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Original Article

Ability of kata "Sanchin" Kyokushinkai karate to quickly restore the bodies of karate sportsmen after significant physical activity

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Abstract:
The article analyzes the influence of the use of "Sanchin" kata by highly skilled karate sportsmen after significant physical activity and the speed of restoration of the psychophysical state of the athlete's body.
Successful performance in competitions is possible with the ability of an athlete to bear significant physical activity inherent in highly emotional and physically exhausting combat and the ability to quickly recover in a short period of time. Extremely important in the preparation of a sportsman-karate is a full-fledged mastering of the skills acquired during the training, and the work was accompanied by an increase in results and did not cause overworked organism. The aim is to investigate and analyze the main indicators of psycho-physical effects on the fitness of an athlete-karate competitor and the impact of the use of "Sanchin" kata on the ability of an athlete's body to be rapidly restored after significant physical and psycho-emotional stresses The analysis of the competitive activity and influence on the athlete's psychophysical state of the load, which is characteristic of the competition of the higher rank in Kyokushinkai karate, is carried out. The regularity of the growth of competitive loads with the advancement of the karate player to the final matches is revealed. It has been determined that more than 30% of the semi-finals and finals of the European Championships in Kyokushinkai Karate have lasted for the last four years the maximum acceptable rules of the competition, which confirms similar characteristics in the level of preparedness of athletes. It is substantiated that in order to fight for prizes, in addition to having a high level of technical and tactical readiness, psychophysical coherence and other components - it is necessary to apply methodical techniques for the rapid recovery of the body after the previous duels. It is proved that the execution of the karate in front of the semi-final and final combat kata "Sanchin" contributes to the rapid restoration of their body.
Key words: kyokushinkai karate, kata, competition, fighting, physical training.

Introduction

Optimum recovery of the organism after exercise of a physical training load of varying complexity with the help of the most suitable forms of motor activity is an urgent task throughout all age periods of human ontogeny (Britchenko et al, 2016; Butenko et al, 2017 (1-2)). In the sporting activity of martial arts, the registration of the training load and the control of the combination in the formation of individual characteristics among athletes are conducted at the established stages of long-term sports development (Nikitenko et al, 2013).

Sports activity in modern karate kioushushki is characterized by a fairly high level of athletes' possession with special technical, tactical preparation, and the development of physical and psycho-emotional qualities (Saienko, 2016; Taylor, 2005). However, the ability of rapid recovery, after significant psychophysical loads, is extremely important (Chaabene et al, 2015; Rovniy et al, 2017). At a relatively similar level of tactical and psychophysical readiness, the readiness of competitors to use internal reserves for quick recovery in a short period of time after intense struggle for achieving high results has become one of the most important factors of success in the competition (Iermakov et al, 2016; Klimenko, 2010; Tabben et al, 2015). Recently, it has become a recognized reality and the problem of psychological training of athletes monopolists, the competition has a general interest.

The pedagogical aspect of the problem is the search for ways and means to ensure the rapid restoration of the psycho-emotional state of the athlete after significant loads including competitive The study of these issues relates to the field of theory and method of sports training.

Based on the data of sport psychology and analyzing the results of the survey of leading specialists and athletes (Dyky et al, 2013; Dunets-Lesko et al, 2009; Koshelev et al, 2007; Oulanova, 2009) – karate in the investigated pre-star conditions and volitional preparation, psycho-physical training of athletes for competitions,

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we can characterize this condition in the following way. He is characterized by a solid assurance of the athlete in his power, a desire to actively and with full dedication of forces, to fight for the achievement of the goal (Korobeynikov et al, 2016). However, the question of the rapid restoration of the psychophysical state of the athlete after significant loads is still poorly investigated, in most cases the use of the medication path is proposed, which in the future may adversely affect the athlete's health.

