International Journal of Physical Education
Volume 5 | Issue 1 | April, 2012 | 62-64

Research Article

Effect of resistance training programme on performance related fitness variables among cricket players

■ P. SIVARAMAN, K. SREEDHAR AND SAKEER HUSSIAN

Received : *18.02.2012;* **Revised :** *08.03.2012;* **Accepted :** *25.03.2012*

■ **ABSTRACT**

The purpose of the study was to find out the effect of resistance training on selected performance related fitness variables among cricket players. To achieve this purpose, 40 male students studying in various classes were randomly selected as subjects from the Department of Physical Education and Sports Sciences, Annamalai University. The age of the subjects ranged from 18 to 25 years. The subjects were further classified at random into two equal groups of 20 subjects each namely, experimental group and control group. Experimental group underwent resistance training for three days per week for twelve weeks whereas control group followed their regular activities. The selected criterion variables namely, speed, shoulder strength, muscular endurance, cardio -respiratory endurance and explosive strength were assessed before and after the training period. The collected data were statistically analysed by using analysis of covariance (ANCOVA). From the results of the study, it was found that there was a significant improvement on speed, shoulder strength, muscular endurance and explosive strength and no change in cardio- respiratory endurance among the experimental group when compared with the control group.

■ ***Key Words*** **:** Resistance training, Performance related fitness variables, Speed

■ ***How to cite this paper*** **:** Sivaraman, P., Sreedhar, K. and Hussian, Sakeer (2012). Effect of resistance training programme on performance related fitness variables among cricket players. *Internat. J. Phy. Edu.*, **5** (1) : 62-64.

See end of the article for authors' affiliations

Correspondence to :

P. SIVARAMAN
Department of Physical Education and Sports Sciences, Annamalai University, Annamalainagar, CHIDAMBARAM (T.N.) INDIA

During the past decades much attention both from coaches and researchers has been focused on determining the optimal training methods for the development of strength, power and competitive performance. Muscle strength and power are important determinants of a successful performance in many individual and team sports (Adam *et al.*, 1992). Resistance training is a form of strength training in which each effort is performed against a specific opposing force generated by resistance (*i.e.* resistance to being pushed, squeezed, stretched or bent) (Feigenbaun and Pollock, 1997) . Resistance exercise is used to develop the strength and size of skeletal muscles. Properly performed, resistance training can provide significant functional benefits and improvement in overall health and well-being (Fleck and Kraemer, 2004). Resistance training has two different meanings. A broader meaning that refers to any training that uses a resistance to the force of muscular contraction (better termed strength training), and elastic or hydraulic resistance, which refers to a specific type of strength training that uses elastic or hydraulic tension to provide this resistance. Research shows that regular resistance training will strengthen and tone muscles and increase bone mass. Resistance training should not be confused with weightlifting, power lifting or bodybuilding, which are competitive sports involving different types of strength training with non-elastic forces such as gravity (weight training or plyometrics) rather an immovable resistance (isometrics, usually the body's own muscles or a structural feature such as a doorframe). Full range of motion is important in resistance training because muscle overload occurs only at the specific joint angles where the muscle is

worked (Jette and Delitto, 1997).

