

EFFECT OF JUMP ROPE AND PLYOMETRIC WITH STAIRCASE TRAINING ON PHYSICAL FITNESS VARIABLE AMONG SCHOOL LEVEL HAND BALL PLAYERS

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ABSTRACT

The study was to find out the effect of jump rope and plyometric with staircase training on physical fitness variables among school level hand ball players. To achieve the purpose of the study, 60 students were selected from SES matric higher secondary school, Ganapathy, Saravajana higher secondary school, peelamedu. The age of the subjects was ranged between 15 and 19 years. 60subjects were selected at randomly and the subjects were divided into three equal groups namely experimental group I and experimental group II and control group. Thus each group consisted of 20 subjects. The investigator one of thephysical fitness variables such as Cardiovascular enduranceamong school handball players.

The experimental group I was under went 12 week of jump rope training and experimental group II was under went 12 weeks of plyometric with staircase training programme and the control group was not involves any specific training. The pre test and post test was taken to all the three groups in before and after training programme respectively. To analysis the data investigator used ANCOVA for this study. If 'F' ratio is found significant the investigator used Scheffe's post hoc test to find out the better group. The study was concluded that the experimental group I and experimental group II was significantly improved on physical fitness variablesamong school handball players. And also it was concluded that the experimental group II (Plyometric with staircase training) was better than the experimental group I (Jumprope training) on physical fitness variables such as Cardiovascular enduranceamong school levelhandball players.

Key words :Jump rope training,plyometric training, staircase training andphysical fitness variables.

INTRODUCTION

“ If the popular study of mankind is man, the proper study of physical education is sport” physical education is imparting learning to choose appropriate physical activity for personal growth, well being, and pleasure in performance. Sports is one of the physical activities played at a level for in conditioning fitness and recreation. Sports itself is a form of culture in society. In this aspect it stands for highly competitive extension and specialized motivation.”

Sports are “carrying away from work”, and an absolute freedom of activity. In general the major aim of sports is recreation. Having become highly competitive, sports today are seen in a much broader perspective than ever before. Sport, in fact, is an attitude of mind. For most people, a sport is recreation, for the genetically endowed’ ones it is competition to excel and achieve high standards in performance. Sports are largely individual events such as athletics, archery, swimming, shooting etc. where in the participant tries to compete against his own previous standards as well as those of others.

Today, sports are highly organized and they are institutionalized. Rules of organization and competition are well defined for each sport discipline. With research and scientific inputs, there is const an effort by athletes to improve standard in performance and achieve perfection in skill. Several sports have carry-over value. They can be played even in old age depending upon the physical condition of the person.

TRAINING

Sports training Specificity is the principle of training that states that should be relevant and appropriate to the sports for which the individual is training in order to produce a training effect.

The specificity principle simply states that training must go from highly general training to highly specific training. The principle of specificity also implies that to become better at a particular exercise or skill, you must perform that exercise or skill. To be a good cyclist, you must cycle the point to take away is that a runner should train by running and a swimmer should train by swimming. **(Hardayal Singh, 1991)**

The word “training” means different things in different fields. In sports the word “training” is generally understood to be synonym of doing exercise. In a narrow sense training is physical exercise for the improvement of performance. Training involves constructing an exercise programme to develop an athlete for a particular event. This increasing skill and energy capacities are equal consideration. Training is the main component and the basic form of preparing the athlete for higher level of performance. It is a systematically planned preparation with the help of the exercise which realizes the main factors of influencing athlete’s progress.

The content of training includes all the basic types of preparation of the sportsmen such as physical, technical, tactical and psychological. Through systematic training the athletes “fitness level” and his acquisition of vital knowledge and skill are improved. Sports training are a basic preparation of sportsman for better performance through physical exercise. It is based on scientific principles of aiming at education and performance enhancement, the improvement of general health and organic functions as well as increasing the strength and stability of the musculo-skeletal system. Development of motor skill is also the objective of sports training. Sports activities consist of motor movement and action and their success depends largely on how correctly they are performed. Techniques of training and improvement of tactical efficiency play a vital role in training process.

JUMP ROPE TRAINING

A jump rope exercise is the best aerobic training exercise. It is a simple exercise of jumping the rope and anyone can jump at a rope near his or her feet. This exercise needs no more equipment but a pair of jumping sneakers and a jumping rope. The best thing about this is that it is convenient for any age.

