



EFFECT OF RESISTANCE TRAINING ON ENDURANCE AMONG FOOTBALL PLAYERS

Dr. Baiju A

Associate Professor of Physical Education, Mannaniya College of Arts and Science,
Pangode, Thiruvananthapuram, Kerala

Cite This Article: Dr. Baiju A, "Effect of Resistance Training on Endurance Among Football Players", International Journal of Engineering Research and Modern Education, Volume 2, Issue 2, Page Number 69-72, 2017.

Copy Right: © IJERME, 2017 (All Rights Reserved). This is an Open Access Article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Abstract:

The purpose of the study was to investigate the effect of resistance training on endurance among football players. For the present study the 30 male football players from Mannaniya College of Arts and Science, Thiruvananthapuram, Kerala were selected at random and their age ranged from 18 to 21 years. For the present study pre test - post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each. Group 'A' underwent resistance training only, group 'B' have not underwent any training. The data was collected before and after twelve weeks of training. The data was analyzed by applying Analysis of Co-Variance (ANCOVA). The level of significance was set at 0.05. It was observed that the resistance training have significantly improved the endurance of football players.

Key Words: Resistance Training, Endurance, Football Players.

Introduction:

The primary objective of strength is not to learn to lift as much weight as possible but to increase strength for application to the relevant sports. This is possible only, when the coaches and physical education teachers use the correct and the most beneficial and economical means to train their sportsmen. Strength and speed are integral components of fitness found in varying degrees in virtually athletic movements. Simply put the combination of strength and speed in power represents one component of athletic fitness that may be most indicative of success in sports, requiring extreme and rapid force of production. Maximum strength and power are not distinct entities they have a close relationship with one another. Maximum strength is the basic quality that influences power performance. Power performance is affected by the interaction between agonist, antagonist and synergic muscles involved in joint movements. Strength training is an inclusive term that describes all exercises devoted toward increasing physical strength. Weight training is a type of strength training that uses weights rather than elastic Eccentric Training or muscular resistance to increase strength. Endurance training is associated with aerobic exercise while flexibility training is associated with stretching exercise like yoga or Pilates. Weight training is often used as a synonym for strength training, but is actually a specific type within the more inclusive category. In addition to the basic principles of strength training, a further consideration added by weight training is the equipment used. Types of equipment include barbells, dumbbells, pulleys and stacks in the form of weight machines, and the body's own weight in the case of chin-ups and push-ups. Different types of weights will give different types of resistance, and often the same absolute weight can have different relative weights depending on the type of equipment used. For example, lifting 10 kilograms using a dumbbell sometimes requires more force than moving 10 kilograms on a weight stack if certain pulley arrangements are used. In other cases, the weight stack may require more force than the equivalent dumbbell weight due to additional torque or resistance in the machine (Baechle, 1994). Resistance training is a form of strength training in which each effort is performed against a specific opposing force generated by resistance. 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. According to the American Sports Medicine Institute is to gradually and progressively overload the musculature system so it gets stronger. Resistance training as an exercise programme in which free or stationary weights are used for the purpose of increasing muscular strength, muscular endurance, power and body composition through which skills can be improved. Specific training programmes can also lead to the development of cardio-respiratory endurance. Simple, if one's strength is going up faster than one's bodyweight and one's performance is improving as well then one are on the right track (Manikandan, 2014).

Reviews:

Giridharan & Saikumar (2015) assessed the effects of high intensity aerobic interval training, concurrent low intensity aerobic and resistance interval training on physiological variables of college level football players. To achieve the purpose of this study, forty five football players from Velammal Institutions, Chennai, Tamilnadu state, India were selected as subjects at random and their age ranged from 18 to 23 years. The subjects were divided into three groups consisting of 15 each. The experimental group I was treated with the high intensity aerobic interval training (HIAIT), experimental group II was treated with the concurrent low

