

# PHYSICAL TRAINING OF CANDIDATES TO PROFESSIONAL MILITARY SERVICE IN LITHUANIAN ARMED FORCES

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## ABSTRACT

*Research back ground and hypothesis.* There is a basic military training course (BMT) carried out in the Lithuanian Armed Forces. The aim of this course is to train soldiers for military service that they were able to perform individual tasks and acquire basic military preparation. There is a lack of research dealing with the effect of physical training programmes in military training courses on the changes in soldiers' physical fitness. We hypothesize that in the course of military training physical fitness of would-be soldiers improves.

*Research aim* was to analyse the structure and content of the BMT programme and the effect of its implementation on the changes in physical fitness for would-be soldiers.

*Research methods:* literature review, analysis of military physical training programmes, physical fitness testing.

*Research results.* During the first testing only 26.8% of would-be soldiers achieved the standards of physical fitness complex test, and during the second testing the standards of the complex test of physical fitness were achieved by 89.5% of service people. In the period of the course  $VO_2\max$  and Ruffier index improved ( $p < 0.001$ ). Indices of physical fitness and functional capacity improved more in the first half of the course. At the end of the course the results of adapted military physical fitness of service people were worse compared to the results of their general physical fitness.

*Discussion and conclusions.* The program of general physical training was effective, but more attention should be paid to the improvement of adapted military physical fitness programme aiming at better results. During the basic military training course physical fitness and functional capacity of candidates improved and at the end of the course it reached the normative level of physical fitness.

**Keywords:** physical fitness, adapted military physical fitness, basic military course, testing.

## INTRODUCTION

Military service requires good health and physical fitness for soldiers. Professional military service admits persons who meet the health requirements and who have fulfilled the established physical fitness standards. There is a basic military training course (BMT) carried out in the Lithuanian Armed Forces. The aim of this course is to train soldiers for military service that they were able to perform individual tasks and acquire basic military preparation. The duration

of the course is 12 weeks. The programme of the course has been developed on the basis of the Order of the Minister of National Defence of the Republic of Lithuania of 2008-07-28 No. 715, the Order of the Commander of the Lithuanian Armed Forces of 2006-09-01 No.V-1137 and the Order of 2011-05-20 No.V-505.

Physical training is one of main structural parts of soldiers' combatant training (Greičius et al., 1998; Skrebė, 2000; *Lietuvos gynybos politikos*

*baltoji knyga*, 2002). The analysis of physical fitness of various army troop soldiers' is a focus of many scientific studies (Radžiukynas, 1999; Sokołowski, 2002; Górski, 2007; Witkowski et al., 2007; Dobosz, Świercz, 2011). Only a minority of the scientific studies analyse the problems related to physical training of the Lithuanian professional soldiers and the peculiarities of physical fitness turn over of soldiers who represent different age groups during their time of service (Vilkas et al., 1994); Čepulėnas, Klenauskas, 2002; Ivaškiene, 2003; Trinkūnas, 2009). Physical fitness and the peculiarities of its changes during the BMT course among the volunteering candidates for professional military services in Lithuania have received inadequate attention in research literature. The aim of the research was to analyse the structure and the content of the BMT programme and the effect of its implementation on the changes in physical fitness for would-be soldiers.

## RESEARCH METHODS

The research sample included 250 persons who participated in BMT course in 2011. BMT course was carried out in the Training Regiment of the Lithuanian Great Hetman Jonušas Radvila. Physical fitness was assessed using the following tests: bending and reaching arms in a lying position for 2 min (times), test for abdominal muscle strength on the Sit-ups for 2 min (times); endurance test – 3000 m run (min, s). Functional capacity was assessed by the indices of Roufier test and maximal oxygen consumption ( $VO_{2max}$ ) which was established indirectly, performing a step test (*Karių fizinio rengimo metodinės rekomendacijos*, 2003). The testing was carried out at the beginning (testing 1), in the middle (testing 2) and at the end of BMT programme (testing 3). Eight control tests were performed: 8 km military march with 10 kg outfit: military obstacle course, grenade throw standing up, lying down, kneeling, and speeding up, military self-defence first-level test, swimming and overcoming obstacles in the water. Physical fitness results in each exercise were evaluated in points using the differentiated scale of evaluation according to age and gender (Table). At the end of BMT course would-be soldiers had to collect no less than 60 points in each test. The data were processed applying statistical programme *SPSS 12*.

