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THE EFFECT OF PLYOMETRIC TRAINING ON EXPLOSIVE STRENGTH VARIABLE OF INTER COLLEGIATE CANOE-KAYAKING PLAYERS

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Abstract:

The present study was an experimental research which was conducted with purpose to examine effect of plyometric training on explosive strength of Inter collegiate Canoe-kayaking players. True experimental pre-test and post-test equivalent group design was used for this study to check the hypothesis. The sample of this study was Nashik zone team selected intercollegiate male n=20 Canoe-kayaking players (10 each experimental and control groups) between the age group of 18-24 years selected through simple random sampling technique from Nashik district. Independent variable is plyometric training program and dependent variable is explosive strength. The selected subjects were pre-tested by Vertical jump, Leg strength dynamometer and 50 m Dash tests and eight weeks Plyometric training program was manipulated only on experimental group not control group. After training programs implemented experimental group's i.e, experimental and control groups were post tested for data collection. After data collection, data of pre-test and post-test of both the groups i.e. experimental and control group, compared by independent sample t-test and interpretations were drawn. Result of the study effects of plyometric training program on was significantly effective to the vertical jump, 50 meter dash & leg strength dynamometer tests for Canoe-kayakers which indicate significant improvement of experimental group compare to the control group.

Keywords: Plyometric training, Explosive strength and Canoe-kayakers.

Introduction:

In the water sport resist the water flow and perform game it's difficult task with primary require physical fitness as most leading factor, Canoeing and kayaking is featured by aerobic endurance, muscular strength or endurance. Its forward relies on non-fulcrum paddle according to certain rules. There are two types of canoeing, namely, kayak and canoe which is only participated by men. Based on the number of athletes, canoeing can be divided into single kayak, double kayak and four-people kayak, single canoe, double canoe and four-people canoe. The race is 200 meters, 500 m, 1000 m and 5000 m. The maximum strength (front 10-20 paddle) power speed (paddle power) rapid strength endurance. In Canoeing and kayaking, the special physical condition is always a key factor to monitor the training.

Explosive Strength:

Explosive muscular strength can be defined as the peak torque or force developed during a maximal contraction, under given set of conditions (MacDougall et al., 1991). Canoe-kayaking is sport that is strength-related, rather than strength-limited in that the performance of a player is influenced by strength, not limited by it (Wrigley and Strauss, 2000).

Leg Strength:

Canoe-kayaking water sports at the highest level puts a great demand on leg strength and endurance (Omosegaard, 1996). The muscular strength and endurance during a movement varies range of movement due to muscular and mechanical conditions. Normally, the more a muscle is stretched, the more tension it can produce.

Plyometric Training for Canoe-Kayakers

Plyometrics refers to a type of intense training that may be understood by an athlete who wants to improve speed power. This type of training also refers to very fast, explosive excision (normally performed with body weight) to improve power output and neutral activation of the muscles (the ability for a muscle to contract quickly). Basically plyometrics relies on an element of physiology called the stretch-shorten cycle. This stretch-shorten cycle means that the muscle is rapidly stretched and then contracted which increases the force applied on the muscle. Plyometric type exercises have been used successfully by many athletes as a method of training to enhance power. In order to realize the potential benefits of plyometric training the stretch-shortening cycle must be invoked. The challenge to one as coach or athlete is to select or create an exercise that is specific to the event and involves the correct muscular action. As long as one remembers specificity to ensure there is a pre stretch first then the only limit is ones imagination.

