International Journal of Interdisciplinary Research in Arts and Humanities (IJIRAH)
Impact Factor: 5.225, ISSN (Online): 2456 - 3145
(www.dvpublication.com) Volume 2, Issue 2, 2017

EFFECT OF PLYOMETRIC TRAINING ON SELECTED HAEMATOLOGICAL VARIABLES AMONG JUMPERS

S. Manimaran* & Dr. C. Ramesh**
* Ph.D Research Scholar, Department of Physical Education, Madurai Kamaraj University, Madurai, Tamilnadu
** Assistant Professor, Department of Physical Education, Madurai Kamaraj University, Madurai Tamilnadu

Cite This Article: S. Manimaran & Dr. C. Ramesh, "Effect of Plyometric Training on Selected Haematological Variables among Jumpers", International Journal of Interdisciplinary Research in Arts and Humanities, Volume 2, Issue 2, Page Number 233-236, 2017.

Abstract:
The purpose of the study was to investigate the effect of plyometric training on selected haematological variables among jumpers. To facilitate the study, thirty jumpers from various clubs in Chennai city, Tamilnadu, India were selected as subjects at random and their ages between 14 to 17 years. The subjects were divided into two equal groups. Group-I performed ladder training and group-II was control. HDL and LDL were assessed by blood test. The subjects were involved with their respective training for a period of 12 weeks. At the end of the twelve weeks of the training post-tests were taken. The significant differences between the means of experimental group and control group for the pre-test and post-test scores were determined by ANCOVA. The level of significance was fixed at 0.05 level of confidence for the degree of freedom 14. The plyometric training group has showed better performance on HDL and LDL than the control group.

Key Words: Plyometric Training, HDL, LDL & Jumpers.

Introduction:

Specifically, plyometrics target the muscles fast twitch fibers. These fibers are in charge of speed and higher power production. Since most sports focus around the need for explosive movements, these are the type of fibers you want to be training. Before ever starting a plyometric program, you must assess your previous training experience, age, physical maturity and conditioning, flexibility and strength. The more experienced an athlete is with training, the younger he can begin plyometrics and the more intense the exercises can be. Prepubescent athletes should not perform high shock activities, but low intensity plyometrics should be fine. Full range of motion is a prerequisite for performing plyometrics. Athletes must also have a good strength base before performing plyometrics. The athlete should maintain a strength program for a few months before beginning plyometrics. During these strength activities the trainer should pay particular attention to using functional strength activities which use the core musculature which will be addressed during the plyometric activity (Yessis & Fred, 1986).

Review of Related Literature:

Ashok, et al. (2012) studied the effect of combination of plyometric training and skill training on the development of jumping ability, anaerobic capacity and skill performance of Male volleyball players, sixty male volleyball players (18-25 yrs) were selected from various colleges in Coimbatore District, Tamilnadu. The subjects were divided as the Experimental group-1 (n=20, PLYOSKILL group) performed the plyometric and skill training, Experimental group-2 (n=20; SKILL group) performed the Skill Training alone, Experimental group:-3 (n=20, CONTROL group) did not perform any training. Pre-test values of jumping ability, anaerobic capacity and playing ability were 14.3± .69, 780.9 ± 54.12, 4.6 ± .59, for PLYOSKILL group, 14.27± .69, 780.9 ± 54.1, 4.6 ± .59 for Skill group and 14.27± .67, 780.95 ± 52.9, 4.7±.656 for Control group respectively. After 12 week of training programme the physical variables and playing ability were significantly improved at (P<=0.05 level). The post test values of jumping ability, anaerobic capacity and game playing ability were 16.4 ± .59, 818.2 ± 44.2, 6.7± .55 for PLYOSKILL group, 15.02 ± .59, 800.2 ± 28.25, 6.0± .72 for skill group and 14.22 ± .73, 775.80 ±49.47, 4.75± .638 for control group respectively. The study shows that combination of plyometric training and skill training were significantly developed jumping ability, anaerobic capacity and skill performance variables among male volleyball players.