*for Windows*. We calculated arithmetic means ( $\bar{x}$ ), standard deviation ( $\pm SD$ ), Student (t) test criterion, and index p for statistical significance. The level of significance was set at 95% when  $p < 0.05$ .

## RESEARCH RESULTS

The whole BMT course includes 645 hours. BMT physical training programme had 120 hours. According to the number of hours for each subject, physical training occupied the second position after tactical preparation, which had 248 hours. Physical training course included physical training theory (2%), general physical training (42%), and applied military physical training (56%). General physical training included learning correct performance of physical exercises (4%), strength development (23%), endurance development (25%), flexibility development 18%; speed and agility development (6%), testing physical skills (24%). Applied military physical training programme included technical training of overcoming military section obstacles 13%), preparation for a military march (6%), training military combat self-defence actions (41%), training combat grenade throws (7%), training military swimming 12%), applied military physical training testing (21%).

During the first physical fitness testing (Figure 1) only 26.8 % of would-be soldiers met the standards of all three control tests (each exercise was evaluated in no less than 60 points). The testing showed that would-be soldiers had weak abdominal muscles as the average point in sit ups exercise was 56.1 points (Figure 2).

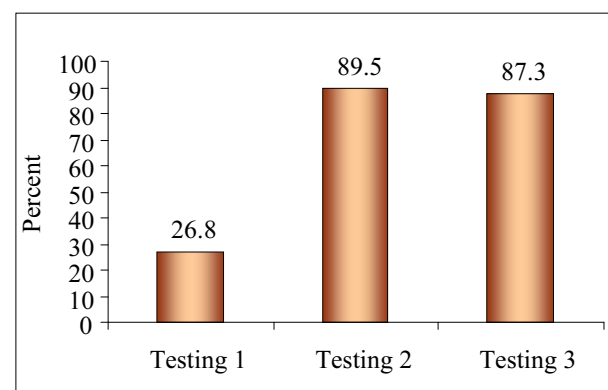


Figure 1. Changes (percentage) in the performance of general physical fitness complex test standards during the BMT course

No	Age group	Bending and reaching arms in a lying position 2 min, times		Sit-ups 2 min, times		3000 m run, s	
		Those who scored 60 points	Those who scored 100 points	Those who scored 60 points	Those who scored 100 points	Those who scored 60 points	Those who scored 100 points
1	18–21	42	71	53	78	15:00	12:06
2	22–26	40	75	50	80	15:42	12:06
3	27–31	39	77	45	82	16:06	12:24
4	32–36	36	75	42	76	16:48	12:24
5	37–41	34	73	38	76	17:24	12:42
6	42–46	30	66	32	72	17:48	13:12
7	47–51	25	59	30	66	18:36	13:30

