

The general physical fitness of Polish military cadets practicing karate kyokushin

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-  **A** Study Design
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Abstract

Background & Study Aim:

Among the combat methods in the Polish Army, kyokushin karate is widely practiced. Combat proficiency depends on a high level of physical fitness (in a general/comprehensive sense). Therefore, the purpose of the study was the knowledge about the general physical fitness of Polish military cadets practicing kyokushin karate.

Material & Methods:

The cadets training kyokushin karate ($n = 77$, including 64 men and 13 women) from the Officer Training School during their one-year training at the General Tadeusz Kosciuszko Military University of Land Forces were examined. A set of tests and standards was used to verify the physical fitness of Polish soldiers. The set includes 4 tests for men and 4 for women. The tests were carried out in three stages to verify the effectiveness of physical fitness formation.

Results:

Between the first and second stages of the study, there was a statistically significant in a single sample (for men). In contrast, between the first and third and between the second and third stages of the study, there was progression that was statistically significant in all samples for men and women.

Conclusions:

The studied soldiers significantly increased their level of physical fitness during their one-year training at the General Tadeusz Kościuszko Military University of Land Forces. The role of physical fitness is important in building soldiers' combat readiness.

Key words:

physical culture • combat sports • self-defense systems • safety • Polish Army

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Authors have declared that no competing interest exists

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Kyokushin karate – a combat sport created by Masutatsu Oyama. It is derived from karate-do, goju-ryu karate, boxing, judo and Korean martial arts. The kumite competitions are conducted in a knockdown system [50].

Shotokan (Shōtōkan) – is a style of karate, developed from various martial arts by Gichin Funakoshi (1868–1957) and his son Gigo (Yoshitaka) Funakoshi (1906–1945). Gichin Funakoshi was born in Okinawa. Shotokan karate training is usually divided into three parts: *kihon* (basics), *kata* (forms or patterns of moves), and *kumite* (sparring) [51].

Physical activity – noun exercise and general movement that a person carries out as part of their day [52].

INTRODUCTION

On 24 February 2022, the Russian Federation attacked Ukraine, an escalation of a war that had been going on since 2014 [1]. The worldwide popularity of combat sports defines the effectiveness of the confronting parties [2, 3]. In this dispute, the Republic of Poland secures its own borders and the territory of the European Union [4, 5]. This has directed Poland's efforts to mobilize the army. It should be noted that the troops in question practice internal combat systems [6]. But there are also troops formed within specific fighting methods [7]. This is because the given soldiers know each other from sports competition in civilian life [8]. In addition, a sense of style bonding [9] and identification with the Grand Master strengthen their mentality [10].

Kyokushin karate is practiced in the Polish Army [11]. This popularity applies to men and women [12]. The kyokushin style of karate, along with Shotokan karate, is the most popular in Poland [13]. Sport competition is carried out in a knockdown system [14]. In fighting, the emphasis is on foot techniques [15]. It requires the participants to be highly prepared physically [16] and mentally [17]. The basis for the effectiveness of any fight is physical fitness [18], which should be understood as the ability to perform motor activities that fully engage motor skills supported by a high level of fitness [19].

Physical activity in the Polish Army aims to promote the all-round development of soldiers through physical education and sports [20]. The emphasis is on shaping physical and mental fitness, raising the level of health, and cultivating habits of physical culture [21].

The formation of physical fitness (in a general/comprehensive sense) is mandatory in all types of uniformed services. In view of the above, the purpose of this article was the knowledge about the general physical fitness of Polish military cadets practicing kyokushin karate.

MATERIAL AND METHODS

Tested persons

The study participants were cadets of the Officer Training School during their one-year training at the General Tadeusz Kosciuszko Military

University of Land Forces: 64 men and 13 women between the ages of 20 and 29, practicing kyokushin karate. Other details of the subjects are confidential.

The project was carried out on the basis of a positive Senate Committee on Research Ethics at the Wrocław University of Health and Sport Sciences number 7/2021.

Tools

A set of tests and norms for testing professional soldiers in physical education specified by the Order of the Chief of the General Staff of the Polish Army for conducting physical fitness verification in the Armed Forces of the Republic of Poland was used. The set includes the following tests:

- for men: a 3,000-meter run time: (minutes and seconds); arm bending while hanging on a bar (number of repetitions); trunk bending while lying down (sit-up) – number of repetitions; a 10 x 10-meter shuttle run (time: seconds);
- for women: 1000 meters run (time: minutes and seconds); bending the arms in the front support on the bench (number of repetitions); torso bends while lying down (sit-up) – number of repetitions; running in a zigzag on the so-called 'envelope' (time: seconds).

Procedure

The study included three stages at intervals. The first stage was conducted after the basic training period in September 2021. The second stage was conducted after the initial professional specialization training period in February 2022. And the third stage was conducted after the period of professional specialization training for the final exam in August 2022. All studies were carried out in the sports facilities of the General Tadeusz Kosciuszko Military University of the Land Forces, in the afternoon, 2 hours after lunch. The subjects were introduced to the purpose of the study and gave written consent to participate in the research. Prior to the start of the study, a warm-up was conducted, after which the cadets proceeded to perform specific exercises. Each test exercise was preceded by a detailed description and demonstration. During the exercise, safety conditions were kept and the proper execution of the exercise was supervised.

Statistical analysis

Statistical analyzes were performed using the Statistica statistical methods package. The estimation of the results is based on the following indicators: frequency (n); mean; minimum (Min); Maximum (Max); standard deviation (SD).

