



## Effect of Step Aerobic and Rope Skipping on Body Mass Index on University Girls

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### ABSTRACT

*The main purpose and objective of the present study was to find out the effect of step - aerobic and rope skipping on body mass-index on University girls. For the purpose of this study ninety (90) under graduate girls of Allahabad University was selected as subjects. These girls age ranged from 18 to 22 years. The age of the above selected girls was verified from their respective age records in the University. All the subjects were randomly assigned to two experimental groups (A, B) and the one Control Groups (C) each consisting of thirty subjects. Body Mass Index was assessed at the beginning and after the experimental period of eight weeks in terms of per-test and post – test scores on the criterion measures. To measure the Body Mass Index weight and height of girls were taken. The weight was recorded in Kg and height was recorded in meters to find out the effects of Rope Skipping and Step-aerobic on Body Mass Index. The analysis of co-variance was used as the statistical treatment with the level of confidence at 0.05. It is found that means difference of Control Group and Step - aerobic: Control Group and Rope Skipping were found to be significant whereas the mean differences of Step- aerobic and Rope Skipping was not statistically significant.*

**KEYWORDS : Step - Aerobic, Rope Skipping.**

### INTRODUCTION:

Today it is necessary for the physical educators and the coaches to recognize the vital part, science plays an important role in the successful conduct of physical education and athletic programmes, to contribute to the best of one's ability to all aspects of physical education and athletics will require a good understanding of the available scientific knowledge not only will such understanding results in better teams and better programmes of activities but also enable to guard the health of pupils. Then too knowing the reason why to select a particular training programme for accomplishing a specific task scientific knowledge is essential. In today's techno-scientific age, the world has completely changed in all aspects due to discovery and research. In the field of games and sports also, there has been a great change with the help of scientific coaching and training. The athlete are being trained on scientific guidelines with highly sophisticated means for better achievement in their concerned sport to enable the coaches to get optimum performance with minimum expenditure of energy and time. They are being exposed to the exercise and training methods, which have got beneficial effect for achieving higher standard. The main aspect to be emphasized in order to achieve high level of performance is the efficient function of the body. They must function well enough to support the particular activity that the individual is performing since different activities make different demands upon the organism with respect to blood circulation, respiration, metabolic neurological and temperature regulating functions, Physiological fitness is specific to activity. Human body is highly adaptable to exercise. The response of each system is discrete, hard work in the heat is necessary to improve the fitness of the temperature regulatory mechanism. Each task has its major physiological components and fitness for the task required are effective functioning of the appropriate system. In competitive sports, for the selection of particular sports, one has to consider measures of human body and the physical fitness which play a dominant role at higher level of sports competitions. Scientists and physiologists have been of the view that anthropometry and physical components of an athlete have a lot to do with the performance, more than the techniques and tactics of a player of a team. The research findings show that a high level of technical perfection alone has nothing to do with the success in competitive sports. Most of the game demands a greater amount of speed, strength, endurance, flexibility, co-ordination and maximum fitness of the Organism. Modern scientific methods of training players or team place greater responsibility on the coaches and physical educators. They are also responsible for the selection of team taking into consideration the physical and physiological qualities essential for the game. In this study research scholar intended to study the effectiveness of rope skipping and step - aerobic programme on Body mass index, and

body composition of girls of selected age range. This can be useful in the place where the climatic conditions, inadequate space and other facilities do not allow the trainees to adopt other types of training programmes.

### Methodology:

Ninety (90) under graduate girls of Allahabad University was selected as subjects. These girls age ranged from 18 to 22 years. The age of the above selected girls was verified from their respective age records in the University. All the subjects were randomly assigned to two experimental groups (A, B) and the one Control Groups (C) each consisting of thirty subjects. The experimental treatments were also assigned to the group at random. The A, B was treated as experimental groups and was administered progressive training programme of Rope Skipping and Step-aerobic respectively for eight weeks. The group 'C' was served as Control Group and continue attending the University but did not participate in any kind of training programme. Body Mass Index was assessed at the beginning and after the experimental period of eight weeks in terms of per-test and post – test scores on the criterion measures. The necessary data was collected with standardized procedure by administering selected physical and physiological abilities tests as suggested by Hardyal Singh and W. Cooper. The necessary work was done before the start of the test. All the tests were administered and explained to the subjects categorically and left no ambiguity. Any doubts of the subjects raised were clarified before taking the test, but no special training was given to the subjects.

