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EFFECTS OF RESISTANCES TRAINING ON POWER ABILITY AMONG STUDENT ATHLETES : A PILOT STUDY

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Abstract: The purpose of the research was to effects the resistance training on power ability among Student Athletes with respects to athletic and work power ability. The 15 Student Athletes as a experimental group who were practicing Inter Collegiate Tournament and 15 other students as a control group was selected as subject for present study, their age ranged between 18-28 years. Only training was given to the experimental groups. Voluntary to participate in the Resistance training programmes. Exclusion criteria were the presence of chronic medical conditions such as asthma, heart disease or any other condition that would put the subjects at risk when performing the experimental tests. The resistance training was planned as 06 weeks 05 Days a week and 45 min. Study was conducted at Aurangabad . Mean score and standard deviation were taken and T test was applied. The result reveals that there was significant effect of resistance training on work power (F-53.76, $p<0.05$) It is found that resistance training improve the work power performance on Student Athletes.

Key words : Training, Student Athletes, power ability

INTRODUCTION

A student athlete (sometimes written student–athlete) is **a participant in an organized competitive sport sponsored by the educational institution in which the student is enrolled**. Student-athletes are full-time students and athletes at the same time. Colleges offer athletic scholarships in many sports. Resistance training is a modality of exercise that has grown in popularity over the past two decades, particularly for its role in improving athletic performance by increasing muscular strength, power and speed, hypertrophy, local muscular endurance, motor performance, balance, and coordination (Aaberg, 1999;Starkey1996). The benefits of resistance training in both competitive and recreational athletes have been well documented over the past Two decades. Improvements in muscle strength and power, increase in muscle size, and improvement in sports performance are common benefits resulting from resistance training programs.Traditionally, strength athletes seeking to improve muscle strength, hypertrophy, power, and sports-specific fitness almost exclusively performed resistance training. Although it has been shown to have profound effects on these physical fitness components, only recently have the health-related benefits of resistance training been elucidated. It is now a popular form of exercise that is recommended by National health organizations such as the AmericanCollege of Sports Medicine (ACSM), American Heart Association, and the American Association for Cardiovascularand Pulmonary Rehabilitation, in conjunction with other modalities of exercise (*ie*, aerobic, flexibility), for the maintenance and improvement of health and performance (Kraemer,2002;Carpinelli,2004).

MATERIAL AND METHODS

Subjects: The 15 Student Athletes as a experimental group who were practicing Inter Collegiate Tournament and 15 other students as a control group was selected as subject for present study, their age ranged between 18-28 years. Only training was given to the experimental groups. Voluntary to participate in the Resistance training programmes. Exclusion criteria were the presence of chronic medical conditions such as asthma, heart disease or any other condition that would put the subjects at risk when performing the experimental tests. The resistance training was planned as 06 weeks 05 Days a week and 45 min. Study was conducted at Aurangabad . Mean score and standard deviation were taken and paired ANCOVA was applied. The subjects were free of smoking, alcohol and caffeine consumption, antioxidant supplementation and drugs during the programmes. They completed an informed consent document to participate in the study. The age, height, weights, power ability of all subjects were measured in physical education department laboratory.

ASSESSMENT OF WORK POWER

Work Power : work power test measured by the Vertical Power Jump.

Vertical Jump: This test measures the power of legs in jumping vertically and can be applied to children of both sexes aged nine years and above.

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Equipment: A Black board of 4.5 feet x 2 feet painted with green and red lines ,one inch apart and one feet apart respectively (The board is fixed firmly to a wall, preferably 6 a weighing scale (optional). In case, the blackboard is not available, a smooth and plain wall may be painted black for use in this test.

Test Administration: In the beginning a demonstration of the vertical jump, is given to a group of five to ten subject is asked to stand erect facing the board . His dominant hand's fingertips are marked with chalk powder and the subject is asked to raise the marked fingertips to a maximum height on the blackboard without lifting the heels so as to mark his maximum reach point. The fingertips are rechalked. With the chalked hand side towards the wall, a vertical jump is to be performed by the subject to make another mark at the maximal height of the jump. The subject is not allowed to run or hop. However, the subject is properly instructed to take a good jump by bending the knees and swinging the arms. The subject may be given three to five trials at his will and the best performance is considered.

Scoring: The maximum distance between the reaching height and the jumping height provides the score the test. However, to get the power in foot-pound units, the above distance is multiplied by the subject's body weight. But majority of the testers routinely use directly the distance jumped irrespective of body weight as the score of the test.