Table. Physical fitness test scores in different age groups

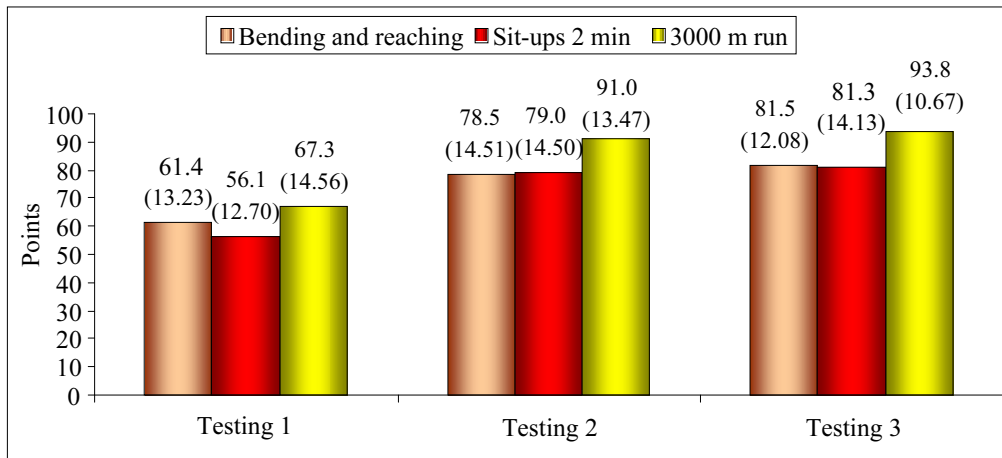


Figure 2. Changes in general physical fitness of soldiers during the BMT course according to points ( $\bar{x} \pm SD$ ) for each exercise

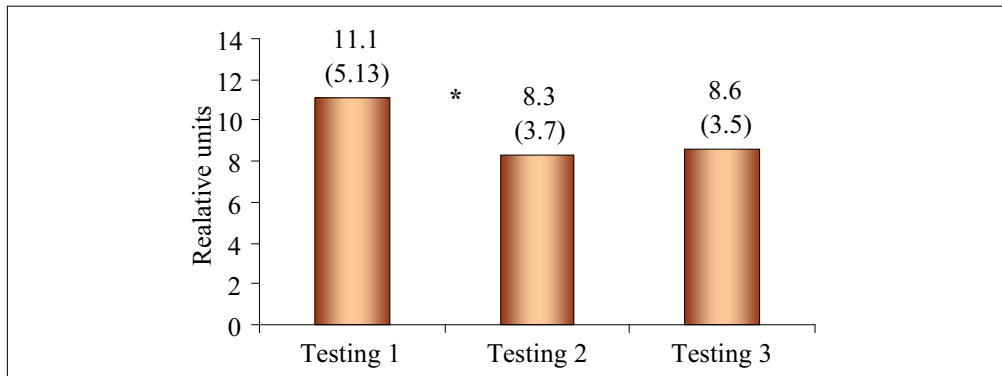


Figure 3. Changes in the indices of Roufier test ( $\bar{x} \pm SD$ ) during the BMT course

Note. \* –  $p < 0.001$ .

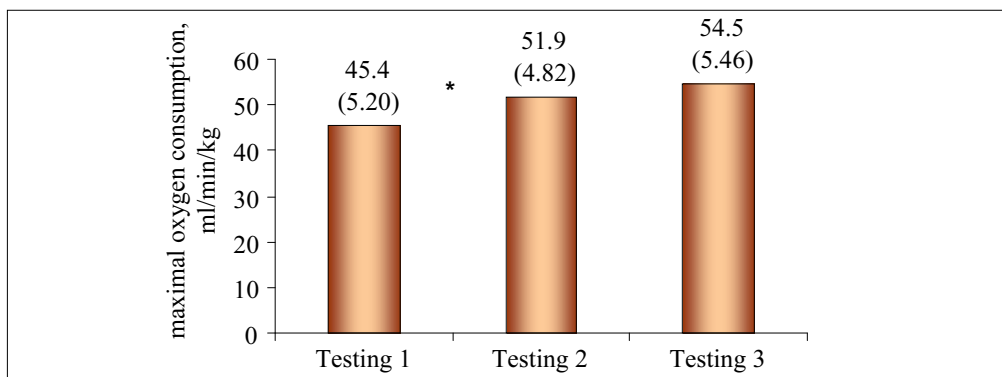
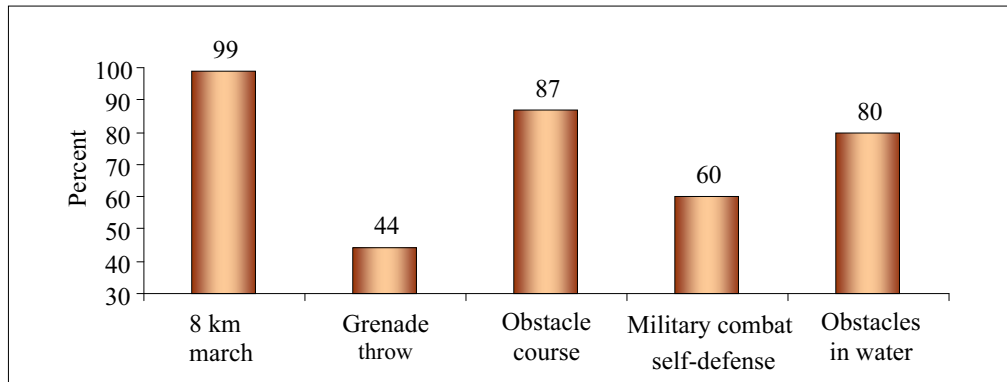