Benefit of jump rope training for improving the cardiovascular system. Improving the respiratory system. Strengthening the wrists, forearms, shoulders, upper legs, and especially the calves and ball of the feet. Increases physical stamina. Increases coordination and reflexes. Increases vertical lap. Simple to learn and skills develop quickly. Very small amount of space necessary to do. For the polar bears like me, it is unquestionably the safest outdoor winter exercise

PLYOMETRICS

plyometrics, also known as "jump training" or "plyos", are exercises in which muscles exert maximum force in short intervals of time, with the goal of increasing power (speed-strength). This training focuses on learning to move from a muscle extension to a contraction in a rapid or "explosive" manner, such as in specialized repeated jumping.

Plyometric is a type of exercise training designed to produce fast, powerful movements and improve the functions of the nervous system, generally for the purpose of improving performance in sports. Plyometric movements, in which a muscle is loaded and then contracted in rapid sequence, use the strength, elasticity and innervations of muscle and surrounding tissues to jump higher, run faster, throw farther, or hit harder, depending on the desired training goal. Plyometric training is used to increase the speed or force of muscular contractions, often with the goal of increasing the height of a jump. (Will and Freeman, 1994)

The term "plyometrics" was coined by Fred Wilt after watching Soviet athletes prepare for their events in track and field; he felt this was a key to their success.[5] It is a poor term to describe what happens,[citation needed] but it has since been accepted and is now well established. When Wilt learned of the work being done by Michael Yessis on Soviet (Russia) training methods, they quickly collaborated to help disseminate information on plyometrics.

Plyometrics(the shock method) was created by Yuri Verkhoshansky in the late 1960s, early 1970s. Since then the shock method of plyometrics is still being practiced for improvement of athletic performance by what appears to be a relatively limited number of athletes. These athletes still do depth jumps, the key exercise in the shock method, according to the guidelines established by Verkhoshansky.

STAIRCASE

"Staircase", "Stairway", and "Stair" redirect here. For other uses, see Staircase (disambiguation), Stairway (disambiguation), and Stair (disambiguation).

A stairway, staircase, stairwell, flight of stairs, or simply stairs is a construction designed to bridge a large vertical distance by dividing it into smaller vertical distances, called steps. Stairs may be straight, round, or may consist of two or more straight pieces connected at angles.

Special types of stairs include escalators and ladders. Some alternatives to stairs are elevators (lifts in British English), stair lifts and inclined moving walkways as well as stationary inclined sidewalks (pavements in British English).

STATEMENT OF THE PROBLEM

The purpose of the study was to find out the effect of jump rope and plyometric with staircase training on physical fitness variables among school level hand ball players.

HYPOTHESIS

- It is hypothesized the jump rope training may be a significant improvement on physical fitness variables among school level hand ball players.
- It is hypothesized the plyometric with staircase training may be a significant improvement on physical fitness variables among school level hand ball players.

DELIMITATION

This study was delimited in the following aspects and these delimitations were taken into consideration while interpreting the results.

- Subjects of the present study were delimited to SES matric higher secondary school, Ganapathy, Saravajana higher secondary school, peelamedu. Coimbatore, only.
- Only school male students were selected for the purpose of the study.
- The sample of the study was 60 handball players.
- The age group of the subject was ranged 15 to 19.
- As far as physical fitness variables were concerned it was delimited to Cardiovascular endurance only.
- The period of training programme was delimited to 12 weeks only.
- The selected criterion variables for the study were assessed by the standardized test items.
- The data were collected on selected criterion variables prior to and immediately after the training period.

METHODOLOGY

SELECTION OF SUBJECTS

The purpose of this study was to find out the effect of jump rope and plyometric with staircase training on physical fitness variables among school level hand ball players.

- To achieve the purpose of the study, 60 students were selected from SES matric higher secondary school, Ganapathy, Saravajana higher secondary school, peelamedu. Coimbatore, only.
- The age of the subjects was ranged between 15 – 19 years. 60 subjects were selected at randomly and the subjects were divided into three equal groups namely experimental group I (jump rope training group) and experimental group II (Plyometric with staircase group) and control group. Thus each group consisted of 20 subjects.

SELECTION OF VARIABLES

The research scholar reviewed the available scientific literatures pertaining to the problem understanding from books, journals, magazines and research papers considering the feasibility of criteria and availability of instruments and the following variables were selected.

