Scholars International Journal of Biochemistry
Abbreviated key title: Sch. Int. J. Biochem.
A Publication by "Scholars Middle East Publishers"
Dubai, United Arab Emirates

ISSN: 2616-8650 (Print)
ISSN: 2617-3476 (Online)

Effect of Specific Training Programme on Cholesterol among University Hockey Players

Dr. P.V. Shelvam
Professor, Department of Physical Education and Sports Sciences, Annamalai University, Annamalainagar, India

Original Research Article

***Corresponding author**
Dr. P.V. Shelvam

Email:
selvamvsdrn@gmail.com

Article History
Received: 14.05.2018
Accepted: 28.05.2018
Published: 30.06.2018

Abstract: The purpose of the study was to find out the effect of specific training on cholesterol among university hockey players. To achieve this purpose of the study, thirty men hockey players were selected as subjects who were from the various faculties, Annamalai University, Annamalainagar. The selected subjects were aged between 19 to 24 years. They were divided into two equal groups of fifteen each, Group I underwent specific training and Group II acted as control that did not participate in any special training apart from their regular sports and games practices. The subjects were tested on selected criterion variable such as cholesterol prior to any immediately after the training period. The selected criterion variable such as cholesterol was to assess body fat monitor. The analysis of covariance (ANCOVA) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variable. The 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate. The result of the present study has revealed that there was a significant difference among the experimental and control group on cholesterol.
Keywords: specific training – cholesterol – hockey.

INTRODUCTION

The primary objective of sports training is to stress various bodily systems to bring about positive adaptation in order to enhance sporting performance. To achieve this objective, coaches and athletes systematically apply a number of training principles including overload, specificity and progression, organized through what is commonly termed periodization.

The application of these principles involves the manipulation of various programme design variables including choice of exercise, order of training activities/exercises, training intensity (load and repetition), rest periods between sets and activities/exercises and training frequency and volume in order to provide periods of stimulus and recovery, with the successful balance of these factors resulting in positive adaptation [1]. Sport specific training is simply fitness and performance training designed specifically for athletic performance enhancement. Training programs for athletic performance enhancement could include such areas as strength, speed, power, endurance, flexibility, mobility, agility, mental preparedness (including goal setting), sleep, recovery/regeneration techniques and strategies, nutrition, rehabilitation, pre-habilitation, and injury risk reduction. A general program should include all of these components and a more specific program may only include a few, depending upon the athlete's specific needs (based on strengths, weaknesses and/or imbalances) and the demands of the sport they participate in [2]. Hockey players are known for their physical toughness, willingness to battle through injuries, dribbling ability and talent with the puck. Players who can take the hits and keep on going forward need strong and resilient bodies. Players must have the size to block shots and the quickness to take the attack up when they gain possession of the puck. Hockey players need to be in top-level cardiovascular condition to play the game effectively. Players who carry a high percentage of body fat are at a disadvantage and will slow down during a shift and in the late stages of the game. Players need to keep their body fat level between 6 percent and 12 percent. A "model" look is not necessary, but abdominal muscles should be visible [3]. Millions of athletes across the country are trying to improve their physiques by altering their body composition. Specifically, they want to reduce their body fat. The cardiovascular endurance exercise session is the traditional favorite exercise of choice to achieve this goal. Many athletes hop on the treadmill or step machine for 45 minutes to expend calories and decrease fat stores. Although research has proven that this

