 DOI: 10.37393/ICASS2022/141 429 - 435

EXPERIMENTAL METHODOLOGY FOR EVALUATION OF THE PRELIMINARY TRAINING OF MOUNTAIN GUIDES

Alexander Shopov, Todor Todorov
National Sports Academy "Vassil Levski", Sofia, Bulgaria

ABSTRACT
Introduction. As the industry experts like to say: "The mountain guide is the guide at the "Museum of Nature". But what distinguishes these people who "do not stay anywhere longer than their enthusiasm"? The training of mountain guides is carried out in the Professional Education Center part of the National Agency for Vocational Education and Training. The training begins with an entrance exam, which assesses the preparation of candidates, and subsequently, the results are used to rank for the upcoming training. The purpose of our research is the development of an experimental methodology for evaluating the preliminary training of candidates for mountain guides. Methods. The research was held in 2022 at the Professional Education Center "Mountains and people". Our methods included several criteria: moving on a mountain route with a topographic map crossing terrain, a theoretical test, and an intervthese criteria formed an overall score with a maximum score of 20 points. We applied our method to 29 participants. Results: Our participants showed an average time of 4 h 38 min for moving on a mountain route with a topographic map and crossing terrain. These times corresponded with an average of 8.8 points in our evaluation method. The average score for the theoretical test was 3.3 points, and the average score for the interview was 3.8 points. The average overall score was 14.8 points, which we define as very informative for the selection of candidates for mountain guides. Conclusion. We recommend this assessment methodology to National Agency for Vocational Education and Training. It is likely to be implemented in the examination requirements of all Professional Education Centers in the country.

Keywords: *mountain guide, topographic map, difficult terrain*

INTRODUCTION

A mountain guide is a specialist who loves and knows mountains, can move and reside in them, and who is in charge of taking a person or a group to the mountain against some payment to show them the best of its nature and his knowledge (Popyordanov et al., 2008).

A mountain guide is a person registered in the National Tourist Register (NTR) according to article 166, paragraph 1 of The Law of Tourism (WT) for practicing the occupation of "Mountain guide", who takes and guides tourists on the mountain and among nature, and along the chosen route takes care of the tourists' safety and provides them with information about the natural-geographic peculiarities of the route and its sights (ORDINANCE N3 of 7 March 2016).

The job of a "Mountain guide" can be done by a person who meets the requirements of article 12, paragraph 1, or paragraph 2. The level enables a mountain guide to take tourists and groups to the mountains in the country on foot or in snow conditions - with traction devices along different routes without using alpine equipment.

The qualification along article 1 can be acquired by every able Bulgarian or EU citizen, or a citizen of a country involved in the European Economic Area Agreement (EEA), or the Confederation of Switzerland who has successfully undertaken the respective training (ORDINANCE N3 from 7 March 2016).

The acquired professional qualification is attested with a certificate for a professional qualification issued according to ORDINANCE N4 from 2003 for the documents in the national education system (announced in DV, issue 41 of 2003) by the schools according to article 9, paragraph 1, point 3 of Professional Training and Education Law, or by the licensed professional training centers registered in the Register of the professional training centers at the National Professional Training and Education Agency (NPTEA).

The training of the mountain guides is mainly provided by the Center of Professional Training (CPT) and starts with an entrance exam which evaluates the candidates' preparation. The results then serve as a classification for future education.

The aim of this research was to create an experimental methodology for evaluation of the candidates for mountain guides' preparation in a point form along a maximum of 20 degrees scale.

METHODOLOGY

The subject of the research was the possibilities and the process of integral diagnostics of competence and degree of readiness of candidates applying for training for the occupation "Mountain guide".

The object of the research was the quantitative and quality indicators characterizing physical condition, technical preparation, and knowledge about Bulgaria, as well as the gained experience and competencies of the candidates for mountain guides.

Research Methods

To evaluate the level of the candidates' preliminary preparation, we used complex methods including the following indicators: trekking a mountain route with a tourist topographic map, taking a test for conditioning and technical skills "Hard terrains", a test "Knowledge about Bulgaria", and an interview with the candidates.

