

Study of the effects of brief and long term of stimulation method in the kick boxing

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Introduction

In the kick boxing the rapidity of kick techniques is a very fundamental quality in order to reduce the possibilities of defence and attack of the opponent. Unfortunately the action rapidity of the acyclic movement is a hard quality to train, especially in the well trained athletes in which the techniques are very well established. Many authors studied the systems to exceed the barrier of rapidity but Prof. J.V. Verchoshanskij contributed greatly to this sector. Between all the methods he studied the most interesting one is the method of stimulation (or "contrast" or "mixed bulgarian") in which a rapidity exercise is replaced by an "intense loading of strength". Our research team already tried several experiments to evaluate the stimulation method effects applied to the combat sports (Villani et al, 2002, 2005). The goal of our work is to verify the effects on a brief and long term of the stimulation method through the lengthwise study of a month of training of kick boxing.



Methods

The method of stimulation tested is based on the connection of two exercises: one of general characteristics (squat 85%; 3 set X 4 reps; rec. 3 min.) and one specific, the medium round kick executed with a backward leg position (3 set X 4 kicks, right and 4 left; rec. 1 min.) performed against the punching bag with the maximum explosive force (recovery squat and kicks: 4 min.) This experiment was practised with twenty-two kick boxing trainees (age 17/30; weight: 60/88 kg; height: 168/185 cm; years of practise: 2/7) also of different competitive levels (provincial and national). All the athletes were initially exposed to a modified version of the SOK TEST (Villani et al., 2004: fig. 1) in which, through an integrated system of photocells and footboard with piezoelectric cells, the time of execution of the kick (4 kicks right, 4 left) was evaluated in both conditions of before and after the definite squat loading. The test reliability has been verified repeating the exercises in two following sessions (test-retest correlation). Two uniform groups have been formed with athletes with a comparable quality both physical and technical: 11 athletes (experimental team), trained for four weeks with the stimulation method; 11 athletes (control team), trained for four weeks with a standard training, in which the squat session was executed an hour after the technical, specific training with the punching bag. After the four week training, the test was repeated to evaluate the effects of both training methods used. The study of the brief term method was done by comparing the pre-load and post-load test (before and after the squat) while the long term method effects was studied by comparing the results of the SOK TEST in both teams.

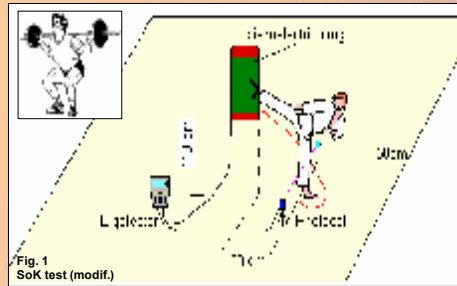


Fig. 1 SOK test (modif.)

Results

The test reliability (correlation test-retest) pointed out r values between 0,79 and 0,89 (p<0,01) for right and left round kick, in both conditions of pre-load and post-load (Tab A). In the experimental team, the SOK TEST results after the month of training improved the evaluation of pre-training, while the control team decreased the improvement and not always was significant (20-28% vs. 10-14%). In the comparison of the SOK TEST results, before and after the squat, both teams had a higher speed of the kicks execution after the overloading stimulation; after the month of training, the experimental team had a higher difference between the pre and the post-squat test (from 11-15% to 19-21%) while the control team had not such significant variations (Tab.B -C).

Tab. A - Correlation Test-Retest		Experimental Group			Control Group		
TECHNIQUE		M Test	M retest	Correlation	M Test	M retest	Correlation
TEST 1 pre-training	Kick dx pre-load	0,225	0,226	r = 0,89 ; p<0,01	0,230	0,236	r = 0,80 ; p<0,01
	Kick dx post-load	0,192	0,198	r = 0,83 ; p<0,01	0,196	0,203	r = 0,84 ; p<0,01
	Kick sx pre-load	0,234	0,235	r = 0,86 ; p<0,01	0,237	0,244	r = 0,80 ; p<0,01
	Kick sx post-load	0,208	0,210	r = 0,82 ; p<0,01	0,205	0,210	r = 0,83 ; p<0,01
TEST 2 post-training	Kick dx pre-load	0,180	0,175	r = 0,80 ; p<0,01	0,203	0,211	r = 0,80 ; p<0,01
	Kick dx post-load	0,141	0,148	r = 0,84 ; p<0,01	0,176	0,181	r = 0,81 ; p<0,01
	Kick sx pre-load	0,185	0,179	r = 0,80 ; p<0,01	0,208	0,211	r = 0,81 ; p<0,01
	Kick sx post-load	0,150	0,150	r = 0,82 ; p<0,01	0,176	0,179	r = 0,79 ; p<0,01

Tab. B - Trasversal Comparison (Anova) Experimental group					Tab. C - Trasversal Comparison (Anova) Control group				
TECHNIQUE	pre load	post load	Diff%	Anova	TECHNIQUE	pre load	post load	Diff%	Anova
Kick dx pre-training	0,225	0,192	-15%	p = 0,035129	Kick dx pre-training	0,230	0,196	-15%	p = 0,043355
Kick dx post-training	0,180	0,141	-21%	p = 0,000012	Kick dx post-training	0,203	0,176	-13%	p = 0,00199
difference	-20%	-27%	-6%		difference	-12%	-10%	2%	
Kick sx pre-training	0,234	0,208	-11%	p = 0,016261	Kick sx pre-training	0,237	0,205	-13%	p = 0,04825
Kick sx post-training	0,185	0,150	-19%	p = 0,000024	Kick sx post-training	0,208	0,176	-15%	p = 0,000101
difference	-21%	-28%	-8%		difference	-12%	-14%	-2%	

Conclusions

We can state that the stimulation method applied to the kick boxing techniques can be considered a very efficient system of training of rapidity and specific explosive force. The results indicate an increasing efficiency of the method proceeding with the training. It will be very important to evaluate these aspects on a wide range of athletes of higher competitive level. These specific experiments shall be the main purpose of our future studies.

References:

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