



ORIGINAL RESEARCH PAPER

Physical Education

EFFECT OF RESISTANCE TRAINING, SAND BAG TRAINING AND CONTROL GROUP ON MUSCULAR ENDURANCE

KEY WORDS: Resistance Training, Sandbag Training, Players, Muscular Endurance.

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ABSTRACT

The purpose of this research was to analyze the resistance training, sand bag training and control group on muscular endurance. To achieve this purpose, 45 college players were selected belonging to RISE Krishna Sai Prakasam Group of Institutions, Ongole. Prakasam District, Andhra Pradesh, India. The age group of the subjects ranged between 18 to 22 years. The subjects were selected by using simple random sampling method. The dependent variable for the present study was speed of players. In order to assess the speed of the subjects was assessed through sit up test. The data collected from the players were statistically analyzed. The collected data from the three groups prior to and immediately after the experimental treatment selected dependent variables were statistically analyzed by using the statistical technique of analysis of covariance (ANCOVA). Whenever the “F” ratio for adjusted post-test means was found to be significant, Scheffes test was followed as a post hoc test to determine which of the paired means difference was significant. The level of significance was fixed as 0.05. Statistical package for the social sciences (SPSS) was used for the purpose of analyzing the data.

INTRODUCTION

Physical conditioning programme provides opportunity for the development and maintenance of physical fitness. It offers an opportunity for the fasciation of normal growth of a child and prevents the reversal factors of the performance such as strength, endurance, flexibility, speed and skill. By undergoing a physical conditioning programme, one experiences a number of changes that makes better performance and foster recovery possible. Through repeated muscular work, strength is gained and as a result one is able to produce more power as there is faster contraction, which means gain in both power and speed. Conditioning the body through regular exercise enables an individual to meet emergencies more effectively. Training and conditioning are the best known ways to prepare the players for efficient performance and healthful living. Efficient performance is possible only through a carefully planned programme of progressive practice which will perfect the co-ordination, eliminate unnecessary movements and accomplish result at the expense of minimum energy as well as conditioning the muscle structure and the circulation withstand without harming the intensive demands made upon them (Sandhya Tiwari, 2006). Sport Specificity Training is an essential component to high school and collegiate sports. While most strength coaches will implement several concepts such as barbell movements, plyometrics, and calisthenics to attempt to improve athlete development for their respective sports, some tools can be overlooked. In this article, we make the case for the benefits of sandbag training as a tool for high school and college age athletes.

While few coaches disagree that most training concepts are effective, coaches must choose which ones to implement based on certain considerations. For example, the ability to be fast, change direction, and accelerate and decelerate is a necessity that is typically universal to all sports. There are several tools that can be used to accomplish this, but not all are effective for several reasons, one of which is the learning curve. Some athletes may take longer to teach and therefore take a while to work up to sets where there is a significant amount of load to create that conditioned adaptive response (common examples include Olympic movements). Young athletes also sometimes get tired or bored from the constant repetition and patience it takes to learn high-level movements. Some coaches would just rather not risk injury and decide the risk outweighs the reward.

This is precisely where the acute variables and the accessory lifts play a very significant role and you can have your best of both worlds. Implementing the proper accessory lifts and equipment will allow the athlete to learn but also create that training stimulus to incite growth. The sandbag is a staple in my programming because of its low-risk for injury and the fun factor it provides with young athletes. The sandbag allows athletes to utilize triple extension, explosiveness, and pure grit. If the athlete's technique breaks down, there is less risk of injury because of its low impact. Furthermore, the sandbag allows the coach to teach movements you would find in your typical barbell movements without allowing the athlete to not be under as much stress. The instability of sand shifting will also allow for core strength development, as well as challenge the athlete mentally. A pink sandbag loaded up to 75 pounds does not look as heavy as it is; athletes will approach the bag with great confidence (the color is deceiving) but after a few drills, that athlete is quickly humbled.

Resistance training is a form of exercise for the development of strength and size of skeletal muscles. Resistance training also known as weight training or strength training is for everyone. According to the American sports medicine institute is a “specialized method of conditioning designed to increase muscle strength, muscle endurance and muscle power. Resistance training can be performed in a variety of ways with resistance machines, free weights like dumbbells and barbells, rubber tubing, or own body weight as in doing pushups, squats or abdominal crunches. Resistance training is a form of exercise intended to increase muscular strength and endurance. It involves exercising muscles using some form of resistance. This resistance could be weights, bands, or even your own bodyweight working against gravity. When doing resistance training—which is sometimes called strength training or weight training—you can focus on specific results, such as joint stability, muscular endurance, increased muscle size, strength, and power.

METHODOLOGY

To achieve this purpose, 45 players were selected belonging to RISE Krishna Sai Prakasam Group of Institutions, Ongole. Prakasam District, Andhra Pradesh, India. The age group of the subjects ranged between 18 to 22 years. The subjects were selected by using simple random sampling method. The dependent variable for the present study was muscular endurance of players. In order to assess the speed of the subjects was done with sit up test. The data collected from the

players were statistically analyzed. The collected data from the three groups prior to and immediately after the experimental treatment on selected dependent variables were statistically analyzed by using the statistical technique of analysis of covariance (ANCOVA). Whenever the "F" ratio for adjusted post-test means was found to be significant, Scheffe's test was followed as a post hoc test to determine which of the paired means difference was significant. The level of significance was fixed as 0.05. Statistical package for the social sciences (SPSS) was used for the purpose of analyzing the data.

