

Authors: Trembach A.B., Savinkova V.A. Krasnodar, Taganrog

Article name: The influence of the biocontrolled electrostimulation on the speed-power qualities of the weight-lifters of high qualification

The influence of the biocontrolled electrostimulation on the speed-power qualities of the weight-lifters of high qualification

According to the clinical evidence, SCENAR-therapy is a nonspecific way of influence on the human body and has a pronounced medical effect in case of various pathologies (see "SCENAR-therapy, SCENAR-expertise" Collected Articles, 1997-2000).

Based on the concept of the community of the traditional and orthodox treatment on the basis of the functional continuum of regulatory peptides (Y.Z.Grinberg, 2000) one can suppose that low-frequency bio-controlled electrostimulation improves functional capabilities of not only ill, but of a healthy body as well. This new approach to SCENAR-therapy has a certain theoretical and practical significance. It allows to analyze the effect of such influence on vital processes in the pure state with the pathological processes excluded and use it in health-improving physical training and in sports. The data on the SCENAR-therapy influence on developing the speed-and-strength qualities in highly skilled weight-lifters.

The growth of sports skill in weightlifting in many respects depends on a level of special strength training of athletes (A.N.Vorobjov, 1977; L.S.Dvorkin, 1989; Menhin, 1993). The force increase of the basic muscular groups of extensors creates favorable conditions to improve performance (J.V.Verhoshansky, 1988). The analysis of training of highly skilled weight-lifters showed that sports skill grow with increased power loads (A.S.Medvedev, 1986). However, now such approach to strength training has practically worked itself out.

New methods of training make it possible to boost muscular strength effectively without increasing the volume and intensity of load (A.B.Trembach, V.V.Marchenko, 2000). The strength can be also improved due to some additional means which should be included in the training integrally. One of such means is electrostimulation of various muscular groups which improves strength qualities of the athletes (J.M.Kots, 1971).

M.V.Tarassenko (2000) was investigating the electrostimulation effectiveness as a means for restoration of neuromuscular and locomotor apparatuses functions in wrestlers and established that short-term electrostimulation of muscles allows to differentiate the muscular fatigue from that of the central nervous system. Regular electrostimulation of muscles to accelerate recovery processes and stimulate the performance makes it possible for athletes to have the more intensive and greater in volume training and competition load. Nowadays many various electrostimulators that

increase the speed-and-strength qualities of sportsmen essentially are described in the literature. SCENAR-therapy as a more adequate method of electric influence including skin impedance feedback, gives wide opportunities in this regard.

Thereupon, the purpose of the present research was to study the influence of SCENAR-therapy on the development of physical characteristics of strength and speed.

36 weight-lifters participated in the research – students of the Krasnodar State Academy of Physical Culture (first-grade sportsmen, master of sports, and candidate masters). Their speed-and-strength characteristics was studied by means of torso dynamometry (dynamometer DS-500) and a standing high jump (according to Abalakov) on a dynamographic stand (tensometric platform) with the following computer analysis.

After initial testing, two groups were created, 13 men in each group. The weight-lifters of the test group were given SCENAR 10 sessions (once on a training day) using the following technique:

- Continuous stimulation, on the face where cerebral nerves yield (internal edges of eyebrows, regions below the corners of the mouth and the zones 1-1.5 cm sideways of nostrils), 1 minute on each point. Frequency 51 Hz.
- Labile stimulation, along the backbone top-down, then treatment of paravertebrals on both sides (the Three Pathways technique) for 7 min at a frequency of 51Hz..
- Labile stimulation, the anterior surface of thighs and back of the shins; 3 min each area at a frequency of 131 Hz.

The stimulation strength was selected individually, depending on skin sensitivity.

After the sessions, both groups were tested again. The data obtained underwent statistical processing (parametric and nonparametric statistics methods).

The research showed that the parameters of the lifting force of the athletes of both groups before the experiment did not differ essentially. The jump according to Abalakov on a tensometric platform with the following analysis allows to single out 9 basic characteristics of the given exercise:

- T_1 – greatest platform unloading time (the beginning of repulsion);
- T_2 – maximal effort time at the moment of repulsion.
- F_1 – minimal effort;
- F_2 – maximal effort;
- T_3 – take-off moment;
- F_3 – effort on a platform at the moment of taking-off (during repulsion);
- P_{1-3} – impulse of force over the repulsion time;
- T_p – flight time;
- H_p – jump height (the most important parameter characterizing the explosive strength).

The two groups of athletes were compared before the experiment and their T_1 , F_1 and T_2 parameters were found to be significantly different between the two groups. The athletes in the control group perform jumping under the weight faster (0.149 ± 0.0121 sec as compared with that in the test group 0.200 ± 0.141 sec). However, the athletes of the test group showed higher minimal effort (38.09 ± 3.925 kg) as compared to that of the control group (16.6 ± 3.252 kg). In the control group the maximal effort time was better (0.531 ± 0.170 sec against 0.642 ± 0.0324 sec). No significant difference was

identified in other parameters. The athletes in both groups showed lower jump height as compared to the data given in the literature (A.N.Vorobjov, 1977; V.V.Marchenko et al., 1985) which is probably due to different methods for testing this parameter.