Material & methods

The research was conducted during the training of highly qualified karate athletes for the main competitions with Kyokushinkai karate in the "Kumite" discipline at the Lviv State University of Physical Culture of KNG (consisting of specialists in the departments "Fencing, boxing and national uniforms", "Anatomy and Physiology" and "Biochemistry and Hygiene"). Qualified athletes – karatets and leading specialists took part in the survey. The survey involved 12 highly trained karatekas. All athletes are members of national team, candidates and masters of sport, according to the classification adopted in Kyokushinkai karate with 1st KYU to the 3rd DAN. Two groups of athletes ware evenly divided by qualifications and age. All karate people aged 18-23, average age of employment is 8 years. All athletes have a large competitive experience, in the net at the intern Rodney tournaments are well known and do executioner "Sanchin".

The aim is to investigate and analyze the main indicators of psycho-physical effects on the fitness of an athlete-karate competitor and the impact of the use of "Sanchin" kata on the ability of an athlete's body to be rapidly restored after significant physical and psycho-emotional stresses.

Methods of research: analysis and generalization of scientific and methodical literature; methods of research of psychophysiological reactions; questionnaire; methods of mathematical statistics.

Results

According to the results of the analysis of literary sources, the number of factors that affect the premature state of the athlete is quite significant. From the degree of readiness of the athlete to the main competitions, his subsequent successes in sporting activity, self-sufficiency and well-being, which greatly influence his mental and somatic health, depend on him. Those athletes who have not reached the proper level of physical readiness, the process of adaptation to participate in the preparation for the competition is accompanied by high tension of the physiological systems of the organism, anxiety, not confidence in their strengths, opportunities.

The search for technologies to determine the psychophysical state of a single-member to create innovative ways of training sportsmen, which would ensure a high level immediately, but also an adequate perception of the results of competitions acquires in the present conditions of exceptional significance. In order to improve the psycho-physical condition and training of a highly skilled athlete for competitions of various levels including the main competitions (Championships of Ukraine, European Championships, etc.) various scientists are offered various means of psychophysical training. However, the possibility of harmonious physical and mental development of highly skilled athletes by means of Kata (formal complexes) Kyokushinkai karate was not considered.

To prove our hypothesis, participants of the testing were psychophysical loading "Pyramid of endurance" with the fixed viewers "Polar 800 RS", the whole process was recorded using software on the computer with further processing and conclusions. To simulate the competitive load, we have been selected physical exercises with marginal loading, similar to the duration of execution to the maximum duration of combat. The initial set of exercises contained: 10 clicks on fists, 50 squats with kick strokes (kin-geri) alternately. The complex was performed continuously during 5 approaches, the dosage of the exercises was changed as described in Table 1.

Table 1. Complex "Pyramid of Endurance"

Approach No.	The name of the exercise Pushing on fists (Saiken)	Squat with kick strokes (Kin-geri)
1	10	50
2	20	40
3	30	30
4	40	20
5	50	10

The duration of the complex (in continuous execution) takes 9-10 minutes and is adequate in terms of its physical and emotional load of about 3-m continuous fighting duels with an equal partner. He is named by us "Pyramid of Endurance".

According to the results obtained using "Polar 800 RS" (comparing the average results of athletes EG and CG after the 3 continuous battles and after the complex) complex "Pyramid of endurance", which, for the influence on the body of athletes is similar to the competitive load (for the results of our previous studies) and

can be used for their simulation. Therefore, at the second stage of the study, we used it to test the hypothesis of the high efficiency of using Sanchin kata to accelerate recovery processes after training or competitive exercises.

Indicators were researched in a state of tranquility, after completing the Pyramid of Endurance exercise, and after the Sanchin khalt (EG) or passive rest of similar duration (CG) (fig. 1).

