

EFFECT OF WEIGHT TRAINING ON MAXIMUM STRENGTH AND STRENGTH ENDURANCE AMONG SOCCER PLAYERS

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Abstract: The purpose of the study was to find out the effect of weight training on maximum strength and strength endurance among soccer players. To achieve the purpose of this study, 20 male intercollegiate soccer players were randomly selected as subjects from Affiliated Colleges, Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India. Their age ranged from 19 to 25 years. The selected participants were randomly divided into two groups such as group 'I' underwent weight training (n=10) and group 'II' acted as control group (n=10). Group 'I' underwent weight training for three days and one session per day and each session lasted for 60 minutes for six week period. Group 'II' was not exposed to any specific training but they were participated in regular activities. The data on maximum strength and strength endurance were collected and administered by 1RM and Wall Sit tests. The pre and posttests data were collected on selected criterion variables prior to and immediately after the training programme. The pre and post-test scores were statistically examined by the dependent 't' test and Analysis of co-variance (ANCOVA) for each and every selected variables separately. It was concluded that the weight training group had shown significantly improved in maximum strength and strength endurance. However the control group had not shown any significant improvement on any of the selected variables such as maximum strength and strength endurance.

Index Terms: *Weight Training, Maximum Strength, Strength Endurance, Soccer Players.*

I. INTRODUCTION

“Physical activity is probably the most enjoyable and yet most inexpensive form of preventive medicine” (Larry G. Shaver, 1981). “Fitness is the ability of an individual to live a full and balanced life. It involves physical, mental, emotional, social and spiritual factors are a capacity for their wholesome expression” [1].

Training is the planned and systematic realization of measure (training contents and training methods) for the durable attainment of goal (training goals) in and through sport [2]. The weight training is popular training methods for maximizing time-efficiency, and are purported to deliver greater physiological benefits faster than traditional training methods. Adding interval training into a circuit weight-training workout may further enhance the benefits of circuit weight training by placing increased demands upon the cardiovascular system [3].

The athlete expresses force through the body's lever system by converting chemical to kinetic energy and by neuromuscular coordination. In all physical activities, the athlete expresses this force against external force (resistance). Resistance may take the shape of weights, throwing implements, water, air, the athlete's own body weight, momentum, and so on [4].

Training with weight is becoming an increasingly recognized as the key method of training for games for development of good physique. It strengthens the muscles and internal organs and promotes the type of health and vigorous that training is ozone of the factors in improving the speed, ability, strength, endurance, flexibility, body components and anthropometric measurement [5].

Weight training is use of systematic exercise with weights and it's used merely as means to increase resistance of the muscle contraction. The primary objective is not to learn to lift as much weight as possible, but to increase strength and power for application to some other sports. Weight training refers to interest in physical fitness or importance of strength in particular sports. Weight training contributes to all round development. It has a high average combination of speed, suppleness and endurance [6].

Weight training is to develop in the individual bodily strength and flexibility primary and also to develop agility, speed and endurance. Weight training should be carried out on alternate days. Daily weight training is not recommended unless the muscle groups are receiving different types of training programmes [7].

Soccer is a game which calls for strenuous continuous thrilling action and therefore appeals to the youth of the world. It is one of the world's most popular games comprising of two teams trying to kick or head a ball to opposing goals (Pick, 1952).

The main component of fitness for Soccer players are endurance, strength, speed, flexibility and power. The Soccer player will have to invest considerable time and effort to see a significant 'return' for his efforts that is an improvement in performance [8].

Maximum strength is the greatest force that is possible to overcome resistance in a single maximum contraction (Tudor & Bompa, 1996). Strength endurance training is important in developing the ability to use your muscle(s) over a longer period of time. This is done by lifting a lower weight for a higher number of repetitions [9].

II. PURPOSE OF THE STUDY

The purpose of the study was to find out the effect of weight training on maximum strength and strength endurance among soccer players.

III. METHODOLOGY

The purpose of this study was to find out the effect of weight training on maximum strength and strength endurance among soccer players. To achieve the purpose of the study twenty male intercollegiate soccer players were randomly selected as subjects from Affiliated Colleges, Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India. Their age ranged from 19 to 25 years. The researcher reviewed the available scientific journals, periodical, magazine, e-resources and research paper. Taking into consideration feasibility criteria, availability of the instrument and relevance of the variable of the present study the following dependent variables namely maximum strength and strength endurance were selected. Similarly weight training was chosen as independent variable. The maximum strength and strength endurance were assessed by 1RM and Wall Sit tests respectively.

This study was conducted to determine the possibility cause and effect of weight training on maximum strength and strength endurance among soccer players. The subjects were divided into two equal group consists of 10 each and named as weight training group (group-I) and control group (group-II). Group-I (n=10) underwent weight training and group II (n=10) acted as control group. The control group was not given any treatment and the experimental group was given weight training for three days per week, for a period of six weeks. The related group research design was used in this study. The collected data from the two groups prior to and after the experimental treatment on maximum strength and strength endurance were statistically analyzed by using the statistical technique of dependent 't' test and analysis of covariance (ANCOVA). In all the cases 0.05 level of confidence was fixed as a level of confidence.

IV. RESULT AND FINDINGS

The effect of weight training on maximum strength and strength endurance maximum strength were analyzed and presented below.

