the combined exercises and resistance training is a combination of the best weight loss practices. So the researcher with the assumption, that it is comparing the impact of two training methods (resistance and combined exercises) on the density of the liver cells, co-enzyme and blood lipoproteins of patients with non-alcoholic fatty liver check up determines that probable changes in response to these factors combined exercises and resistance training?

Method

Subjects

The population of this study, was male students Azad University Behbahan branch , after informing students of overweight and BMI of 25 to 30 kilograms the doctor introduced and after the radiography people who have Nonalcoholic fatty liver Alcohol (grade2,3) were separated and of which 45 overweight subjects were chosen And then randomly divided into three groups (two experimental groups combined (N = 15) and resistance (N = 15) and a control group (N = 15)) and having Inclusion criteria for the study (with fatty liver disease Alcohol (grade2,3), with an age range 25-18 years, the lack of regular physical activity during the past 6 months and BMI between 25 and 30 kilograms by the square of height in meters) for example, participated in the study. The completed questionnaire and demographic information work (based on the company's interest in the test, demographic characteristics, smoking and any other drugs, lack of disease such as cardiovascular disease, hypertension, respiratory diseases and muscular diseases and skeleton) voluntarily participated in this study. The participants recommended that 48 hours before each meeting to avoid the evaluation of any vigorous exercise.

Measures anthropometric (weight and height), body composition (BMI or body fat percentage) and physiological (VO2max) for each subject in the first session in the laboratory and Sports Medicine Clinic oil company Ahwaz were evaluated, all the tests and analysis of blood with oil hospital laboratory experts was conducted. Fat percentage of subjects with bio-electrical impedance (BIA) model (olympia 3/3) measurements were made in South Korea.

The maximum oxygen consumption (VO2max) subjects adjusted the treadmill and the test beam (Boros modify test) measured (7). It should be noted that ethical considerations into all subjects in this study is that an adequate description of the purpose and methods of work and ensure the confidentiality of the data was given. As well as autonomous subjects were excluded from the study at any time during the study .

Exercise protocol

Compound exercises were performed 3 days per week, which includes strength training and power training. Endurance training after strength training began. The first session were started 15 minutes at the end of 10 weeks to about 55 minutes

Duration and intensity of aerobic exercise plan based on previous studies of exercise in patients with fatty liver was performed. The main phase of training in the first session consists of 20 minutes of exercise at 40 to 45 percent of maximum heart rate, which if it continues to tenth week of training and training intensity increased (Table 1)

Strength training program with weekly three sessions and each session an hour and a half at 50% of maximum power, maximum ten weeks of looking, and intensity of exercise once a week would increase so that in the final week of near maximal strength was carried out. The training program of the resistance group containing exercises for the upper extremities, including bench press, pull on the arm with a pulley, biceps and triceps with a barbell and exercises to strengthen the lower extremities, including Scott with the device on an inclined surface (Hogg feet), foot-and-forth Pulley's leg. The movements of sit-ups were to strengthen the abdominal and trunk muscles (a total of eight movements)

The training was conducted for the overload. Table 2 referred to the resistance training group program

Table 1: Protocol endurance training in research

week	**First**	**Scene**	**Third**	**Forth**	**Fifth**	**Sixth**	**Seventh**	**Eightieth**	**Ninth**	**tenth**
Time(minuet)	15	20	25	30	35	40	45	45	50	5
Intensity (HR max)	45-40	50-45	55-50	60-55	65-60	65-60	70-65	70-65	75-70	75-70

Table 2: program of resistance training in research

Weeks	Load exercise	Sets	Times	Time of rest between sets
First and scene	1RM %60	3	10-12	1-2 meant
Third and forth	1RM %65	3	10-12	1-2 meant
Fifth and sixth	1RM %70	3	10-12	1-2 meant
Seventh and eightieth	1RM %75	3	10-12	1-2 meant
Ninth and tenth	1RM %80	3	10-12	1-2 meant

Blood sampling and analysis: Venous blood samples before and after the exercise of the brachial vein in tubes containing EDTA (Ethylene Diamine tetra acetic Acid) were cast and were immediately transferred to the laboratory. The level of liver

enzymes was measured (AST, ALK.PH and ALT) using the kit Greiner (- Gereiner Bio One) made in Germany. HDL-C and triglycerides levels by spectrophotometric method (colorimetric enzyme) and was measured using test kits Pars. All measurements are automatically and using auto analyzer was used (Cobas mira-s, USA). The LDL-C was calculated using the formula Friedwald:

LDL-C = TC – (TG/5 + HDL-C

The cell density in this study was done through ultrasound machine.

