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An Impact of Plyometric Training With And Without Mental Training on Selected Psychomotor Variable Among Inter Collegiate Women Soccer Players

KEYWORDS: Plyometric Training, Mental Training, Psychomotor, Reaction ability

Dr. K. A Ramesh

Assistant Director of Physical Education, Anna University, BIT Campus Tiruchirappalli, Tamilnadu, India

ABSTRACT *The purpose of the study was to find out the effects of Plyometric training with and without Mental Training on selected psychomotor variable among Inter Collegiate women Soccer Players. To achieve the purpose of the study, forty five(N=45) women Soccer Players studying at Various Colleges in Pudukkottai District, Tamilnadu, India who have participated inter collegiate Soccer Tournament during the academic year 2015-2016 were selected randomly as subjects. The subjects were divided into three groups of fifteen each, namely Plyometric training with mental training (n-15), Plyometric training without mental training (n-15) and Control group. The training period was limited to twelve weeks. Among variable psychomotor variables only Reaction ability was selected as criterion variable and it was assessed by Ball reaction exercise test. The selected variable was assessed prior to and immediately after the training period. The data obtained from all the groups before and after the experimental period were statistically analyzed by Analysis of Covariance (ANCOVA). Whenever 'F' ratio for adjusted Post test means was found to be significant, the Scheffe's test was applied as post-hoc test to determine the paired mean's differences. The level of confidence was fixed at 0.05 levels for all the cases to find out the significance. The results showed that there was a significant difference among Plyometric training with Mental Training, Plyometric training without Mental Training and control groups on Reaction ability among Inter Collegiate women Soccer Players. Among the experimental groups, Plyometric training with Mental Training group significantly improved in Reaction Ability than that of Plyometric training without Mental Training.*

INTRODUCTION

The actual term 'plyometrics' was first coined in 1975 by Fred Wilt, the American Track and Field coach. The elements ply and metric come from Latin roots for "increase" and "measure" respectively, the combination thus means 'measurable increase" ***(Baechle, 1994).***

Plyometric training is known to be an intense form of exercise that requires maximal efforts to create the physiological change associated with elite athletic performance. This system became popular in the late 60's to the early 70's and was credited with being responsible for much of the East European success in athletics during that time. Since then, the use of plyometric training has evolved into a mainstay of the training and development programs of virtually all-sporting events. With this transition came many questions, including the age, gender and strength levels of the athletes who would benefit from this form of training. The fundamental reason to train with plyometrics is to reduce the ground contact time that an athlete spends when running or jumping. This time is reduced as the athlete matures, gets stronger, and practices the skills of their game. To further enhance resistance training the athlete spends considerable time practicing the specific movement skills they wish to improve; namely, running and jumping. These two movement patterns are often thought of as genetic endowments and affected little by outside influences such as training programs. To the contrary, research has shown that virtually all athletes can positively influence their performance outcomes by using plyometric training on a regular basis. In order to implement this type of training with young athletes several factors must be considered. The first consideration is what controlled research studies tell us about this form of training and its effect on young children.

Scientific inquiry into the efficacy of aquatic based plyometric training has recently received a lot of attention. In a recent investigation the effects of a six week aquatic plyometric training program on vertical jump performance was tested. Twenty-nine subjects were divided into three groups 1) chest deep aquatic plyometric group, 2) waist deep aquatic plyometric group, and 3) a control group which did no specific jump training. Each plyometric group trained two days per week with a periodized program where the volume of training ranged from 90 – 140 foot contacts and intensity was manipulated. Both plyometric groups performed an identical training program with the only difference being the depth of the water utilized. Prior to and after the 6 weeks of training, the subjects' vertical jump performance and force-time curve characteristics were assessed via the use of a force plate analysis system. When the three groups were analyzed, no significant differences were noted between the three treatment groups when examining vertical jump displacement. Additionally, no significant differences were noted between the three treatment groups for peak force and power values. Based upon these findings it was determined that performing plyometric training in an aquatic environment offers no marked benefit to athletes. It is likely that this lack of performance gain occurs because the aquatic environment changes force characteristics associated with traditional plyometric exercises ***(Miller et al, 2007).***

METHODOLOGY

Aim of the study was to find out the effects of Plyometric training with and without Mental Training on selected psychomotor variable among Inter Collegiate women Soccer Players. To achieve the purpose of the study, forty five(N=45) women Soccer Players studying at various College in Pudukkottai District, Tamilnadu, India who have participated inter collegiate Soccer Tournament during the academic year 2015-2016 were selected randomly as subjects. The subjects were divided into three groups of fifteen each, namely Plyometric training with mental training (n-15), Plyometric training without mental training (n-

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15) and Control group. The training period was limited to twelve weeks. Among variable psychomotor variables only Reaction ability was selected as criterion variable and it was assessed by Ball reaction exercise test***(Uppal, 2001).*** The selected variable was assessed prior to and immediately after the training period.

RESULTS AND DISCUSSION

The data obtained from all the groups before and after the experimental period were statistically analyzed by Analysis of Covariance (ANCOVA). Whenever 'F' ratio for adjusted Post test means was found to be significant, the Scheffe's test was applied as post-hoc test to determine the paired mean's differences. The level of confidence was fixed at 0.05 levels for all the cases to find out the significance.

The analysis of covariance on Reaction ability of the pre, post and adjusted test scores of Plyometric Training with mental training, Plyometric Training without mental training and Control group, have been analyzed and presented in table - I.