intensity aerobic and resistance interval training (CLIARIT) and group III as control group (CG). Vo2 max was assessed by Queen's college step test and cardio respiratory endurance was measured by Cooper's 12 minutes run. analysis of covariance (ANCOVA) was computed because the subjects were selected random, but the groups were not equated in relation to the factors were examined. Whenever the adjusted post-test means were found significant, the scheffe's post-hoc test was administered to find out the paired means difference. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study. Both the high intensity aerobic interval training group and concurrent low intensity aerobic and resistance interval training group had shown significant difference in improvement on physiological variables of college level football players. The concurrent low intensity aerobic and resistance interval training group showed significant improvement on physiological variables than the other two groups. Kala & Gokulakrishnan (2015) investigated the effect of concurrent resistance and plyometric training on selected physical variables among college women volleyball players. To achieve the purpose thirty students were selected at random from Vivekanandha Educational Institutions, Thiruchengode, Namakkal. Age ranged between 18 - 25 years for this study. The subjects were divided into two equal groups namely experimental group 'A' and Control group 'B'. The experimental group 'A' under went six weeks training program. No attempt was made to equate the groups in any manner. Training process has been carried out as per the scheduled Performa. The control group was not allowed any type of training other than the daily day to day activities. The data collected from the two groups prior to and after experimentation on selected variables; physical fitness components of strength, endurance, explosive power, speed and flexibility were statistically examined for significant differences. Analysis of covariance (ANCOVA) was applied to determine whether the training programmes produced significantly different improvements in selected variables after six weeks of training. The group mean gains recorded by the various groups during the experimental period of six weeks to the criterion measures were tested for the significance by applying 't' test. In all the cases 0.05 level of confidence will be utilized which was considered as an appropriate. Based on the result of the study it was concluded that, the concurrent resistance and plyometric training programme produced a significant development on the selected physical variables.

Sendhil (2015) investigated the effect of varied intensities of weight training on arm strength and leg strength. To achieve this purpose of the study 60 college men students studying in the Perunthalaivar Kamarajar Arts College, Puducherry were selected as subjects at random. Their age ranged between 18 to 25 years. The selected subjects were divided into four equal groups of 15 each. The experimental group- I underwent high intensity weight training, group - II underwent medium intensity weight training, group-III underwent low intensity weight training for three days per week for 6 weeks whereas the group-IV act as control group. The following variable namely arm strength and leg strength was selected as criterion variable. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to fund out the significant difference, if any among the groups. Whenever the obtained "F" ratio was found to be significant, the scheffe's test was applied as post hoc test to find out the paired mean difference, if any. The 0.5 level of confidence was fixed to test the level of significance which was considered as an appropriate. The results of the study showed that there was a significant difference exists among high, medium, low intensity weight training groups and control group on arm strength and leg strength. And also high intensity weight training group, medium intensity weight training group and low intensity weight training group showed significant improvement on arm strength and leg strength when compared to control group. Szlezak et al. (2015) examined the effect of a micro-dose of thumb resistance-exercise on leukocyte redistribution, thumb pinch-strength and reported fatigue. The effect of training status was also studied. 30 male participants (20 weightlifting-trained; 10 untrained) were separated into 3 groups of 10 (WLEXP; UTEXP; WLPLA) & performed 4 x60 second thumb isometric resistance-exercise intervals separated by 60 second rest intervals in a single-blinded placebo-controlled study. Participants were assessed over a 60 minute post-intervention recovery period. Pinch-strength decreased in WLEXP and UTEXP groups ($p<0.01$), and recovered to baseline values ($p=0.01$) in the WLEXP group only. Fatigue increased in WLEXP and UTEXP groups and remained elevated across time ($p<0.01$). Circulating total leukocyte and lymphocyte counts increased in WLEXP and UTEXP groups across time. Constant elevation was seen in both measures for the UTEXP group ($p<0.05$) whereas the WLEXP group showed two peaks in leukocyte (baseline - 0 mins post, $p<0.01$; 20 - 60 mins post, $p=0.02$) and lymphocyte counts (base-line - 0 mins post, $p<0.01$; 20 - 60 mins post, $p<0.01$). Monocyte count increased similarly from baseline ($p=0.47$) in the WLEXP group ($p=0.02$) and UTEXP group ($p<0.01$) at 60 minutes post. Our results suggest that perception of fatigue does not correlate with physiological recovery from thumb resistance-exercise in resistance-trained individuals which has implications for recovery monitoring. Of particular novelty, we also showed that a micro-dose of thumb resistance-exercise is sufficiently stressful to distort leukocyte trafficking and thus homeostasis.