RESULTS

In the sense of individual training effects, measures affecting the strength of the upper limbs

were the least effective. In each stage of the research there was at least one person (male and female) who did not perform a single repetition of the test exercise (Table 1).

Between the first and second stages of the study, statistically significant progression was recorded only in the 10×10 m shuttle run trial for men. However, between the first and third and between the second and third stages of the study, statistically significant progression was recorded in all trials for both men and women (Table 2).

Table 1. Summary of basic descriptive statistics from the tests conducted: male n = 64; female n = 13.

Sex	Trial	Test stage	Mean	Min	Max	SD
Males	3000 m run (time)	1	13:70	12:05	15:45	0.87
		2	13:50	12:02	15:40	0.85
		3	12:28	11:16	14:13	0.69
Female	1000 m run (time)	1	04:50	03:58	05:40	0.62
		2	04:47	03:50	05:38	0.64
		3	03:79	03:37	04:49	0.41
Male	Arm bending in a bar overhang (number of repetitions)	1	7.52	0	21	3.99
		2	8.48	0	16	3.85
		3	12.44	0	20	4.86
Female	Shoulder bends on a bench (number of repetitions)	1	11.00	0	24	8.36
		2	13.92	0	23	8.93
		3	20.92	0	42	19.23
Male	Trunk bends lying down (number of repetitions)	1	46.88	30	75	11.14
		2	61.70	42	85	7.98
		3	64.02	33	90	11.40
Female	Trunk bends lying down (number of repetitions)	1	37.77	30	50	6.15
		2	46.69	36	56	4.80
		3	50.77	48	55	1.59
Male	Shuttle run 10x10 m (time)	1	00:30:53	00:28:20	00:32:90	1.08
		2	00:30:11	00:27:60	00:33:60	1.17
		3	00:29:38	00:27:50	00:31:90	0.95
Female	Zigzag run on the 'envelope' (time)	1	00:28:52	00:26:50	00:30:80	1.38
		2	00:27:92	00:25:80	00:30:40	1.49
		3	00:25:76	00:24:80	00:27:50	0.88

Table 2. Summary of the results of the statistical analyses from the tests conducted.

Trial / Sex	ANOVA		Mean values in tests			Post hoc comparison with Scheffé's test		
	F	p	1	2	3	1-2	1-3	2-3
3000 m – males (time)	467.88	0.000	13:70	13:56	12:28	0.036	0.000	0.000
1000 m – females (time)	61.80	0.000	04:50	04:47	03:79	0.937	0.000	0.000
Arm bending overhang on a bar – males (number of repetitions)	101.31	0.000	7.52	8.48	12.44	0.033	0.000	0.000
Arm bending on the bench – females (number of repetitions)	3.89	0.034	11.00	13.92	20.92	0.730	0.040	0.182
Trunk bends – males (number of repetitions)	82.34	0.000	46.88	61.70	64.02	0.000	0.000	0.284
Trunk bends – females (number of repetitions)	34.26	0.000	37.77	46.69	50.77	0.001	0.000	0.058
Shuttle run 10×10 m – males (time)	36.49	0.000	00:30:53	00:30:11	00:29:38	0.009	0.00	0.00
Zigzag run on the 'envelope' – females (time)	26.15	0.000	00:28:52	00:27:92	00:25:76	0.344	0.00	0.00

DISCUSSION

The relationship of physical culture with the training of soldiers is undeniable, since physical activity is included in the basic duties of people in the uniformed services. Therefore, the issue of physical fitness in officer schools has often been a topic of discussion at conferences and briefings on military education and in research papers [22-26].

It should be noted that physical education has always been given due prominence in officer schools. Among the many recruitment requirements for enlistment in military and police schools, physical fitness is one of the important criteria [27]. Accordingly, every candidate for the military must pass physical fitness tests. This task is perceived in a special way in the environment of candidates for professional soldiers. But for several years now, deficiencies in the physical fitness of the same have been noted. These deficiencies are often brought from the family home and perpetuated in the course of school education. People taking unreflective advantage of the benefits of technological progress are increasingly reducing their physical activity to the bare minimum. The consequence is a decrease in the level of physical fitness and a reduction in personal development.

The results show what was the level of the subjects' physical fitness had after the basic training period in September 2021, after the initial professional specialty training period in February 2022, and after the professional specialty training period in August 2022. Throughout the year, there was a significant progression in physical fitness among both male and female participants in all tests. This is a very satisfactory result. The importance of the subjects' motor potential [28], their elite [29] and sports experience [30] should be emphasized here. But in the experiment, the eating habits [31], weight [32] and the body composition of the soldiers [33, 34] were not controlled. The role of the coach [35] in the early development of soldiers into a karate culture [6] also cannot be ruled out. What is important is that after one year of training, there are noticeable changes in the level of physical fitness of the participants [37] with regard to combat effectiveness [38, 39], but also concern for their own physicality and motor safety [40-42]. Moreover, we speculate that the high physical fitness of the subjects in the final stage may have had a positive impact on their mental health [43]. This, in turn, may translate into their greater self-efficacy [44, 45].

Unfortunately, there are no studies on stimulating the general physical fitness of the Polish population in ontogenesis through kyokushin karate training. Such knowledge concerns judo [46-49] and could be a reliable frame of reference for comparative studies.

CONCLUSIONS

The cadets of the Officer Training School significantly increased their physical fitness level during their one-year training at the General Tadeusz Kosciuszko Military University of Land Forces. This indicates the important role of physical fitness in soldiers' combat readiness.

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