THE EFFECTIVENESS OF A COURSE OF THE DRUG " ALAKTON " IN THE PREPARATION OF SKILLED WRESTLERS

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Annotation. *Purpose*. The influence of the new domestic preparation on the performance of functional readiness and psychophysiological performance athletes. *Material and methods*. The study involved 12 qualified wrestlers (age 17-19 years) with the written consent. The drug contains chelated magnesium glycinate cocarboxylase and betaine. Course reception - within seven days of shock microcycle. *Results*. Found that course reception has a positive impact on health and the special recovery processes athletes. Also found a positive effect on physiological indicators. The authentic reduction in travel time distance shuttle run 4 x 9 m, increase in the coefficient of special endurance, increase the number of repetitions in the test. Showed a reduction in the coefficient of restitution and increasing the number of shots (mill) in this test. *Conclusions*. The data obtained suggest appropriate use of the drug in the practice of preparing skilled fighters.
Keywords : special, performance, physiological, indicators.

Introduction

In connection with constantly growing political coloring and commercialization of sports there are taken measures on increasing its show character, which is accompanied , in particular, by changing and improvement of rules. For example, recent 100 years, rules in wrestling have been changed more than 30 times. Changes of wrestling competitions' rules results in reconstruction of sportsmen's training methodic: modern regulations significantly intensifies duel, fight has become more aggressive, higher requirements are set to wrestler's physical condition [2].

With it, it was found that absolute special endurance substantially influences on duel result [1]. In works by V.V. Shiyan it was proved that trainings of glycolitic, anaerobic character confidently influences (r=0.76) on rate of increment of wrestlers' special endurance and indicators of competition functioning [6]. As far as final product of glycolysis is lactic acid, effects, connected with its excessive accumulation in blood and muscles substantially influence on special workability of wrestlers [8, 9, 12]. That is why for intensification of wrestlers' trainings and competition functioning, it is purposeful to apply means, which facilitate utilization of lactate [10, 11]. Recent times, alongside with pedagogic and psychological means of recreation still more attention is paid by specialists to medical-biological means. Using of different pharmacological means has gradually transformed in one of the most important and effective components of modern sports [5, 13-15].

Analysis of domestic market of sport-related pharmacological means, which facilitate organism's recreation, attracted our attention to preparation "Alacton" (CJSC, "Pharmacological firm "PharCoS", Ukraine, Kyiv). The components of this preparation are cocarboxelase, in the form of chelate compound with magnesium glycinate and betaine. Chelate compound of cocarboxylase with magnesium glycinate, which is a co-factor of enzymes of carbohydrate and energetic metabolism, has adaptogenic and stress-resistance effect, facilitates activation of anabolic processes in muscles, accelerates recreation after trainings, increases adaptation mechanisms of cardio-vascular system, reduces tiredness, decreasing quantity of lactic acid in muscles. Magnesium glycinate participates in synthesis of kreatine. Betaine – is a substance of natural origin, which amplifies detoxification and renewal functioning of liver; has hepatitis-resistance effect, facilitating detoxification of different xenobiotics; it has lypotropic properties, facilitates normal functioning of central nervous system. Besides, betaine shows ergogenic properties, influencing on synthesis of methionine [4].

Attempts to estimate «Alacton's recreational influence on organism of qualified wrestlers were taken also in the past. Its influence on bio-chemical parameters and workability indicators was researched in 30 second bicycle ergometer test Wingate [4]. But, with it influence of the preparation on wrestlers' special workability, on which sportsmen's efficiency depends most of all, was not evaluated. In this connection the problem of application of recreational pharmacological means for increasing of wrestlers' special workability has not been elucidated sufficiently that makes purposeful and urgent the presented here research.

The work has been fulfilled in the frames of scientific topic 2012.2 «Control of functional state and metabolism of qualified sportsmen in Olympic cycle of training", which was approved by Order of Ministry of science and education, youth and sports of Ukraine № 1241 dt. 28.10.2011 .

Purpose, tasks of the work, material and methods

The purpose of the research is to study influence of taking course of "Alacton" on indicators of special workability and psycho-physiological indicators of qualified wrestlers.

Methods and organization of the research. Selection of sportsmen in experimental and control groups was carried out on the base of compulsory conditions, existing in sport pharmacology for studying of pharmacological

doi: 10.6084/m9.figshare.880630

means in sports: the quantity of tested shall be not less than 6 persons in every group; sex – mail; qualification level – not less than candidate master of sports; control group shall be completely identical to experimental; availability of unified training process for the period of research. After receiving of verbal and written explanation of the purpose, procedures and potential risk of the research, 12 men (sportsmen, specializing in free style wrestling, masters of sports and candidate masters of sports with prize winners of Ukraine championships among them) gave written consent for participation in the research. All sportsmen were arbitrary divided in two groups: experimental and control. Experimental group consisted of 6 men of 17-19 years old (Mean ± SD: 18.17 ± 0.75 years), mass of body from 54.9 to 76.9 kg (62.77 ± 7.85 kg); control group – 6 persons of 17-10 years old (17.33 ± 0.82 years), mass of body from 61 to 77 kg (69.83 ± 6.49 kg).