1. Control and evaluation of the physical preparation and test "Hard terrains"

Trekking a mountain route with a topographic map – there are mid-stations along the route where the candidate's time is recorded. They get one point if they are within the allotted time or a maximum of three points from the control stations. If they finish the route within five hours, another three points are added to their score. If they finish past time, some points are deduced - 1 point for every ten minutes of overtime. From the test "Hard terrains", the candidates get from 0 to 4 points, or the total is a maximum of 10 points.

2. Control and evaluation of general and specific knowledge – test "Knowledge about Bulgaria": it is a written test for two hours. It consists of 88 multiple-choice questions, each with three answers. There is only one correct answer, which should be marked with „V" or „X". The questions are divided in the following way:

A. General knowledge – 15 questions

E.g., Which of the following sorts of grapes does not originate in Bulgaria?

- Broad leaved Melnik
- Gumza
- Otel.

B. Specific questions about Bulgaria's history – 14 questions

C. 30 questions about Bulgaria's geography; religion, Christianity – 15 questions; Bulgarian culture – 14 questions. On the basis of the correct answers, the candidates for mountain guides get from 1 to 6 points (Table 1). The results are announced in written form no later than three days after taking the exam.

Table 1. *Criteria for evaluation of the test "Knowledge about Bulgaria" according to the number of the correct answers*

6 points	5 points	4 points	3 points	2 points	1 point
80–88	70–79	60–69	50–59	40–49	30–39

The physical preparation test includes trekking a mountain route outlined on a topographic map (about 15 km, total ascend more than 1000m) for an allotted control time. The candidate's backpack should be 15% of his weight. *During the trekking, at a suitable spot with good visibility, the candidates do the test "Hard terrains".* It includes an outlined rocky-scree route (about 20m, up to 50m denivelation). During the trekking, the evaluators watch out for the candidates' staggering, supporting, sitting, and fallings. Two evaluators observe the allotted time (5 min), but the total control time remains unchanged.

The organization and diagnostics of the evaluation of the physical preparation and the test 'Hard terrains" are the following:

- ✓ When taking the test, the candidates should bring the necessary trekking equipment.
- ✓ The candidates are weighed (with scales), and the weight of their backpacks is determined.
- ✓ The backpack's content is reduced to the weight needed.
- ✓ An oral technical description of the route is made. Its physical parameters are explained –

linear distance, overall ascend, and control time for passing the whole route.

- ✓ Five minutes before the start, the candidates receive maps with an outlined route (Figure 1).

The experiment was held in April 2021, in Vitosha mountain, with a start-final at the parking lot of Dragalevski Monastery. The route was outlined on a tourist map with a scale of 1:25000 and horizontals every 10 m. The map was made especially for the case by "Iskar tour". The route length was 16,688 км with an overall ascend of 1210 m. there were three control stations – at Boyana lake, Kikish shelter, and at the first crossing of the route, where evaluators recorded the middle times (Figure 1). The middle control times were 1, 2:30, and 3:30 hours. The idea was that the candidates moved at a moderate pace and that the serious mistakes could not be compensated. The start was after a draw every 5 minutes, and the candidates were wearing numbers attached to their backpacks to be recognizable. Only the use of a compass was allowed (without GPS) and telescopic poles, if required.

3. An interview with the candidates for mountain guides

The aim is to determine the candidate's mountaineering experience and motivation. The candidates provide the committee with their CVs, including their mountain experience in the past three years, and they should expand on them during the interview. The maximum number of points they can get is 4.