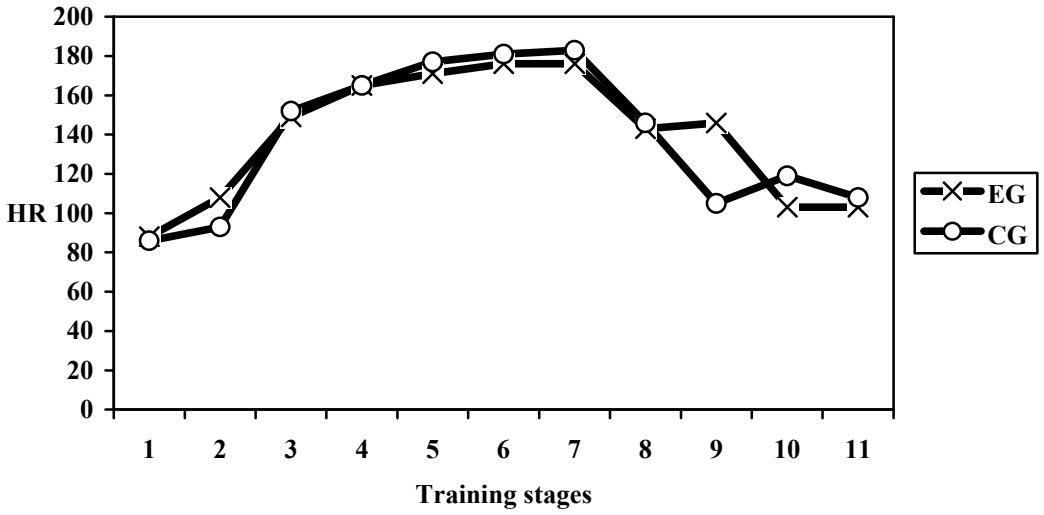

Fig. 1. Comparative regimen of recovery of heart rate of leading athletes after considerable physical activity and influence of the use of "Sanchin" kata (HR – heart rate, str./min.): experimental group (EG) and control group (CG)

As shown in Figure 1 shows a comparative graph of recovery of heart rate of leading athletes after considerable physical activity and the influence of the use of "Sanchin" kata on the psychophysical state of karate with EG as described in Table 2). As can be seen from the schedule, the specificity of classes in Kyokushinkai karate forms an athletes ability to quickly recover from significant psychophysical loads, but after the release of heart rate to the initial level in karatekas CG indicators for a long time fluctuate, and the representatives of the EG after the execution of the kata occurs stabilization and exit there are no significant fluctuations in the initial indications, which indicates the positive effect of the execution of the "Sanchin" kata on restorative processes in the athletes body.

Table 2. Indicators are the frequency of heart rate athletes when performing the test "Pyramid of Endurance".

Approach No.	Heart rate experimental group	control group	Trening stages	Time periods experimental group	control group
1	88	86	WORKOUT	00:10:40.2	00:10:40.2
2	108	93	(START) The beginning of the pyramid	00:14:06.2	00:14:07.2
3	149	152	pyramid	00:15:14.8	00:15:15.4
4	165	165	pyramid	00:16:20.4	00:16:20.1
5	171	177	pyramid	00:17:25.6	00:17:27.6
6	176	181	pyramid	00:18:33.7	00:18:33.4
7	176	183	Finish of the pyramid	00:19:43.1	00:19:42.4
8	143	146	Start kata/relaxation	00:20:55.2	00:20:55.3
9	146	105	Start the recovery	00:22:25.4	00:22:25.7
10	103	119	Completion of exercises	00:30:28.6	00:30:28.4
11	103	108	Stop registration	00:30:37.7	00:30:51.4

Confirmation of positive influence of "Sanchin" kata gave the indexes of biochemical analysis of pH of saliva obtained using "pHep®+ Waterproof Pocket pH Tester" as shown in Figure 2.

