ISO 9001 - 2015

ISSN 2349 - 4891

Monthly

IJRRAS

IF
4.665

Volume 4,Issue 4, April 2017

International Journal of
Recent Research and Applied Studies

SURRAGH PUBLICATIONS

ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies
(Multidisciplinary Open Access Refereed e-Journal)

Effect of Twelve Week Explosive Strength Training on SRM University Long Jump Athletes

S.Maiyappan[1] & Dr.Louis Raj[2]

[1]*M.Phil Research Scholar, Department of Physical Education & Sports Sciences, SRM University, Chennai, Tamilnadu, India.*
[2]*Assistant professor, Department of Physical Education & Sports Sciences, SRM University, Chennai, Tamilnadu, India.*

Received 15th March 2017, Accepted 20th April 2017

Abstract

The purpose of this study was to assess the effect of explosive strength training program on Srm university long jump athletes. Twenty (N=20) male athletes from Srm university, Chennai, aged 19–23 years old, were randomly assigned to an experimental group. The subjects were assessed at baseline and after training for standing broad jump and vertical jump. A schedule of weight training program was employed on the students twice a week for a Period of 12 weeks. Paired t-test was applied to findout the significant effect of Explosive strength training on long jumper`s performance. The results of the study showed that there was a significant improvement after 12 weeks weight training in standing broad jump t-value 4.6747 (p<0.0002) and vertical jump t-value11.5507 (P< 0.0001).

Keywords: Explosive Strength, Standing Broad Jump, Vertical Jump.

Introduction

Weight training is a type of training for developing the strength of skeleton muscles. Weight training is a type of training that uses weights for resistance. Weight training provides a pressure to the muscles that causes them to adapt and get stronger. Explosive exercise can be defined as movements in which the rate of force development (RFD) is maximum or near maximum for a given type of muscle action (e.g. isometric, concentric, and eccentric). The peak RFD has a strong association with the ability to accelerate a mass. Explosive exercise may be performed isometrically or dynamically; however, dynamic movements can produce higher RFDs than isometric exercise. As the resistance used for dynamic movement decreases, the RFD increases resulting in an inverse relationship between peak force production and RFD Thus, a continuum of explosive exercise can be conceptualized ranging from isometric movements and high force slow movements (very heavy weights) to very fast movements performed with relatively light weights. Depending upon the resistance used a high RFD, high acceleration and power output can be achieved within the same movement. Explosive exercises in which all three parameters (RFD, acceleration and power) are at maximum or near maximum can be termed "speed strength" exercises and may be Plyometric or ballistic in nature. Harris et al. declared that some researchers claim the use of 80% of 1RM is recommended to improve power characteristics, while others suggest 50-60% of 1RM and below. Kawamori and Haff agreed with Harris et al., stating that there is inconsistency in the optimal load to produce the highest power. They claimed that some studies that used untrained subjects, single joint exercises, and upper-body exercises reported 30-45% of 1RM, while others using trained subjects, multi joint exercises, and lower-body exercises reported 30-70% of 1RM. The main purpose of the study was to evaluate the explosive strength of college level long jumpers and determine the effect of weight training on the three different explosive strength tests.

Correspondence
S.Maiyappan
E-mail: aucpescholars2015@gmail.com

Methodology

Twenty male athletes of Srm university Chennai, in the age group of 19 to 23 years enrolled in the training for the 2016-17 academic year were selected as subjects for the study. The tests which were selected for the study were broad jump (B.J.) and vertical jump (V.J.) after the pre-test the students were made to perform the explosive strength exercises (jump squat, jump lunges, one-leg jump squat) with weight. A schedule of weight training program was employed on the students twice a week for a Period of 12 weeks. A post test was conducted at the end of 12th week.

Statistical Design

To find out the significant effect of Explosive strength training on long jumper`s performance Paired t-test was applied.

Results

The results of the study are as under, the mean, S.D, and ‘t’- test of the subjects are presented in the

tables from 1to 2.

Table 1
Shows Pre and Post test of Broad jump of Srm University Long Jump Athletes

Test (in meters)	N	Mean	SD	Std Error	T-Value
Pre Test	20	2.2245	0.0951	0.0213	4.6747*
Post Test	20	2.3285	0.1859	0.0416	

95% CI for mean difference: (-0.1506 to -0.0574) df=19 table t-value at 0.5 (2.093)
t-test of mean difference = 0 (vs. not = 0): t-Value = 4.6747 P-Value = 0.0002

Table 1, above indicates the results with regard to broad jump. The athletes of Srm University with the training have shown improvement in the performance of broad jump from pre to post with the mean and S.D being (2.2245, 0.0951) and (2.3285, 0.1859) respectively. The improvement is quite encouraging and highly significant ($p<0.0002$).

Table 2
Shows Pre and Post test of Vertical jump of Srm University Long Jump Athletes

Test (in meters)	N	Mean	SD	Std Error	T-Value
Pre Test	20	19.845	4.169	0.932	11.5507*
Post Test	20	21.975	4.290	0.959	

95% CI for mean difference: (-2.516 to -1.744) df=19 table t-value at 0.5 (2.093)
t-test of mean difference = 0 (vs not = 0): t-Value = 11.5507 P-Value = 0.0001

Table-2 above indicates the results with regard to vertical jump. The students of Srm University with the training have shown improvement in the performance of vertical jump from pre to post with the mean and S.D being (19.845, 4.169) and (21.975, 4.290) respectively. The improvement is quite encouraging and highly significant ($p<0.0001$).

Discussion

The main finding of this study is that explosive strength training resulted in positive changes in long jumper`s performance. Results of the Study showed that there is satisfactory improvement in rate of force of athletes.

Faigenbaum AD (2000)The potential benefits of youth strength training extend beyond an increase in muscular strength and may include favorable changes in selected health and fitness related measures. If appropriate training guidelines are followed, regular participation in a youth strength training program has the potential to increase bone mineral density, improve motor performance skills, enhance sports performance, and better prepare our young athletes for the demands of practice and competition.

Conclusion

It is concluded from this study, that there was a marked improvement in the performance of the students in power exercises among all the events from pre to post test, which is quite significant. The students have shown a highly marked improvement in performance of broad jump, which shows the interest among the students for this event, which is very encouraging and significant. Furthermore with regard to the comparison among the three events it is concluded that the performance of the students in broad jump was the best followed by vertical jump. Vertical jump took the last place among these events where the performance of the students was the least.

References

1. American college of sports medicine. (1991) “Guidelines for exercise testing and prescription”, 4th Ed., R. R.Pate(Ed.).Philadelphia: Lea & Febiger, pp.285-300.
2. Adams K, O'Shea JP, O'Shea KL and Climstein M. (1992) The effect of six weeks of squat, Plyometric and squatplyometric training on power production. *J Appl Sport Sci Res*. 6:36-41
3. Brown, E.W., and K. Abani. (1995) “Kinematics and kinetics of the dead lift in adolescent power lifters”.*Med.sci.sports Exerc*.17:554-566,
4. Baumgartner, T.A., and Jackson, A.S. (1987) “measurement for evaluation in physical education and exercise science” (3rd ed.)Dubuque, IA: Wm.C.Brown.