IJBPAS, November, 2015, 4(11), Special Issue: 576-583
ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)
'A Bridge Between Laboratory and Reader'
www.ijbpas.com

INVESTIGATING OF LIVER ENZYMES (AST, ALT) AND CARDIOVASCULAR RISK FACTORS IN ZORKHANEH-PAHLAVANI AND BODYBUILDERS ATHLETE

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ABSTRACT

The purpose of this study was to evaluate risk factors for cardiovascular and liver enzymes in zorkhaneh-pahlavani and bodybuilders athletes. The subjects of this study, 30 male athletes, including 15 zorkhaneh-pahlavaniathletes with an average age of 31.26 ± 3.65, height 178.13 ± 2.99, weight 89.93±9.84 and body mass index 28.31±2.67 and 15 body builder athletes with an average age of 88.53±1.10, height 176.73±3.65, weight 88.53±1.10 and body mass index 28.32±3.10 that were volunteered to participate in research. This was a retrospective study and subjects had experienced at least three years of professional activity. Blood samples were taken from all subjects in one step. Statistical Analysis was performed using independent t-test and the significance level was considered P<0.05.The results showed that compared to factors discussed in in zorkhaneh-pahlavani athletes and bodybuilders in the levels of systolic blood pressure (p<0.024), diastolic blood pressure (p<0.019), liver enzymes aspartate aminotransferase (AST) (p<0.044), significant but the liver enzyme alanine aminotransferase (ALT) levels (p<0.373) and triglycerides (p<0.194) was not significant. Based on the results of resistance exercise training increases the pressure in the myocardial sympathetic stimulation increases the heart rate and This vascular resistance that increases in systolic and diastolic blood pressure. As well as general training zorkhaneh-pahlavani and bodybuilders athletes by increasing lipolysis, the removal of triglycerides from the blood and use it more muscles. This can reduce blood fat levels, On the other hand, resistance exercise bodybuilder pressure and cause rupture of the muscle fibers of skeletal muscle damage and leaving inflammatory muscle enzymes (ALT, AST) in blood.

Keywords: blood pressure, AST, ALT, triglycerides, zorkhaneh-pahlavani athletes, bodybuilder athletes

INTRODUCTION

Given the complexity of the system response of cardiovascular different physical activities, dealing with the system and its effectiveness in different fields of sport is important. One of the most important factors in cardiovascular physiological blood pressure, which can be affected by exercise and physical activity. This suggests that regular exercise can cause changes in the body, especially the cardiovascular system causing the body to adapt more to the needs. Sports compatibility on the heart, the left ventricle is applied more on a direct relationship with the type, intensity and duration of exercise, the fitness of individuals **[1-3]**. When physicalexercise factors such as heart rate, maximum oxygen consumption and the volume of blood pumped per beat increases. In addition, the effect of exercise, diastolic volume, end systolic volume increases due to increased blood volume due to stronger contractions of the heart muscle is reduced. Which can be reduced systolic and diastolic blood pressure. While intense exercise increases the sensitivity of the heart and increase blood pressure **[4,5]**.

The cardiovascular system in response to exercise, research has shown that the right amount of exercise, reduces triglycerides and lipoprotein lipase stimulates the muscle. Increasing the uptake of triglyceride lipase activity, which in turn reduces the risk of cardiovascular disease **[5,6]**.

The ongoing implementation of local sports activities severe tear muscle fibers of skeletal muscles to tear sarcomere and impaired muscle following the line Z and muscle damage. This is an inflammatory response in the enzyme exit such as aspartate aminotransferase and alanine amino transferase within the muscle creates frequently associated with swelling and pain **[8-10]**.

The two most sensitive enzymes and liver enzymes are most useful. Aspartate aminotransferase and alanine amino transferase enzymes that transfer amino group of the amino acid aspartate and alanine Ketoglutaric acid, to produce malic acid and pyruvic acid catalyze **[8,11]**.

Given the important role of systolic and diastolic blood pressure, liver enzymes ALT, AST and triglycerides in the professional life of athletes, this study tries to compare the cardiovascular system changes - induced vascular resistance training and endurance athletes during their career the physiological structure of the deal.

MATERIALS AND METHODS

In this study the method of data collection is retrospective and the study purpose is functional. The study participants included 15 zorkhaneh-pahlavani athletes with an average of 31.26 ± 3.65, height 178.13 ± 2.99, weight 89.93±9.84 and body mass index 28.31±2.67 and 15 bodybuilders men with a mean with an average of 88.53±1.10, height 176.73±3.65, weight 88.53±1.10 and body mass index 28.32±3.10 and had at least three years of athletic experience.

Measurement of variables

Subjects' Height and weight were measured respectively by a stadiometer and a standard Japanese scorpion scales, in barefoot and minimal clothing condition (weight in kilograms with 0.1 kg precision; height in centimeters with 0.1 mm precision) and registered in special data sheets. BMI was calculated as is the ratio of weight in kilograms to the square of height (m). Systolic and diastolic blood pressures were measured using stethoscope in audio method after 10 to 15 minutes resting in a sitting position on a chair.Aspartate aminotransferase and alanine aminotransferase activity by an enzymatic photometric sensitivity 2 units per liter and 1.4 percent coefficient of variation was determined. (Colorimetric kits, test Pars Tehran, Iran) units liter unit.

