



EFFECT OF BODY FREE AND MEDICINE BALL WEIGHT TRAINING WORKOUTS ON LEG STRENGTH AMONG ENGINEERING STUDENTS

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ABSTRACT

The study was to examine the body free and medicine ball weight training workouts on leg strength among engineering students. Total recruited randomly N=48 (forty eighty) men active and physically fit engineering students their age period ranged from 18 years to 25 years selected from University College of Engineering Narasaraopet, JNTUK Andhra Pradesh. The chosen students were randomly recruited into four groups each group n=12 men i.e. empirical groups I men: body weight exercises (BEE), empirical group II men underwent: free weight exercises (FWE), empirical group III underwent: medicine ball exercises (MBE), and control group (CG). CG was practiced only their regular activities. The training period was fixed for 16- week's duration and four sessions in a week. The measurement of leg strength scores was collected through leg dynamometer before and after the completion of specific training. The collected score's were analyzed through ANCOVA and level of significant was restricted at 0.05 levels. The study found that body free and medicine ball weight training workouts had positive significant impact to increase the leg strength engineering students of three empirical group's players comparative to control group. Therefore, free weight is more effective than body weight exercises and medicine ball exercises in improving leg strength.

Keywords: – free weight, body weight, medicine ball, leg strength and dynamometer

Introduction:

Fitness refers to the ability of resisting fatigue, performing acceptable degree of motor ability and being able to adapt to muscular stress. The components of physical fitness are a set of elements that allows to know the level of physical fitness of a person. These are also known as motor abilities. It includes strength, endurance, flexibility, speed, coordinative abilities. These five motor abilities and their complex forms are basic requirement for human motor action. Thus, sports performance in all sports depends to great extent on these abilities.

Strength refers to the ability of an individual to overcome resistance or exert force against resistance made by a muscles or group of muscles. The strength ability can be divided into three type's namely maximum strength or static strength is the ability to overcome or act against maximal resistance. Dynamic strength or endurance strength is the strength that a person needs to sustain their body over a prolonged period of time, overcome resistance or act against resistance under condition of fatigue. Explosive strength or speed strength refers to muscles ability to work at maximum speed. It is a combination of strength and speed abilities

Statement of the Research Problem:

To analyze the “Influence of body free and medicine ball weight training workouts on leg strength among engineering students”.

Research Hypothesis:

- There will be a significant increase in score of leg strength performance of empirical group’s after the sixteen weeks impact of body free and medicine ball weight training work outs when compared with control group students.
- The free weight training will be more effective than body weight and medicine ball exercises program.

Methodology:

The study was to measure the body free and medicine ball weight training workouts on leg strength among engineering students. Total recruited randomly N=48 (forty eighty) men active and physically fit engineering students their age period ranged from 18 years to 25 years selected from University College of Engineering Narasaraopet, JNTUK Andhra Pradesh. The chosen students were randomly recruited into four groups each group n=12 men i.e. empirical groups I men: body weight exercises (BEE), empirical group II men underwent: free weight exercises (FWE), empirical group III underwent: medicine ball exercises (MBE), and control group (CG). CG was practiced only their regular activities. The training period was fixed for 16- week’s duration and four sessions in a week. The measurement of leg strength scores was collected through leg dynamometer before and after the completion of specific training. The collected score’s were analyzed through ANCOVA and level of significant was restricted at 0.05 level.

Table - I**THE LEG STRENGTH - DYNAMOMETER TEST ANCOVA RESULTS OF BWE, FWE, MBE AND CG GROUPS OF STUDENTS**

GROUPS	BWE	FEW	MBE	CG	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED ‘F’
Pre Test Mean SD	68.91 3.58	64.75 4.54	67.08 4.66	68.41 4.27	Between	124.91	3	41.63	2.28
					Within	803.00	44	18.25	
Post Test Mean SD	79.75 6.60	89.50 4.31	87.33 4.33	66.25 4.41	Between	3973.75	3	1324.58	56.57*
					Within	1030.16	44	23.41	
Adjusted Post Test Mean	78.75	91.35	87.48	65.42	Between	4392.73	3	1464.24	104.41*
					Within	603.01	43	14.02	
Mean Diff	+10.84	+24.75	+20.25	-2.16	-	-	-	-	-

Table F-ratio value at 0.05 level of confidence for 3 and 44 (df) =2.82, 3 and 43 (df) =2.82

*Significant

BWE : Body weight exercises group
FEW : Free weight exercises group
MBE : Medicine ball exercises group
CG : Control group.

The above table-I shows that there is a significant difference on leg strength performance among the four groups such as **BWE** : Body weight exercises group, **FEW** : Free weight exercises group, **MBE** : Medicine ball exercises group and **CG** : Control group. Since the 'F' value required being significant at 0.05 level for 3, 44 d/f and 3, 43 are 2.82, but the computation values of leg strength post and adjusted posttest 'F' values are 56.57 and 104.41 respectively. Which are greater than the tabulated value, it shows that training is effective for positive changes in leg strength. Since the obtained 'F' ratio is found significant.