Independent variables

The following were the independent variables selected for this study

1. Jump rope training
2. Plyometric with Staircase training

Dependent variables

The following were the dependent variables selected for this study

Physical fitness variable

- Cardiovascular endurance

SELECTION OF THE TEST

DIMENSION	COMPONENTS	TEST ITEMS	UNITS
PHYSICAL FITNESS VARIABLES	Cardiovascular endurance	Harvard step test	In seconds

Analysis of the study

TABLE – II

**COMPUTATION OF ANALYSIS OF COVARIANCE RESULTS
ONCARDIOVASCULAR ENDURANCE AMONG EXPERIMENTAL GROUP
ANDCONTROL GROUP**

Test	Jump rope training group	Plyometric with Staircase training Group	Control Group	Source of Variances	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test Mean	57.75	56.60	56.95	Between	13.90	2	6.95	0.24
SD	5.34	6.13	4.32	Within	1611.50	57	28.27	
Post Test Mean	80.40	81.65	57.30	Between	7520.63	2	3760.32	99.34*
SD	5.04	8.35	4.28	Within	2157.55	57	37.85	
Adjusted Post Test Mean	80.09	81.88	57.36	Between	7469.43	2	3734.72	115.44*
				Within	1811.74	56	32.35	

* Significant at 0.05 level of confidence.

Required table value at 0.05 level of significance for 2 & 57 and 2 & 56 degree of freedom 3.19

Table II shows that the pre-test mean value of experimental group I (Jump rope training), experimental group II (Plyometric with staircase training group), and control group are 57.75, 56.60, and 56.95 respectively. And standard deviation values of experimental group I, experimental group II and control group are 5.34, 6.13 and 4.32 respectively. The obtained 'F' ratio of 0.24 for pre-test score is lesser than the required table value of 3.19 for df 2 and 57 at 0.05 level of confidence on Cardiovascular endurance

The post-test mean value on Cardiovascular endurance of experimental group I (Jump rope training), experimental group II (Plyometric with staircase training group), and control group are 80.40, 81.65 and 57.30 respectively. And standard deviation values of experimental group I, experimental group II and control group are 5.04, 8.35 and 4.28 respectively. The

obtained ' F' ratio of 99.34 for pre-test score is greater than the required table value of 3.19 for df 2 and 57 at 0.05 level of confidence on Cardiovascular endurance.

The adjusted post-test mean value on Cardiovascular endurance of experimental group I (Jump rope training), experimental group II (Plyometric with staircase training group), and control group are 80.09, 81.88 and 57.36 respectively. The obtained ' F' ratio of 115.44 for adjusted pre-test score is greater than the required table value of 3.19 for df 2 and 56 at 0.05 level of confidence on Cardiovascular endurance.

The result of the study indicated that there was a significant difference between the adjusted post-test means of jump rope training, plyometric with staircase training group, and control group are on Cardiovascular endurance.

Whenever the obtained ' F' ratio of adjusted post-test mean was found to be significant, the investigator go for the Scheffe's post hoc test to find out the paired mean differences and it was presented in table - III

TABLE-III
SCHEFFE'S POST HOC TEST FOR ADJUSTED MEAN VALUE FOR OF
JUMP ROPE TRAINING GROUP AND PLYOMETRIC WITH
STAIRCASE TRAINING GROUP AND CONTROL
GROUP ON CARDIOVASCULAR ENDURANCE

S. No.	Adjusted Post-test Means			Mean Difference	Confidence Interval
	Jump rope training group	Plyometric with Staircase training Group	Control Group		
1.	80.09	81.88		0.79	4.49
2.	80.09		57.36	22.73*	
3.		81.88	57.36	24.52*	

*Significant at 0.05 level of confidence.

The table – III shows that the mean difference value between, experimental group I (Jump rope training), experimental group II (Plyometric with staircase training group) group is 0.79 on Cardiovascular endurance, it is lesser than the confidence interval value of 4.49, it its

indicates that there is no significance difference between experimental group I and experimental group II on Cardiovascular endurance.