Statistical methods

subjects' characteristics and research data were analyzed using descriptive statistics in the form of tables and graphs. After confirming normal distribution (normallity) for both groups' data (Kolmogorov–Smirnov test), the mean difference was analyzed using independent t-test with 0.05 significance level. All the calculations were performed using the spss software version 18.

RESULTS

The results showed that compared to factors discussed in zorkhaneh-pahlavani athletes and bodybuilders in the levels of systolic blood pressure ($p<0.024$), diastolic blood pressure ($p<0.019$), liver enzymes aspartate aminotransferase ($p<0.044$), significant but the liver enzyme alanine aminotransferase levels ($p<0.373$) and triglycerides ($p<0.194$) was not significant (**Table 1**).

Table 1: Comparison of Mean Outcome Measurements between two groups

Variable	Mean difference	t	p
systolic Blood pressure	8.93	2.28	0.030
diastolic Blood pressure	6.00	2.49	0.019
triglycerides	35.63	1.30	0.194
AST	11.86	2.11	0.044
ALT	9.66	0.90	0.373

DISCUSSION

The results showed that the comparison between the zorkhaneh-pahlavani and bodybuilders athletes groups in systolic and

diastolic blood pressure levels were significantly higher systolic and diastolic blood pressure was bodybuilders athletes so that the groups compared to zorkhaneh-pahlavaniathletes groups.

Exercise-induced high blood pressure is a function of the amount of blood discharged into the arterial blood flow and cardiac output is increased. In addition, severe changes in heart rate as one of the basic components of cardiac output during exercise and resistance may be due to increased sympathetic stimulation and parasympathetic effects is effective in increasing the pressure on the heart **[12]**. It should be noted that the density and peripheral arterial compression device during resistance training may cause significant and rapid increase in vascular resistance and arterial blood pressure (systolic). This increase, together with a high heart rate during resistance training can increase the rate pressure product or myocardial strain involved **[13]**. On the other hand, cardiovascular responses to resistance training can be muscle contraction, the mass and length of contract involved a direct relationship **[14]**.

The results of research **Armito et al (2005)** to investigate cardiorespiratory responses associated with resistance training implies that both static and dynamic leg press exercise pressure against cardiovascular causes increased heart rate, pressure the systolic and diastolic **[15]**. **Mcardel et al (2007)** showed that a single bout of resistance exercise can increase the blood pressure of the study participants followed the match **[16]**. The results of this study with research **Teske et al (2009) and Perseghin et al (2007)** by imaging of the heart called the left ventricle with relative bulk is not a significant relationship between systolic blood pressure and diastolic blood in elite athletes with non-athletes receive, inconsistent **[17-18]**.

The results showed that the comparison between the zorkhaneh-pahlavani with bodybuilders athletes the variable is not significant triglyceride though the zorkhaneh-pahlavaniathletes of triglycerides are higher compared to the bodybuilders athletes. Regular physical activity, transfer and use by muscle triglyceride increases. It has been shown that exercise during and after the plasma insulin decreased, and probably one of the factors that put the change from cholesterol, plasma insulin levels **[19]**. Possibly insulin, activates lipolysis of adipose tissue and plasma free fatty acid concentration is increased. Along with insulin, glucagon secretion increases, which speeds up the process of lipolysis **[20]**.

The results of research **Durstine et al (2002)** 30 evaluated the results of this study

showed that aerobic exercise is a total decrease of 4% triglycerides **[21]**. **Stone et al (1991) and Kraus et al (2001)** Reduction of serum lipids were observed following resistance exercise **[22,23]. Irvine et al (2009)** found that aerobic exercise reduces triglycerides in the match **[24]**. The research results **Stoedfalke et al (2000)** and co-workers after 20 weeks running with intensity 70-80% of maximum heart rate did not observe significant differences in lipid profile, inconsistent **[25]**.

The results showed a significant difference between liver enzymes AST in zorkhaneh-pahlavani with bodybuilders athletes, but the liver enzyme ALT in the zorkhaneh-pahlavani with bodybuilders athletes there.

In the event of severe muscle damage as a result of sports activity, enzymes such as alanine aminotransferase, aspartate amino transferase and are the muscle fibers in the blood increases **[26]**. The intense resistance exercise can cause damage and rupture of muscle fibers in skeletal muscles and the removal of muscle inflammatory enzymes ALT, AST in the blood **[27,28]**.

The results of research **Nissen et al (2009)** effect Weightlifting on clinical chemistry parameters indicative of liver function in men, and significant increase in the index of AST, ALT then observed **[29]**. **Mashiko et al (2004) and Clarkson (2006)** increased liver enzymes in extreme sports activities considered match But the results of the research **[30]**. **Matsus et al (2006)** observed significant changes in the wake of such a practice is inconsistent **[31]**.

CONCLUSION

The results of this study show that resistance training changes of systolic and diastolic blood pressure for changes in cardiac output to meet the needs of the body and provides instant.High levels of these variables showed severe pressure resistance training on blood pressure is systolic and diastolic. On the other hand pressure and injuries caused by intense resistance exercise can increase muscle damage indicators and liver enzymes lipase enzyme activity also increases during exercise is to reduce triglyceride levels.

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