TABLE - I
ANALYSIS OF COVARIANCE OF THE DATA ON REACTION ABILITY OF PRE, POST AND ADJUSTED SCORES OF EXPERIMENTAL GROUPS AND CONTROL GROUP

Test	Plyometric Training with Mental Training Group (Group–I) Expt. Group 'A'	Plyometric Training without Mental Training Group (Group-II) Expt. Group 'B'	Control Group (Group- III)	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
Pre-Test Mean SD	**1.83** ±0.**09**	**1.83** ±0.**09**	**1.83** ±0.**09**	BetweenGroups	0.0003	2	0.0002	0.02
				Within Groups	0.34	42	0.008	
Post-Test Mean SD	**1.61** ±0.**08**	**1.67**±0.**10**	**1.82** ±0.**08**	BetweenGroups	0.35	2	0.18	27.92*
				Within Groups	0.26	42	0.006	
Adjusted Post-Test Mean	**1.61**	**1.66**	**1.82**	**Between Sets**	0.35	2	0.17	47.32*
				Within Sets	0.15	42	0.004	

*** Significant at 0.05 level of confidence**
Table value for df (2, 42) at 0.05 level = 3.22 Table value for df (2, 41) at 0.05 level = 3.23

The above table shows that the pre-test mean & standard deviation values on Reaction ability of experimental groups 'A' and 'B' and control group were 1.83, 1.83 & 1.83 and ±0.09, ±0.09 & ±0.09 respectively. The obtained 'F' ratio of 0.02 for pre-test scores was lesser than the table value of 3.22 for df 2 and 42 required for significance at 0.05 level of confidence on Reaction ability.

The post test mean & standard deviation values on Reaction ability of experimental groups 'A' and 'B' and control group were 1.61, 1.67 & 1.82 and ±0.08, ±0.10, & ±0.08 respectively. The obtained 'F' ratio of 27.92 for post-test scores was greater than the table value of 3.22 for df 2 and 42 required for significance at 0.05 level of confidence on Reaction ability.

The adjusted post-test means on Reaction ability of experimental groups 'A' and 'B' and control group were 1.61, 1.66 and 1.82 respectively. The obtained 'F' ratio of 47.32 for adjusted post-test mean was greater than the table value of 3.23 for df 2 and 41 required for significance at 0.05 level of confidence on Reaction ability.

The results of the study indicated that there was a significant difference between the adjusted post-test means of Plyometric Training with mental training, Plyometric Training without mental training and Control group on Reaction ability.

Since, three groups were compared, whenever the obtained 'F' ratio for adjusted post test was found to be significant, the Scheffe's test was used to found out the paired mean difference and it was presented in table-II.

TABLE - II
SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN PAIRED MEANS ON REACTION ABILITY

Plyometric Training with Mental Training Group (Group–I) Expt. Group 'A'	Plyometric Training without Mental Training Group (Group-II) Expt. Group 'B'	Control Group (Group-III)	**Mean Difference**	**Confident Interval Value**
1.61	**1.66**	**---**	**0.05**	**0.06**
1.61	**---**	**1.82**	**0.21***	
---	**1.66**	**1.82**	**0.16***	

**Significant at 0.05 level of confidence.*

The above table shows that the mean difference values of experimental groups 'A' and Control group and experimental groups 'B' and Control group were 0.21 and 0.16 respectively, which were greater than the confidence interval value of 0.06 on Reaction ability at 0.05 level of confidence. The results of the study showed that there was a significant difference between experimental groups 'A' and Control group and experimental groups 'B' and Control group.

The mean difference values of experimental groups 'A' and experimental groups 'B' were 0.05, which was lesser than the confidence interval value of 0.06, so it showed insignificant differences.

The above data also reveals that Plyometric Training with mental training group had better Reaction ability.

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The pre, post and adjusted mean values of Plyometric Training with mental training, Plyometric Training without mental training and Control group on Reaction ability were graphically represented in the Figure -I.

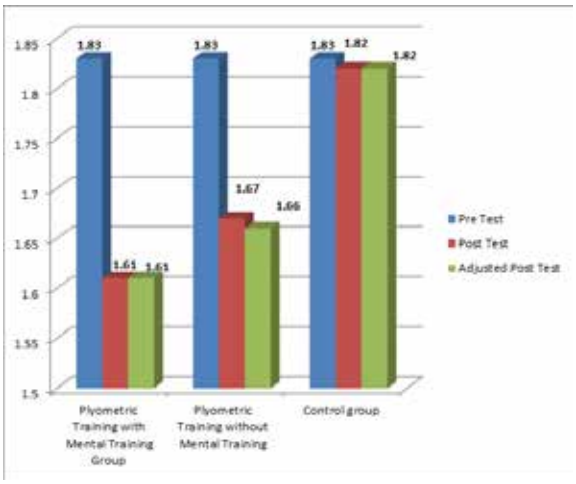

Figure: IX	The pre, post and adjusted mean values of Plyometric Training with mental training, Plyometric Training without mental training and Control group on Reaction ability

CONCLUSIONS

From the analysis of the data, the following conclusions were drawn.

1. There was a significant difference among Plyometric training with Mental Training, Plyometric training without Mental Training and Control group on Reaction ability among Inter Collegiate women Soccer Players.

2. Significant improvements noticed on selected Reaction ability due to Plyometric training with Mental Training, Plyometric training without Mental Training.

3. Among the Experimental groups, Plyometric training with Mental Training group significantly improved the Reaction ability Performance than that of Plyometric training without Mental Training.

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