Impact of Aquatic Plyometric Training on Intercollegiate Handball Players' Leg Explosive Strength

Dr.T.Siva Prasad
Physical Director, Principal In charge, KVR, KVR &MKR College, Khajipalem-522329, P.V Palem (Md), Bapatla (Dt), Andhra Pradesh

Abstract- This research article to determine how aquatic plyometric training affected the intercollegiate handball players' leg explosive strength. Leg explosive strength, leg explosive leaping strength, aquatic plyometric training, and floor plyometric training are the factors that have been chosen. Sixty guys between the ages of 19 and 25 who played handball for their colleges in intercollegiate competitions were chosen for this study from among several institutions in Chennai. The participants were randomly assigned to one of three groups: the floor plyometric training group (FPTG), the aquatic plyometric training group (APTG), or the control group (CG). The results showed that whereas floor plyometric training did not significantly increase standing wide leap, six weeks of water plyometric training did considerably improve leg explosive strength as measured by standing broad jump. Aqua plyometric training was therefore shown to be superior to floor plyometric training. An underwater plyometric training program was used to statistically assess the data acquired in order to increase the leg explosive strength of intercollegiate handball players.

Keywords: Plyometric training

INTRODUCTION

TRAINING

The primary methodological idea is the broad training plan. Who establishes the organisational priorities for each stage of the training process? Two areas of development should be organised: the athlete's motor potential (specific physical preparation) and the athletes' ability to use this potential efficiently for competitive exercises (the target is technique, tactics, and speed of execution). Every coach is required to have a methodical idea of how athletes are prepared and to lay out the year's training plan. (1999, Juriverchoshanskij)

SPORTS TRAINING

Therefore, increasing the body's work production in a particular motor regimen should be the main goal of the training procedure. Sports training develops the general methodological concepts of an athlete's preparation, establishes the quantitative program of preparation, defines the general training strategy, and elaborates the basic model of the work lodes of all the training means that are objectively required (Singh, 1991).

PLYOMETRIC TRAINING

Plyometric exercises, also referred to as "jump training" or "ploys," are designed to increase muscular force in the shortest amount of time while simultaneously boosting power and speed. The goal of this exercise is to teach you how to quickly or "explosively" transition from a muscular extension to a contraction, as in specialised repetitive leaping. Plyometric exercises are mostly employed by athletes to increase their performance; they are used to a far lesser extent in the fitness industry.

METHODOLOGY

60 intercollegiate handball players from various colleges in Chennai who competed for their institutions in intercollegiate handball competitions were chosen using a technique and approach tailored to this research study. They varied in age from 19 to 25 and were chosen at random to serve as subjects. They were then randomly assigned to three groups: the floor plyometric training group (FPTG), the aquatic plyometric training group (APTG), and the control group (CG).

SELECTION OF VARIABLES

Dependent variables
- Leg Explosive Strength (vertical jump)
- Leg Explosive Jumping (standing broad jump)

Independent variables
- Aquatic plyometric training (for six weeks)
- Floor plyometric training (for six weeks)

ANALYSIS OF THE DATA AND RESULTS OF THE STUDY

In order to better understand how aquatic plyometric training affects intercollegiate handball players' leg explosive strength, this chapter presents statistically handled data, conclusions, and debate. Here is the statistical analysis of information gathered from 60 Chennai-based intercollegiate handball players. The study's objective was to determine how aquatic plyometric training affected the leg explosive strength of Chennai's intercollegiate handball players. The ANOVA was calculated to determine the differences between these groups, and it was deemed significant at the 0.05 level of confidence.

COMPUTATION OF ANALYSIS OF COVARIANCE

Result on vertical jump:

The statistical analysis comparing the initial and final mean of vertical Jump to aquatic plyometric and floor plyometric training among intercollegiate handball players is presented in table-I.

TABLE- I Computation of analysis of covariance on vertical jump

(In. centimeters)

	Aqua plyometric-group	Floor plyometric group	Control group	Source of variance	Sum of squares	D f	Mean squares	Obtained
Pretest mean	55.90	55.80	56.40	Between	3.7	2	1.85	0.03
				Within	3195.1	57	56.06	
Post test mean	68.10	64.55	58.50	Between	942.4	2	471.22	8.58*
				Within	3129.8	57	54.91	
Adjusted posttest mean	68.20	64.69	58.26	Between	101.4	2	507.41	17.02*
				Within	1669.7	56	29.82	
Mean diff	12.20	8.70	2.10					

Table f-ratio 0.05 level of confidence for 2 and 57 (d f) =3.16, 2 and57(d f) =3.16

* Significant

The results presented in Table-I proved that there was no significant difference in pretest mean and the results shows that the random as significant at initial stage was successful, as the obtained F value of 0.03 was less than the required. F table value of 3.16 to be significant a 0.05 levels. The post- test comparison between the groups proved to be significant. As the obtained F value of 8.58 was greater than the required F table value of 3.16 to be significant at 0.05 levels. The obtained F value on adjusted. Mean differences was 17.02, which was greater than the required F table value of 3.16 to be significant 0.05 levels. Hence it was proved that there was significant difference among adjusted post- test means.