RESULTS

The information gathered pretest, posttest and adjusted post test mean on resistance training, sand bag training and control gatherings are given in table I.

Table -I Analysis Of Covariance Of Data On Muscular Endurance Between Pre-test, Post-test And Adjusted Post-test Of Resistance Training And Sand Bag Training Groups And Control Group

	RTG	SBTG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Initial means	10.60	10.86	10.46	BG	1.244	2	0.622	0.58
				WG	45.067	42	1.073	
Final means	13.26	13.46	10.66	BG	73.200	2	36.600	36.60*
				WG	42.000	42	1.000	
Adjusted Final means	13.22	13.47	10.69	BG	69.985	2	34.993	35.25*
				WG	40.696	41	0.993	

* Significant at 0.05 level

Table values required for significance at 0.05 level with df 2 and 42; 2 and 41 are 3.22 and 3.23 respectively.

Results of Muscular Endurance

An assessment of table - I point out that the pre test means of resistance training, sand bag training and control groups were 10.60, 10.86 and 10.46 respectively. The attained F-ratio for the pre-test was 0.58 and the table F-ratio was 3.22. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. This established that there were no significant difference between the experimental and control groups representing that the course of action of randomization of the groups was ideal while conveying the subjects to groups.

The post-test means of the resistance training, sand bag training and control groups were 13.26, 13.46 and 10.66 respectively. The attained F-ratio for the post-test was 36.60 and the table F-ratio was 3.22. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. This confirmed that the disparity between the post test means of the focus were significant.

The adjusted post-test means of the resistance training, sand bag training and control groups were 13.22, 13.47 and 10.69 respectively. The attained F-ratio for the adjusted post-test means was 35.25 and the table F-ratio was 3.23. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. This established that there was a noteworthy difference among the means owing to the experimental trainings on muscular endurance.

Table -II Scheffe's Test For The Difference Between The Adjusted Post-test Paired Means Of Muscular Endurance

Adjusted Final means			Mean Difference	Required CI
RTG	SBTG	Control Group		
13.22	13.47	---	0.25	0.92
13.22	---	10.69	2.53*	
---	13.47	10.69	2.78*	

* Significant at 0.05 level of confidence

The multiple comparisons showed in Table II proved that there existed significant differences between the adjusted means of resistance training and control group (2.53), sand bag training and control group (2.78). There was no significant difference between resistance training and sand bag training (0.25) at 0.05 level of confidence with the confidence resistance value of 0.92.

Discussion on Muscular Endurance

The results presented in table II showed that obtained adjusted means on muscular endurance among resistance training group was 13.22, followed by sand bag training group with mean value of 13.47, and control group with mean value of 10.69. The differences among pretest scores, post test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and the obtained F values were 0.58, 36.60 and 35.25 respectively. It was found that obtained F value on pre test scores were not significant and the obtained F values on post test and adjusted means were significant at 0.05 level of confidence as these were greater than the required table F value of 3.22 and 3.23. The post hoc analysis through Scheffe's Confidence test proved that due to twelve weeks training of resistance training and sand bag training has improved muscular endurance than the control group and the differences were significant at 0.05 level.

REFERENCES

- Ajmer Singh et al., Science of Sports Training, (New Delhi: Kalyani Publishers, 1983) 357-372
- Arnheim D. Danial, Modern Principle of Athletic Training, (St. Louis: The Mosby College Publishers, 1985) 84-92.
- Baechle, Thomas R. and Earle, R.W., Essentials of Strength Training and Conditioning, (Champaign, Illinois: National Strength and Conditioning Association, 2000) 147-162.
- Charles Herbert, Best and Normal Duke Taylors, The Physiological Basis of Medical Practice, (Baltimore: The William and William Co., 1955) 360.
- Basha. N Alauthen and Kavithashri PK, "Effect of strengthening training and resistance training on selected physical physiological and skill related variables among volleyball players", Journal of Sports Science and Nutrition 2020; 1(2): 18-21
- Basil Jebaslin Durai D and Franklin Shaju MK, "Effect of sand running training on speed among school boys", International Journal of Physical Education, Sports and Health 2019; 6(3): 117-122
- Chien, Yu-Hsuan and others, "Effects of 12-Week Progressive Sandbag Exercise Training on Glycemic Control and Muscle Strength in Patients with Type 2 Diabetes Mellitus Combined with Possible Sarcopenia", Int J Environ Res Public Health. 2022 Nov; 19(22): 15009.
- Christian. M Werner, et al., "Differential effects of endurance, interval, and resistance training on telomerase activity and telomere length in a randomized, controlled study" Eur Heart J 2019 Jan 1; 40(1): 34-46.