



A STUDY ON EFFECT OF 12 WEEK PLYOMETRIC TRAINING AND RECOVERY ON VERTICAL JUMP AMONG HIGHER SECONDARY SCHOOL CHILDREN BETWEEN AGES 16 TO 18 YEAR OLD

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Abstract

The purpose of the study was to find out the effect of 12 week Plyometric training and Recovery training on leg explosiveness among higher secondary school children. Plyometric exercises are an effective way to develop speed and strength which is especially helpful for sports. Performing plyometric exercises in one to three times a week can increase vertical jump and improve speed and strength. Four to seven week plyometric programmes are effective for improving vertical jump, height, vertical jump power and anaerobic power, when it is followed by a proper recovery period. This study examined the effect of 12 weeks of plyometric training and recovery among Higher secondary school children. It was formulated as parallel group design, consists of two experimental groups and one controlled group. To the randomly selected sixty subjects an initial test on vertical jump power was administered. Based on the data the groups were equated in to three groups and group I represented the control, plyometric exercise training for twelve weeks assigned to group II. Plyometric and recovery training was administered to group III on the criterion measure. The vertical jump performance was analyzed by the application of one way analysis of variance (ANOVA). It is evident from the study that the motor fitness variable –

vertical jump has significantly changed in the plyometric and recovery training.

Keywords: Explosive. Plyometric, Vertical Jump and Recovery

Introduction

Plyometric training exercises are now being used in almost every sport which require power, speed or strength such as football, basket ball, weight lifting, soccer, baseball, softball, volleyball etc both professionally and at amateur levels. Plyometric drills help to develop rhythm, speed, power and even muscular endurance. It must be used correctly and for a specific purpose, can be a tremendous asset to the individual athlete as well as to the general and specific conditioning of entire sports programme. Recovery is the duration between sets, which can be either active or passive. Extremely high loads cannot be tackled for long by sportsmen unless the recovery processes are supported and accelerated by some means. By doing recovery means, appropriately fitted in the daily routine of the sportsmen. The total period can be considerably shortened.

Methodology

Sixty [N=60] students studying in eleventh and twelfth standard with the age of 16 to 18 year old, of Catholicate Higher Secondary School, Pathanamthitta, Kerala belongs to different



sports were selected randomly as subject for the study. All sixty subjects were divided randomly in three groups namely Group I served as controlled group, the second and the third Group underwent experiment. The twelve week of Plyometric exercise training was assigned to Group II and Plyometric exercise and recovery training was administered to Group III. The control group was totally free to attend the daily exercise programme and were kept away from doing experimental treatment. All the training programmes were scheduled for 6 days per week for a period of 12 weeks. To determine the effect of Plyometric training, plyometric and recovery training on vertical jump. In order to measure the explosive power, a vertical Jump Power test was conducted. The test was administered by using chalk powder or chalk at a smooth wall with adequate ceiling height, on the wall the measurement lines were marked at a distance of two centimetres with a coloured marking pen. The measurement started at a height of 180 cm, and then every two cm one horizontal line was marked for one metre width. Initially the standing reach height was marked on the wall. Then the subject were asked to make a vertical jump with maximum reach as possible and mark on the wall. The scoring was made on the basis of the difference number of centimetres between the initial height and the vertical height marked on the wall. Three trials were given with sufficient interval. Among the three trials the best jump distance was recorded to the nearest centimetres. All the subjects were tested on the criterion variables prior to and immediately after the training period. Plyometric exercise training was conducted in the evening session for one hour duration and the plyometric and recovery training was given in the evening for one and a half hour duration.

Results

The collected data pertaining to vertical jump of three groups Viz; Control group, plyometric group and plyometric and recovery group were tested using ANOVA. Whenever 'F'- ratio was found to be Significant, the Scheffer's test was applied as to determine the mean differences between any two groups. The level of significance was fixed at 0.5 level of significance for all the cases.

TABLE – 1
MEAN AND STANDARD DEVIATION FOR INITIAL AND FINAL TEST SCORE OF VERTICAL JUMP

Groups	INITIAL		FINAL	
	Mean	S.D	Mean	S.D
Control	54.75	7.39	54.7	7.39
Plyometric	54.15	7.35	60.2	7.75
Plyometric and Recovery	53.8	7.33	63.75	7.98

The mean and Standard Deviation values for initial and final test scores of vertical jump on controlled group, Plyometric training group and Plyometric training and Recovery group were analysed and presented in Table 1.

TABLE – 2
COMPARISON BETWEEN CONTROL GROUP, PLYOMETRIC GROUP AND PLYOMETRIC AND RECOVERY

Source of Variance	df	Ssx	Ssy	MSX (Vx)	MSY (Vy)	F value
Between	2	9.23	831.7	4.615	415.85	12.77
Within	57	3013.5	1855.15	52.86	32.54	
total	59	3022.73	2686.55			

From the table 2 the one way ANOVA of both initial and final scores of vertical jump power shows that "F" value of .087 for initial and final test among the three groups were insignificant, indicating the random sampling was successful, and value of 12.77 for final test among control plyometric and plyometric and recovery groups were significant at 0.01 level of significance.



TABLE – 3
SCHEFEE'S POST HOC TEST FOR MEAN
DIFFERENCE BETWEEN GROUPS

Mean Value			MD	L.S
Plyometric and Recovery	Plyometric	Control		
63.75	60.2		3.55	N.S
63.75		54.7	9.05	0.01
	60.2	54.7	5.5	N.S

Discussion of Findings

All subjects of the plyometric and plyometric and recovery group were underwent regular training programme, and subjects of the control group were free from the training programme. It is evident from the table that the vertical jump power has significant changes in plyometric and recovery training group when compared to the group with only plyometric training. Control group does not show any changes. From the findings we will come to know that the plyometric and recovery group shows better performance when compared to other groups.

Conclusion

Plyometric is a popular training technique used by many coaches today. It has been touted as a way to bridge the gap between sheer strength and power. Plyometric exercises develop fast twitch muscle fibers. It is based on the understanding that concentric (shortening) muscle contraction is much stronger if it is immediately follows an eccentric (long throwing) contraction of the same muscle. It concludes that the participation in twelve weeks of plyometric and recovery training results in the improvement of vertical jump.

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