Arul (2014) compared the effects of isolated and combined weight and interval trainings on speed and strength endurance. To achieve this purpose of the study, sixty men students studying in the Department of Physical Education and Sports Sciences, Annamalai University were selected as subjects at random and they were divided into four equal groups of fifteen subjects each with age ranging from 18 to 24 years namely weight training group, interval training group, combined weight and interval training group and control group. The

weight training group and interval training group underwent their respective trainings for three days per week for twelve weeks. Whereas, the combined weight and interval training group underwent weight training for three sessions per week for first six weeks and interval training for three sessions per week for remaining six weeks. The control group did not allow to participate in any special training programme apart from their regular physical education activities as per their curriculum. The following variables namely speed and strength endurance were selected as criterion variables. All the subjects of four groups were tested on selected dependent variables at prior to and immediately after the training programme. The analysis of covariance was used to analyze the significant difference, if any among the groups. Since, four groups were compared, whenever the obtained 'F' ratio for adjusted post test was found to be significant, the Scheffe's test to find out the paired mean differences, if any. The .05 level of confidence was fixed as the level of significance to test the 'F' ratio obtained by the analysis of covariance, which was considered as an appropriate. The results of the study revealed that there was a significant difference among weight training, interval training, combined weight and interval training and control groups on speed and strength endurance. And also significant improvement were noticed due to weight training, interval training, combined weight and interval training.

Methodology:

The purpose of the study was to investigate the effect of resistance training on endurance among football players. For the present study the 30 male football players from Mannaniya College of Arts and Science, Thiruvananthapuram, Kerala were selected at random and their age ranged from 18 to 21 years. For the present study pre test - post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each. Group 'A' underwent resistance training only, group 'B' have not underwent any training. The data was collected before and after twelve weeks of training. The data was analyzed by applying Analysis of Co-Variance (ANCOVA). The level of significance was set at 0.05.

Results:

Table 1: Computation of Mean and Analysis of Covariance of Endurance of Experimental and Control Groups

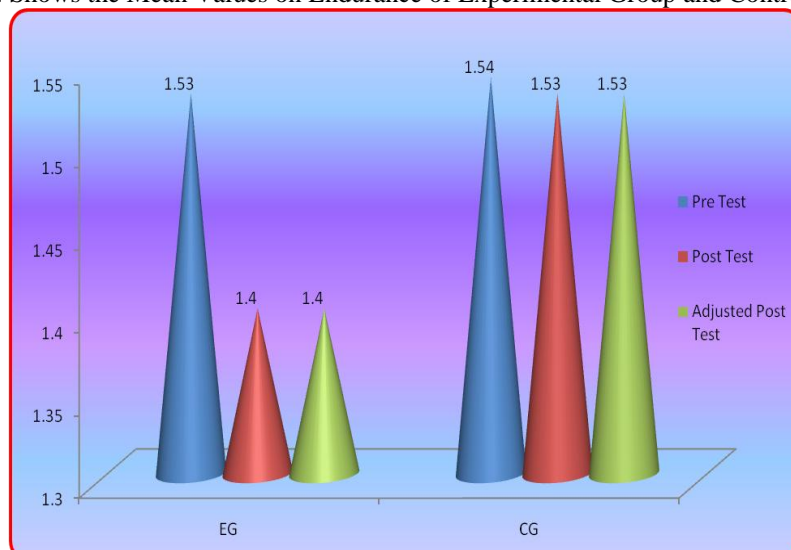
	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	1.53	1.54	BG	0.001	1	0.001	1.88
			WG	0.02	28	0.001	
Post Test Mean	1.40	1.53	BG	0.12	1	0.12	151.31*
			WG	0.02	28	0.001	
Adjusted Post Mean	1.40	1.53	BG	0.11	1	0.11	135.62*
			WG	0.02	27	0.001	