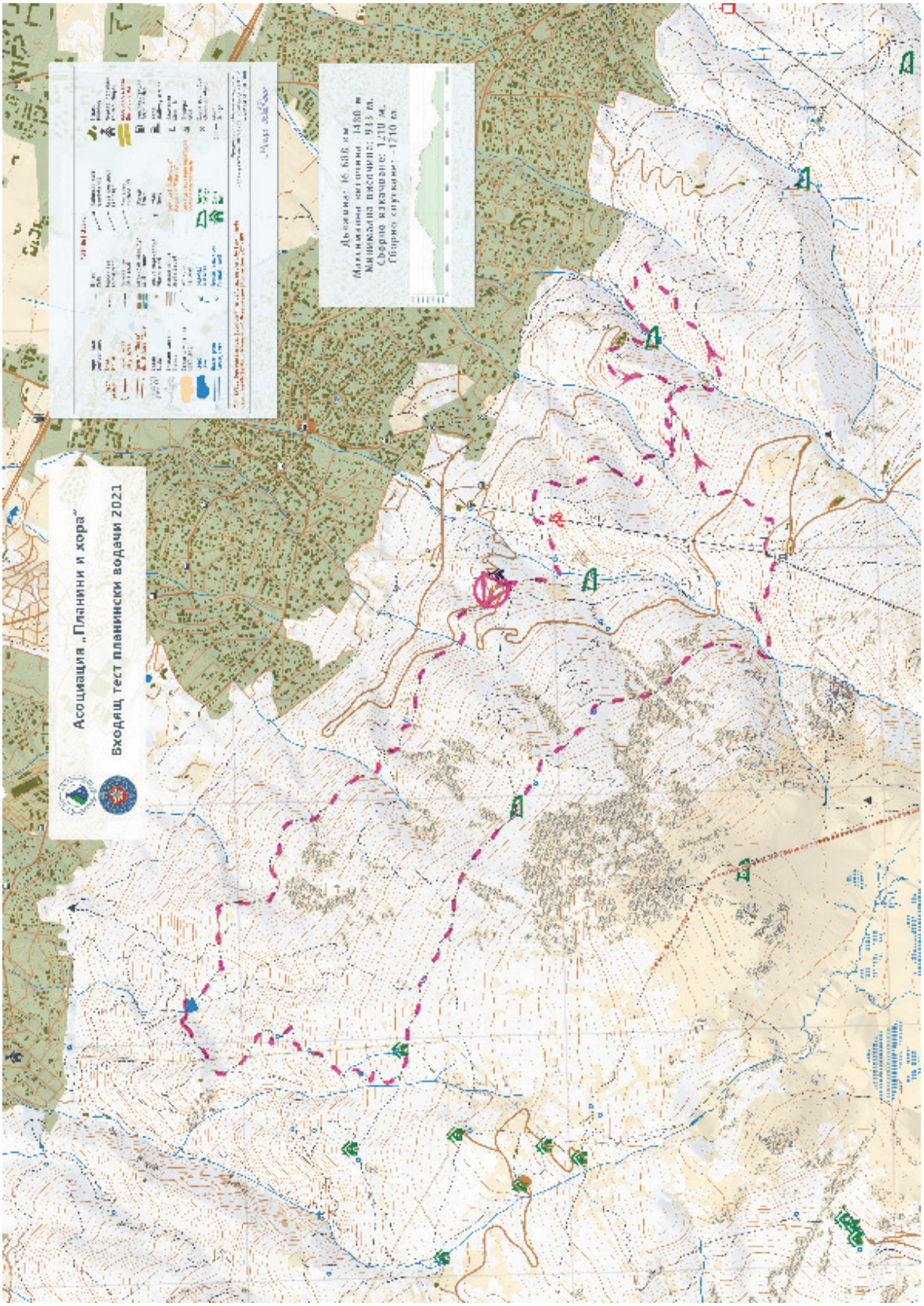

Figure 1. *Tourist map of Vitosha mountain with the route for control of the preparation*

Table 2. *Results from the tests for control of the preparation of the candidates for mountain guides*

