

## **Effect of Plyometric Exercise on Front Crawl Stroke in Swimming**

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### **Abstract**

The Purpose of the study was to find out the effect of plyometric exercise on front crawl stroke in swimming. 30 boys from 10 to 12 years age group had been selected randomly from different schools of Delhi. Out of 30 selected swimmers 15 swimmers are selected for experimental group and 15 swimmers are selected for control group. Where assigned to treatment group and control group. For the purpose of analyzing the data the following statistical techniques were computed step wise. The level of significance was set at .05 level, Descriptive Statistics & Co-related T-ratio. From the analysis of data it is evident that there is no significant difference exist in pre and post data of experimental and controlled group.

### **INTRODUCTION**

Swimming has already occupied a place among the most popular sports in the world. It caters to the highest level of competition for players of both male and female providing thrilling and good entertainment to spectators and above all it enjoys the status of a healthy recreation sport for people of all ages.

Swimming has played an important role in every century. Beginning with the primitive carving on the cave walls and continuing through the pages of history, literature, art and education. From training of warrior, swimming turned for fun, fitness and safety. Swimming as a leisure time activity can be enjoyed by the young and old alike, individually or in the groups. Once you know how to swim, you can take part in all other aquatic activities. Swimming is also considered a healthy activity because it exercises all muscles and keeps the body in tune. Doctors also recommended swimming for rehabilitation purpose.

Swimming which was earlier considered to be fun. Fitness and survival activity has now developed into one of the most popular competitive sports at international level. The development of swimming start and refinement of its technique began when swimming for the sake of sport was transferred from open water to closed ports. Swimming become an increasingly popular sport especially among young people. The people growing interest in this sport was also stimulated by building of Swimming pools and improved methods used in teaching swimming.

Now swimming has become an increasingly “fashionable” sports because of the nature of the sports both male and female swimmers have broad, well developed bodies, and are often in demand as models.

Plyometric is the term now applied to exercises that have their roots in Europe, where they were first known simply as “Jump training”. Interest in this Jump training increased during the early 1970’s as East European athletes emerged as powers on the world sport ----- As the Eastern block counties began to produce superior athletes in such sports as track and field, gymnastics and weight lifting, the mystique of their success began to center on their training methods.

Plyometric exercises is based upon the belief that a repaid lengthening of muscles just prior to the contraction will result in a much stronger contraction. Plyometrics is a method of developing explosive power. It is also an important component of most athletic performances. As coaches and athletes have recognized the potential improvements plyometric can bring to performance, they have integrated it into the overall training program in many sports and made it a significant factor in planning the scope of athletic development. Plyometric training may be viewed as an extension of the 'shock' method of strengthening muscles for athletic performance recommended by Verkoshanski of Russia (1968) The shock method advocated by Verkoshanski consisted of rebounded jumps from a height to develop the reactive neuromuscular apparatus of the athlete.

Plyometric training should be considered in the context of the athlete's age, skill levels, injury history and a myriad of other variables that comprise his or her athletic development. Plyometric is defined as exercises that enables a muscles to reach maximum strength in as short a time as possible. This speed strength ability is known as power. Plyometric is an excellent method of developing body power and it is proved a very effective method for improving explosive strength. It offers rich variation of exercises and load structure any activity that activates that stretch reflex mechanism is plyometric exercise.

Plyometric is based upon the belief that a rapid lengthening of the muscles just prior to the contraction will result in much stronger contraction. The added contractile strength is believed to be due to a stretch of muscle spindles involving the myotatic reflex and resulting in an increased frequency of motor unit discharge. Plyometric training is one of the best method to develop explosive power for sports. Basically plyometric provide a method to train for optimum relationship between strength and speed which will ultimately manifest itself as explosive power. Today Plyometric movements are performed in almost all sports.

Depth Jump is one of the many plyometric exercises. In depth jumping the athlete stands on a shelf generally 2m of height above the ground, stepping of the shelf they immediately perform a maximal effort vertical or horizontal jump after landing on the ground. Basic strength level must be attained before starting a plyometric training program. The choice of exercise must correspond to age, sex and biological development of sports person. There should be a gradual increase of stress during a complete training cycle. Body weight should be determining factors in assigning the value of jumps in workout. Generally the number of sessions to devote the plyometric training is 2 or 3 times per week. One of the basic tenets of all exercise programs is that major efforts of training should be preceded by lower level activities. These "warm up" activities can take several different forms and can be 'general' or 'specific' in nature. The exercises of choice when using plyometric drills should be specific or related to the larger efforts. These exercises are not classified as true plyometrics because they require less voluntary effort, focus and concentration to complete. They are used to develop fundamental movement skills and are helpful in establishing motor pattern that are going to directly carry over to speed development and jumping ability. The purpose of the study was to know the effect of Plyometric exercise on free style swimming.