TABLE: 2

THE LEG STRENGTH - DYNAMOMETER TEST RESULTS OF SCHEFFE'S METHOD TEST MEAN DIFFERENCES BETWEEN BWE, FWE, MBE AND CG GROUPS OF STUDENTS

(ADJUSTED POST MEAN)

BWE	FWE	MBE	CG	MD	CI
78.75	91.35	-	-	12.60*	4.43
78.75	-	87.48	-	8.73*	
78.75	-	-	65.42	13.33*	
-	91.35	87.48	-	3.87*	
-	91.35	-	65.42	25.93*	
-	-	87.48	65.42	22.06*	

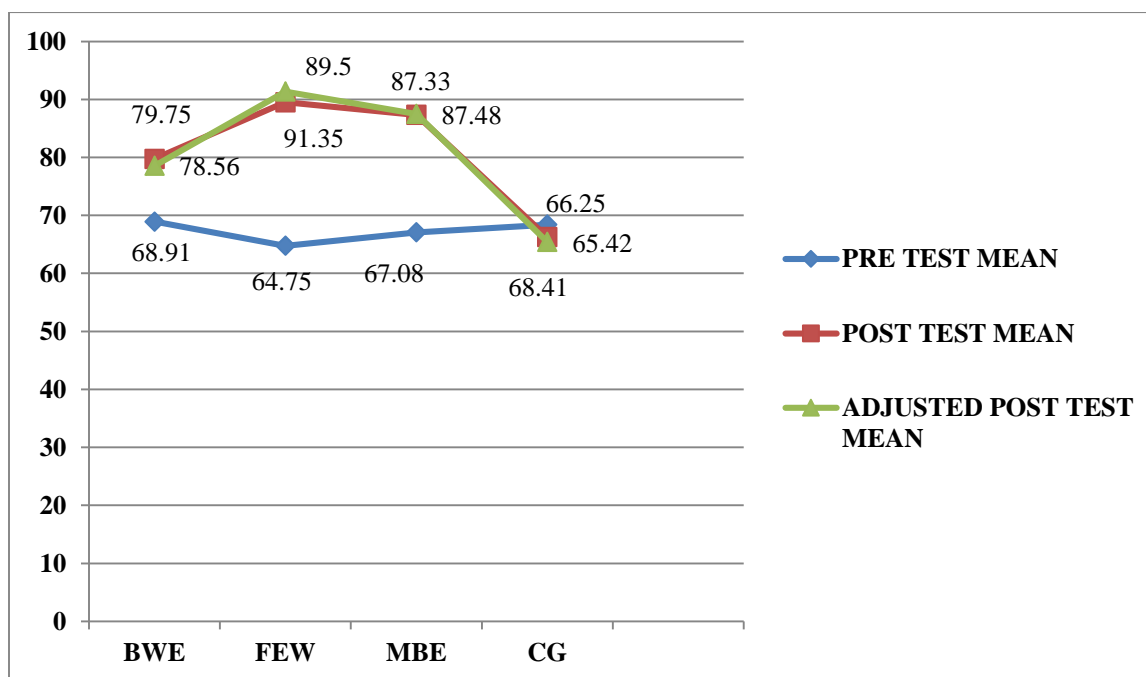
*Significant

BWE : Body weight exercises group
FEW : Free weight exercises group
MBE : Medicine ball exercises group
CG : Control group.

In above table : 2 display the mean differences between **BWE** : Body weight exercises group and **FEW** : Free weight exercises group, **BWE** : Body weight exercises group and **MBE** : Medicine ball exercises group, **FEW** : Free weight exercises group and **CG** : Control group, **FEW** : Free weight exercises group and **MBE** : Medicine ball exercises group, **FEW** : Free weight exercises group and **CG** : Control group, **MBE** : Medicine ball exercises group and **CG** : Control group are 12.60, 8.73, 13.33, 3.87, 25.93 and 22.06. These means differences values are higher than CI value 4.43. Therefore researcher noted significant differences present between training groups and control groups after treatment period.

Figure - 1

THE LEG STRENGTH - DYNAMOMETER PRE POST AND ADJUSTED POST TEST MEAN NUMBERS IN KILOGRAMS OF BWE, FEW, MBE AND CG GROUPS OF STUDENTS PRESENTED IN LINE GRAPH.



BWE : Body weight exercises group
FEW : Free weight exercises group
MBE : Medicine ball exercises group

- There will be a significant increase in score of leg strength performance of empirical group's after the sixteen weeks impact of body free and medicine ball weight training work outs when compared with control group students.
- The free weight training will be more effective than body weight and medicine ball exercises program.

Discussion on Hypothesis:

- The first hypotheses stated that there will be a significant increase in score of leg strength performance of empirical group's after the sixteen weeks impact of body free and medicine ball weight training work outs when compared with control group students. The statistical analysis proved that body free and medicine ball weight training work outs significantly increased the leg strength performance. Hence research first hypothesis accepted.
- The second hypotheses stated that free weight training will be more effective than the body weight exercises and medicine ball exercises. The statistical analysis proved free weight training is superior to body weight exercises and medicine ball exercises. Hence research second hypotheses accepted.

Discussion and Findings:

The implementation of 16-weeks of body weight exercises, free weight exercises and medicine ball weight training work outs positively increase the leg strength when compared with control group students. The various sports training effect on leg strength are Blakey1 and Southard (1987) concluded that influence of 8-weeks of weight and plyometric training significantly increased the legs strength of trained groups. . Jothi et al., (2010)

result demonstrated that, concurrent strength and plyometric training with repeated bouts of a combination of physical exercise has significant positive impact on leg strength. Antonio et al., (2017) suggested that resistance multi joint exercises program is more effective than single joint exercises in increasing legs muscle strength. Muthu (2002) decalred that 8-weeks effect of strength training and combined training of strength and endurance positively increased the maximum leg strength of subjects. Shayinsha (2006) concluded that high intensity with low volume and low intensity with high volume of maximal power training has significant effect for gains in maximum leg strength.

Conclusions:

Investigator recorded that impact of 16-weeks body weight exercises, free weight exercises and medicine ball exercises had positive gain in muscular leg strength of students. Therefore, free weight exercises is more effective than body weight exercises and medicine ball exercises for increasing leg strength of engineering students.

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