The dynamics of the lifting force and basic characteristics of the Abalakov jump in the control and test groups of weight-lifters before and after SCENAR-therapy are represented in the Table.

Average values of torso dynamometry parameters and basic parameters of Abalakov jump; (two groups of weight-lifters after 10 days of trainings).

Parameter	Test group M±m		Control group M±m	
	beginning	end	beginning	end
Torso dynamometry	180.6±6.61	204.8±8.20 P < 0.05	167.0±5.11	166.5±4.57 P > 0.05
Abalakov jump T ₁	0.200±0.014 1	0.225±0.0366 P > 0.05	0.149±0.0121	0.148±0.0128 P > 0.05
F ₁	38.09±3.925	35.61±4.078 P > 0.05	16.16±3.252	19.14±3.240 P > 0.05
T ₂	0.642±0.032 4	0.632±0.0383 P > 0.05	0.531±0.0170	0.530±0.0196 P > 0.05
F ₂	237.9±13.23	232.9±11.95 P > 0.05	228.2±16.63	224.7±16.25 P > 0.05
T ₃	0.774±0.030 8	0.836±0.0341 P > 0.05	0.723±0.0474	0.730±0.0523 P > 0.05
F ₃	0.651±0.029 0	0.645±0.280 P > 0.05	0.594±0.0447	0.594±0.0431 P > 0.05
P ₁₋₃	88.4±5.23	89.5±5.07 P > 0.05	75.0±5.27	80.3±5.29 P > 0.05
Tp	0.611±0.012 9	0.588±0.0097 P > 0.05	0.636±0.0115	0.632±0.0033 P > 0.05
Hp	45.94±1.941	40.36±1.947 P > 0.05	48.84±1.882	48.88±1.636 P > 0.05

In the test group after a course of electrostimulation, muscle strength of trunk extensors increase from 180.6±6.61 up to 204.8±8.20 kg ($p < 0.05$). Other parameters didn't change significantly in the test group. The jump height was varying in the test group from 45.94±1.941 up to 40.36±1.947 sec. No significant changes in the tested speed and strength parameters were registered in the sportsmen of the control group.

This neuroadaptive biocontrolled electrostimulation allowed to increase the strength of trunk extensor muscles by 24.2 kg as compared to that in the control group (the increase was 13.4 %) without any change in speed. In preliminary observation of jumping athletes (track-and-field) it was revealed that their high-speed characteristics (by 8-10%) improved after 10 sessions of SCENAR-influence only on cranial nerves yields on the face, stimulation along the backbone and of paravertebrals on both sides ("three pathways") without stimulating leg muscles.

Thus, selective SCENAR influence connected with the activation of the central nervous or muscular systems provides differentiated development of particular physical qualities in sportsmen.

REFERENCE

1. Verhoshanskij J.V. The principles of sportsmen physical training. - M.: Physical culture and sport, 1988. - pp 124-127.
2. Vorobiov A.N. Weightlifting sport. The articles about physiology and sport training. Issue. 2. - M.: Physical culture and sport, 1977. - pp. 97-113.
3. Grinberg J.Z. To a question of the principles of Scenar-therapy effectiveness "Scenar-therapy", "Scenar-expertise", collection of articles, issue 3-Taganrog, 1997.-pp 16-22.
4. Grinberg J.Z. The effectiveness of Scenar-therapy. Physiological aspects. "Scenar-therapy" and "Scenar-expertise". Collection of articles, Issue 4,- Taganrog, 1998.- pp 8-16.
5. Dvorkin L.S. - Heavy athletics and age. - Sverdlovsk: Publishing house of the Ural university, 1989.-200p.
6. Kots J.M. - The electrostimulation training of the muscles. - In the book.: the materials of scientific - methodical conference on a problem: "Medico-biological ground of the system of students physical training in high school". - Kaunas, 1975. - pp. 82-84.
7. Marchenko V.V., Mihitarov A.A., Ganchenko I.O. Hapapha A.J. "The methods of planning of the qualified weight-lifters training process. The manual. - Krasnodar, 1985.-pp 21-28.
8. Medvedev A.S. "The system of many years training in heavy athletics".-M.: Physical culture and sports, 1986.-272 p.
9. Medvedev S.V. The Application of Scenar-thechnique in sport medicine. "Scenar-therapy" and "Scenar-expertise". Collection of articles, Issue.3.-Taganrog, 1997.- pp60-65.
10. Tarasenko M.V. The means of restoration and adaptation to loads during precompetitive wrestlers' training.// The theory and practice of physical culture. №6. 2000.-pp. 33-35.
11. Trembach A.B. Marchenko V.V. The characteristics electromiogrammes of weight-lifters biceps at different loads //The theory and practice of physical culture. №8. 2000. Pp.20-22.

The article is provided with the assistance of:

RITM OKB ZAO
Petrovskaya 99,
Taganrog 347900
Russian Federation
www.scenar.com.ru

and

RITM Australia Pty Ltd
4/130-134 Pacific Hwy
Greenwich NSW 2065
Australia
www.scenar.com.au