Sedano, et al. (2011) conducted a study to determine the effects of a 10-week plyometric training program on explosive strength, acceleration capacity and kicking speed in young elite soccer players. Twenty-two players participated in the study: control group (CG), (N.=11; 18.2 ± 0.9 years) and treatment group (TG) (N.=11; 18.4 ± 1.1 years). Both groups performed technical and tactical training exercises and matches together. However, the CG players followed the regular physical conditioning program, which was replaced by a plyometric program for TG. Plyometric training took place three days a week and included jumps over hurdles, horizontal jumps and lateral jumps over hurdles. Jumping ability, 10 m sprint and kicking speed were measured on five separate occasions. Two-way analysis of variance (ANOVA) with repeated measures reflected that the TG demonstrated significant increases (P<0.05) in jumping ability and acceleration capacity after six weeks of training and in kicking speed with dominant and non-dominant leg after eight and ten weeks respectively. On the other hand there were no significant changes in CG players throughout the study. The main findings revealed that a 10-week plyometric program may be an effective training stimulus to improve explosive strength

compared to a more conventional physical training program. The improvements in explosive strength can be transferred to acceleration capacity and kicking speed but players need time to transfer these increases.

Roopchand & Lue (2010) investigated the effect of a three week plyometric training programme on jump performance and agility in Jamaican national netball players. Eighteen national netballers participated in a Plyometric training programme. Subjects were evaluated using the Vertical Jump Test, the Broad Jump Test and the Illinois Agility Test prior to the start of the programme and at week 3. The data were analysed using SPSS version 12 for Windows. A One-Sample Kolmogorov-Smirnov Test showed normal distribution of data and a paired samples t-test was used to determine whether the mean change in jump performance and agility was significant. All eighteen subjects completed the three weeks of training. Three subjects were shown to be outliers at week 3 and this resulted in data from 15 subjects being analysed. At the end of the three weeks, there were significant improvements in Vertical Jump Scores ($p = 0.023$), Broad Jump Scores ($p = 0.002$) and Agility scores ($p = 0.045$). Three weeks of Plyometric training can lead to significant improvements in jump performance and agility and should be integrated into the national training programme at intervals yet to be determined.

Methodology:

The purpose of the study was to investigate the effect of plyometric training on selected haematological variables among jumpers. To facilitate the study, thirty jumpers from various clubs in Chennai city, Tamilnadu, India were selected as subjects at random and their ages between 14 to 17 years. The subjects were divided into two equal groups. Group-I performed ladder training and group-II was control. HDL and LDL were assessed by blood test. The subjects were involved with their respective training for a period of 12 weeks. At the end of the twelve weeks of the training post-tests were taken. The significant differences between the means of experimental group and control group for the pre-test and post-test scores were determined by ANCOVA. The level of significance was fixed at 0.05 level of confidence for the degree of freedom 14.

Results and Discussion:

The detailed procedure of analysis of data and interpretation were given below,

Table 2: Summary of Descriptive Statistics on Selected Haematological Variables among Jumpers

S.No	Variables	PTG					CG				
		Pre	SD (±)	Post	SD (±)	Adjusted Mean	Pre	SD (±)	Post	SD (±)	Adjusted Mean
1	HDL	116.53	2.29	108.32	2.02	108.31	117.23	1.60	116.41	2.21	116.43
2	LDL	65.82	3.01	71.23	1.42	71.33	64.93	1.89	65.17	2.46	65.08

PPG = Plyometric Training Group & CG = Control Group

The table 2 shows that the pre and post test means and standard deviation of two groups on selected haematological variables among jumpers.

Table 3: Analysis of Variance of Pre Test Scores on Selected Haematological Variables among Jumpers

S.No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	HDL	BG	3.67	1	3.67	0.93
		WG	110.01	28	3.92	
2	LDL	BG	5.87	1	5.87	0.92
		WG	177.44	28	6.33	

***** $P < 0.05$ Table F, df (1,38) (0.05) = 4.09

In table 3, the results of analysis of variance of pre test scores on HDL (0.93) and LDL (0.92) were lesser than the table value of 4.19 indicating that it was not significant for the degrees of freedom (1,28) at 0.05 level of confidence indicating that the random sampling was successful.

