IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

The Effect Of Circuit Training On The Lipogenic Profiles Of Football Players

Dr. K. ASHOK KUMAR

Regional Head -Tamilnadu & Kerala, Organization: Sportz Village Foundation

***Abstract*:** The purpose of the study was to find out the effect of circuit training on HDL and LDL among football players. To achieve the purpose of the present study, thirty women football players from Tiruchirappalli district, Tamilnadu were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into two equal groups at random. The subjects were divided into two equal groups of fifteen players each. Group I acted as Experimental Group (Asana practices) and Group II acted as Control Group. The requirement of the experiment procedures, testing as well as exercise schedule was explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. Pre test was conducted for all the subjects on total cholesterol and triglycerides. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group and Control Group in an equivalent manner. Experimental Group was exposed to asana practices and Control Group was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was twelve weeks. After the experimental treatment, all the thirty subjects were tested on selected variables. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to Analysis of Covariance (ANCOVA) to find out the significance among the mean differences. In all cases 0.05 level of significance was fixed to test hypotheses. It was observed that the twelve weeks of circuit training have significant effect on HDL and LDL than the control group.

Index Terms – Circuit Training, Lipid, Football Players

1. INTRODUCTION

Now days, the tactics of the modern game of football comprises a large number of means, methods and elements. Its effective application is only possible if all factors that are characteristic of the particular match are taken into account. These factors result from the objective assessment of the possibilities of one's own team and those of the opponent. But also to be considered are the concrete external conditions under which the match takes place. If these factors are not taken into account a team will not be able to achieve an optimum score. Gaining effective control of these factors will only be possible if the tactics of football is mastered. The tactics in football is constantly developing. The word a technique is used here refers to the particular movements and skills both on and off the ball which required in football. It is especially important in football to master the fundamental techniques**.**

2. REVIEW OF RELATED LITERATURE

Melo et al. (2014) a study compared the total work volume, number of repetitions and rate of perceived effort performed in two different sequences of circuit training sessions. Eleven recreationally trained men (24.0} 4.8 years, 76.1} 8.5 kg, 1.75} 0.06 m) performed two different sequences of circuit training sessions. All sessions consisted of eight stations (exercises) of three sets in circuit, performed to volitional fatigue, alternating upper and lower body exercises, with 1-minute rest interval between exercises. Sequence A began with multiple joint exercises and progressed to single joint exercises, whereas sequence B was performed with the opposite exercise order. Number of repetitions and rating of perceived exertion (RPE) were compared by repeated measures multivariate analysis of variance (repeated measures MANOVA).

Total work volume (TWV) was compared by paired t-test. There were no differences between exercise order for TWV ($p=0.47$) and RPE of all exercises ($p>0.05$). For both sequences, number of repetitions was greater when exercise was performed first ($p<0.05$). These results indicate that during a circuit training session, exercises order influenced the number of repetition, but did not influence TWV and RPE. These findings may suggest that for those who aim overall muscular gains, similar results will be obtained with single and multiple joint, upper and lower body circuit training exercise orders. Similarly, exercise intensity will be similarly perceived regardless of exercise sequences. For those who aim specific muscle group gains, priority exercises must be performed first.

Antonio (2013) conducted study on effects of high-intensity circuit training, low-intensity circuit training and endurance training on blood pressure and lipoproteins in middle-aged overweight men. Effect of six weeks of two types of plyometric circuit training programmes on jumping performance of female college level players and athletes were compared. Circuit Training Programme-I used depth jumping in combination with hopping and hurdling while Circuit Training Programme-II comprised only of depth jumping from boxes varying in heights from 15-45cms. The results showed that gains in jumping abilities as a result of CTP-II are much higher than the gains accruing as a result of CTP-I. The amount of gain in abilities was not uniform. The gain varies from ability to ability. CTP-II has proved more effective in improving the jumping abilities of the subjects because it is more saturated with depth jumping exercises.