Athletic performance in many sports demands the development of muscle strength, which is required for other performance related characteristics, notably speed and power. Yet despite extensive research in the area, the adaptive mechanisms contributing to maximal strength adaptation are not yet fully understood (Kitai *et al.*, 2004). Research has consistently indicated that moderate to heavy loads are required in order to gain an increase in muscle size, muscle activity and muscle strength. Correspondingly, an extensive review of the literature and current guidelines published by the American College of Sports Medicine (ACSM) suggest relatively heavy loads that equal, or are in advance of 80 per cent of a one-repetition maximum (1RM) are required in order to achieve optimal strength gains. A number of studies that used the term strengthening in fact used resistance training. Because strengthening is a generic term and has received criticism for being a vague term that most often fails to define the type of strengthening used (Laskowski, 2008). Resistance exercise programmes can be modified not only by the external load, but also by the speed of contraction, and level of induced fatigue (Latham *et al.*, 2003). Altering resistance exercise programmes in just one of these ways will induce a distinct skeletal muscle response. However, the combined effects of adjusting training in two or more of these areas simultaneously will result in more complex physiological interactions that may either hinder or improve training related strength gains. Unfortunately, we still have insufficient evidence to fully understand the complex interactions between load, movement speed and the extent of muscular exhaustion induced by the level of work (e.g. completed number of sets and repetitions) (Rhea *et al.*, 2003). Resistance training appears to be a safe and effective form of intervention for patients with muscle strength deficit, but further evidence is needed to determine whether this type of exercise can improve function and quality of life. Progressive resistance training improves muscle strength and physical capacity in elderly individuals, but benefits with regard to disability and quality of life remain unclear (Taylor *et al.*, 2005). Marked evidence indicates that regular participation in a resistance training programme can improve measures of strength and power in adults (Todd, 1995). Cricket occupies a significant place among all other sports and games. In some respects it is unique as a sport. It is an ideal sport and is a grand energetic game, giving enjoyment demanding fitness and dedication. Performance in cricket is determined by several factors namely skill, technique, tactics, fitness and training. Both physical and mental fitness play vital role in performance. Modern day cricket demands higher level of fitness and the modern sporting managers are on the lookout for training modalities to keep the players fit to perform and to avoid injuries. Very few studies were done on the effect of resistance training on performance related fitness variables among cricketers, and hence this effort was taken.

■ METHODOLOGY

The purpose of the study was to find out the effect of resistance training on selected performance related fitness variables among cricket players. To achieve this purpose, 40 male students were randomly selected as subjects from the Department of Physical Education and Sports Sciences, Annamalai University studying in various classes. The age of the subjects ranged from 18 to 25 years. The subjects were further classified at random into two equal groups of 20 subjects each namely experimental group and control group. Experimental group underwent resistance training for three days per week for twelve weeks whereas control group followed their regular activities. The duration of the sessions was 60 minutes which included 10 minutes each for warm up and warm down. The active duration of 40 minutes experimental group underwent resistance training. The subjects were assessed on selected criterion variables namely, speed, muscular endurance, shoulder strength cardio-respiratory endurance and explosive strength before and after the training period. The selected variables were measured by using standard testing procedures (Speed: 50 mts dash, Muscular endurance: Sit ups test, Explosive strength: Sergeant jump, Shoulder strength: Soft ball throw, Cardio-respiratory endurance: Coopers 12 minutes run). The data collected from experimental group and control groups before and after completion of the training period on selected variables were statistically examined by applying analysis of covariance (ANCOVA). All the data were analyzed using SPSS statistical package. The level of confidence was fixed at.05 level of significance. The analysis of covariance on speed, explosive strength, muscular endurance, shoulder strength and cardio-respiratory endurance of the pre -test and post- test scores of experimental group and control group have been analyzed and presented Table 1.

■ OBSERVATIONS AND DISCUSSION

The findings of the study showed that significant difference was existing between experimental group and control group on speed, explosive strength, muscular endurance and shoulder strength, since the obtained 'F' ratio of 105.49, 111.46, 864.84, and 136.16, respectively for adjusted post test means were greater than the required table value 4.11 for significance at 0.5 level of confidence. Further, the study showed that there was no significant difference existing between experimental group and control group on cardio-respiratory endurance since the obtained 'F' ratio of 0.986 for adjusted post test mean was less than the required table value 4.11 for significance at 0.5 level of confidence. From this study it is understood that resistance training has its influence on the performance related variables among cricketers.

