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TOPORKOV A.
S. Kuznets Kharkiv National University of Economics

PHYSICAL TRAINING OF 30-40 YEARS OLD TOURISTS SKIERS TO SKI SPORTS HIKING

Abstract. ***Purpose:*** *Compare the test results obtained at different stages of physical training of tourists skiers, immediately after passing of the ski sports hiking of the third category of complexity and 14 days after hiking. Determine the effectiveness of the designed program to improve the physical readiness of 30-40 years old tourists skiers.* ***Material and Methods:*** *14 people aged 30 to 40 years old who have a different experience in water, hiking and mountain as well as ski-sport hiking took part in research. Analysis of scientific and methodical literature, pedagogical observations, pedagogical experiment, methods of mathematical statistics is used.* ***Results:*** *The test results of 30-40 years old tourists skiers which are the participants in the experimental group received at different stages of preparation and preparatory period and the results after passing ski sports hiking of the third category of complexity are processed. Their comparative analysis is held.* ***Conclusions:*** *It was found that the developed training program can effectively influence the physical readiness of tourists skiers, as well as all functions and systems that contribute to the successful passage of ski sports categorized hike.*

Keywords: *sports tourism, sports hiking, physical training, training program, experiment, exercises, results, testing, index.*

Introduction. Sports tourism is an independent kind of sports belonging to the Unified Sports Classification and represents the most balanced kind of sports and wellness of a man activity. [3]. Despite the fact that sports tourism every year is becoming more and more popular, and thousands of new fans join the tourist movement, none of its kinds is not included in the Olympic program, and is not a professional sport. Of course, the competition is held for certain types of sports tourism in the various Championships, Cups, meetings, and training of athletes is engaged in leisure-tourist centers, clubs, station, tourist club of universities, enterprises and organizations. But at the same time, sports tourism is still developing on public principles, thanks to the enthusiasm of the tourists themselves. [13].

Sport hiking is a component, the most active and dynamic part of the tourist activity, combining on a voluntary basis fans of hiking, skiing, mountain, water, bike, car, motorcycle, speleohiking and fans to travel on gasketed ships of different classification [3, 4].

It follows that feature of sports tourism is, first of all, that hiking often goes in the extreme conditions of the natural environment where the group works in offline mode, providing optimal conditions for the route.

According to many authors [1, 2, 5, 12, 14] you must be physically and mentally prepared as well, you have a wide range of special knowledge of technique and tactic to overcome obstacles based on human physiology to pass the "thread" of the route.

Physical training is the main content of training in any kind of sports tourism and in skiing in particular, is inextricably connected with strengthening and increasing overall level of functional condition and health promotion of the tourist-skier. The high level of versatile physical training of all members of the group is one of the most important guarantees of successful going of the whole hiking.

Physical training tourist-skier aims to develop basic impellent qualities (endurance, strength, speed, agility) needed in ski hike. Physical training tourist-skier is divided into general and special. *General and special physical training* is becoming the leading kinds, where means of general physical training of tourists skiers are General developing exercises which are divided into two subgroups: a) general developmental preparations; b) exercises from other kinds of sports [6, 8, 11]. These exercises are mainly used in the snow-free season for the development of the physical qualities needed to tourist-skier. Exercises are chosen so that there was the greatest positive transfer of physical qualities from used kind to the main one – ski tourism. So, cross-country is used for the development of cross-endurance; long work with rubber shock absorbers is used for the development of strength endurance; sports games (basketball, handball, football) are used to develop agility, coordination and speed etc. [7, 9, 10, 15].

Special exercises are also divided into two subgroups: a) specially-preparatory; b) specially-supplied. Specially-preparatory exercises are used to develop the physical and willed qualities in relation to the ski tourism. Specially-supplied are used in order to study technique elements of ways of ski-movements.