Chittibabu & Akilan (2013) evaluated the study the effectiveness of a football specific endurance circuit training on aerobic capacity and heart rate of high school male football players. To achieve the purpose of the study twenty four (24) male high school football layers were selected from Neyveli Lignite Corporation Sports School, Neyveli and St. Joseph Higher Secondary School, Manjakuppam, Cuddalore. These subjects were randomly distributed into two groups namely football specific endurance circuit training group (N=12) and control group (N=12). The mean age of the selected players was 16.85 ± 0.67. Aerobic capacity, resting heart rate and peak heart rate were selected as criterion variables. Aerobic capacity was measured by multistage fitness test and resting and peak heart rate was measured using polar heart rate monitor. The football specific endurance circuit training was administered 3 days per week for six week. They performed 2 minutes of work at 90 to 95% of targeted heart rate using Karvonen method. They performed 8 repetitions during first and second week, followed by 10 repetitions during third and fourth week and 12 repetitions during fifth and sixth week of training. This was followed by 2 minutes of active resting at 60 to 70% of targeted heart rate. In this study 1:1 work rest ratio was followed. Both the groups were tested before and after training, the collected data was analysed using ANCOVA. The result of the study showed that aerobic capacity, resting heart rate and peak heart rate between the groups was significant, it indicate that after adjusting pre-test scores, there was a significant difference between the two groups on post-test scores. The findings of the study showed that significant increase in aerobic capacity and decrease in resting and peak heart rate. It was concluded that football specific endurance circuit training is effective in improving aerobic capacity and increases the cardiovascular fitness of male high school boys during competitive phase.

Irungbam et al., (2013) compared the effects of plyometrics, circuit training and circuit breaker programmes on selected motor components of school level football players. For the purpose of the study; four groups: three experimental groups viz: plyometric training group (A), circuit training group (B), and circuit breaker programme group (C) and the fourth group served as the control group. Random group design was employed. Reliability coefficients for the test- re- test scores on selected motor components: Cardiorespiratory endurance (1.5 mile Run) 0.87, Hip and back flexibility (Sit and Reach Test) 0.97,Spine flexibility (Bridge Up Test) 0.94, Shoulder flexibility (Shoulder Rotation Test) 0.97,Static balance (Stork Stand Test) 0.97, Dynamic balance (Modified Bass Test) 0.97 were selected to collect the data. To find out the comparative effects of plyometric training, circuit training and circuit breaker programme on selected motor components of school level Football players, analysis of covariance was employed, the proposed hypothesis was tested at .05 level of confidence. The result revealed significant improvement in most of the selected motor components. All the three experimental groups were effective in improving the Cardio respiratory endurance (1.5 mile Run), Hip, back and spine flexibility and also balance (staticand dynamic). The plyometric groups were comparatively better than the circuit traininggroup and circuit breaker programme in improving the Cardio respiratory endurance of the subjects. In the case of shoulder flexibility all the three experimental groups did not show any significant improvement.

Paoli et al. (2013) study was to determine the physiological effects of an high-intensity circuit training (HICT) on several cardiovascular disease risk factors in healthy, overweight middle-aged subjects, and to compare the effects of HICT to traditional endurance training (ET) and low-intensity circuit training (LICT). Methods: Fifty-eight participants (ages 61±3.3 yrs, BMI 29.8±0.9) were randomly assigned to one of the three exercise treatment groups: HICT, LICT and ET. The three groups exercised three times per week, 50

min per session for 12 weeks. Baseline and after intervention anthropometric characteristics: body weight (BW), fat mass (FM); blood pressure: diastolic (DBP) and systolic (SBP), blood parameters; CHOL-t (total cholesterol), LDL-C (low density lipoprotein-cholesterol), HDL-C (high density lipoprotein-cholesterol), TG (triglycerides), ApoB and ratio ApoB/ApoA1were measured. Result: Compared to other groups, HICT showed significantly higher reductions in FM, DBP, CHOLt, LDL-C, TG, ApoB and significantly greater increases in high density HDL-C. LICT resulted in the greatest reduction in SBP. All groups showed a significant improvement of BW without any significant differences between groups. Their findings indicated that high-intensity circuit training was more effective in improving blood pressure, lipoproteins and triglycerides than endurance training alone or lower intensity circuit training.

Maria Raj (2013) compared the effects of plyometrics, circuit training and circuit breaker programmes on selected motor components of school level football players. For the purpose of the study; four groups: three experimental groups viz: plyometric training group (A), circuit training group (B), and circuit breaker programme group (C) and the fourth group served as the control group. Random group design was employed.Reliability coefficients for the test- re- test scores on selected motor components: Cardiorespiratory endurance (1.5 mile Run) 0.87, Hip and back flexibility (Sit and Reach Test) 0.97,Spine flexibility (Bridge Up Test) 0.94, Shoulder flexibility (Shoulder Rotation Test) 0.97,Static balance (Stork Stand Test) 0.97, Dynamic balance (Modified Bass Test) 0.97 were selected to collect the data. To find out the comparative effects of plyometric training, circuit training and circuit breaker programme on selected motor components of school level Football players, analysis of covariance was employed, the proposed hypothesis was tested at .05 level of confidence. The result revealed significant improvement in most of the selected motor components. All the three experimental groups were effective in improving the cardiorespiratory endurance (1.5 mile Run), Hip, back and spine flexibility and also balance (static and dynamic). The plyometric groups were comparatively better than the circuit training group and circuit breaker programme in improving the Cardio respiratory endurance of the subjects. In the case of shoulder flexibility all the three experimental groups did not show any significant improvement.