Figure 4. Changes in maximal oxygen consumption indices ( $\bar{x} \pm SD$ ) of soldiers during the BMT course

Note. \* –  $p < 0.001$ .

Figure 5. Results of the performance of adapted military physical fitness standards in percent



The points were awarded according to the subject's age following evaluation scale. During the tests they decreased to 87.8%. It can be explained by the fact that at the end of BMT programme the candidates were tired as their physical loads increased due to testing in the applied military physical training. Candidates to professional military service demonstrated low indices (Figure 3, 4) of functional body capacity (poor Roufier test and  $VO_2$  max indices).

The results of applied military physical training testing (Figure 5) at the end of BMT programme were as follows: 98.5% of candidates carried out 8 km military march meeting the norms, 43% – grenade throws, 87.3% – overcoming military section obstacles, 60.5% – military combat self-defence, 79.8 % – swimming and overcoming obstacles in the water.

## DISCUSSION

It is relevant to carry out tests of soldiers' physical fitness as well as optimize their physical training programs in accordance with the obtained results. The first testing of would-be soldiers showed that their physical fitness did not correspond to the levels required for soldiers in professional military service. The capacity of the cardiovascular system of would-be soldiers was evaluated by the indices of  $VO_2$ max and Roufier test. At the beginning of the course the  $VO_2$ max indices ( $\bar{x}$ ) of service people amounted to  $45.4 \pm 5.20$  ml/min/kg, and Roufier test index was  $11.1 \pm 5.13$  relative units. These indices showed satisfactory and poor level (*Karių fizinio rengimo metodinės rekomendacijos*, 2003).

Lack of physical activity is characteristic of today's schoolchildren, especially at the age of

17–18, and this directly impacts physical fitness results of young men of military age (Greičius et al., 1998). Suitability for military service is determined not only by the person's health, but also the indices of physical fitness and physical capacity (Radžiukynas, 1999; Skrebė, 2000).

During the second testing, which took place in the middle of the course, the subjects showed improved physical fitness results. The standards of the complex test of physical fitness were achieved by 89.5% of service people. Flexibility improved most; its average point in 3000 m running was 91.0. Hand grip strength and abdominal muscle power increased as well and it amounted to 78.5 and 79.0 points (Figure 2). We should note that the improvement in the indices of physical fitness was greater in the first half of the course. If we compare the results of the second and the third testing, we will notice that the improvement was not so expressed. In the period of the course the  $VO_2$ max indices improved from  $45.4 \pm 5.20$  ml/min/kg to  $54.5 \pm 5.46$  ml/min/kg ( $p < 0.001$ ), and Roufier index improved from  $11.1 \pm 5.13$  to  $8.6 \pm 3.5$  relative units ( $p < 0.001$ ). Indices of functional capacity improved more in the first half of the course.

Some authors (Trinkūnas, 2009) suggest that physical fitness is better of persons called to the Army who are from villages, and not from the cities, but during BMT course persons improve their physical fitness more.