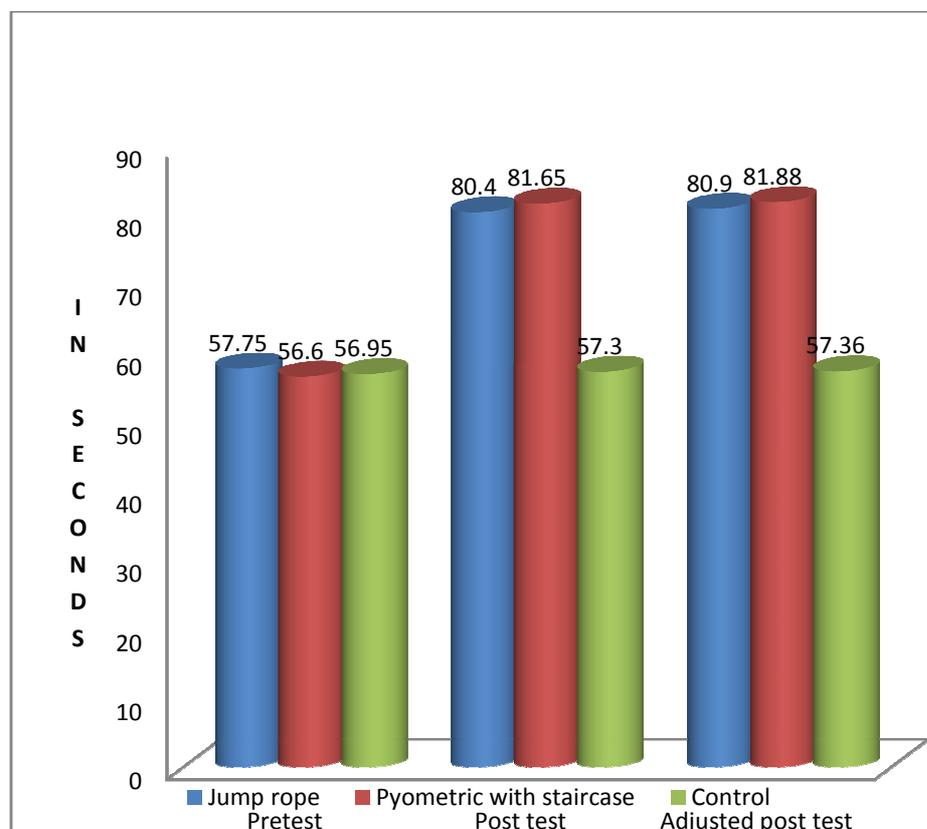
The mean difference value between, experimental group I (jump rope training) and control group is 22.73 on Cardiovascular endurance, it is greater then the confidence interval value of 4.49, it its indicates that there is significance difference between experimental group I and control group on Cardiovascular endurance.

The mean difference value between, experimental group II (Plyometric with staircase training group) and control group is 24.52 on Cardiovascular endurance, it is greater then the confidence interval value of 4.49, it its indicates that there is significance difference between experimental group II and control group on Cardiovascular endurance.

The pre, post and adjusted post-test mean value of experimental group I (jump rope traininggroup), experimental group II (plyometric with staircase training group), and control group on Cardiovascular endurance were graphically represented in figure - I

FIGUER – I

Cylinder diagram shows the mean value of pre and post tests and adjusted post test of control group and experimental group on cardiovascular endurance



DISCUSSION ON FINDINGS

The result of the study indicates that cardiovascular endurance is improved in experimental group I (plyometric training) and experimental group II (staircase training group). The training shows a better improvement than the control group. This is due to the training adapted by the subjects in the training period this clearly shows the plyometric training and staircase training group to improve the cardiovascular endurance. From the result of Scheffe's post hoc test the experimental group II (staircase training group) is better than the experimental group I (plyometric training group).

DISCUSSIONS ON HYPOTHESIS

The second hypothesis of the study is stated that there would be a significant difference in cardiovascular endurance due to effect of jump rope training and plyometric with staircase training. The result of the study revealed that there is a significant difference in cardiovascular endurance due to effect of jump rope training and plyometric with staircase training. Hence the investigator's hypothesis was accepted.

CONCLUSION

- Within the limitation of the present study, the conclusion were drawn
- It was concluded that the experimental group I (jump rope training) was significantly improve on cardiovascular endurance among school handball players.
- It was concluded that the experimental group II (plyometric with staircase training) was significantly improve on cardiovascular endurance among school handball players.
- It was concluded that the experimental group II (plyometric with staircase training) was better than the experimental group I (jump rope training group) on cardiovascular endurance among school handball players.

Websites visited

www.en.wikipedia.org
www.google.com
www.medline.com
www.pubmed.com
<http://shdhganga.inflibnet.ac>