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## Effect of complex training on explosive power among hockey players

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### Abstract

The purpose of the present study was to investigate the effect of complex training on explosive power among male hockey players. To achieve this purpose of the study thirty male students were selected from Alagappa University College of Physical Education, Karaikudi, during the year 2017-18. The subject's age ranges from 18 to 23 years. The selected students were divided into two groups of fifteen each namely experimental group (complex training) and control group. The experimental group underwent complex training for three days per week for the period of twelve weeks. The dependent variable namely explosive power was taken as criterion variable in this study. Pre-test was taken before the training period and post-test was measured immediately after the twelve weeks training period. The selected subjects were tested on explosive power, it was measured by vertical jump test. Statistical Technique 't' ratio was used to analyse the means of the experimental group and control group. The cases 0.05 level of confidence was fixed to test the hypothesis. The results revealed that there was a significant difference found due to complex training given to the experimental group on explosive power when compared to the control group.

**Keywords:** Complex training, explosive power and 't' ratio

### Introduction

Ebben (2002) <sup>[1]</sup> states that complex training alternates bio-mechanically similar high load weight training exercises with plyometric exercises. Complex training, one of the most advanced forms of sports training, integrates strength training, plyometrics and sports specific movement. It consists of an intense strength exercise followed by a plyometric exercise. Complex training activates and works the nervous system and fast twitch muscle fibers simultaneously. The strength exercise activates the fast twitch muscle fibers, responsible for explosive power. Complex training is a resistance training routine that is considered as an approach for improving the lower body power output. Complex training involves the combination of performing a resistance exercise (e.g., back squat) followed soon thereafter by a biomechanically similar explosive movement (e.g., a ballistic countermovement jump). The combination of movements is referred to as a complex pair. Chu (1996) <sup>[2]</sup> was of the opinion that "Complex training was developed by the Europeans to blend the results of heavy weight training with what they call shock training and what is called plyometrics by Indians."

It is the quality of the a muscle to contract forcefully in the quickest possible time (Weinberg and Gould, 1995). The implementation of bigger physical loading, such as pre-loading, improves explosive movements. Exercising with loading causes a temporarily better performance of the following action due to the increased stimulation of the central nervous system (Jensen *et al.*, 1999; Fatouros *et al.*, 2000) <sup>[5, 4]</sup>.

### Statement of the Problem

The purpose of the study was to find out the effect of complex training on explosive power among male hockey players.

### Methodology

The purpose of the present study was to investigate the effect of complex training on explosive power among male hockey players.

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To achieve this purpose of the study thirty male students were selected from Alagappa University College of Physical Education, Karaikudi, during the year 2017-18. The subject's age ranges between 18 to 23 years. The selected students were divided into two equal groups of fifteen each namely experimental group (complex training) and control group. The experimental group underwent for three days per week for the period of twelve weeks. The dependent variable is explosive power was taken as criterion variable in this study. Pre-test was taken before the training period and post-test was measured immediately after the twelve weeks training period.

The selected subjects were tested on explosive power, it was measured by vertical jump test. Statistical Technique 't' ratio was used to analyse the means of the experimental group and control group. The cases 0.05 level of confidence was fixed to test the hypothesis.

**Vertical Jump Results**

The 't' test was to find out the significance of differences between experimental group (complex training) and control group means of the speed. Hypothesis level of significance was 0.05.

**Table 1:** (Vertical Jump)

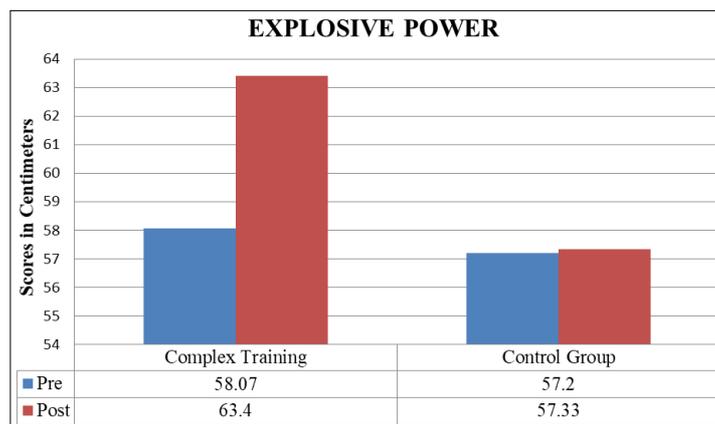
Variables	Groups	Mean		Standard Deviation		Stand Error Mean		df	't' ratio
		Pre	Post	Pre	Post	Pre	Post		
Explosive Power	Experimental Group	58.07	63.40	5.92	5.26	1.53	1.36	14	11.479*
	Control Group	57.20	57.33	6.79	6.62	1.75	1.71		

\*Significance at 0.05 level of confidence.

(The table value required for significance at 0.05 level of confidence with df 14 is 2.14.

Table-1 showed that mean values of pre-test and post-test of the experimental group on explosive power were 58.07 and 63.40 respectively. The obtained 't' ratio was 11.479\*, since the obtained 't' ratio was greater than the required table value of 2.14 for the significant at 0.05 level with 14 degrees of freedom, it was found to be statistically significant. The mean values of pre-test and post-test of the control group on explosive power were 57.20 and 57.33. The obtained 't' ratio was 0.79, since the obtained 't' ratio was lesser than the

required table value of 2.14 for the significant at 0.05 level with 14 degrees of freedom, it was found to be statistically insignificant. The result of the study showed that there was a significant difference between experimental group and control group on explosive power. It may be concluded from the result of the study that experimental group improved in explosive power due to the effects of twelve weeks of complex training.



**Fig 1:** Bar Diagram Showing the Group-I and Group-II Mean Values of Explosive Power (Scores in Centimetres)

**Discussions on Findings**

The result of the study indicates that the experimental group namely complex training group had significantly improved the selected dependent variable namely explosive power when compared to the control group. It is also found that the improvement caused by complex training, when compared to the control group. The result of this study on explosive power has line with the study conducted by Dejan Javorac (2012) [6].

**Conclusions**

1. There was a significant differences between experimental group and control group on explosive power after the training period.
2. There was a significant improvement was in favour of experimental group due to twelve weeks training programme.

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