Material and Method:

The present study was an experimental research which was conducted with purpose to examine effect of plyometric training on explosive strength of Inter collegiate Canoe-kayaking players. True experimental design was used for this study to check the hypothesis. i.e, Subjects was divided into two groups; one was experimental group and second was control group. This research was based on pre-test and post-test equivalent group design. The sample of this study was Nashik zone team selected intercollegiate male n=20 Canoe-kayaking players (10 each experimental and control groups) between the age group of 18-24 years selected through simple random sampling technique from Nashik district. Variables are the condition all characterized that are experimental manipulates, controls and observes. Independent variable is plyometric training program and dependent variable is explosive strength. The selected subjects were pre-tested by Vertical jump, Leg strength dynamometer and 50 m Dash tests and eight weeks Plyometric training program was manipulated only on experimental group not control group. After training programs implemented experimental group's i.e, experimental and control groups were post tested for data collection. After data collection, data of pre-test and post-test of both the groups i.e. experimental and control group, compared by independent sample t-test and interpretations were drawn.

Plyometric Training Program:

The duration of plyometric training program was eight weeks which was given four days in a week. Duration of plyometric training for one day was 60 minute at 7;00 pm to 8;00 pm.

Table no. 1
Plyometric Training Program

Week	Intensity (%)	Exercise	Set	Reps	Rest
First Week	Low	Tuck Jump Split Squat Jump Plyo Push-Ups Plyo Sit-Ups	2	8-10	2-3 min.
Second Week	Low	Standing Long Jump Spike Jump Plyo Push-Ups Plyo Sit-Ups	2	8-10	2-3 min.
Third Week	Medium	Tuck Jump Split Squat Jump Standing Long Jump Spike Jump	2	10-12	2-3 min.
Fourth Week	Medium	Standing Long Jump Spike Jump Plyo Push-Ups Plyo Sit-Ups	3	8-10	2-3 min.
Fifth and	High	Standing Triple Jump Jump Over Barrier	3	8-10	3-4 min.

Sixth Week		Jump & Reach Diagonal Cone Hop Medicine Ball Throw			
Seventh and Eight Week	High	Standing Triple Jump Jump & Reach Diagonal Cone Hop Plyo Sit-Ups Medicine Ball Throw	3	8-10	3-4 min.

Statistical Tools:

After data collection, data of pre-test and post-test of both the groups i.e, experimental and control group, by using analysis of independent sample t-test and interpretation were drawn. The level of significance was kept at 0.05 to test the hypothesis.

Results of the study:

The obtained results are present in the following table.

Table no. 2,Descriptive statistics of experimental and control group

Test	Group	N	Mean	Mean Diff.	't' value	Sig. (p-value)
Vertical Jump	Exp	10	23.1	4.8	2.62	0.01
	Con	10	18.3			
50 meter Dash	Exp	10	4.98	1.46	2.57	0.02
	Con	10	6.44			
Leg strength Dynamometer	Exp	10	59.73	15.4	3.45	0.01
	Con	10	44.33			

Discussion:

It was observed from the results effects of plyometric training program on explosive strength variable of intercollegiate Canoe-kayaking players from table No. 1 shows that there was a significant difference between experimental group and control group of subjects regarding to the all test items. This indicates that plyometric training had positive effect on explosive strength of intercollegiate Canoe-kayaking players of experimental group.

This finding was supported by **Milicl et al (2008)** determined the effects of plyometric training on the explosive strength of volleyball players. The effects of a six week plyometric training program during the second half of the preliminary period of the annual training cycle were studied. The sample consisted of 46 subjects aged 16. The experimental group consisted of 23 volleyball players & control group consisted of 23 high school students. The sample of measuring instruments consisted of eight tests of explosive leg strength: the two-foot takeoff block jump, the right foot takeoff block jump, the left foot takeoff block jump, the two-foot takeoff spike jump, the right foot takeoff spike jump, the left foot takeoff spike jump, the standing depth jump and the standing triple jump. Using a multivariate and univariate statistical method, the researchers were able to determine a statistically significant difference in explosive strength in favor of the experimental group.

Conclusion:

On the basis of the result obtained in the study the researcher made the concluded that effects of plyometric training program on was significantly effective to the vertical jump, 50 meter dash & leg strength dynamometer tests for Canoe-kayakers which indicate significant improvement of experimental group compare to the control group.

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