* Significant at 0.05 level

Table value for df 1 and 28 was 4.20, 1 and 27 was 4.21

The above table indicates the adjusted mean value of endurance of experimental and control groups were 1.53 and 1.53 respectively. The obtained F-ratio of 135.62 for adjusted mean was greater than the table value 4.21 for the degrees of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among experimental and control groups on endurance. The above table also indicates that both pre and post test means of experimental and control groups differ significantly. The pre, post and adjusted post mean values of endurance of both experimental and control groups are graphically represented in the figure 1.

Figure 1: Shows the Mean Values on Endurance of Experimental Group and Control Groups



Conclusion:

It was observed that the resistance training has significantly improved the endurance of football players.

References:

1. Arul, S. (2014). Influence of Isolated and Combined Weight and Interval Trainings on Speed and Strength Endurance. *International Journal of Recent Research and Applied Studies*, 1, 4(15), 68 - 71.
2. Baechle, T.R. (1994). *Essentials of Strength Training and Conditioning* Champaign, IL: Human Kinetics.
3. Giridharan, K. & Saikumar, CH. VST. (2015). Effects of High Intensity Aerobic Interval Training Concurrent Low Intensity Aerobic and Resistance Interval Training on Physiological Variables of College Level Football Players. *International Journal of Recent Research and Applied Studies*, 2,3 (9), 35 -39.
4. Kala, C. & Gokulakrishnan. D. (2015). Effect of Concurrent Resistance and Plyometric Training on Selected Physical Variables among College Women Volleyball Players. *International Journal of Recent Research and Applied Studies*, 2, 1(7), 31 - 36.
5. Karthikeyan, P. (2014). Effects of Varied Loads of Resistance Training on Selected Strength Parameters. *International Journal of Recent Research and Applied Studies*, 1 (13), 48 - 51.
6. Lakshmikrishnan, R. & Sivakumar., K. (2014). Effect of Weight Training and Plyometric Training on Explosive Power and Speed. *International Journal of Recent Research and Applied Studies*, 2 (4), 16 - 18.
7. Manikandan, S. (2014). Effect of Different Intensities of Resistance Training on Selected Strength Parameters among Men Handball Players. *International Journal of Physical Education, Sports and Health*, 1(2): 09-11.
8. Morrow, J.R., Jackson, A.W., Disch, J.G., & Mood, D.P. (2005). *Measurement and Evaluation in Human Performance* Champaign, IL: Human Kinetics.
9. Philip J. R. (2003). *Weight Training*, Iowa: C.Brown Company Publishers.
10. Sendhil, R. (2015). Effect of Different Loads of Weight Training on Arm Strength and Leg Strength among College Men. *International Journal of Recent Research and Applied Studies*, 2,4 (5), 17 -19.
11. Szlezak, A.M., Tajouri, L., Keane, J. & Szlezak, S.L. (2015). Micro-dose of resistance-exercise: effects of sub-maximal thumb exertion on leukocyte redistribution and fatigue in trained male weightlifters. *Journal of Physical Education and Sport*, 15(3), 55.365 - 377.
12. M. Suresh Kumar & A. Dinesh Kumar, "Effect of Mental Training on Self Confidence among Professional College Students", *International Journal of Recent Research and Applied Studies*, Volume 4, Issue 12, Page Number 51-53, 2017.
13. M. Suresh Kumar & A. Dinesh Kumar, "A Statistical Approach towards the Effect of Yoga on Total Cholesterol of Overweight Professional College Students", *International Journal of Recent Research and Applied Studies*, Volume 4, Issue 2, Page Number 126-128, 2017.