COMPARATIVE EFFECT OF DIFFERENT HEIGHTS OF DEPTH JUMPING ON VERTICAL JUMPING ABILITY

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ABSTRACT

The purpose of this investigation was to find out the comparative effect of different heights of depth jumping on vertical jumping ability. Forty boys of classes eight from Ram Krishna Vidhya Mandir , Morar (Gwalior) were selected at random as subjects and their average age was 13 years. The subjects were divided into four equated groups by computing means and standard deviation. Group A was trained in depth jump on 35cm and group B in 40cm and group C in 45cm for a periods of six weeks 3 days per week. The A, B, C experimental groups and group D served as control group. Vertical jumping ability was taken as dependant variable for this investigation. To determine which treatment variable proved to be most effective in improving vertical jumping ability. F-test was applied and a post hoc test using L.S.D. test was used. The results revealed that depth jump is an effective method as compared to the control group and depth jump on 35cm, 40cm, 45cm are equally effective in enhancing vertical jumping ability of the subjects.

Key word: Depth jumping and vertical jumping ability.

INTRODUCTION:

Plyometric exercise refers to those activities that enable a muscle to reach maximal force in the shortest possible time. Plyometric is a combination of Greek words (Plio = more, metric = to measure). Plyometric exercise is quick, powerful movement using a pre-stretch or counter or movement that involves the stretch - shortening cycle. The purpose of plyometric exercise is to increase the power of subsequent movements by using both the natural elastic components of muscle and tendon and stretch reflex.

The term plyometric involves the muscle working both concentrically and eccentrically. Plyometric exercise is a relatively new concept of training that applies the present stretch condition of muscle prior to explosive contraction.

The vertical jump consisted of determining the difference to the nearest centimeter between the height reached by the subject, when facing the wall, and the height marked by his chalked fingertips during a maximal jump from a standing position.(Dan G . Della,(1950) " Individual difference in foot leverage in relation to jumping performance , " Research quarterly 21, : 11.

Lastayo, p.s. (1999) performed study on chronic eccentric exercise and concluded that when performed progressively at increasing work rate yielded gains in the isometric strength, with no muscle injury and no increase in energy intensity measured as oxygen uptake. Cannnel, L.J. (2001) Performed study on randomized clinical trail of the efficacy of the drop squats or leg extension leg curl exercise to threat clinically diagnosed jumps knee in athletes and concluded that progressive drop squats can reduce pain of jumpers knee and quadriceps strength is gained by 15%.Chen, T.C. (2005) Who did study on the effects of 7 days eccentric training periods on muscle, found that continuous intensive isokinetic eccentric training performed with damaged muscle did not exacerbate muscle damaged inflammation . Muthu Kumaran (2008) Studied the effect of plyometric on agility and speed in collegiate football players found that plyometric training programme had significant effect on improving agility and speed in collegiate football players.

METHODOLOGY:

The purpose of the study was to find out the comparative effect of different heights of depth jumping on vertical jumping ability.

SUBJECTS

Forty boys of classes of eight from Ram Krishna Vidhya Mandir , Morar (Gwalior) were selected at random as subjects for the study.

CRITERION MEASURES

The maximum height reached in vertical jump was taken as the criterion measures for the study. Each subject was given three trials and best trial was taken into consideration to determine the

vertical jump measure. Measurements were taken at the beginning and after an experimental period of six weeks.

Training and Practice of Depth Jump on Different Heights

Depth jump is a form of plyometric exercises based on belief that a rapid lengthening of a muscles prior to a contraction will result in a much stronger contraction. Practice was given for forty –five-minutes in the morning. The training continued over a period of six weeks. The subjects trained thrice a week i.e. on Monday, Wednesday and Friday.

EXPERIMENTAL DESIGN

Equated group design was employed in this study. The group were equated based on the initial performance of the student in vertical jumping ability test, using the matching process. The subjects were classified into four groups (A , B , C ,and D). The experimental A, B, C participated in a progressive training programme of different heights of depth jump I me. 35cm, 40cm, 45cm respectively. Group D served as control group. Test for vertical jumping ability was administered to the subjects at the beginning and after an experimental period of six weeks.

RESULTS:

Reliability of data was established by test re-test method. The vertical jumping ability of the subjects was measured on two days with an interval of one day in between co-efficient of correlation of the scores obtained on two days was 0.89.

To determine the effectiveness of different heights of depth jump i.e.35cm, 40cm, 45cm in improving vertical jumping ability of the subjects, an analysis of variance was done and data relating to this is produced in table 1.

TABLE-1. Analysis of variance of mean scores of four groups in vertical jump.

scope of variance	df	sum of square	mean sum of square	F-ratio
between group	3	292.4	97.47	3.20
within group	36	1095.2	30.42	

*significance at .05 level of confidence,F.05(3,36)=2.87

table 1 shows that there is a variability in the score of the four group which is also evident from 'F' value (3.20) indicated in the table-1.since 'F' ratio obtained is significant at .05 level of confidence a post hock test (LSD)was applied to find out which of the treatment variable were superior in improving vertical jumping ability.

The paired means and the difference between the mean for the three experimental groups and a control group in vertical jumping ability are presented in table 2.

Table-2. Paired means and differences between means of vertical jump scores of four group

Depth jump on 35 cm.(group A)	depth jump on 40 cm.(group B)	depth jump on 45 cm.(group C)	control group	difference of means
34.3	38.0			3.7
34.3		34.9		0.6
34.3			30.4	3.9
	38.0	34.9		3.1
	38.0		30.4	7.6*
			30.4	4.5

*significant at .05 level
Critical difference at .05 level is 5.01.

Table-2 shows that the difference between the means of "depth jump" on 40cm group and control group(7.6) exceeds the critical difference value (5.01) indicating that depth jump on 40cm group is superior to control group in improving vertical jumping ability. Jump on 40cm, 45cm, 35cm group and 45cm, 35cm and control group was not found to be significant indicating that all depth jump on 40cm ,45cm and 35cm have equal training effects and depth jump on 45cm and 35cm is not effective in improving vertical jumping ability as compared to control group.

The application of F- test and L.S.D. test, clearly shows that depth jump group B is superior to control group in vertical jumping ability. The depth jump group A, B and depth jump group A and C control group have equal training effects in improving vertical jumping ability.

The higher mean value in case of depth jump on 40 cm group gives an indication that with longer training programme the 40 cm group might have proved to be superior as compared to the other group.

CONCLUSION:

Depth jump on 40cm height of Box are an effective training means for improving vertical jumping ability as compared to the control group. Depth jump on 35 cm, 40 cm and 45 cm are equally effective in enhancing vertical jumping ability of the subjects. Within the duration of the experiment depth jump on 35 cm and 45 cm heights of Box did not prove to be effective as a means of training for improving vertical jumping ability as compared to control group.

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