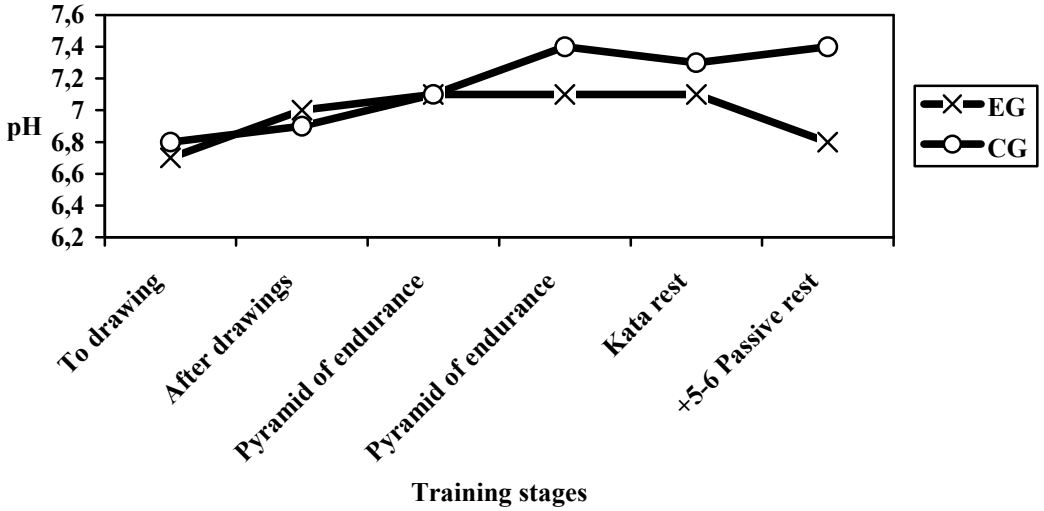

Fig. 2. Indicators of biochemical analysis of pH of saliva athletes: EG (effect of Sanchin kata), CG (passive rest after significant physical activity)

Dicussion

The use of modern digital technologies made it possible to detect the real impact of KATA on the psycho-physical state of an athlete-karate player, which confirms our hypothesis and is recommended for use in the training process during the training of highly skilled athletes for kumite competitions.

The use of "Polar 800 RS" for controlling the training process for the training of highly skilled athletes for the kumite competitions in Kyokushinkai karate gives a very significant effect. As it promotes the implementation of the athlete's and coach's intentions, the purpose of which is a significant result of the competitions. At the same time, it enables the operative correction of the training process individually for each athlete.

Conclusions

The use of modern digital technologies made it possible to detect the real impact of KATA on the psycho-physical state of an athlete-karate, which confirms our hypothesis and is recommended for use in the training process during the training of highly skilled athletes for kumite competitions. The use of "Polar 800 RS" for controlling the training process for the training of highly skilled athletes for the kumite competitions in Kyokushinkai karate gives a very significant effect. As it promotes the implementation of the athlete's and coach's intentions, the purpose of which is a significant result of the competitions. At the same time, it enables the operative correction of the training process individually for each athlete.

The obtained results of the research confirmed the data of specialists about the necessity of using "Sanchin" kata at the stage of improving the skill and qualitative characteristics of the training process. According to the results of the annual experiment in the experimental group of karateists, statistically significant improvement was recorded ($p < 0.05$) as physical (strength of muscle groups, speed and speed-strength qualities, overall endurance) and special stamina, as well as increased ability to a rapid recovery of the body after significant psychophysical stresses.

1. The dynamics of heart rate indices during the training session in the qualified athletes of the Kyokushinkai karate style with different direction of loading in the preparatory period to the responsible competitions is determined.

2. The largest dynamics of heart rate indicators was established during the training session in qualified karates during the performance of work with the maximum competitive load on bags and in the execution of the "Pyramid of endurance".

3. It was established that the use of "Sanchin" kata after considerable stresses gives the effect of a quick restoration of an athlete's body.

As a result of the conducted group testing (execution of "Pyramid of endurance") athletes CG (control group), who after exercise performed respiratory exercises for 1 min. and EG (experimental group), athletes who performed the Sanchin kata for 1 min. "Polar 800 RS" received the following indicators:

A – the level of adaptation to physical activity (CG – 24 %, EG – 57 %);

B – the level of trenirovannosti organism (CG – 9 %, EG – 61 %);

C – level of energy supply (CG – 40 %, EG – 44 %);

D – psychoemotional condition (CG – 34%, EG – 55%);

100% corresponds to the maximum level of the relevant indicators.

It has been experimentally verified and proved that performing Sanchin kata after accelerating recovery processes in the cardiovascular system at the stage of direct preparation for the main competitions of kumite in karate kyokushinkai.

Further research should be devoted to a deeper and more detailed study of the influence of Kata on the formation of the required level of physical and mental readiness of highly skilled Karate sportsmen and their interrelation with the performance of performances at prestigious competitions with kumite in Kyokushinkai karate.