Connection with academic programs, plans, themes. Studies carried out in accordance with the thematic plan of research of the Department of winter sports, cycling and tourism of Kharkov State Academy of Physical Culture (KSAPC) of the Ministry of Education and Science of Ukraine for 2013-17 years on the topic «Fundamentals of sport tourism in the recreational activities of different aged groups in Ukraine» (State registration number 0114U000366).

Purpose of research: Determine the effectiveness of designed program to improve the physical preparedness of 30-40 years old tourists skiers.

Tasks of research: 1) Develop a program of physical training of 30-40 years old tourists skiers in order to successfully passage of the ski-sport hiking of III-IV categories of complexity. 2) Experimentally test the effectiveness of the proposed program of physical training of 30-40 years old tourists skiers.

Methods of research: analysis of scientific and methodical literature, pedagogical observations, pedagogical experiment, methods of mathematical statistics.

Organization of research: Research was conducted in May – January 2012 – 2013 years. Experimental group consisted of 14 people aged 30 to 40 years old who have different experience of water trips, hiking and mountain hiking. Over the years, all members of the group engaged in various kinds of sports, many of them have

sports categories. At the beginning of the experiment, all members of the group had different experiences of ski sports tours.

Due to the fact that tourists are not professional athletes, and as a rule goes in for several kinds of sports tourism, many years incessant training program cannot be. Accordingly, the period of preparation for categorical ski hiking was limited in time.

Results of research: Physical training includes exercises for the development of general endurance (hiking, cross-hiking, cross-country races, moving on roller skis, ski movement), as well as exercises to develop strength qualities (exercises at the gym, lifting weights, on the crossbar, parallel bars, etc.). In hours load was distributed as follows (tab. 1):

Table 1

Load distribution of physical training of tourists

№	Months	Hours	№	Months	Hours
1	May	23	6	October	35
2	June	23	7	November	35
3	July	25	8	December	35
4	August	27	9	January	30
5	September	30	10	sum	263

At the stage of the main experiment tests to assess the level of the development of physical qualities and functional conditions, which were used in the preparation stages were chosen. In May, August and January, the research of motive qualities and functional conditions of 30-40 years old tourists skiers' organism was conducted (tab. 2).

Received data for pedagogical research during the preparation period have shown that the result of a 12-minutes' run was increased during the experiments and it reached the maximum values in January. Overcoming of the distance in 12 minutes achieved the maximum values in January and was 1852.0 m, which was 185.0 m more in relation to indicators of May ($t = 7,31$; $p < 0.001$), while at the same time the distance of running increased to 84.0 m ($t = 4,22$; $p < 0.001$) and after the first stage of the research (May-August).

The number of jumping out within 30 sec. with 10 kg gradually increased, and in January it was 16.2 times, which was 2.3 times more ($t = 2,39$; $p < 0.05$) than in May.

The results of tests, reflecting the general physical preparedness of 30-40 years old tourists skiers had higher results at the end of preparation period and increased in the number of the barbell squat with 20 kg to 6.6 times ($t = 2,26$; $t = 6,36$; $p < 0,05$-001), in barbell squat with 50 kg to 5.5 times more ($t = 2,99$; $p < 0.01$).

The number of exercise flexion and extension arms with clap lying on the floor in August increased to 4.5 times ($t = 3,04$; $p < 0.01$), while pulling up on the crossbar with a weight of 5 kg 2.3 times more ($t = 2,59$; $p < 0.05$), in January the data of indicators in relation to the original data accordingly increased to 6.6 times more ($t = 4,65$; $p < 0.001$) and 6 times more ($t = 4,25$; $p < 0.001$).