Testing of adapted military physical fitness at the end of the course showed (Figure 5) that the level of adapted military physical fitness of service people was lower compared to the standard requirements. As many as 53% of subjects failed in grenade throw test, 38.8% – in military self-defence, 10.5 % did not overcome obstacle course, and 17.2% failed in overcoming obstacles in water.

The performance of adapted military physical fitness tasks requires learning new complex movements and psychological stability in performing them (Skrebė, 2001). The formation and consolidation of technical skills require more time. The performance of adapted military physical fitness tasks is greatly affected by psychological stress due to difficult conditions of performance (Schafer, 1992; Cox, 1994). Psychological tension is expressed in inability to control one's actions (Masiulis, 2006). We suppose that due to those factors the results of adapted military physical fitness of service people were worse compared to the results of their general physical fitness.

At the end of the course the results of adapted military physical fitness of service people were worse compared to the results of their general

physical fitness. Some persons failed in achieving the standards of adapted military physical fitness.

## CONCLUSIONS AND PERSPECTIVES

The programme of general physical training was effective, but more attention should be paid to the improvement of adapted military physical fitness programme aiming at better results.

During the basic military training course physical fitness of candidates improved and at the end of the course it reached the normative level of physical fitness. The majority of would be soldiers are still unable to meet some of the normative requirements of the applied military physical training.

## REFERENCES

- Cox, R. H. (1994). *Sport Psychology. Concepts and Applications*. Dubuque: Brown & Benchmark.
- Čepulėnas, A., Klenauskas, S. (2002). Change of soldiers physical preparedness during service period. *Kultura fizyczna w wojsku w dobie przemiar*. Pod redakcją M. Sokołowskiego (pp. 23–27). Wydawnictwo Wyższej Szkoły oficerskiej im. Stefana Czarnieckiego. Poznań.
- Dobosz, J., Świercz, M. (2011). Physical fitness of soldiers from land forces units in 2009 and 2010 years. *In A Diagnosis of Physical Fitness in the Contemporary Army* (pp. 39–61). Warszawa: Polish Scientific physical education association section of physical education in the army.
- Górski, P. (2007). Compensatory training programs for regular cadre of the Polish army. In M. Sokołowski (Ed.), *Biosocial Effects of Military Service as a Basis for Further Improvement of Future Physical Education and Sports Programmes* (pp. 277–284). Poznań Akademia Wychowania fizycznego im. Piaseckiego w Poznaniu.
- Greičius, R., Tutkus, E., Skrebė, B., Kočiubaitis, V. (1998). *Lietuvos kariuomenės karių fizinis rengimas* [CD-ROM]. Vilnius.
- Ivaškienė, V. (2003). The development of physical preparedness of soldiers. In M. Sokołowski (Ed.), *Biospoleczne aspekty kultury fizycznej w wojsku* (pp. 114–121). Poznań: AWF.
- Karių fizinio rengimo metodinės rekomendacijos*. (2003). Parengė R. Greičius, E. Tutkus, V. Kočiubaitis. Kaunas: Karo medicinos tarnyba.
- Lietuvos gynybos politikos baltoji knyga*. (2002). Vilnius: Lietuvos Respublikos krašto apsaugos ministerija.
- Masiulis, N. (2006). Fizinio aktyvumo poveikis stresui, nerimui ir depresijai mažinti. Šiuolaikinių technologijų analizė. A. Skurvydas ir kt., *Fizinis aktyvumas ir sveikata* (pp. 99–116). Kaunas: Lietuvos kūno kultūros akademija.
- Radžiukynas, D. (1999). *Lietuvos karo akademijos kariūnų fizinis ugdymas pirmais studijų metais: daktaro disertacija*. Vilnius: Vilniaus pedagoginis universitetas.
- Schafer, W. (1992). *Stress Management for Wellness*. New York: Harcourt Brace Jovanovich.
- Skrebė, B. (2000). *Karių fizinis rengimas*. Vilnius.
- Skrebė, B. (2001). *Kliūčių ruožo įveikimo metodika*. Vilnius.
- Sokolowski, M. (2002). Wychowanie fizyczne i sport w procesie przygotowania Zawodowego w wojsku. M. Sokolowski (Ed.), *Kultura fizyczna w wojsku w dobie przemian* (pp. 324–328). Wydawnictwo Wyższej Szkoły Oficerskiej im. Stefana Czarnieckiego. Poznań.
- Trinkūnas, E. (2009). Skirtingo šaukimo karių fizinio pasirengimo kaita bazinio kurso metu. *Sportinį darbingumą lemiantys veiksniai (II): mokslinių straipsnių rinkinys* (el. versija) (pp. 164–173). Kaunas: Lietuvos kūno kultūros akademija.
- Vilkas, A., Kepežėnas, A., Radžiukynas, D. (1994). Lietuvos kariuomenės karių, pašauktų 1993 m. pavasarį, fizinio išsivystymo, fizinio parengimo ir organizmo funkcinių galimybių tyrimo duomenys. *Įvairaus amžiaus gyventojų fizinio ugdymo ir sveikatos problemos* (pp. 119–122). Vilnius.
- Witkowski, K., Stefaniak, T., Majsnerowski, M. (2007). Physical fitness of soldiers in the regular or professional military service in the NATO response task force. In M. Sokolowski (Ed.), *Biosocial Effects of Military Service as a Basis for Further Improvement of Future Physical Education and Sports Programmes* (pp. 145–153). Poznań Akademia Wychowania fizycznego im. Piaseckiego w Poznaniu.