Statistical Analysis: For statistical analysis in this study, the mean and standard deviation as descriptive statistics were used. After checking the normality of Shapiro Wilks test data with equal variances with Levene test, t-test for intergroup differences of pretest to post-test was used.

As well as to study the differences between groups were analyzed by analysis of covariance and post hoc test Banfrvny. Data analysis was performed using SPSS version 21. Significant level of 05/0> p is considered.

Findings

Anthropometric, body composition and physiological subjects (VO2max) is given in Table 1

Table 1. anthropometric, body composition and physiological subjects

index	Group	Mean±standard deviation
Age(year)	Resistance group	21/2±2/31
	Component group	22/1±7/54
	Control group	21/1±6/14
High (centimeter)	Resistance group	174/6±4/08
	Component group	175/3±23/62
	Control group	174/5±16/54
Weight (kilogram)	Resistance group	83/5±9/34
	Component group	82/6±8/85
	Control group	84/4±6/54

The mean study variables before and immediately after the exercise is given in Table 2. The t-test results to demonstrate the effectiveness of the pre-test to post-test training is provided in the table.

Table 2: Results of t-test and analysis of covariance variables

index	group	Pretest	Posttest	intergroup		Between group	
				Amount of T	P value	Amount of T	P value
AST(U/L)	Resistance group	44/5±6/34	31/2±26/65	-3/42	0/003	16/84	0/001
	Component group	43/4±8/85	30/3±6/33	-4/46	0/001		
	Control group	43/6±13/85	41/42±6/33	0/46	0/651		
ALT(U/L)	Resistance group	37/5±76/94	25/3±5/73	-3/85	0/006	15/93	0/001
	Component group	38/6±0/82	24/4±8/33	-4/83	0/001		
	Control group	37/4±20/94	34/4±33/75	1/81	0/098		
ALK.PH (U/L)	Resistance group	187/11±60/49	127/54±93/43	-3/83	0/008*	11/60	0/001
	Component group	198/13±46/14	129/34±33/27	-3/13	0/009		
	Control group	197/15±14/46	200/12±46/23	0/62	0/875		
HDL(mg/dl)	Resistance group	35/5±93/18	42/4±8/75	3/35	0/005*	10/38	0/001
	Component group	35/4±8/33	47/4±5/56	4/47	0/001		
	Control group	36/4±4/33	36/5±26/29	-1/78	0/106		
LDL(mg/dl)	Resistance group	132/11±6/12	85/15±40/14	-6/85	0/001*	15/32	0/001
	Component group	138/15±73/89	87/5±26/16	-4/52	0/001		
	Control group	132/13±6/89	132/11±8/16	0/53	0/691		
VLDL(mg/dl)	Resistance group	57/12±8/27	30/17±9/87	-484	0/001	16/83	0/001
	Component group	61/13±6/39	29/9±58/43	-4/65	0/001		
	Control group	60/18±6/32	57/7±26/23	0/65	0/398		
TG(mg/dl)	Resistance group	223/32±80/22	168/22±20/34	-5/03	0/001	15/02	0/001
	Component group	218/1±66/19	122/11±53/25	-3/43	0/006		
	Control group	219/29±20/39	199/13±33/43	0/625	0/398		

Data are mean ± SD; * significant differences in the level of 05/0> p than to practice in the same group, † significant difference in the level 05/0> p among groups.

According to Table 5, the results showed that among the three groups (resistance training, combined training and control) a significant difference in the level of liver enzymes (AST, ALK.PH and ALT) and lipoproteins in the blood of patients with fatty liver there drinks (05/0> p). Banfrvny follow-up test results showed that the resistance and concurrent control group with significant differences in study variables (05/0> p)

The combination of variables between the groups of resistance and there was no significant difference (05/0 <p). On the other hand ten weeks of resistance training and the combination causes significant reduction in the level of liver enzymes (AST, ALK.PH and ALT), triglycerides, LDL and VLDL and increasing HDL levels were significantly (05/0> p). The results of ultrasound test to measure the density of the cells showed that patients with NAFLD, all in Grade 2 and 3 cell density, with (low cell density in patients with nonalcoholic fatty liver is common) after ten weeks of training combined resistance and a significant increase in cell density in these patients (grade 1 and normal) (05/0> p)

Discussion And Conclusion

The results showed that the three groups (resistance training, combined training and control) a significant difference in the level of liver enzymes (AST, ALK.PH and ALT) and lipoproteins in the blood of patients with non-alcoholic fatty liver there. On the other hand Mfavmty ten weeks of training and the combination causes significant reduction in the level of liver enzymes (AST, ALK.PH and ALT), triglycerides, LDL and VLDL and HDL levels were significantly increased. Test results also showed ultrasound to measure the density of cells, after ten weeks of combined resistance and a significant increase in cell density was seen in these patients.