The research was carried out in the period of "shock" micro-cycle at special-training stage of basic period. Duration of micro-cycle, which was oriented on improvement of technical-tactic sportsmen's actions, was 7 days. Training loads of sportsmen during that micro-cycle were ensured, mainly, at the account of anaerobic, glycolitic mechanism of energy supply, as far as just this mechanism is the main for work, which lasts from 20 seconds to 6 minutes [9].

Sportsmen of experimental group used "Alacton" (CJSC, "Pharmacological firm "PharCoS", Ukraine, Kyiv) during 7 days by the following schema: 2 pills under tongue in 15 minutes after training. Day doze of acting substance was 1.0 g. Sportsmen of control group took placebo (capsules with 0.5 g of starch) be the same schema. Choosing of dozes and duration of course was carried out as per instructions on using of preparation.

Effectiveness of preparation "Alacton" and its influence on processes of organism's recreation after intensive loads were studied by evaluation of functional fitness and determination of psycho-physiological indicators of sportsmen, who specialize in free style wrestling. Choosing of tests was based on their reliability, informative character and possibility to fulfill quick examinations.

Evaluation of functional fitness of the tested groups of sportsmen was conducted with the help of such pedagogic tests: shuttle run 4x9 meters, test for special endurance, test for recreation [Free style wrestling: men, women. Instructional program for junior sport schools, specialized junior schools of Olympic reserve, schools of highest sportsmanship and specialized educational establishments of sport profile – Kyiv: АСБУ, 2011. – pg.95].

Studying of psycho-physiological indicators was carried out with the help of computer program "Psycho-diagnostics" [Zh.L. Kozina, L.M. Barybina, G.V. Korobeynikov, D.I. Mischenko, O.A. Tsykunov, O.V. Kozin A.c. 39679 Ukraine. Computer program "Psycho-diagnostic". - № 39679; application, dt. 10.06.2011.]. This system is intended for determination of individual qualities of human nervous system in processing of visual information of different difficulty as per methodic by N.V. Makarenko and V.S. Lizogub [3]. Testing was conducted in two modes of work: optimal and feedback. In optimal mode there are three sub-modes: SVMR – simple, visual-motor response, RC 1-3, response to choosing of one signal from three and RC 2-3 – response to choosing 2 signals from three. In every of sub-modes we determined such parameters as mean value of latent period (M), m.sec; mean square value of deviation (σ), m.sec.; quantity of errors.

In feedback mode there are 2 sub-modes: FNPM– determination of functional nervous processes' mobility and SNP determination of strength of nervous processes. In these sub-modes we determined the following parameters: mean value of latent period (M), mean square value of deviation (σ), m.sec.; quantity of errors; time of test's fulfillment, sec.; minimal time of exposure, m.sec.; time of coming to minimal exposure, sec.

Testing of sportsmen was carried out twice: at the beginning of micro-cycle and after its finishing. The researched was planned so that the day preceding testing, should have been free from trainings. First we made psycho-physiological diagnostics and them pedagogic testing.

Statistic processing of researches' results we fulfilled on PC with the help of program package GraphPad Prism version 5.0 for Windows (GraphPad Software, San Diego California, USA [www.graphpad.com]).

Results of the researches

At the beginning of the research, with determination of indicators of pedagogical and psycho-physiological testing we did not find confident differences between sportsmen of experimental and control groups, except value of latent period in RC 1-3 and RC 2-3. Mean value of latent period RC 1-3 in experimental and control groups was 520.8 ± 11.06 m.sec. and 452.3 ± 14.24 m.sec. accordingly (P = 0,0035). Mean value of latent period of RC 2-3 – 576.3 ± 12.96 m.sec. and 513.5 ± 10.37 m.sec. accordingly (P = 0,0036). Thus, by most of indicators experimental and control groups can be considered comparable.

The obtained during researches data witness about positive influence of course taking of "Alactone" preparation on special workability and recreation processes of qualified wrestlers. In table 1 we presented results of pedagogic testing. Time of passing distance in shuttle run 4 x9 meters reduced by 3.66 % at experimental group; in control group there were no confident changes. It can be conditioned by presence of magnesium glycinate in "Alactone", which participates in synthesis of kreatine and cocarboxylase, which improves functioning of nervous. Coefficient of experimental group's special endurance increased by 4.3 %. Also quantity of repetitions in test increased by 5.94 %, that is quite possible connected with ergogenic effect of cocarboxylase: increasing of glucose utilization by tissues, production of ATP and reducing of lactic acid's accumulation [7]. Reduction of recreational coefficient by 6.17 % and increasing of mill circle throws by 10.09 % in experimental group witness about improvement of recreational processes.