Table 4: Analysis of Variance of Post Test Scores on Selected Haematological Variables among Jumpers

S.No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	HDL	BG	491.18	1	491.18	108.95*
		WG	126.22	28	4.50	
2	LDL	BG	275.18	1	275.18	68.14*
		WG	113.06	28	4.03	

***** $P < 0.05$ Table F, df (1,28) (0.05) = 4.19

In table 4, the results of analysis of variance of post test scores on HDL (108.95) and LDL (68.14) were greater than the table value of 4.19 indicating that it was significant for the degrees of freedom (1,28) at 0.05 level of confidence.

Table 5: Analysis of Covariance of Adjusted Post Test Scores on Selected Haematological Variables among Jumpers

S.No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value

1	HDL	BG	478.36	1	478.36	102.44*
		WG	126.07	27	4.66	
2	LDL	BG	283.35	1	283.35	72.95*

***** P < 0.05 Table F, df (1,27) (0.05) = 4.21

In table V, the results of analysis of covariance of adjusted post test scores on HDL (102.44) and LDL (72.95) were greater than the table value of 4.21 indicating that it was significant for the degrees of freedom (1,27) at 0.05 level of confidence.

Figure 1: Shows the Mean Values of Experimental and Control Groups on HDL among Jumpers

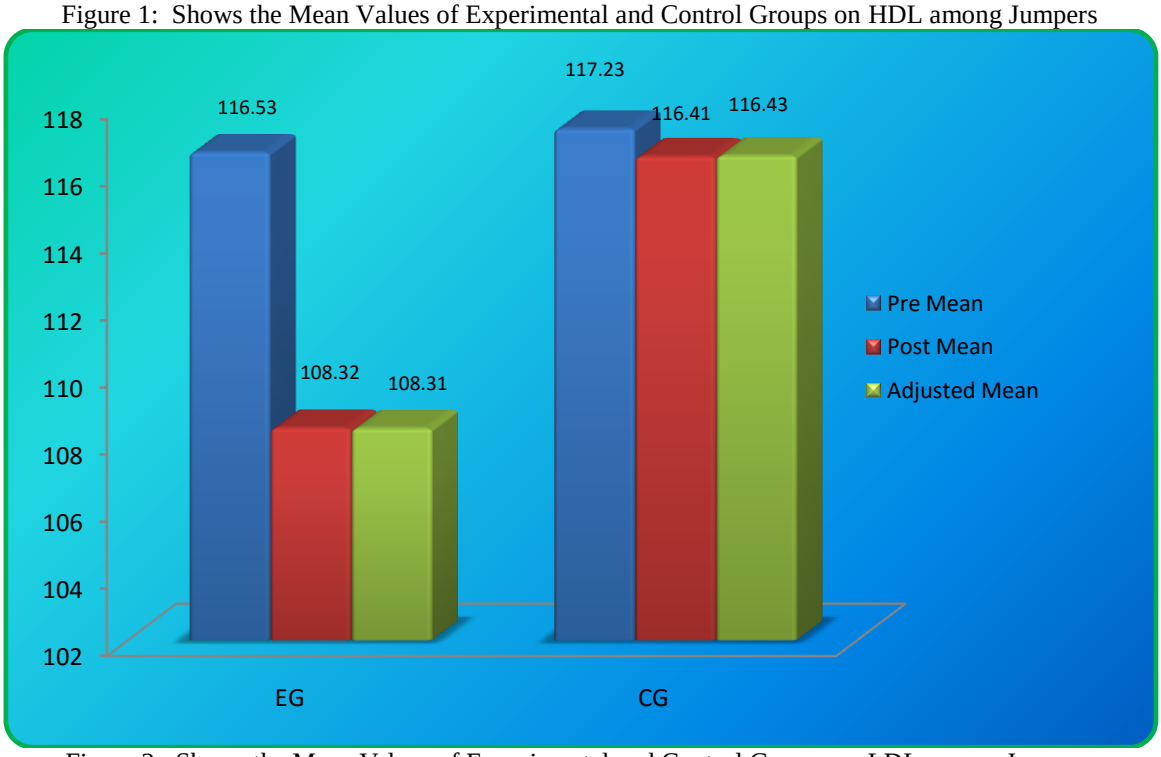
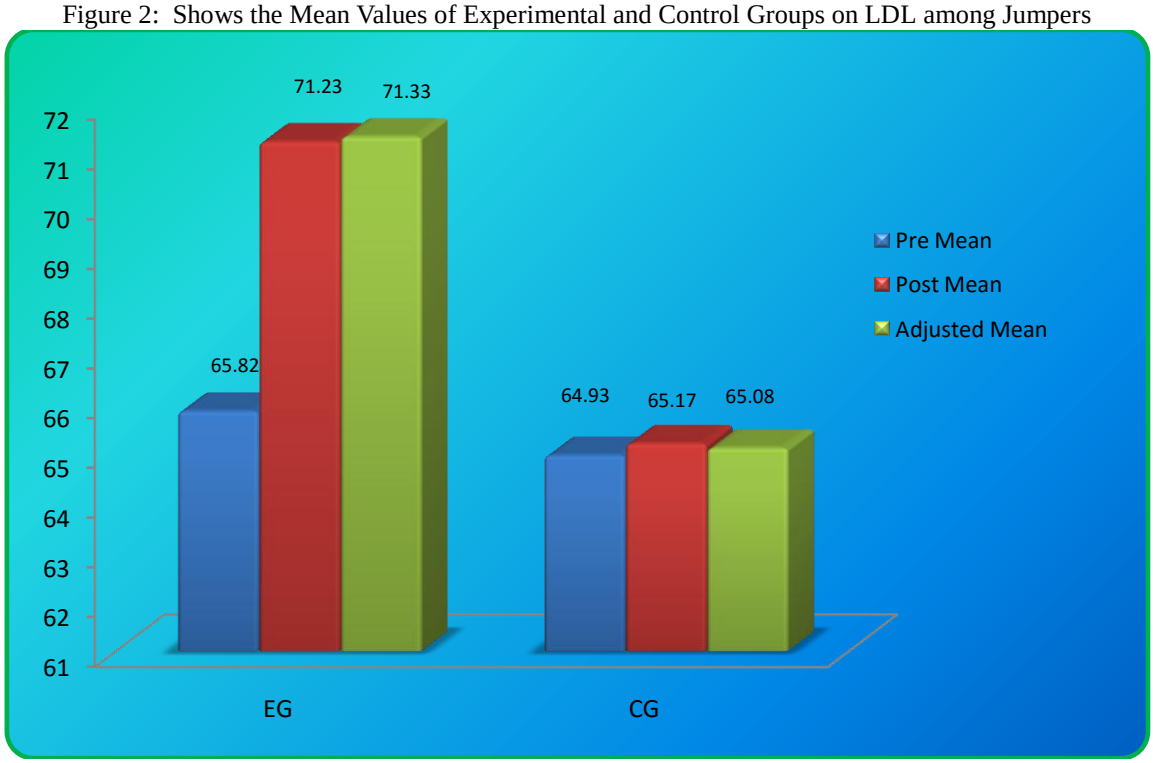