Training Programme:

The exercise session should consist of the following

1) A warm-up period of approximately 10 minutes this should combine calisthenics' type stretching exercises and progressive aerobic activity that should increase the heart rate close to the prescribed heart rate for the session.

2) A cool-down period of 5-10 minutes. Training program would be planned as 06 weeks 5 days a week and 45 min. Day the level of training intensity is increased from initial 15% to 70% during twelve weeks students were trained according to protocol of three sets, 8-12 repeat and 3-5 minutes break between each set training programs were created in the frame of these criteria.

Parameters measurements

Power generally measured by two methods Athletic power measured by using the Standing Broad Jump test and work power test would be measured by using the Vertical Power Jump test.

Collection of data:

Data was taken from the 15 Student Athletes as a experimental group of Aurangabad similarly Pre and Post Test was taken from 15 other students as a control group Resistances training was given to the experimental group. And analysis the data mean, S.D. and analysis of Covariance was utilized the level of significant was set up at 0.05 level.

RESULTS OF THE STUDY

As the primary aim of the study was to statistically effects of Resistance training to improve power ability on Student Athletes . With the help of mean Standard Deviations & T-Value

Table-1

Morphological characteristics of Control groups

Sr. No.	Components	Means Scores	Standard Deviations
1.	Age (Year)	22.50	3.41
2.	Weight (Kg)	68.88	6.34
3.	Height (cm)	170.21	21.32
4.	Body Mass Index (BMI)	20.56	2.56

Table -1 depicted the morphological characteristics of control group, the Mean Scores (S.Ds.) age of control group was **22.50** (3.41) years, mean scores (S.Ds.) weight was **68.88** (**6.34**) Kg, mean scores (S.Ds.) height was **170.21** (**21.32**) cm and mean scores (S.Ds.)BMI was **20.56** (**2.56**) .

Table-2

Morphological characteristics of Experimental groups

Sr. No.	Components	Means Scores	Standard Deviations
5.	Age (Year)	22.43	3.40
6.	Weight (Kg)	68.12	6.30
7.	Height (cm)	170.54	21.11
8.	Body Mass Index (BMI)	20.34	2.43

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Table -2 depicted the morphological characteristics of Experimental group, the Mean Scores (S.Ds.) age of control group was 22.43 (3.40) years, mean scores (S.Ds.) weight was 68.12 (6.30) Kg, mean scores (S.Ds.) height was 170.54 (21.11) cm and mean scores (S.Ds.)BMI was 20.34 (2.43) .