approach might be a sure solution to short-term weight loss (for about the first three months), it may not be the best strategy for long-term weight loss and maintenance. Body composition training and strength training are not enemies, especially not in the long term. But even in the short term, strength training makes sense; otherwise, the body reaches a plateau all too soon. Why wait until the muscles have decreased in size because of the cardiovascular endurance training and until the metabolic cost of living has gone down because of the weight loss? If you pair strength training with the traditional cardiovascular endurance exercise in a planned program, you can create an effective symbiotic relationship [4]. To stay fit and have your cholesterol level lowered, you may want to rely on series of exercises. These exercises should be able to keep your body healthy without making your heart rates upside down. Resistance exercises are done regularly in moderation will be beneficial for your heart and entire health. These will be beneficial even more if combined with balanced diets, which are fat-free, low in cholesterol, and vitamin-loaded. Consistent exercises is going to help controlling cholesterol level by either lowering triglycerides level or raising the HDL—the good cholesterol level. Doing consistent exercises will decrease triglycerides by 30 to 40% and boost the HDL. However, lowering the entire body cholesterol level also means decreasing the level of LDL—the bad cholesterol inside the blood. This is possible if the exercises you are performing have an ability of making you lose some weight. Strength training is a harmful kind of exercise in the past time, strength training has been used widely nowadays as one of the alternatives for cholesterol controlling plan. However, excessive strength training should be avoided to prevent having the benefits turn into the negative effects. Many health practitioners agree that to be effective in controlling cholesterol level and heart health, a combination of exercises is required. Three most common forms of exercises include aerobics—to get your heart rate up before doing harder exercises; strength training—to build your muscles and body mass; and stretching—to keep you limber [5]. Cholesterol is a type of fat which is an essential part of our body structure and required for normal body function. Inside our body cholesterol is present in cells and in blood. Cholesterol in blood is present in two forms as free cholesterol or stored in the form of cholesterol ester. Inside the cells cholesterol is part of the cell membrane making it waterproof. Besides structural components it forms all other steroid hormones including corticosteroids, sex hormones, bile acids and vitamin D. Cholesterol is present in foods of animal origin such as egg yolk, meat, liver and brain. A type of protein called low-density lipoprotein (LDL) is responsible for transport of cholesterol and its compounds inside the cells. Another type of protein called high-density lipoprotein (HDL) transport free cholesterol to the liver where it is removed from the body. Common conditions which are caused by abnormalities of cholesterol include atherosclerosis and gall stones. Atherosclerosis is a disease in which there is abnormal deposition of cholesterol in vital arteries. The specific diseases which are caused by abnormalities of atherosclerosis depend on the organ to which that artery is supplying blood. When the arteries of the brain are involved it causes stroke. When arteries of the heart are involved it causes angina or myocardial infarction. When blood supply to legs or arms is compromised it causes ischemia and gangrene of the involved limb. Abnormal deposition of cholesterol in blood vessels occurs when there is high level of free cholesterol in the blood. More than half of the world population has high cholesterol levels. It means every second person is at risk of developing any disease caused by atherosclerosis. Cholesterol is the main structural element of all steroids which are synthesized in the body. Cholesterol itself is synthesized by the body from Acetyl-CoA. Three molecules of Acetyl-CoA combine to form a chemical compound called mevalonate; the enzyme which catalyzes this reaction is called HMG-CoA reductase. A category of drug called HMG-CoA reductase inhibitors are used to reduce synthesis of cholesterol in people who have high levels of cholesterol in blood. Cholesterol synthesis in the liver depends on the amount of cholesterol in diet. In tissues this control of steroid synthesis depends on gain of cholesterol and loss of cholesterol. Excess cholesterol is excreted from the body in form of bile salts. A large amount of these salts are reabsorbed from the intestine. This is called enterohepatic circulation [6].

MATERIALS AND METHODS

To achieve this purpose thirty (N = 30) male hockey players were randomly selected from various faculties, Annamalai University, Tamilnadu, India. The selected subjects were aged between 19 to 24 years. They were divided into two equal groups of fifteen each, Group I underwent specific training and Group II acted as control that did not participate in any special training apart from their regular curricular activities. The experimental group underwent twelve weeks for 3 days per week training. The selected criterion variable cholesterol to assess body fat monitor. Pre-test data were collected before the training program and post-test data were collected after the training program.

Training Program

The intensity variations in 12 weeks training for experimental groups are given in Table - I.

Table-I: Experimental groups

Weeks	1&2	3&4	5&6	7&8	9&10	11&12
% of intensity	70	74	78	82	86	90

Statistical Technique

The analysis of covariance (ANCOVA) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variable. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate.