Conflicts of interest

The authors state that there`s no conflict of interest.

References

Britchenko, I.G. & Saienko, V.G. (2016). Physical ability of the individual as a needed market factor in the European Union. *Economy and Education of Ukraine: on the road to EU, monograph*. Nowy Sącz, Wyzsza Szkola Biznesu – National Luis University, pp. 43-59.

Butenko, H., Goncharova, N., Saienko, V. & Tolchieva, H. (2017). Use of health tourism as a basis for improving physical condition of primary school age children. *Journal of Physical Education and Sport,* 17(1), Art. 6, pp. 34-39. DOI:10.7752/jpes.2017.s1006.

Butenko, H., Goncharova, N., Saienko, V., Tolchieva, H. & Vako, I. (2017). Physical condition of primary school children in school year dynamics. *Journal of Physical Education and Sport,* 17(2), Art. 82, 543-549. DOI:10.7752/jpes.2017.02082.

Chaabene, H., Franchini, E., Sterkowicz, S., Tabben, M., Hachana, Y. & Chamari, K. (2015). Physiological responses to karate specific activities. *Science & Sports, Elsevier Masson*, 30(4), pp. 179-187.

Dunets-Lesko, A., Vovkanych, L. & Kindzer, B. (2009). Evaluation of the functional state of qualified karate`s athletes. *Young sports science of Ukraine*, 13, pp. 67-70.

Dyky, B., Vovkanych, L., Vlasov, A. & Kindzer, B. (2013). Changes in the variability of the cardiac rhythm of persons of different ages under the influence of stress factors. *The theory and methods of physical education and sports*, 3, pp. 40-44.

Iermakov, S.S., Podrigalo, L.V. & Jagiełło, W. (2016). Hand-grip strength as an indicator for predicting the success in martial arts athletes. *Archives of Budo*, 12, pp. 179-186.

Klimenko, A.I. (2010). Regulation of mental functions in single combat. *Physical education of students*, 3, pp. 31-33.

Korobeynikov, G., Korobeinikova, L., Mytskan, B., Chernozub, A. & Cynarski, W.J. (2017). Information processing and emotional response in elite athletes. *Ido Movement for Culture. Journal of Martial Arts Anthropology*, 17(2), pp. 41-50.

Koshelev, Yu.P. & Tugushev, R.Kh. (2007). Features of a psychological campaign in the study of martial arts. *Izvestiya Saratov University*, 1(7). pp. 35-38.

Nikitenko, A.O., Nikitenko, S.A., Busol, V.V., Nikitenko, A.A., Velichkovich, M.R. & Martsiv, V.P. (2013). The relations of indicators of speed and power qualities of combat athletes at the stage of specialized basic training. *Pedagogy, psychology, and medical-biological problems of physical training and sports,* 1, pp. 49-55.

Oulanova, O. (2009). Healing through the martial way: Incorporating karate training into counselling and psychotherapy. *Body, Movement and Dance in Psychotherapy, An International Journal for Theory, Research and Practice, 4(1), pp.* 45-57. http://dx.doi.org/10.1080/17432970802097978

Rovniy, A., Pasko, V. & Galimskyi, V. (2017). Hypoxic training as the basis for the special performance of karate sportsmen. *Journal of Physical Education and Sport,* 17(3), Art. 182, pp. 1180-1185. DOI:10.7752/jpes.2017.03182.

Saienko, V. (2016). Improvement and control of the development level of special endurance in athletes of high qualification in kyokushin kaikan karate. *International Journal of Pharmacy & Technology*, 8(3), pp. 18026-18042.

Tabben, M., Coquart, J., Chaabene, H., Franchini, E., Ghoul, N. & Tourny, C. (2015). Time-motion, tactical and technical analysis in top-level karatekas according to gender, bout outcome and weight categories. *Journal sport scientific,* 33(8), pp. 841-849.

Taylor, J. (2005). Beginner to black belt : authorised kata manual for kyokyshin karate*, monograph*. Melbourne, 101 p.