Najeeb (2013) conducted a study forty five boys in the age group of 13 to 14 years of Alagappa Model school, Karaikudi were selected at random and were divided randomly into three groups namely mud circuit training group, concrete circuit training group and control group. The experimental groups participated in the training programme for a period of 6 weeks. During this period, the control group was let off without any training. The data were collected on selected physical and physiological variables of speed, agility, leg explosive power, pulse rate, blood pressure, aerobic capacity respectively before training (pre-test) as well as after 6 weeks of training (post-test). Analysis of covariance was used to analyse the data. The result of the study clearly indicated that the mud circuit training group had improved the speed, agility, leg explosive power, pulse rate, blood pressure, and aerobic capacity to a greater degree than concrete circuit training group.

Paul (2013) Fitness is that state which describes the degree to which an individual has the capacity to capacity productively. Fitness is a singular matter. It suggests the capability of every individual to live most adequately inside his Potentialities. The motivation behind this study was to figure out if there was any critical impact of cardiovascular persistence of young men through chosen high intensity aerobics works out. Ninety six Boys people of Govt. High School, Guntur were chosen at irregular aggregation of 400 scholars as the subjects for this study. Two likened aggregations were defined of Forty eight each one, matching them with the indistinguishable beat rate readings. One was named as gathering x and was treated as the control bunch, and the second assembly Y, was subjected to the trial medication.

Skidmore, et al. (2012) conducted a study on Interval and circuit weight training are 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. their purpose was to compare acute effects of three circuit weight training protocols 1) traditional circuit weight training, 2) aerobic circuit weight training, and 3) combined circuit weight-interval training on blood lactate (BLA), heart rate (HR), and ratings of perceived exertion (RPE). Eleven recreationally active women completed 7 exercise sessions. Session 1 included measurements of height, weight, estimated VO2max, and 13 repetition maximum (RM) testing of the weight exercises. Sessions 2-4 were held on non-consecutive days for familiarization with traditional circuit weight training (TRAD), aerobic circuit weight training (ACWT), and combined circuit weight-interval training (CWIT) protocols. In sessions 5-7, TRAD, ACWT, and CWIT were performed in a randomized order ≥ 72 hr apart for measures of BLA, HR, and RPE at pre exercise and following each of three mini-circuit weight training stations. Repeated-measures ANOVAs yielded significant interactions ($p < 0.05$) in BLA, HR, and RPE. Combined circuit weight-

interval training (CWIT) produced higher BLA (7.31 ± 0.37 vs. TRAD: 3.99 ± 0.26, ACWT: 4.54 ± 0.31 mmol.L-1), HR (83.51 ± 1.18 vs. TRAD: 70.42 ± 1.67, ACWT: 74.13 ± 1.43 beats.min-1) and RPE (8.14 ± 0.41 vs. TRAD: 5.06 ± 0.43, ACWT: 6.15 ± 0.42) at all measures. Aerobic circuit weight training (ACWT) elicited greater RPE than traditional circuit weight training (TRAD) at all measures. Including combined circuit weight-interval training (CWIT) workouts into exercise programming may enhance fitness benefits and maximize time efficiency more so than traditional circuit training methods.

3. METHODOLOGY

The purpose of the study was to find out the effect of circuit training on HDL and LDL among football players. To achieve the purpose of the present study, thirty women football players from Tiruchirappalli district, Tamilnadu were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into two equal groups at random. The subjects were divided into two equal groups of fifteen players each. Group I acted as Experimental Group (Asana practices) and Group II acted as Control Group. The requirement of the experiment procedures, testing as well as exercise schedule was explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. Pre test was conducted for all the subjects on total cholesterol and triglycerides. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group and Control Group in an equivalent manner. Experimental Group was exposed to asana practices and Control Group was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was twelve weeks. After the experimental treatment, all the thirty subjects were tested on selected variables. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to Analysis of Covariance (ANCOVA) to find out the significance among the mean differences. In all cases 0.05 level of significance was fixed to test hypotheses.

