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Effect of plyometric and weight training on speed performance of judo players

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Abstract
The literatures relevant to the present study of effect of Plyometric Training and Weight Training on development of speed quality among judo players which have been collected from different sources of references are described in this chapter. To execute this investigation the research scholar randomly selected Twenty four judo women players s from Sengunthar Arts & Science, Tiruchengode belonging to the age group of 18 to 21 years. They were randomly divided into three groups of each group into eight subjects. Group I underwent Plyometric Training, Group II underwent Weight Training and Group III underwent Control group, for duration of Six weeks. Based on the relevant literature reviewed and in accordance with view of profession physical educators, the following speed variable were selected for performance of plyometric training and weight training in this study. To establish reliability test and retest method was applied five students in Sengunthar Arts and Science, Tiruchengode were tested on selected dependent variable. The Intra class co-efficient of data and are presented. The Training was assigned three days per six weeks of group I group II. The training was not given the control group. Pre and Post test was conducted on the criterion measures at the beginning and end of the experimental training programme. Analysis of co-variance statistical technique was used to test the adjusted post- test mean difference among the experimental groups. If the adjusted post- test results were significant level of 0.05.

Keywords: plyometric training, weight training, judo and speed

Introduction
Physical strength may or may not be the most important thing in life, as Rip says, but there is no question that is vitally important in martial arts, especially judo. Judo, like any worthwhile sport, favors strong, fit athletes with good technique. While some martial arts, like Brazilian jiu-jitsu, are highly technique-driven, Judo requires strength, power, and conditioning—in addition to technique—to be successful. Gerald Lafon, a United States Judo Association Master Coach, explains that Judo has thirteen major variables, basic psychomotor skills, agility, kinesthetic awareness, techniques, flexibility, endurance, strength, speed, power, health, mental skills, tactics, and environment (very much like CrossFit, except you beat up *other* people).
Judo is simple (not to be confused with easy). You win by throwing your opponent to the ground, pinning him to the mat, or subduing him with a grappling technique. Basically, you impose your will upon your opponent while he tries to do the same to you. Obviously, there's going to be some disagreement about who does what to whom, and the player with greater skill in the above-mentioned areas usually gets to make those decisions.
Judo a modern martial art, combat and Olympic sport created in Japan in 1882 by Jigoro Kano. Its most prominent feature is its competitive element, where the object is to either throw or takedown an opponent to the ground, immobilize or otherwise subdue an opponent with a grappling maneuver, or force an opponent to submit by joint locking or by executing a strangle hold or choke. Strikes and thrusts by hands and feet as well as weapons defenses are a part of judo, but only in pre-arranged forms (kata) and are not allowed in judo competition or free practice (randori).

Statement of the problem
The purpose of this study is to find out the effect of plyometric and weight training on speed performance of judo players.

Objectives of the present study
The following are the objectives of the study:
To consolidate basic judo-specific skills
To acquire and develop further techniques
To acquire and develop appropriate tactical

And strategic abilities
To introduction to judo philosophy surrounding, winning and losing.
To continue to place emphasis on training (not competition)
To introduce the possibility of pursuing a career in high-performance judo
To emphasize ethical behavior