RESULTS & DISCUSSION

The statistical analyses of cholesterol due to specific training have been presented in Table II.

Table – II: Analysis of Covariance on Cholesterol of Specific Training Group and Control Group

	Experimental Group	Control Group	Source of Variance	Sum of Squares	Df	Mean Squared	'F' ratio
Pre- test Mean	186.02	185.72	Between	2.58	1	2.58	0.85
S.D.	5.28	5.32	Within	85.13	28	3.04	
Post-test Mean	178.62	185.68	Between	8.35	1	8.35	5.65*
S.D.	4.86	5.28	Within	41.38	28	1.48	
Adjusted Post-test Mean	176.54	185.64	Between	42.48	1	42.48	25.29*
			Within	45.29	27	1.68	

* Significant at .05 level of confidence. Table value required for significance at .05 level with df 1 and 28 and 1 and 27 are 4.20 and 4.21.

Table – II showed that the pre-test values of cholesterol for specific training group and control group were 186.02 ± 5.28 and 185.72 ± 5.32 respectively. The obtained 'F' ratio value of 0.85 for pre-test score of specific training group and control group on cholesterol was less than the required table value of 4.20 for significance with df 1 and 28 at .05 level of confidence.

The post-test mean values of cholesterol for specific training group and control group were 178.62 ± 4.86 and 185.68 ± 5.28 respectively. The obtained 'F' ratio value of 5.65 for post-test scores of specific training group and control group was more than the required table value of 4.20 for significance with df 1 and 28 at .05 level of confidence.

The adjusted post-test mean values of cholesterol for specific training group and control group were 176.54 and 185.64 respectively. The obtained 'F' ratio value of 25.29 for adjusted post-test scores of specific training and control group was more than the required table value of 4.21 for significance with df 1 and 27 at .05 level of confidence.

The results of this study showed that there was a significant difference among specific training group and control group on cholesterol.

CONCLUSIONS

The result of this study showed that there was a significant improvement after the specific exercise training on triceps when compared with control group. The eight weeks of experimental treatment significantly influence on triceps thickness in university hockey players. The above results are supported by Steven Mann, Christopher Beedie and Alfonso Jimenez [7], Prabhakaran and others [8]and Costa and others [9].

REFERENCES

1. Takken, T., et al. (2003), "Physical Activity and Health Related Physical Fitness in Children with Juvenile Idopathic Arthritis". The European League Against Rheumatism Journal, 62: 885 and 885-889.
2. Thomas, A., Dawson, B. & Goodman, C. (2006). The yo-yo test: reliability and association with a 20-m shuttle run and VO2max. International Journal of Sports Physiology and Performance, 2, 137-149.
3. www.livestrong.com › Sports and Fitness- Body characteristics of hockey players, Feb 6, 2014.
4. www.humankinetics.com/excerpts/.../training-to-improve-body-composit

5. Zatsiorsky, Vladimir M. Science and Practice of Strength Training, (Champaign Illinois: Human Kinetics Publishers Inc., 1995) 83-86.
6. Akabas, S.R. and R.J. Deckelbaum, Introduction to the symposium, Beyond Cholesterol: Prevention and Treatment of Coronary Heart Disease with n-3 Fatty Acids. Am J Clin Nutr, 2008. 87(6): p. 1977S.
7. Steven Mann, Christopher Beedie, and Alfonso Jimenez, "Differential Effects of Aerobic Exercise, Resistance Training and Combined Exercise Modalities on Cholesterol and the Lipid Profile: Review, Synthesis and Recommendations**",** Sports Med. 2014; 44(2): 211–221.
8. Prabhakaran B. and others, "Effect of 14 weeks of resistance training on lipid profile and body fat percentage in premenopausal women", Br J Sports Med. 1999 Jun; 33(3): 190–195.
9. Costa RR and others, "Effects of Resistance Training on the Lipid Profile in Obese Women", J Sports Med Phys Fitness, 2011 Mar: 51(1): 169-77.