# KANDIDATŲ Į LIETUVOS KARIUOMENĖS PROFESINĘ KARO TARNYBĄ FIZINIS RENGIMAS

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## SANTRAUKA

*Tyrimo pagrindimas ir hipotezė.* Lietuvos kariuomenėje vykdomi baziniai kariniai mokymai (BKM), kurių tikslas parengti profesinei karo tarnybai karius, gebančius atlikti nustatytas individualias užduotis ir įgyti pagrindinį karinį parengtumą. Trūksta mokslinių tyrimų, nagrinėjančių bazinių karinių mokymų fizinio rengimo programos vykdymo poveikį karių fizinio pajėgumo kaitai. Keliami hipotezė, kad per bazinius karinius mokymus būsimųjų karių fizinis pajėgumas gerėja.

*Tikslas* – išanalizuoti BKM fizinio karių rengimo programos struktūrą ir turinį bei nustatyti jos vykdymo poveikį būsimųjų karių fizinio pajėgumo kaitai.

*Metodai:* literatūros šaltinių studija, bazinių karinių mokymų fizinio rengimo programos analizė, fizinio parengtumo testavimas.

*Rezultatai.* Per pirmą testavimą tik 26,8% būsimųjų karių įvykdė bendrojo fizinio parengtumo kompleksinio testo normatyvą, o per antrą šį normatyvą įvykdė 89,5%. Per mokymų laikotarpį pagerėjo ( $p < 0,001$ ) maksimalaus deguonies suvartojimo ir Ruffjė indekso rodikliai. Fizinio parengtumo ir funkcinio pajėgumo rodiklių pagerėjimas buvo didesnis per pirmą mokymų pusę. Bazinių karinių mokymų pabaigoje kursantų taikomojo karinio fizinio parengtumo rezultatai buvo prastesni negu bendrojo fizinio parengtumo.

*Aptarimas ir išvados.* Bendrojo fizinio rengimo programa buvo veiksminga, tačiau reikėtų atkreipti dėmesį į karinio taikomojo fizinio rengimo programos tobulinimą siekiant geresnių rezultatų.

Per bazinius karinius mokymus būsimųjų karių fizinis parengtumas ir funkcinis pajėgumas pagerėjo ir jie pasiekė kursų pabaigai nustatytą fizinio parengtumo normatyvinį lygį.

**Raktažodžiai:** fizinis parengtumas, taikomasis karinis fizinis parengtumas, baziniai kariniai mokymai, testavimas.

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