- 1) For the purpose of the study, the study was confined to 30 boys randomly selected from different schools of Delhi.
- 2) The Study was further confined to the age group of 10-12 years.
- 3) The study was delimited to 42 days (6 weeks) plyometric training.
- 4) The performance of the subject was taken on 50 mtr. Free style swimming.

## **PROCEDURE AND METHODOLOGY**

### **Selection of Subjects**

30 boys from 10 to 12 years age group had been selected randomly from different schools of Delhi. Out of 30 selected swimmers 15 swimmers are selected for experimental group and 15 swimmers are selected for control group. Where assigned to treatment group and control group.

### **Criterion Measure**

50 meters free style performance had been taken during pre test and post test and the performance was taken in second up to 1/10.

### **Experimental Design**

Out of 30 swimmers 15 swimmers were in the controlled group and 15 swimmers in the experimental group.

### **Administration of Training Programme**

A training programme of 6 weeks of plyometric exercise, twice a week, in morning session i.e. 5:00 AM to 7:30 AM for experimental group and 6:00 AM to 7:30 AM for controlled group, who went through the normal swimming schedule with out doing any plyometric exercise. Training load of plyometric exercise had been increased progressively every week. Plyometric training had been imparted twice a week i.e. on Tuesday and Friday. The detailed scheduled of plyometric exercise on week basis is given an follow.

### **Statistical Procedure**

For the purpose of analyzing the date the following statistical technique were computed step wise. The level of significance was set at .05 level.

- 1) Descriptive Statistics.
- 2) Co-related T-ration.

## **RESULTS AND DISCUSSIONS**

For the analysis of date co-related T ration was computed to compare the mean of Pre and Post date of control group and experimental group. The finding pertaining to the T ration has been presented in following Tables.

### **Significance of Mean Difference between Pre and Post data of Experimental Group**

PRE	POST	DM	(SD) DM	'T' RATIO
34.36	33.18	1.18	0.63	1.87

\*Significant at .05 level.

$$t_{.05}^{(14)} = 2.14$$

Table indicates that there is insignificant difference between the pre and post date experimental group. As the calculated 't' ration was found 1.87 against the tabulated 't' ration of 2.14. Since the calculated 't' value was found to be lower ten the tabulated, no significant difference exist between the pre and post date of the experimental group. Table further shows that however the performance has improved following the treatment but difference was not found to be statistically significant.

### **Significance of Mean Difference between Pre and Post data of Controlled Group.**

PRE	POST	DM	(SD) DM	'T' RATIO
34.69	33.80	0.89	0.54	1.64

\*Significant at .05 level.

$$t_{.05}^{(14)} = 2.14$$

Table shows that there is a insignificant difference between pre and post date of the controlled group. As the calculated 't' was found to be 1.64 against the required value of 't' at .05 level ( $t_{05}^{(14)} = 2.14$ )

From the analysis of data it is evident that there is no significant difference exist in pre and post data of experimental and controlled group. Insignificant difference in experimental group, following training could be attributed to fact that the subject selected for the study are in their growing age. Where they are in the process of attaining mastery over the skill, more over their age pattern is such that they are growing at a faster rate and few subject might have attain puberty where as others may not. Hence, the difference in their physiological and physical parameters.

### CONCLUSIONS AND RECOMMENDATIONS

Based on the finding and within the limitation. Following conclusion were drawn.

- 1) Insignificant difference was found between pre and post data of experimental group.
- 2) Control group also shows insignificant difference between the pre and post data.

From this study, Following recommendation has been given by research scholar:

- 1) It is recommended that the training programme may be given for longer period i.e. minimum 10-12 weeks.
- 2) The similar study may be undertaken by selecting the subjects from the age group 16-17 years.
- 3) Similar study undertaken by giving the treatment for thrice a day.

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