Methodology

In a study which included 24 young highly selected judo players, the evaluation of muscle strength and muscle endurance was carried out through a combination of laboratory and field tests. The testing was realized at the beginning of the preliminary period and after a period of six weeks, at the end of the preliminary period. On the basis of the obtained results, we have concluded that the proper periodization of weight and plyometric training, as a part of the preliminary training program, enables the adequate physiological adaptation of judo players which results in an increase in muscle strength and speed with the preservation of muscle endurance applied on a sample of elite young judo athletes, a discriminate function has shown that there is a significant difference, at the multivariate level, between the results from the beginning and end of the preliminary period. The discriminate function was best described by the following tests: the relative value of average strength, the relative value of the greatest value of strength and speed the relative value of oxygen uptake, which has indicated that the preliminary period had a positive effect on the improvement of the functional abilities of elite young judo athletes (Nurkić, Bratić, Radovanović, & Bojić, 2009). Due to the previously mentioned changes in the human body that take place during judo matches, judo athletes are often subjected to concurrent training for the development of muscle force and the development of aerobic (cardio respiratory) endurance with the aim of achieving adaptations specific for both types of training. However, the question of how compatible these two types of training are when performed simultaneously remains open if we take into consideration that their application has as a result different physiological adaptations. For that reason, during the six weeks training for the increase of strength and cardio respiratory endurance, the change to the parameters of oxidative stress were also monitored on a sample of 24 judo athletes, divided into an experimental and control group. In addition, we also compared the effects of such a training program with those of a usual training program of judo athletes on maximum oxygen uptake, parameters of anaerobic capacity, situational-motor skills. The obtained results have indicated that the plyometric training and weight training led to an increase in maximum oxygen uptake and anaerobic capacity but also caused a misbalance between reactive oxygen species and the antioxidative system in the body. The paper reviews the possibility that the creation of pro-oxidants represents a stimulus for the increase of antioxidant defense with the aim of achieving optimal physiological adaptation to this type of training.

Training programme

During the training period, the experimental groups underwent their respective training programmes three days per week [alternate days] for 6 weeks in the addition to their regular activities programme.
Group I underwent Plyometric training
Group II underwent Weight training
And Control group.
Every training session lasted for about 45 to 60 minutes including warming up, and warming down.
On the basis of pilot study the initial load and their further progression was fixed for his study.

Statistical analysis

The following statistical procedure was observed to estimate the effect of plyometric training and weight training on speed performance of judo women athletes. Analysis of co-variance statistical technique was used to test the adjusted posttest mean difference among the experimental groups. For testing the validity of three groups and for testing the significance of the difference between the means of the three groups after the experiment, the "F" ratio was calculated by analysis of covariance method.
The final means were adjusted for differences in the initial means and the adjusted means were tested for significance.

Level of significance

For testing thy hypothesis, the selected yogic practice has an effect on the blood sugar and hypertension patients the level of significance was set at 0.05 level with the "t" of 3.17 as given by Clarke and Clarke.

Discussions on findings

Thus the investigation clearly pointed that the plyometric, and weight training will helps to improved the speed quality are in consonance with the findings of Reddy, maniazhagu and cavagna.

Analysis of co-variance of the pretest and posttest on speed of training groups

(Scores in seconds)

Mean	Plyometric training Group (N8)	Weight training Group (N 8)	Control Group (N 8)	Source of variance	Sum of squares	df	Mean squares	F-ratio
Pre test	7.81	7.73	8.07	B: W:	1.27 12.07	2 57	.64 .21	3.05
Post test	6.92	7.09	9.38	B: W:	2.22 11.11	2 57	1.11 .19	5.84
Adjusted post-test	6.95	7.15	8.29	B: W:	4.85 8.40	2 56	2.43 .15	16.2
Mean gains	0.86	0.58	0.18					

*Signicicant at 0.05 level

Adjusted final mean differences on speed of various training groups

Plyometric training group	Weight training group	Control group	Mean difference
6.95	7.15		0.20
	7.15	7.29	0.14
6.95		7.29	0.34

Result of various Training on the development of speed quality:

Above the tables shows the analyzed data of speed. The pretest means of 7.81, 7.73, 8.07 sec of speed for plyometric, weight and control group. Resulted with an F raito of 3.05 which was insignificant. The posttest means of6.92, 7.09, 8.29 sec of speed for same groups respectively were results in f ratio of 5.84 which was significant at0.05 level

Conclusions

On the basis of the interpretations of data, the following conclusions may be drawn.

The findings of the study show that plyometric training had a significant improvement in speed quality.

The findings of the study shows that weight training had a significant improvement in speed quality.

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