Since significant improvements were recorded, the results were subjected to post hoc analysis using scheffe's confidence interval test. The results were pretested in table-II.

TABLE-II- Scheffe's confidence interval test scores on vertical jump

Mean				
Aqua plyometric Group	Floor plyometric group	Control group	Mean difference	Required C I
68.20	64.69		3.52	4.34
68.20		58.26	9.94*	4.34
	64.69	58.26	6.42*	4.34

*Significant

The results presented in table II provide that (1) there was significant difference between aquatic plyometric group and control group. (2) There was no significant difference between floor plyometric group and control group and (3) there was no significant difference between aquatic plyometric group and floor plyometric group.

RESULTS ON STANDING BROAD JUMPS

The statistical analysis comparing the initial and final mean of standing broad jump. To aquatic plyometric training among intercollegiate handball players is presented in

Table- I Computation of analysis of covariance on standing broad jump

(In meters)

	Aquatic Plyo-metric group	Floor Plyometric group	Control group	Source variance	Sum of square's	df	Mean Square's	Obtained
Pretest Mean	2.05	1.95	2.00	Between	0.1	2	0.05	0.96
				Within	2.8	7	0.05	
Post test Mean	2.20	2.11	2.03	Between	0.3	2	0.15	3.57*
				Within	2.3	7	0.04	
Adjusted Post test Mean	2.17	2.14	2.03	Between	0.2	2	0.11	5.03*
				Within	1.2	6	0.02	
Mean Diff	0.15	0.16	0.03					

Table F-ratio at 0.05 level of confidence for 2 and 57 (d f) = 3.16,2 and 56 (d f) = 3.16

*Significant

The results presented in table-I provide that there was no significant difference in pretest means and the results shows that the random assignment at initial stage was successful, as the obtained F value of 0.96 was less than the required F table value of 3.16 to be significant at o.o5 level

The post- test comparison between the groups proved to be significant as the obtained F value of 3.57 was greater than the required F value on adjusted mean differences was 5.03, which was greater than the required F table value of 3.16. To be significant at 0.05 levels. Hence it was proved that there was significant difference among adjusted post- test means. Since significant improvements were recorded, the results were subjected to post hoc analysis using scheffe's confidence interval test. The results were pretested in table-II.

TABLE-II Scheffe's confidence interval test scores on standing broad jump.

Mean				
Aqua plyometric Group	Floor plyometric group	Control group	Mean difference	Required C I
2.17	2.14		0.03	0.12
		2.03	0.14	0.12
2.17	2.14	2.03	0.11	0.12

*Significant

the results presented in table II provide that (1) there was significant difference between aquatic plyometric group and control group. (2) There was no significant difference between floor plyometric group and control group and (3) there was no significant difference between aquatic plyometric group and floor plyometric group

CONCLUSION

Within the limitation and de-limitation of this study, the following conclusion was drawn. It was concluded that there was significant improvement in leg explosive strength, measured through vertical jump due to six weeks aqua plyometric training. It was concluded the there was significant improvement in leg explosive strength, measured through standing broad. It was concluded that aqua plyometric exercises were safe while considering floor plyometric exercise.

REFERENCE

[1] Yadav, Devraj, Scientific Principles of Sports Training, Angel Publication, New Delhi.
[2] Aukerman MM. Train smart with deep water running. AMAA Journal. 2008.
[3] Datta N, Bharti R. Effect of aquatic and land plyometric training on selected physical fitness variables in intercollegiate male handball players. Int J Sport Health Sci. 2015;9(5):449–451
[4] Bavli O. Comparison the effect of water plyometrics and land plyometrics on body mass index and biomotorical variables of adolescent basketball players. Int J Sport Exerc Sci. 2012;4(1):11–14.
[5] Miller MG, Berry DC, Bullard S, Gilders R. Comparison of land-based and aquatic-based plyometric programs during an 8-week training period. J Sport Rehabil. 2002;11(4):268–283.