Figure -1 shows Morphological characteristics of Control groups

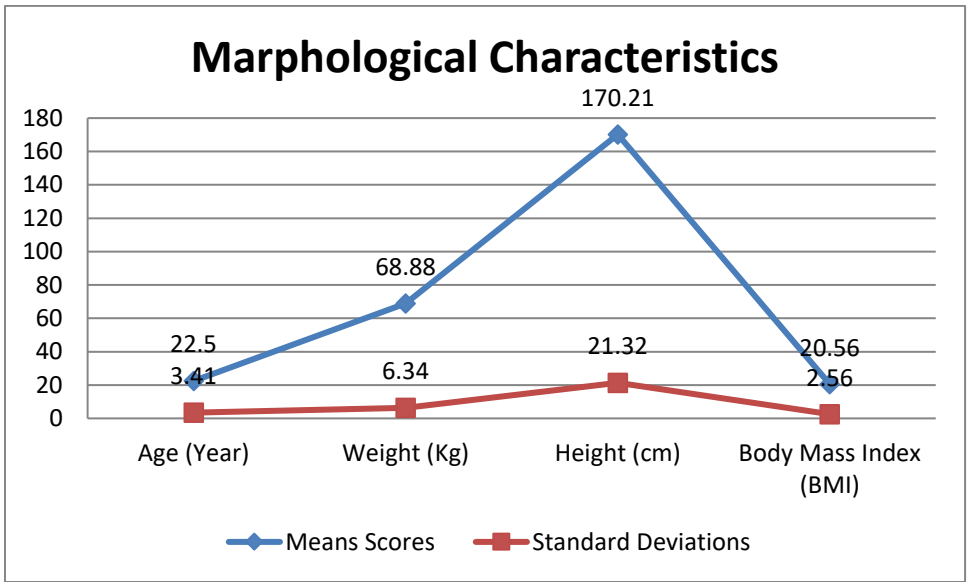

Figure -2 shows Morphological characteristics of Experimental groups

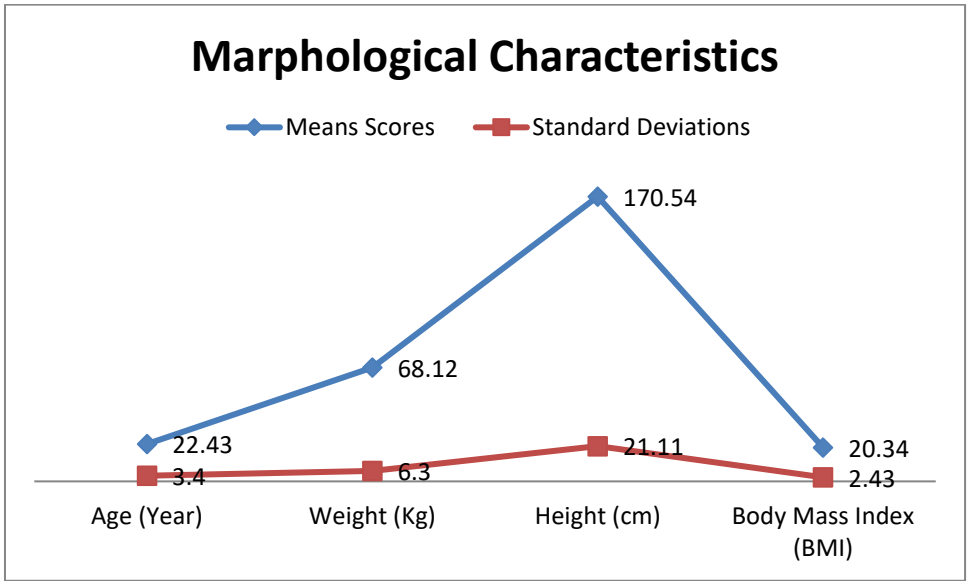

Table-3, Mean Scores and Standard Deviations of Pre and Post-test of Work power among Control group.

components	Test	Numbers	Mean Scores	S. D.	T-Value
Work power	**Pre Test**	**15**	**42.09**	**3.20**	**1.65NS**
	Post Test	**15**	**42.15**	**3.27**	

As per Table-3, illustrates the mean scores and standard deviations of work Power using through Vertical Jump test among Control group. The mean score of Pre- test was 42.09 and the post test was 42.15 respectively of work Power among control group. In addition the standard deviations of Pre-test were 3.20 and the post test was 3.27 respectively of work Power among control group. The findings of the study shows that , there was significant difference in relation to pre and post test of work Power between Control group.

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Figure -3, shows the Mean Scores and Standard Deviations of Pre and Post-test of Work power among Control group