Table 1 : Analysis of co- variance on selected variables among resistance and control groups

Variable name	Group name	Control group	Experimental group	'F' Ratio
	Pre-test mean ± S.D.	7.97±0.32	8.03±0.31	0.28
Speed	Post-test mean ± S.D.	7.99±0.32	7.88±0.32	1.14
	Adj. post-test mean	8.01	7.85	105.49*
	Pre-test mean ± S.D.	50.80±5.37	51.65±5.43	0.248
Explosive strength	Post-test mean ±S.D.	51.30±5.12	59.90±5.09	28.39*
	Adj. post-test mean	51.66	59.54	111.46*
	Pre-test mean ± S.D.	33.85±3.94	33.30±4.31	0.178
Muscular endurance	Post-test mean ± S.D.	34.45±3.83	40.25±4.25	20.53*
	Adj. post-test mean	34.18	40.52	864.84*
	Pre-test mean ± S.D.	63.07±3.82	62.91±3.52	0.02
Shoulder strength	Post-test mean ± S.D.	62.75±3.77	67.00±3.37	14.13*
	Adj. post-test mean	62.68	67.08	136.16*
	Pre-test mean ± S.D.	1888.50±115.95	1891.50±115.90	.007
Cardio- respiratory endurance	Post-test mean ± S.D.	1884.50±118.84	1893.50±115. 35	0.056
	Adj. post-test mean	1885.75	1891.50	0.986

*Significant at .05 level of confidence (The table value required for significance at .05 level of confidence for df 1 and 38, 1 and 37 was 4.098 and 4.11, respectively)

Conclusion :

Based on the results of the study, it is concluded that there was a significant improvement existing between experimental group and control group on speed, explosive power, muscular endurance, and shoulder strength. There was no significant change in cardio-spiratory endurance between resistance training group and control group.

Authors' affiliations:

K. SREEDHAR, Department of Physical Education and Sports Sciences, Annamalai University, Annamalainagar, CHIDAMBARAM (T.N.) INDIA

SAKEER HUSSIAN, Directurate of Physical Education, University of CALICUT, MALAPURAM (KERALA) INDIA

■ REFERENCES

Adams, K., O'Shea, J., O'Shea, K. and Climstein, M. (1992). The effect of six weeks of squat, plyometric and squat plyometric training on power development. *J. Appl. Sports Sci. Res.,* **6:** 36-41.

Feigenbaum, M.S., Pollock, M.L. (1997). Strength training rationale for current guidelines for adult fitness programs. *Physician & Sportsmedicine,* ISSN 0091-3847.

Fleck, S.J. and Kraemer, W.J. (2004). *Designing resistance training programs.* (3rd Ed.) Human Kinetics, Champaign, IL, **65**:120–134.

Jette, A.M. and Delitto, A.(1997). Physical therapy treatment choices for musculoskeletal impairments. *Phys. Ther.,* **77**:145–154.

Kitai, T.A. and Sale, D.G. (2004). A specificity of joint angle in isometric training (abstract). *European J. Appl. Physiol.,* **58** (7): 744–748.

Laskowski, E.R. (2008). Strength training: How many sets for best results?. *Mayo Clinic. Retrieved,* pp.02-06.

Latham, N., Anderson, C., Bennett, D. and Stretton, C. (2003). Progressive resistance strength training for physical disability in older people. *Cochrane Database Syst. Rev.,* 2003: 2.

Rhea, M.R., Phillips, W.T. and Burkett. L.N. (2003). A comparison of linear and daily undulating periodized programs with equated volume and intensity for local muscular endurance. *J. Strength Cond. Res.,* **17** (1): 82–87.

Taylor, N.F., Dodd, K.J., Damiano, D.L.(2005). Progressive resistance exercise n physical therapy: a summary of systematic reviews. *Phys. Ther.,* **85**:1208–1223.

Todd, Jan (1995). From milo to Milo: A history of Barbells, Dumbells, and Indian Clubs (PDF). *Iron Game History,* **3** (6)248-254.

*****