



Impact of Plyometric Exercises on Speed Among Handball Players

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Abstract

The purpose of the study was to determine the effect of plyometric exercise on speed among men handball players. The subjects of the study were 60 men handball players from Pulwama District of Jammu and Kashmir state of India. The subjects were randomly assigned into two groups that is an experimental group and a control group with 30 subjects in each group. The experimental group underwent plyometric training program for 60 minutes per day for a period of 12 weeks for 5 days a week. The control group did not involve in any fitness program. 50 yards run was administered before and after the training period and the difference was recorded to notice the effect of plyometric exercise.

Keywords: Plyometrics, handball Speed, 50 Mtrs Run

Introduction

Plyometrics refers to human movement that involves an eccentric (lengthening) muscle contraction immediately and rapidly followed by a concentric (shortening) contraction. This is often referred to as the stretch-shortening cycle. The phase between these two contractions is referred to as the amortization phase. Energy stored during the eccentric phase is partially recovered during the concentric phase. In order to best use this stored energy the eccentric phase must be rapidly followed by the concentric. Plyometrics (also known as “plyos”) is a type of exercise training designed to produce fast, powerful movements, and improve the functions of the nervous system, generally for the purpose of improving performance in sports. Plyometric movements, in which a muscle is loaded and then contracted in rapid sequence, use the strength, elasticity and innervation of muscle and surrounding tissues to jump higher, run faster, throw farther, or hit harder, depending on the desired training goal. Plyometrics is used to increase the speed or force of muscular contractions, providing explosiveness for a variety of sport-specific activities. Plyometrics has been shown across the literature to be beneficial to a variety of athletes. Benefits range from injury prevention, power development and sprint performance amongst others. Plyometric training involves and uses practicing plyometric movements to toughen tissues and train nerve cells to stimulate a specific pattern of muscle contraction so the muscle generates as strong a contraction as possible in the shortest amount of time. A plyometric contraction involves first a rapid muscle lengthening movement (eccentric phase), followed by a short resting phase (amortization phase), then an explosive muscle shortening movement (concentric phase), which enables muscle to work together in doing the particular motion. Plyometric training engages the myotatic reflex, which is the automatic contraction of muscles when their stretch

sensory receptors are stimulated. Handball is an excellent all round team sport and has been widely accepted as a highly competitive game. The Handball players used to involve in different type of physical training and this study is also undertaken to find out the effect of plyometric exercises on speed among men Handball players.

Methodology

The purpose of the study was to determine the effect of plyometric exercise on speed among men Handball players. The subjects of the study were 60 men Handball players from Pulwama district of J & K state of India. The subjects were randomly assigned into two groups that is an experimental group and a control group with 30 subjects in each group. The experimental group underwent plyometric training program for 60 minutes daily evening, weekly five days for a period of 12 weeks. Plyometric exercise work out includes Lateral High Hops, Hurdle jumps, Lateral Barrier jumps, Split Squat jumps, Bounding, Bounding with Rings, ZigZag Hops, Depth jumps. 50 yards run was administered to find out the effect of training before and after the training period and the difference was recorded to arrive at the training significance.

Result of Speed

The mean, standard deviation and t-test were employed to analyze the significant difference in the mean value of pre and post test of experimental and control groups and are presented in Table-1 and Table-2

Table-1

Significant Difference of pre and post-test values of experimental group

| Variables | Test | Mean | sd | T value |
|-----------|-----------|-------|----------|----------|
| Speed | Pre-Test | 7.08 | 0.208624 | 5.23896* |
| | Post-Test | 6.518 | 0.074 | |

*significant at 0.05 level of confidence $t_{0.05} (22) = 2.074$

The experimental group pre and post-test mean, standard deviation and t-values are presented in Table-2 and it reveals the significant level in the effect of plyometric exercise on experimental group. The t-value of the selected variable is above the table value of 2.074. Hence the study indicates that the plyometric exercise is useful for the significant improvement of physical fitness variable like speed.

Table-2

Significant Difference of pre and post-test values of experimental Group

| variables | test | Mean | Sd | T value |
|-----------|-----------|------|----------|----------|
| speed | Pre-Test | 7.01 | 1.000728 | 0.06493* |
| | Post-Test | 7.06 | 1.18029 | |

*significant at 0.05 level of confidence $t_{0.05} (22) = 2.074$

The control group pre and post-test mean, standard deviation and t-values are present in Table-2. The result indicates that there is no significant difference in speed.

Discussion

All the subjects of the experimental group underwent regular plyometric training which was assigned to them. From the analysis it is evident that in the case of 50 yards run significant changes were noticed after twelve weeks of different plyometric exercises. But the control group did not show any changes in the 50 yards run timing. The timing significantly reduced due to the plyometric training. The study reveals that

the experimental group are significant than the control group. The result of the study is in consonance with the finding of the following studies of RahmanRahimi. et.al, (2006), Miller, et.al. (2006)

Conclusion

From the results and discussions it is concluded that the plyometric exercises have a positive impact on the improvement in speed. In control group there is no significant improvement found and the result of the study indicates that plyometric exercise is useful for the development of various physical fitness variables.

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