Fatty liver is the major cause of chronic liver disease in children and adults is. Fat accumulation in the liver with increased echogenicity it is the amount of highly fatty infiltration in the liver depends. The most important principle for the treatment of fatty liver, addressing the underlying disease causing it. Keep weight in the normal and proper physical activity and continuous preventable evidence also suggests that liver fat and physical activity and regular exercise a solidarity independent patients for cardiovascular and type II diabetes show. Cooperation relative to sports and liver fat unclear, but both should be on interventions for chronic metabolic disease considered and treated (6)

Obesity, especially abdominal obesity, plays an important role in increasing the risk of fatty liver. Accordingly, having regular exercise at least 30 to 60 minutes a day is recommended. According to the above that the risks of fatty liver disease and rising trend in today's society and

as well as determining the effects of exercise on the disease and because the combined training is one of the best ways to reduce weight, this study an experimental basis and in both medical and sports have been conducted in this study, liver enzymes and LP obese students affected by two types of resistance training and the combination was studied

. The results of this study show that Between enzymes Alk.ph, AST and ALT, installation and after ten weeks of resistance and combined groups there was no significant difference But there is a significant difference between the experimental and control groups. This result indicates that both of them have a positive effect on the enzyme in two groups The results of this study with previous results J. Chool bi et al. (2015), Robinson et al. (2000), Waldron (2002), Thomas et al. (2015), Fernando (2002) and Kester Hasvrz et al (2011) is consistent (8-11) and the results Mvgyvs (2009) inconsistent(12). This is could be due to the type of exercise duration and intensity .

The results of this study show that among HDL two groups of resistance, installation and after ten weeks of training, significant differences exist between experimental groups and control significant difference is that this result reflects the combined training has positive effects on reducing lipoprotein blood protein in the target group Dardaz hand information. . The scores of the two groups lead to resistance training is better than combined training shows results with previous results Pskatlv et al. (2000) and Fahlmn (2002) is consistent (16,17). This could be due to the positive effects of exercise training on cardiovascular risk markers in blood.

The results of this study suggest that between LDL two groups of resistance and combined, installation and after ten weeks of training, there was no significant difference between them and there is between experimental groups and control significant difference. This result indicates that both of them have positive effects on the enzyme in two groups.

The details of the scores of the two groups lead to resistance training show better than combined training.

Survey results also show that between VLDL two groups of resistance and combined, installation and after ten weeks there was no significant difference But between experimental groups and control there is a significant difference that this result indicates that both of them have positive effects on the enzyme into two groups, there is also information on the scores of the two groups, the superiority of combined training to practice resistance shows

The results of this study with another researches Pskatlv (2000), Fahlmn (2002), Feli et al. (2015) and Zlbr et al (2008) is consistent (16-19), which could be due to the positive effects of exercise training on cardiovascular risk markers in blood.

Survey results also show that between TG of two groups of resistance and combined, installation and after ten weeks there was A significant difference And also between the experimental groups and control significant difference is that this result indicates that compound exercises a positive effect on reducing blood lipid in the Dardaz hand information about the scores of the two groups lead resistance training than the combined training is showing The results of this study with another

researches LE et al. (2013), Marand et al. (2013) and Hunger et al (2015) is consistent (20-22), which could be due to the positive effects of exercise on blood lipid.

On base The results of this research can be concluded that combination and resistance exercises can improve cell density, the level of liver enzymes and blood lipoproteins are in patients with non-alcoholic fatty liver. With the improvement of this indicator in patients suffering from non-alcoholic fatty liver can be risks of cardiovascular disease associated with this disease be prevented.

However, more research is needed to measure changes in cell density, the level of liver enzymes and blood lipoproteins in patients with nonalcoholic fatty liver in intensity and types of exercise protocols examine

Appreciation

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