Table 2

Dynamics of indicators of 30-40 years old tourists skiers' motive qualities in preparation period (n = 14)

№	Indicators	30-40 years old		
		$\overline{X}_1 \pm m_1$	$\overline{X}_2 \pm m_2$	$\overline{X}_3 \pm m_3$
		May	August	January
1	2	3	4	5
1.	12-minutes' run, m	1667,0±16,62	1751,0±10,95	1852,0±19,08
2.	Jumping out within 30 sec. with 10 kg, numbers of times	13,9±0,86	15,2±0,48	16,2±0,48
3.	Barbell squat with 20 kg, numbers of times	26,4±0,83	28,8±0,63	33,0±0,62
4.	Barbell squat with 50 kg, numbers of times	4,8±0,60	6,5±0,54	10,3±1,74
5.	Flexion and extension arms with clap lying on the floor, numbers of times	33,9±1,18	38,4±0,85	40,5±0,77
6.	Pulling up on the crossbar with a weight of 5 kg, numbers of times	7,1±0,72	9,4±0,53	13,1±1,23
7.	Lifting legs hanging on the wall bars with a weight of 5 kg, numbers of times	23,8±1,06	26,8±1,00	29,2±0,78

Power indicators of abdominal muscles have also increased, and the maximum values in lifting legs hanging on the wall bars with a weight of 5 kg reached in January, increased to 5.4 times ($t = 2,94$; $p < 0.05$) relative to baseline values.

The analysis of the results of the functional conditions of 30 – 40 years old tourists skiers in the preparation period showed there were no statistically significant changes in blood pressure ($p > 0.05$) (tab. 3).

Table 3

Dynamics of indicators of 30-40 years old tourists skiers' functional conditions in preparation period (n=14)

№	**Indicators**	**30-40 years old**		
		$\overline{X}_1 \pm m_1$	$\overline{X}_2 \pm m_2$	$\overline{X}_3 \pm m_3$
		May	**August**	**January**
1.	BP systolic, mm Hg	119,7±1,83	114,7±2,29	113,5±2,69
2.	BP diastolic, mm Hg	68,0±2,46	63,0±2,31	63,2±1,86
3.	Frequency of heart rate, bpm^{-1}	86,2±1,09	81,8±0,88	80,3±1,02
4.	ANAMC, con. units	64,7±2,42	68,7±0,92	73,4±1,00
5.	AMC, con. units.	158,0±2,00	164,0±1,23	171,9±1,78
6.	MOU, l	4,6±0,13	5,2±0,09	5,3±0,09
7.	VCL, ml	4620,0±55,38	4900,0±53,85	5050,0±69,23
8.	Quetelet's index, $kg \cdot cm^2$	23,4±0,91	21,5±0,69	19,2±1,03
9.	Robinson's index, con. units	101,9±1,35	93,1±1,09	91,2±1,03

At the same time, systolic blood pressure reduced to 5 mm Hg ($t = 1.70$; $p > 0.05$) in August and to 6.2 mm Hg ($t = 1,91$; $p > 0.05$) in January, and diastolic to 5 mm Hg ($t = 1,48$; $p > 0.05$) and 5.2 mm Hg ($t = 1,55$; $p > 0.05$) relatively to May.

The results of the heart rates are operational indicators of the functional conditions of the cardiovascular system of 30-40 years old tourists skiers, which allowed to correct exercises during the training in the preparation period.

Indicators of frequency of the heart rates decreased with a set of training and statistically significant changed in August to 4.4 beats per minute^{-1} ($t = 3,16$; $p < 0.01$) and in December to 5.9 beats per minute^{-1} ($t = 3,98$; $p < 0.01$) relatively to indicators of May.

Anaerobic and aerobic abilities of 30-40 years old tourists skiers changed during the training in the preparation period. Indicators of anaerobic metabolic capacitance significantly increased to 8.7 con. units in January ($t = 3,41$; $p < 0.01$) relatively to the original indicators for the period from August to January, the difference was 4.7 con. units ($t = 3,80$; $p < 0.01$).

Aerobic indicators increased in August to 6 con. units ($t = 2.43$; $p < 0.05$) and in January to 7.9 con. units ($t = 3,41$; $p < 0.01$) relatively to the data of August.