4. RESULTS

TABLE – I
COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF HDL OF EXPERIMENTAL AND CONTROL GROUPS

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	56.26	57.20	BG	6.53	1	6.53	1.14
			WG	159.33	28	5.69	
Post Test Mean	62.46	57.86	BG	158.70	1	158.70	55.91*
			WG	79.46	28	2.83	
Adjusted Post Mean	62.57	57.76	BG	166.55	1	166.55	62.85*
			WG	71.54	27	2.65	

* 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 HDL of experimental and control groups were 62.57 and 57.76 respectively. The obtained F-ratio of 62.85 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 HDL. 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 HDL of both experimental and control groups are graphically represented in the figure-I.

FIGURE – I

SHOWS THE MEAN VALUES ON HDL OF EXPERIMENTAL GROUP AND CONTROL GROUPS

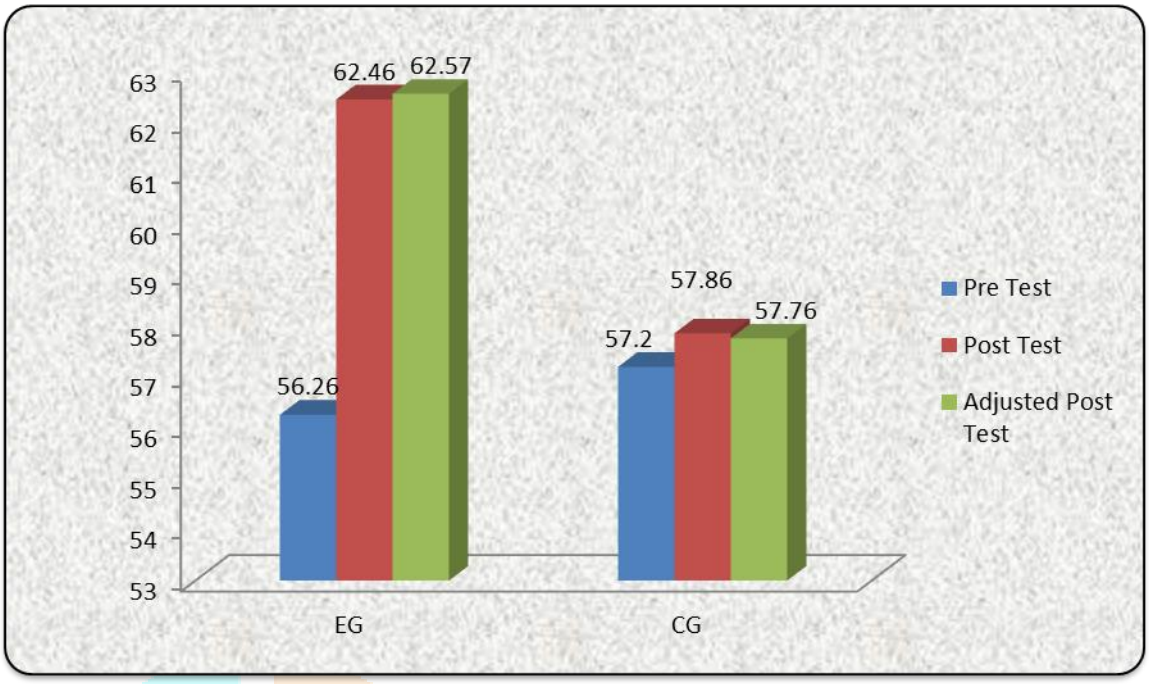


TABLE – II

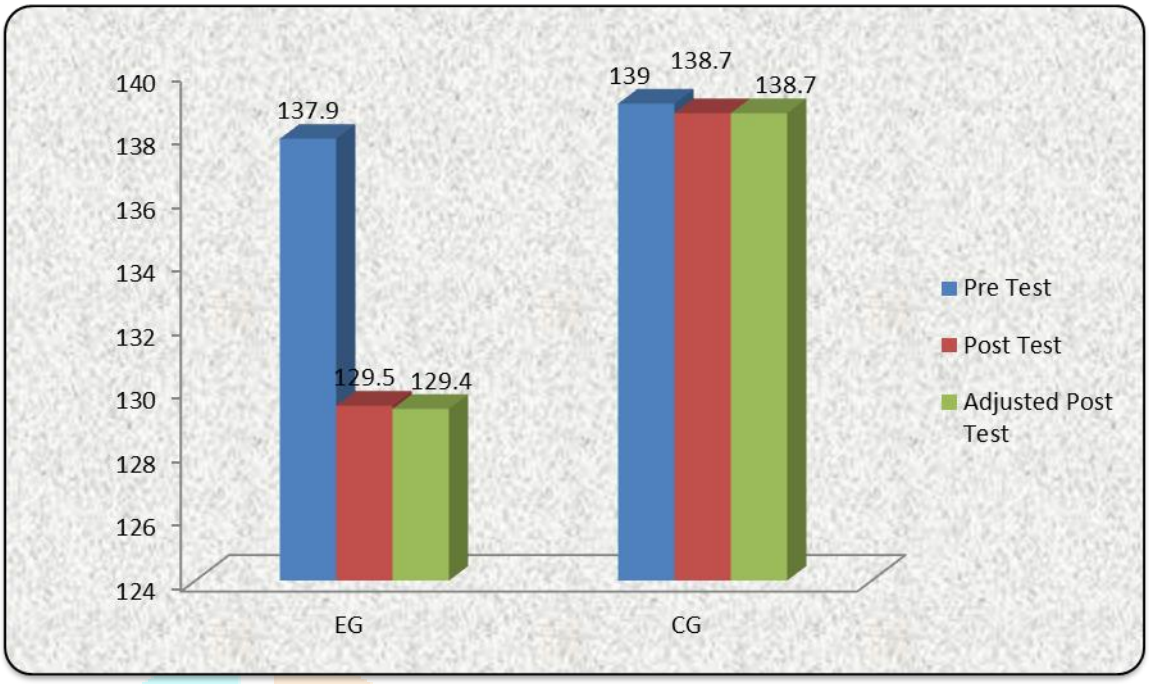
COMPUTATION OF MEAN AND ANALYSIS OF COVARIANCE OF LDL OF EXPERIMENTAL AND CONTROL GROUPS

	Experimental Group	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F
Pre Test Mean	137.93	139.00	BG	8.53	1	8.53	0.18
			WG	1274.93	28	45.53	
Post Test Mean	129.46	138.66	BG	634.80	1	634.80	30.90*
			WG	575.06	28	20.53	
Adjusted Post Mean	129.44	138.68	BG	636.84	1	636.84	30.02*
			WG	572.73	27	21.21	

* 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 LDL of experimental and control groups were 129.44 and 138.68 respectively. The obtained F-ratio of 30.02 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 LDL. 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 LDL of both experimental and control groups are graphically represented in the figure-II.

FIGURE – II
