

Speed Training with Elastic Resistance and its Effect on Developing the Bek Chagi and up Dollyo Chagi for Taekwondo Junior Performers

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Abstract: The current research aims at designing motor speed exercises using elastic resistance and identifying its effect on developing the performance level of Bek Chagi and Up Dollyo Chagi kicks in Taekwondo Junior performers. The researcher used the quasi-experimental approach with one group design (pre-/post-tests) on a purposefully chosen sample of 12 taekwondo junior performers (10-12 years)-Tanta Sports Club Season 2009-2010. Results showed that speed exercises using elastic resistance had positive effects on developing the performance level of Bek Chagi and Up Dollyo Chagi kicks in Taekwondo Junior performers as the percentage of improvement between pre- and post- tests ranged from 8.64% and 12.88%. speed exercises using elastic resistance had positive effects on improving physical fitness elements related to technical performance as the improvement percentages of motor speed, muscular ability, motor range and balance were 4.65% - 2.44% - 0.57% - 1.4%, consecutively. Using training aids (elastic cords) contributed greatly in this improvement.

Key words: Speed exercises • Elastic resistance • Taekwondo junior performers

INTRODUCTION

Physical components, like motor speed to maintain technical performance level of various skills, are very important in taekwondo [1-2]. Training with exercises that use the same motor path of performance and at the same duration, so that the dominant muscle work is the same working muscles in performing the skill leads to developing technical performance level [3]. The researcher thinks that physical characteristics are essential for taekwondo. This appears during competition in attack/counter-attack situations and when moving to defense. Success in these situations depends on the speed of performing skills, as speed of specific body parts is essential for movement and increased speed increases the performer's level and provides his/her with a better competitive situation [4-5].

Taekwondo results depend on the performer's speed in motor skills, either one or more kicks and in case of flash attack to hit the target in face or trunk. This is also true in launching quick attack to disturb the opponent with various kicks [6]. Elastic resistance is one of the most important training styles. Elastic cords are important because of its natural elasticity during training. This makes the muscle contraction of the used body part look, to a great extent, like the real motor

performance pattern. Elastic cord can be modified with several tools to fit the nature and shape of the desired exercise. They can be elongated to fit the performer's height and can relatively reduce injury risks that may result from other training aids like dumbbells or hard balls [7].

Noticing several national and international championships, the researcher noticed that the most frequently used skills during performance, either in preliminary rounds or finals, are the "Bek Chagi" (round forward kick to trunk [HOGO] area) and "Up Dollyo Chagi" (round forward kick to head guard). Although Bek Chagi is frequently used in matches, its performance level is low, followed by Up Dollyo Chagi. Speed of kick may affect the development of performance level of the kicks under investigation. This is in agreement with several previous studies [8-10].

The current research aims at designing motor speed exercises using elastic resistance and identifying its effect on developing the performance level of Bek Chagi and Up Dollyo Chagi kicks in Taekwondo Junior performers.

The researcher hypothesized that there are statistically significant differences between pre- and post- tests on the performance level of Bek Chagi and Up Dollyo Chagi kicks in Taekwondo Junior performers in favor of the post-tests.

MATERIALS AND METHODS

Approach: The researcher used the quasi-experimental approach with one group design (pre-/post-tests).

Sample: Sample included 12 of taekwondo junior performers (10-12 years)-Tanta Sports Club Season 2009-2010 who were chosen purposefully. Table 1 shows sample description.

Table 1 indicated that the sample is free of radical distributions as Squewness value ranged between ± 3

Research Tools: A restameter for measuring heights-a medical balance for measuring weights-stop watch-elastic cords-a taekwondo mat.

Physical Abilities Tests:

- Performance speed (measured with kicking speed in ten seconds - repetition)
- Muscular ability (measured with wide jump test - cm) [11].
- Motor range (measured by up-to-down vertical kick test [Nara Chagi] point) [9].
- Balance (measured by up-to-down vertical kick test [Nara Chagi] point) [9].

Technical Performance Test:

- Technical performance test (measured by analysis form of Bek Chagi-point)
- Technical performance test (measured by analysis form of Up Dollyo Chagi-point) [12].

The Training Program: This recommended program aims at developing the speed performance of both kicks under investigation. The high intensity interval training is used and the program was divided into 98 weeks.

Training intensity was between 85-95%. Performance duration was 3-7 seconds and rest interval was 10 times the performance duration. Number of repetitions was 5:8. Warm-up and cool down were isolated so that the unit duration was 15 minutes. The program included motor speed tests for all muscle groups used in Bek Chagi and Up Dollyo Chagi. Fixation direction of elastic resistance is the major factor in identifying the muscle group affected with the program (up the body-on floor-in front of the body-back of the body-beside the body [left-right]) and fixation point on the performer (ankle-thigh).

Statistical Treatment: The researcher used the following statistical treatments: means - median-SD-Squewness-correlation coefficient-(t) test-improvement percentage.

RESULTS AND DISCUSSION

Table 2 indicated that means for pre-test was between 9.753 for balance and 175.161for motor range. Means value for post-test was between 9.890 for balance and 178.753 for muscular ability. (t) table value (1.78) was less than its paired value (3.25-3.95). This indicates that difference significance was in favor of post-test.