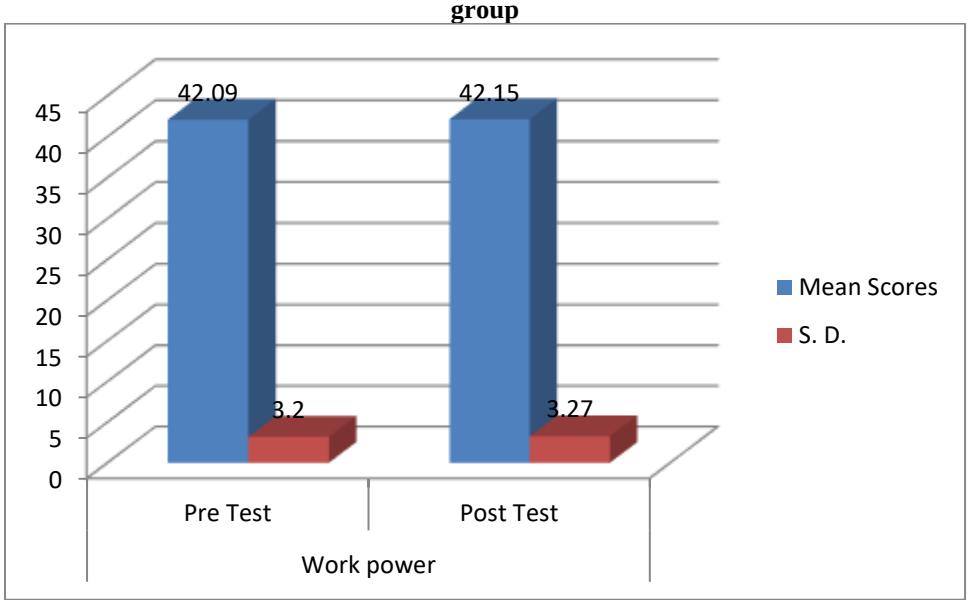


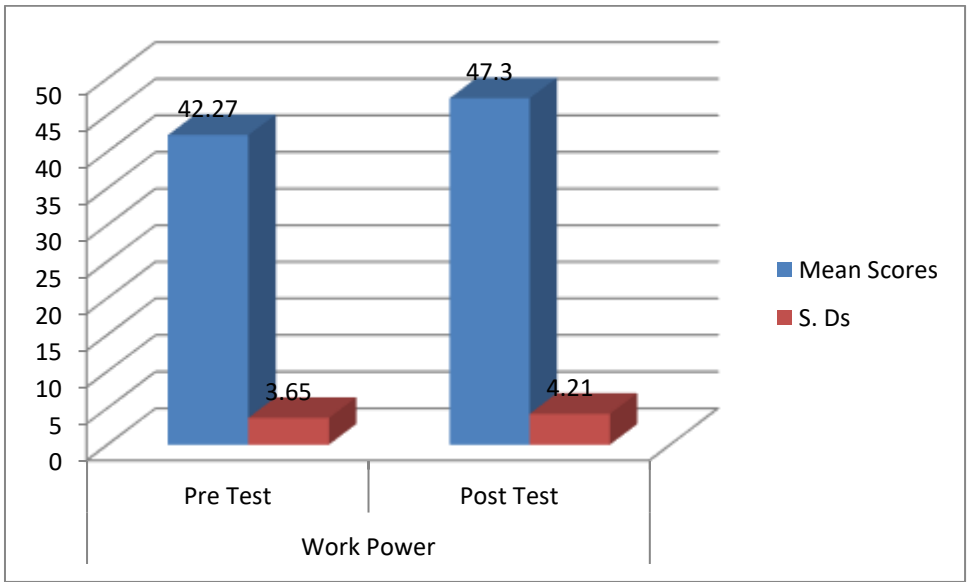
Table-4, Mean Scores and Standard Deviations of Pre and Post-test of Work Power among Experimental group.

components	Test	Number	Mean Scores	S. Ds	T-Value
Work Power	Pre Test	15	42.27	3.65	4.67*
	Post Test	15	47.30	4.21	

As per Table-2, illustrates the mean scores and standard deviations of work Power using through Vertical Jump test among experimental group.

The mean scores obtained and standard deviations from Table 2, the mean score of Pre-test was 42.27 and the post test was 47.30 respectively of work Power among experimental group. Mean while the standard deviations of Pre-test were 3.65 and the post test was 4.21 respectively of work Power among experimental group..

Figure -4, shows the Mean Scores and Standard Deviations of Pre and Post-test of Work power among Experimental group



DISCUSSION

The findings of the study shows that , there was significant difference in relation to pre and post test of **work Power** between Experimental group . This means that Six weeks Resistance training programme has improved work power

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performance among Student Athletes . Resistance training **Enhanced muscular strength and power**. **Better developed, positive exercise habits**. **Improved motor skills leading to enhanced sports performance**. It had been hypothesized that there would be significant effect of Resistance training to the improvement of sports performance-related physical fitness components with respect to work power ability among Student Athletes . The results reveal that there was significant effects of Resistance training was found out on sports performance related physical fitness components with respect to work power among Student Athletes . Jump performance has been a standard assessment of athletic strength and power in the lower body (Anderst, 1994; Duke, 1992; Fatourous, 2000). Coaches and athletes have looked on this test as a predictor for athletic potential in many sports including weightlifting, football, basketball, volleyball, and track. Low strength attributable to poor muscular development hinders athletic performance including vertical jump and should be the primary training objective for the less-trained individual (Maffiluletti, 2002; Brown, 1986). resistance training has been shown to improve vertical jump performance as much as 2–8 cm or 5–15%, it seems that lighter, more explosive lifts may be more effective than heavier lifts that are performed at lower velocities (Holcomb,1996;Umesh,2010; Fatouruus,2000). As a result, when training for explosive movements, relatively light ballistic resistance exercises may be the most appropriate training model and offer the greatest potential for improvement in vertical jump performance (Anderst,1994, Poole,1987) . It is found that there was a significant effect of Resistance training on Athletic Power. Six week resistance training has improved the Athletic power among Student Athletes . There was a significant effect of Resistance training on work Power.

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