SHOWS THE MEAN VALUES ON LDL OF EXPERIMENTAL GROUP AND CONTROL GROUPS



5. CONCLUSION

It was observed that the twelve weeks of circuit training have significant effect on HDL and LDL than the control group.

6. REFERENCES

[1] Antonio, P., Quirico, F., Giuseppe, T.M., Marco, N. and Antonino, B. (2013).“Effects of high-intensity circuit training, low-intensity circuit training and Endurance training on blood pressure and lipoproteins in middle-aged overweight men”,*Journal of Strength and Conditioning Research*; 1803-10.

[2] Chittibabu, B., &Akilan, N. (2013).”Effect of football specific endurance circuit training on aerobic capacity and heart rate of high school male football players”, *International Journal of Physical Education, Fitness and Sports*,Vol.2. No.4, ISSN 2277-5447.

[3] Melo, B. M., &Cappato de Araujo, R. (2014).“Effect of exercise order on the resistance training performance during a circuit training session”,*Rev Bras CineantropomDesempenho Hum*, 16(3):325-333 327.

[4] Najeeb, A.M. (2013). “Effects of circuit training on different surfaces on selected physical and physiological variables of school boys”.*International Journal of Physical Education, Fitness and Sports*; Vol.2.No.4, ISSN 2277-5447.

[5] Paoli A., Paccelli F., Bargossi A.M., Marcolin G., Guzzinati S., Neri M., Bianco A., Palma A.(2010). “Effects of three distinct protocols of fitness training on body composition, strength and blood lactate*”, Journal of Sports Medicine and Physical Fitness*; 550, 43-51.

[6] Paul Kumar, P. P. S. (2013). The Effect of Circuit Training on Cardiovascular Endurance of High School Boys. Global Journal of Human Social Science, Arts, Humanities & Psychology, 13, 7.