The indicators of maximal oxygen uptake and vital capacity of lungs of 30-40 years old tourists skiers also statistically significant changed due to the increase in August ($t = 3,70$; $p < 0.01$), while for the period from August to January, the changes are not significant ($p > 0.05$).

At the beginning of the researches, the weight and height Quetelet's index corresponded to the overweight – 23.4 kg/cm^2 while in the preparation period in August it decreased to 21.5 kg/cm^2 ($t = 1,63$; $p < 0.05$), and in December to 19.2 kg/cm^2 ($t = 3,02$; $p < 0.01$).

At the same time the indicators of Robinson index of 30-40 years old tourists skiers in May corresponded to the level below average physical development and it was 101.9 con. units ($t = 5,05$; $p < 0.001$). Later indicators fell to 93.1 con. units ($p > 0.05$), and corresponded to the average level.

Thus, indicators of physical qualities and functional conditions of 30-40 years old tourists skiers varied mainly under the influence of training and competitive pressures used in the stages of the preparation period.

In order to determine the effect of physical activity as a result of ski hike of the III category of complexity analysis of the results was carried out immediately after the hike and 14 days later in order to the original data before hiking (tab. 4).

The results of the testing of 30-40 years old tourists skiers after the hike of the III category of complexity significantly deteriorated: indicators of 12 minutes run after the end of hike decreased to 297.0 m ($t = 9.48$; $p < 0.001$), 14 days later indicators returned to the original data, even with a slight increase (1,889.0 m), which indicates the presence of supercompensation phase.

The number of jumping out within 30 sec. with 10 kg has statistically decreased after the hike to 5.4 times ($t = 4,95$; $p < 0.001$) in relation to testing before the hike, while after 14 days rest indicators returned to the original ($p > 0.05$).

The results in the number of the barbell squat with 20 kg statistically significant decreased after a hike to 10.2 times ($t = 11.88$; $p < 0.001$) relatively to the

results before the hike, and 14 days later they increased to 9.3 times ($t = 15.99$; $p < 0.001$) relatively to the results after the hike.

Table 4

Dynamics of indicators of 30-40 years old tourists skiers' motive qualities before and after the hike (n=14)

№	Indicators	30-40 years old		
		$\overline{X}_1 \pm m_1$	$\overline{X}_2 \pm m_2$	$\overline{X}_3 \pm m_3$
		Before hike	**After hike**	**14 days later**
1.	12-minutes' run, m	1852,0±19,08	1555,0±21,54	1889,0±18,46
2.	Jumping out within 30 sec. with 10 kg, numbers of times	16,2±0,48	10,8±0,72	17,5±1,15
3.	Barbell squat with 20 kg, numbers of times	33,0±0,62	22,8±0,60	42,3±1,06
4.	Barbell squat with 50 kg, numbers of times	10,3±1,74	3,8±0,60	12,9±0,95
5.	Flexion and extension arms with clap lying on the floor, numbers of times	40,5±0,77	23,4±1,09	43,6±1,11
6.	Pulling up on the crossbar with a weight of 5 kg, numbers of times	13,1±1,23	4,6±0,68	13,5±0,92
7.	Lifting legs hanging on the wall bars with a weight of 5 kg, numbers of times	29,2±0,78	16,1±0,72	32,3±0,85

Before the hike the results of barbell squat with 50 kg was 10.3 times, and immediately after the hike – 3.8 times ($p<0.001$). 14 days later the results minimally exceeded January figures of 12.9 times.

The indicators of flexion and extension arms with a clap lying on the floor, pulling up on the crossbar and lifting the legs on the wall bars with 5 kg of 30-40 years old tourists skiers statistically significant changed after the hike ($p < 0.01$), at the same time after 14 days of active rest, they returned to the original data.

The functional condition of 30-40 years old tourists skiers changed as well during the research under the influence of physical activity.

The oppression of functions and systems of the body, which affected the decrease in the studied parameters were after the hike.