Table 2 and Fig. 1 indicated that difference percentage was between 0.57% for motor range and 4.56% for motor speed. This indicates that difference significance was in favor of post-test. Table 2 also indicated that means value of pre-test was 1.856 for Bek Chagi and 1.949 for Up Dollyo Chagi. Means value for post-test was between 2.013 for Bek Chagi and 2.2 for Up Dollyo Chagi. This indicates that difference significance was in favor of post-test.

Table 2 and Fig. 2 indicate that difference significance between pre- and post- test on technical variables was 8.46 for Bek Chagi and 12.88% for Up Dollyo Chagi. This indicates that difference significance was in favor of post-test. These results agreed that taekwondo needs a great

Table 1: Sample description (n=12)

	Variable	Measurement	Means	Median	SD	Squewness
Basic variables	Height	Cm	145.75	4.76	145.50	0.39
	Age	Year	11.14	0.23	11.05	2.39
	Training duration	Year	4.00	3.00	2.36	2.227
Physical variables	Motor speed	Second	10.41	10.0	0.79	0.32
	Muscular ability	Cm	174.4	14.22	172.50	0.12
	Motor range	Degree	175.1	175.28	0.81	1.19
	Balance	Second	9.75	10.0	0.86	-0.44
Technical variables	Technical level of Bek Chagi	Point	1.95	1.85	0.94	0.32
	Technical level of Up Dollyo Chagi	Point	1.86	1.85	0.09	0.15

Table 2: Difference significance between pre and post- tests

Variable	Pre-test		Post-test		Means difference	(t)	%
	Means	SD	Means	SD			
Physical variables							
Motor speed	10.416	.491	10.900	.255	0.48	3.35*	4.65
Muscular ability	174.500	3.989	178.753	3.003	4.25	5.85*	2.44
Motor range	175.161	2.576	176.161	2.153	1	3.95*	0.57
Balance	9.753	.149	9.890	.137	0.13	3.25*	1.40
Technical variables							
Technical level of Bek Chagi	1.949	.126	2.200	.191	0.25	3.87*	12.88
Technical level of Up Dollyo Chagi	1.856	0.08	2.013	.106	0.15	4.37*	8.46

Significance on $p=0.05 = 1.78$

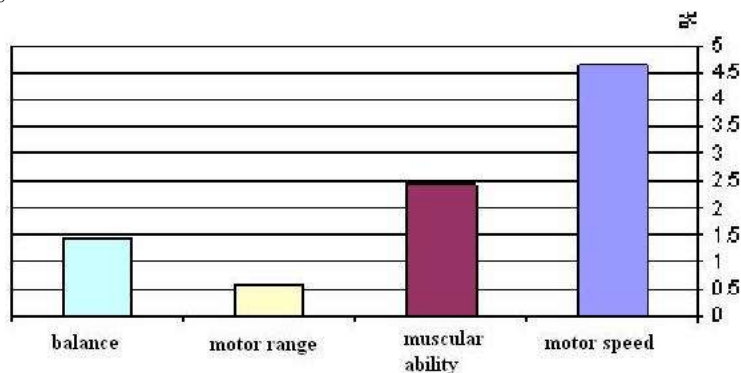


Fig. 1: Improvement percentages between pre- and post tests on physical variables

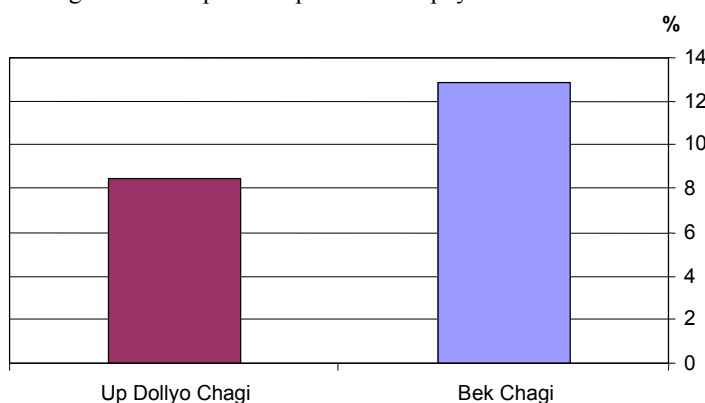


Fig. 2: Improvement percentages between pre- and post tests on technical variables

deal of speed as training aids play a major role in training success as they have positive effects on different physical and technical variables [6, 13-16]. The researcher thinks that speed training with elastic resistance affects the post-test results as there were statistically significant differences between pre and post-tests of the sample on all investigated variables.

CONCLUSION

The Researcher Concludes That:

- Speed training with elastic resistance has a positive effect on developing the performance

level of Bek Chagi and Up Dollyo Chagi as the improvement percentage between pre and post measurements was (8.46% and 12.88%) consecutively.

- Speed training with elastic resistance has a positive effect on developing the physical fitness levels as the improvement percentage between pre and post measurements was (4.65% - 2.44% - 0.57% - 1.4%) for motor speed, muscular ability, motor range and balance consecutively.
- Using training aids (elastic cords) in the recommended program helped greatly improving the technical performance level.

RECOMMENDATIONS

The Researcher Recommends the Following:

- Using the recommended training program for developing the performance level of Bek Chagi and Up Dollyo Chagi for junior taekwondo performers.
- Motor speed training should be done on the same path of real performance.
- Using elastic cords in training all types of kicks besides physical fitness variables.

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