Figure 2: Shows the Mean Values of Experimental and Control Groups on LDL among Jumpers



Conclusion:

The plyometric training group has showed better performance on HDL and LDL than the control group.

References:

1. Ashok, K. R., Balamurugan, B. & Karthik, R. V. (2012). Combined Effect of Plyometric Training and Skill Training on the Development of Fitness Related Parameters and Skill Performance variables among Male Volleyball Players. International Journal of Health, Physical Education and Computer Science in Sports. Volume No.8, No.1.pp15-17.
2. Chu, D. (1992). Jumping into Plyometrics. Champaign, IL: Human Kinetics.
3. Clarke, H. H & David, H. C. (1986). Application of Measurement to Physical Education. (6th ed) Englewood Cliffs, New Jersey: Prentice Hall:P.52-103
4. Donald, A. C. (1998). Jumping Into Plyometrics. California: Human Kinetic Publisher.
5. Roopchand, M. S. & Lue-Chin, P. (2010). Plyometric training improves power and agility in Jamaica's national netball team. West Indian Med J. 59(2):182-7.
6. Sedano, S., Matheu, A., Redondo, J.C. & Cuadrado, G. (2011). Effects of plyometric training on explosive strength, acceleration capacity and kicking speed in young elite soccer players. J Sports Med Phys Fitness. 51(1):50-8.
7. Yessis, M. & Fred, H. (1986). Plyometric Training. Escondido: Fitness System, Inc.