### ADMINISTRATION OF TEST:

#### Body Mass Index

To measure the Body Mass Index weight and height of girls were taken. The weight was recorded in Kg and height was recorded in meters. And the following formula was used to measure the Body Mass Index.  $BMI = \frac{\text{weight (kg)}}{\text{height squared (m}^2\text{)}}$ .

To find out the effect of step - aerobic and rope skipping on body mass- index on under graduate girls of Allahabad University the required statistical calculation were computed with the help of SPSS software in the computer. To find out the effects of Rope Skipping and Step- Aerobic on Body Mass Index. The analysis of co-variance was used as the statistical treatment with the level of confidence at 0.05.

### RESULTS:

#### TABLE-1

#### ANALYSIS OF COVARIANCE OF THE MEAN OF TWO EXPERIMENTAL GROUPS AND CONTROL GROUP IN BODY

**MASS INDEX**

Group	Sum of Square	df	Mean Square	F-ratio			
Pre-test mean	16.77	16.67	16.83	A 0.42 W 388.2	2 87	0.21 4.46	0.047
Post-test mean	14.97	15.1	16.67	A 53.63 W 500.96	2 87	26.82 5.758	4.66*
Adjusted post-test mean	14.96	15.18	16.6	A 47.879 W 162.58	8 86	23.949 1.948	12.34*

Significant at 0.05 level of confidence, N=90, A= among mean variance, W= Within group variance, F-ratio needed for significance at 0.05 level of confidence = 3.11

As the difference between the adjusted post-test means for three groups were found significant the critical difference between the paired adjusted final means were not significant difference between all paired adjusted final means are shown in table.2

**TABLE-2  
PAIRED ADJUSTED MEANS AND DIFFERENCES BETWEEN MEANS FOR TWO EXPERIMENTAL GROUPS AND THE CONTROL GROUP IN BODY MASS INDEX.**

Mean			Diff between Means	Critical diff for Adjusted Mean
Control	Step-up	Rope skipping		
16.6	15.18		1.42*	0.497
16.6		14.96	1.64*	0.497
	15.18	14.96	0.22	0.497

It is evident from table 2 that means difference of Control Group and Step Up: Control Group and Rope Skipping were found to be significant whereas the mean differences of Step-Aerobic and Rope Skipping was not statistically significant at 0.05 levels. The mean increase made by the two experimental groups shows insignificant difference amongst them. However, the mean increase made by control group and Step –Aerobic: Control Group and Rope Skipping were significantly greater than that of Rope Skipping and Step-Aerobic in the performance of Body Mass Index.

**DISCUSSION:**

The analysis of data using analysis of covariance revealed that two experimental groups trained by Step-Aerobic and Rope skipping exercise, showed significant changes in the Body Mass index.

Rope Skipping had showed higher physiological change in concerned with Body Mass Index followed by Step-Aerobic. There was no change found in Control group because the Control group was not edged in any type of systematic physical activity as the other two experimental groups were. And eight week was not enough duration to bring any physiological changes as per the growth and development was concerned. The better performance of experimental group as compared to the control group may be due to the fact that the experimental groups have undergone a systematic and progressive training programme (thrice a week) for duration of eight weeks whereas control groups did not participated in any kind of formal training. It is an established fact that regular training/conditioning of optimum intensity brings some specific physiological adaptive changes in various parameters namely, cardiovascular system, muscular system and body composition. The Rope Skipping group showed better adaptation in their Body Mass index than that of Step-Aerobic and Control Group. The effect of Rope skipping inducted higher physiological changes probably its movement was more recreational and may be due to fact that Skipping obviously involve almost the entire parts of body to that of Step-Aerobic. The Rope Skipping group also achieved better development because Rope Skipping types of exercise were motivating to the subjects and they were very familiar with this type of activity also.

**CONCLUSION:**

Eight weeks of participation in different modes of training namely, Rope Skipping and Step-Aerobic were effective in bringing change in Body mass index. Between two modes of training Rope Skipping exercise followed by Step –Aerobic achieved the higher reduction in Body Mass Index.

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