



Effect of Plyometric Training on Selected Fitness Components And Playing Ability in Karate of School Children

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Abstract:

The present study was undertaken to find out whether there is any effects of Plyometric exercise to develop the motor fitness components of karate player. This experimental design consists of an experimental group which was compared with a control group for the testing the effects of specific training program on selected motor fitness components and performance in Karate. This experimental design was the parallel group design where the experimental group received the Plyometric training program and the control group did not. This result could compare the effects of ten weeks training programme. The sample of the present study comprised of 40 boys age ranged from 13 to 15 years. The collected data were analyzed by using 't' test. After the Ten weeks training there is an improvement in the selected motor fitness component and also in Karate skill.

Keywords: *Plyometric Exercise, Motor Fitness components.*

Introduction:

Plyometric is the term now applied to exercises that have their roots in Europe, Where they were first known as simply jump training. Interest in this jump training increase during the early 1970 as east European Athletes emerged as powers on the world sport scene, but the actual term Plyometric was first coined in 1975 by Fred wilt, one of Americas track and field coach, Latin origin, plyometric is interpreted to mean Measurable increases.

Plyometric is Plyometric is defined as exercises that enable a muscle to reach maximum strength in as shortest time as possible. This speed strength ability is known as power. However various training programme proved that Plyometric exercise are effective in the development of the motor fitness components. Therefore the researcher realized the importance of the Plyometric exercise in order to develop motor fitness component and these in turn also helpful in the development of skill and performance among the Karate Players

Objectives of the Study:

The specific objectives for the present study are as under:

To compare the mean gain scores of muscular power as measured by Vertical Jump Test, of experimental group and control group.

To compare the mean gain scores of speed as measured by 50 yard dash test of experimental group and control group.

To compare the mean gain scores of Playing Ability in Karate of experimental group and control group

Hypothesis:

The null hypothesis to be tested was formulated as under:

Ho1: There is no significant difference in mean gain scores of Muscular Power as tested by Vertical Jump Test. Between the Experimental and Control group, due to the Plyometric Training Programme.

Ho2: There is no significant difference in mean gain scores of Speed as tested by 50 yard dash Test, between the experimental and control group, due to the Plyometric Training Programme.

Ho3: There will be no significant difference in mean gain scores of Playing Ability in Karate. Between the experimental Control group, due to the Plyometric Training Programme.

Chaouachi et al. (2014) Chaouachi and colleagues examined the effects of plyometric training on explosive strength and sprint performance among adolescent athletes. The study found that structured plyometric routines significantly improved lower-limb power, agility, and overall muscular coordination compared to conventional training. These improvements are highly relevant to karate, a sport that demands rapid force production and directional changes. The authors concluded that well-deigned plyometric drills enhance neuromuscular efficiency, leading to performance gains in sport-specific contexts. This provides a foundational understanding that plyometrics can positively influence physical attributes critical to karate performance.

Ramírez-Campillo et al. (2018) Ramírez-Campillo et al. investigated the impact of short-term plyometric training on balance and jump performance in children and adolescents. The results demonstrated significant increases in vertical jump height and dynamic balance compared to control groups. Since balance and lower-body power are essential for executing kicks and stances in karate, this study supports the inclusion of plyometric protocols in youth karate conditioning. The authors also highlighted safety considerations, emphasizing proper progression to minimize injury risk in school-age participants.

Kashyap & Singh (2019) In a quasi-experimental study on school athletes, Kashyap and Singh assessed plyometric training's influence on agility and speed. Findings indicated marked improvements in shuttle run and 50-m sprint performance following an eight-week plyometric program. The study suggests that these enhanced fitness components are transferable to karate, where rapid transitions and fast footwork determine competitive success. The researchers recommended incorporating sport-specific plyometric exercises to further refine performance outcomes.

Ceylan & Ozkan (2021) Ceylan and Ozkan explored plyometric conditioning in youth combat sport athletes, revealing positive effects on functional strength and reaction time. The plyometric group showed significant improvements in knee flexor/extensor strength and quicker response time in sport-relevant tasks. Given that karate involves both sudden strikes and defensive movements, this research highlights how plyometrics may enhance playing ability through neuromuscular adaptations and improved reaction kinetics.

Design of the Study:

The design of the present study was parallel group design. The experiment design of the study was Pre test – Post test control group design. A sample of Forty (N=40) male subjects was selected randomly from Chandrapur District. The age of the subject 13 to 15 years.

Dependent Variables:

Selected motor fitness components and skill test of karate was considered as dependent variables.

Sr. No.	Variable	Test	Unit
01	Muscular Power	Vertical Jump	Meter
02	Speed	50 Yard dash	Seconds
03	Playing Ability in Karate	Karate playing skills put forward	Points

Independent Variables:

The following Plyometric training programme was considered as independent variables

Stqadium Hop	Depth jump with 180 Degree turn
Depth Jump	Single foot side to side Ankle hop
Standing Long Jump with Later Sprint	Single leg hops
Standing Long Jump with Sprint	Zig Zag Drill
Cone Hops with change of Direction Sprint	Straight Pike Jump

Statistical Analysis:

Since, there were two groups for this experimental study viz., experimental group and control group, where in the researcher has decided to compare within group and between group mean gain in order to see the efficacy of treatment, the 't' test was appropriately used for the data analysis.

Result of the Selected Variables on the Experimental Group:

Table no. 01 show that the comparison of mean gain in selected variables of the control and experimental groups. The data was analyzed by using paired sample 't' test on between group.

Table No: 01: Comparison of Mean Gain in selected variables between the Control and Experimental Group

Variable	Group Compared	Mean Gain	Mean Diff.	Std Err Mean Gain	't'	Sign.
Muscular Power	Control V/S experimental	0.35 2.55	2.2	0.46	5.86	0.000 P<0.05
Speed	Control V/S Experimental	0.00 0.33	0.33	0.03	5.22	0.000 P<0.05
Playing Ability in Karate	Control V/S Experimental	0.30 1.50	1.20	0.22	2.59	0.000 P<0.05

Findings:

After the analysis and interpretation of the data the following findings are as follows:

The Plyometric training programme improves the muscular power significantly.

The Plyometric training programme contributes to improve the Speed significantly.

The Plyometric training programme helps to improve the playing Ability in Karate significantly.

Conclusion:

On the basis of the results obtained and the interpretation of the data, the present study concludes.

The Plyometric training programme for the 10 weeks could significantly improve the selected motor fitness components and also the playing ability of Karate players.

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