After the hike diastolic blood pressure was increased to 14.8 mm Hg ($t = 3.83$; $p < 0.01$) and 14 days later the frequency of heart rates was increased to 4.7 beats per min^{-1} ($t = 3.94$; $p < 0.01$) relatively to the results before hiking (tab. 5).

While to 6.9 beats per min^{-1} ($t = 3.80$; $p < 0.01$) decreased heart rate parameters obtained 14 days later and to 16 mm Hg ($t = 2.14$; $p < 0.05$) diastolic blood pressure decreased according to the results after the hike.

The indicators of anaerobic and aerobic metabolic capacity decreased after the hike to 12.1 con. units ($t = 8,15$; $p < 0.001$) and 15.4 con. units ($t = 7,40$; $p < 0.001$),

accordingly, at the same time after active rest (14 days) the results returned to the original data, and in AMC was higher results than in prepared period.

Table 5

Dynamics of indicators of 30-40 years old tourists skiers' functional conditions after the hike (n=14)

№	Indicators	30-40 years old		
		$\overline{X}_1 \pm m_1$	$\overline{X}_2 \pm m_2$	$\overline{X}_3 \pm m_3$
		Before hike	After hike	14 days later
1.	BP systolic, mm Hg	113,5±2,72	117,2±3,68	112,5±2,69
2.	BP diastolic, mm Hg	63,2±1,86	78,0±3,38	62,0±2,46
3.	Frequency of heart rate, bpm^{-1}	80,3±1,02	82,5±3,15	75,6±0,60
4.	ANAMC, con. units	73,4±0,84	61,3±1,23	75,1±1,26
5.	AMC, con. units	171,9±1,78	156,5±1,08	178,5±1,00
6.	MOU, l	5,3±0,12	5,0±0,05	5,5±0,11
7.	VCL, ml	5050,0±69,23	5020,0±23,85	5440,0±83,08
8.	Quetelet's index, $kg \cdot cm^2$	19,2±1,03	17,8±0,60	21,2±0,60
9.	Robinson's index, con. units	91,2±1,03	96,1±1,05	82,2±1,15

Ski multi-day hike slightly affected the indicators of maximal oxygen uptake and vital capacity of lungs, which decreased ($p > 0.05$) due to the need for more long-term process to change these indicators.

After the hike of the third category of complexity the tourists skiers' weight decreased to 1.4 kg/cm^2 ($t = 1.20$; $p > 0.05$) compared to the period before the hike and increased to 3.4 kg/cm^2 ($t = 8, 90$; $p < 0.001$) 14 days later, which confirms the weight and height Quetelet's index.

Also, 14 days later after the hike the indicators of Robinson's index of 30-40 years old tourists skiers decreased to 13.9 con. units ($t = 8.90$; $p < 0.001$).

So, it was found that ski hiking of the III category of complexity oppressed the functions of tourists skiers' organism systems ensuring the participation in hikes, thus special physical and other training in preparation period is necessary.

Conclusions:

1. The comparative analysis of the results 30-40 years old tourists skiers of the experimental group received at different stages of preparation period and the results after passing ski hiking of the III category of complexity is held.

2. It was found that the developed training program for 30-40 years old tourists skiers in preparation period could effectively influence the physical preparedness, as well as all functions and systems of the organism that contributed to the successful passage of the ski sports categorized hike.

3. The effectiveness of proposed and developed training program of 30-40 years old tourists skiers to ski hiking of the III-IV category of complexity was proved in practice (ski hiking of the III category of complexity). The route was covered

completely. The timetable is maintained. All the trip participants coped with their duties and were able to overcome the physical loads on the route.

Further research will focus on the development of physical training programs in preparation period in for water, cycling and mountaineering.

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Alexander Toporkov: *PhD (Physical Education and Sport); Semen Kuznets Kharkov National University of Economics: Lenin Avenue 9a, Kharkov, 61166, Ukraine.*

ORCID: 0000-0002-8949-9893

E-mail: a.toporkov@meta.ua