Table 1

Influence of course taking of "Alacton" on indicators of special workability and recreation of qualified wrestlers (X ± σ)

Indicators of pedagogic testing	Experimental group		Control group	
	Before	After	Before	After
Shuttle run 4 × 9 m, sec.	8.21 ± 0.06	7.92 ± 0.07 *	8.147 ± 0.06	8.162 ± 0.06
Coefficient of special endurance	0.93 ± 0.01	0.97 ± 0.01 *	0.9237 ± 0.01	0.9222 ± 0.01
Quantity of repetitions in test	102.7 ± 1.86	108.8 ± 2.79 *	104.5 ± 2.50	104.3 ± 2.64
Coefficient of recreation	0.81 ± 0.01	0.76 ± 0.01 *	0.7707 ± 0.02	0.7655 ± 0.01
Quantity of mill circle throws in test	21.5 ± 0.34	23.67 ± 0.14 *	22.33 ± 0.61	22.33 ± 0.33
Maximal HBR after test for recreation, b.p.m.	172 ± 3.41	174 ± 2.09	172.0 ± 3.69	172.7 ± 3.49

Notes: *p ≤ 0.05 difference between indicators before and after testing

The data, obtained in psycho-physiological testing (see table 2) also witness about positive influence of "Alacton" course. Confident reduction of latent period RC 1-3 by 12,01 %, latent period of RC 2-3 – by 11.97 %, latent period of FNPM by 6.78 %, minimal time of exposure of FNPM signal by 15.49 % witness about improvement of central nervous system's functioning of experimental group's sportsmen. Such effect can be conditioned by presence of cocarboxylase in the preparation, which stimulates nervous functions; and glycine, which improves metabolism in brain tissues, weakens psycho-emotional tension, improves mental activity. Also we can not exclude possibility of indirect action of preparation on psycho-physiological indicators at the account of improvement of recreational processes in sportsmen's organisms after intensive loads.

Table 2

Influence of "Alacton" course on psycho-physiological indicators of qualified wrestlers (X ± σ)

Indicators of psycho-physiological state	Experimental group		Control group	
	Before	After	Before	After
Latent period of PNS, m.sec.	316.2 ±24.67	299 ± 11.71	308.0 ± 9052	319.7 ± 11.24
Latent period of RC 1-3, m.sec.	520.8 ± 11.06	458.2 ± 18.04 *	452.3 ± 14.21	456.7 ± 14.49
Latent period of RC 2-3, m.sec.	576.3 ± 12.96	507.3 ± 10.35 *	513.5 ± 10.37	527.2 ± 9.26
Latent period of FNPM, m.sec.	468.8 ± 11.96	437 ± 14.13 *	453.8 ± 15.66	459.0 ± 15.00
Minimal exposure time of FNPM signal, m.sec.	473.3 ±18.38	400 ± 28.75 *	420.0 ± 30.98	433.3 ± 27.65
Total time of FNPM test, sec.	102.8 ± 3.24	97.83 ± 2.68 *	101.3 ± 2.50	103.0 ± 3.28
Time of coming to minimal exposure of FNPM, sec.	66.5 ± 10.38	69.5 ± 6.174	82.17 ± 3.46	86.5 ± 3.32
Latent time of CNS, m.sec.	416.3 ± 9.86	397.5 ± 9.68 *	407.5 ± 7.73	413.2 ± 7.74
Quantity of CNS errors	129,5 ± 2,91	133.3 ± 3.676	131.7 ± 3.07	136.0 ± 3.27
Minimal time of CNS signal exposure, m.sec.	363.3 ± 16.67	336.7 ± 12.02 *	370.0 ± 8.56	383.3 ± 15.85
Time of coming to minimal exposure of CNS, sec.	170.5 ± 31.98	146.3 ± 30.3	18.24 ± 7.45	19.23 ± 7.85

Notes: *p ≤ 0.05 difference between indicators before and after testing

Conclusions:

1. One week course of "Alacton" during "shock" micro-cycle at special-preparatory stage of basic period influences positively on special workability of qualified wrestlers that is witnessed by confident reduction of distance passing's time in shuttle run 4 × 9 m, by increasing of coefficient of special endurance and increasing of quantity of test's repetitions.
2. It was found that course of "Alacton" positively influences on recreational processes after test loads, that is manifested in reducing of recreation coefficient and increasing of "mill circle" throws in this test.
3. Using of "Alacton" also improves functioning of central nervous system that is witnessed by positive dynamics of psycho-physiological indicators.

The prospects of further researches imply involving in researches on this topic representatives of other kinds of sports, in which anaerobic glycolysis is main source of energy supply.

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Cite this article as: Sazonov V.V., Jaremenko V.V., Zemtsova I.I. The effectiveness of a course of the drug «Alakton» in the preparation of skilled wrestlers. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 2013, vol.12, pp. 72-76. doi:10.6084/m9.figshare.880630

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Received: 01.10.2013
Published: 30.12.2013