4.1 Maximum Strength

Table 4.1: Computation of 't' - ratio between pre and post test means of weight training and control groups on maximum strength

Criterion Variables	Test	Weight Training Group Mean	Control Group Mean
Maximum Strength (kilograms)	Pre test	81.95	81.26
	Post test	90.78	84.47
	't'test	8.27*	1.20

*Significant at 0.05 level. (Table value required for significance at .05 level for 't'-test with df 9 is 2.26)

The table 4.1 shows that the pre-test mean value of weight training and control groups are 81.95 and 81.26 respectively and the post test means are 90.78 and 84.47 respectively. The obtained dependent t-ratio values between the pre and post test means of weight training and control groups are 8.27 and 1.20 respectively. The table value required for significant difference with df 9 at 0.05 level is 2.26. Since, the obtained 't' ratio value of weight training group was greater than the table value, it was understood that weight training group had significantly improved the maximum strength. However, the control group has not improved significantly. The 'obtained t' value is less than the table value, as they were not subjected to any specific training.

Table 4.2: Analysis of covariance on maximum strength of weight training and control groups

Adjusted Post Test Means		Source of variance	Sum of squares	df	Mean square	F - ratio
Weight Training Group	Control Group	Between	680.82	1	680.82	34.86*
90.79	84.48	Within	332.01	17	19.53	

* Significant at 0.05 level. Table value for df 1, 17 was 4.45

Table 4.2 indicates that the adjusted post test means values on maximum strength. The obtained f- ratio of 34.86 for adjusted post test mean is greater than the table value 4.45 with df 1 and 17 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant mean difference exist between the adjusted post test means of weight training and control groups on maximum strength. The bar diagram shows the mean values of pretest, post test and adjusted post test on maximum strength of weight training and control groups.



Figure-4.1: Pre, post and adjusted post tests mean values of weight training and control groups on maximum strength.

4.2 Strength Endurance

Table 4.3: Computation of 't' - ratio between pre and post test means of weight training and control groups on strength endurance

Criterion Variables		Test	Weight Training Group Mean	Control Group Mean
Strength (seconds)	Endurance	Pre test	66.74	67.08
		Post test	73.92	69.43
		't'test	6.85*	0.94

*Significant at 0.05 level. (Table value required for significance at .05 level for 't'-test with df 9 is 2.26)

The table 4.3 shows that the pre-test mean value of weight training and control groups are 66.74 and 67.08 respectively and the post test means are 73.92 and 69.43 respectively. The obtained dependent t-ratio values between the pre and post test means of weight training and control groups are 6.85 and 0.94 respectively. The table value required for significant difference with df 9 at 0.05 level is 2.26. Since, the obtained 't' ratio value of weight training group was greater than the table value, it was understood that weight training group had significantly improved on strength endurance. However, the control group has not improved significantly. The 'obtained t' value is less than the table value, as they were not subjected to any specific training.

Table 4.4
Analysis of covariance on strength endurance of weight training and control groups

Adjusted Post Test Means		Source of variance	Sum of squares	df	Mean square	F - ratio
Weight Training Group	Control Group	Between	441.57	1	441.57	29.36*
74.01	69.44	Within	255.68	17	15.04	

* Significant at 0.05 level. Table value for df 1, 17 was 4.45

Table 4.4 shows that the adjusted post test means values on strength endurance. The obtained f- ratio of 29.36 for adjusted post test mean is greater than the table value 4.45 with df 1 and 17 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant mean difference exist between the adjusted post test means of weight training and control groups on strength endurance. The bar diagram shows the mean values of pre, post and adjusted post tests on strength endurance of weight training and control group.

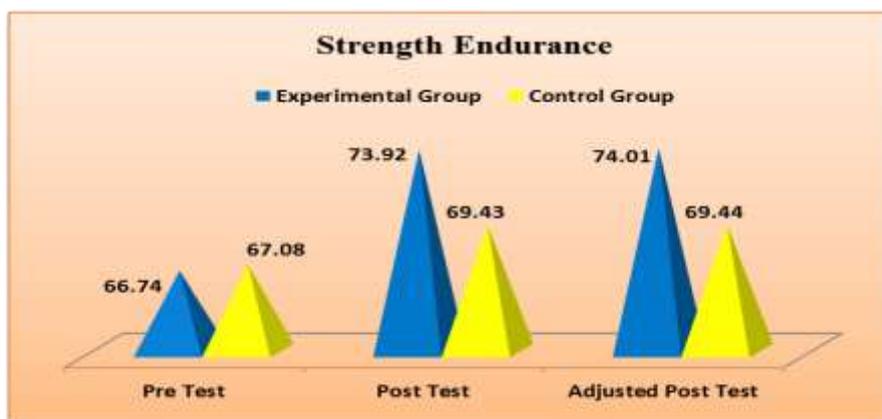


Figure 4.2 : Pre, post and adjusted post tests mean values of weight training and control groups on strength endurance.

V. DISCUSSION ON FINDINGS

Arumugam (2016) Conducted study to examine the effect of complex training on muscular strength among kabaddi players. The result of the study indicated significant improvement on muscular strength due to the effect of complex training. Sankarmani et al., (2012) examined the effects of weight training and combination of weight and plyometric training. Forty intercollegiate athletes were selected and assigned in to two groups randomly namely weight training and combination of plyometric training and weight training. Each group underwent a six week of training program. The result of the study showed that Combined Plyometric and weight training is more effective in improving anaerobic power, muscular strength, vertical jump, 50 yard dash and 1 RM squat performance in athletes than the weight training alone. From above these both supportive study intent to conduct this study the result of the my study indicates that there was a significant improvement on maximum strength and strength endurance due to the effect of weight training among soccer players when compared to control group.

VI. CONCLUSIONS

1. There was significant improvement on maximum strength due to the effect of weight training among soccer players.
2. There was significant improvement on strength endurance due to the effect of weight training among soccer players.
3. However the control group had not shown any significant improvement on any of the selected variables.

VII. REFERENCES

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