	Participant		Control times (hour)					Trekking time to the stations				Responses	Number of points along the different criteria for evaluation								Result
№	Start N	Name	Start	st.1	st.2	st.3	Final	st.1	st.2	st.3	Total time	Test	st.1	st.2	st.3	Hard terrains	Final	Total	test	Interviews and CV	Number of points
1	234	M.N.	8:00	8:51	10:08	11:22	12:47	0:51	2:08	3:22	4:47	50	1	1	1	2	3	8	3	2	**13**
2	235	A.Z.	8:03	8:51	10:08	11:22	12:42	0:48	2:05	3:19	4:39	63	1	1	1	3	3	9	4	3	**16**
3	236	Z.D.	8:06	8:51	10:08	11:22	12:36	0:45	2:02	3:16	4:30	55	1	1	1	4	3	10	3	4	**17**
4	237	Z.P.	8:09	8:45	9:47	11:00	12:39	0:36	1:38	2:51	4:30	58	1	1	1	4	3	10	3	4	**17**
5	238	I.K.	8:12	8:53	10:07	11:22	12:43	0:41	1:55	3:10	4:31	64	1	1	1	3	3	9	4	3	**16**
6	239	V.K.	8:15	8:53	10:07	11:22	12:36	0:38	1:52	3:07	4:21	63	1	1	1	4	3	10	4	4	**18**
7	240	D.B.	8:18	9:02	10:16	11:22	12:47	0:44	1:58	3:04	4:29	61	1	1	1	2	3	8	4	3	**15**
8	241	D.D.	8:21	9:05	10:34	11:51	13:22	0:44	2:13	3:30	5:01	57	1	1	1	3	2	8	3	2	**13**
9	242	K.D.	8:24	9:02	10:08	11:22	12:39	0:38	1:44	2:58	4:15	45	1	1	1	3	3	9	2	2	**13**
10	243	I.P.	8:27	9:24	10:08	12:17	14:05	0:57	1:41	3:50	5:38	54	1	1		1		3	3	1	**7**
11	244	A.D.	8:30	9:19	10:46	11:54	13:32	0:49	2:16	3:24	5:02	64	1	1	1	3	2	8	4	3	**15**
12	245	I.M.	8:33	9:24	10:47	11:58	13:27	0:51	2:14	3:25	4:54	45	1	1	1	2	3	8	2	3	**13**
13	246	V.K.	8:36	9:24	10:47	11:58	13:22	0:48	2:11	3:22	4:46	49	1	1	1	4	3	10	2	3	**15**
14	247	E.N.	8:39	9:30	10:47	11:53	13:27	0:51	2:08	3:14	4:48	58	1	1	1	3	3	9	3	3	**15**
15	248	R.S.	8:42	9:29	10:46	11:53	13:37	0:47	2:04	3:11	4:55	68	1	1	1	4	3	10	4	2	**16**
16	249	D.G.	8:45	9:31	10:47	11:53	13:27	0:46	2:02	3:08	4:42	55	1	1	1	3	3	9	3	3	**15**
17	250	V.S.	8:48	9:33	10:39	11:58	13:21	0:45	1:51	3:10	4:33	50	1	1	1	4	3	10	3	4	**17**
18	251	A.D.	8:51	9:35	10:46	11:58	13:21	0:44	1:55	3:07	4:30	59	1	1	1	4	3	10	3	4	**17**
19	252	O.Sh.	8:54	9:37	11:02	12:17	13:46	0:43	2:08	3:23	4:52	73	1	1	1	4	3	10	5	3	**18**
20	253	I.P.	8:57	9:35	10:38	11:27	12:34	0:38	1:41	2:30	3:37	50	1	1	1	3	3	9	3	2	**14**
21	254	B.S.	9:00	9:47	11:00	12:01	13:26	0:47	2:00	3:01	4:26	62	1	1	1	1	3	7	4	3	**14**
22	255	Ts.P.	9:03	9:48	11:02	12:17	13:47	0:45	1:59	3:14	4:44	48	1	1	1	3	3	9	2	2	**14**
23	256	B.K.	9:06	9:58	11:02	12:17	13:47	0:52	1:56	3:11	4:41	58	1	1	1	2	3	8	3	3	**14**
24	257	R.H.	9:09	9:58	11:18	12:27	13:52	0:49	2:09	3:18	4:43	58	1	1	1	2	3	8	3	1	**12**
25	258	Y.N.	9:12	9:58	11:19	12:27	13:51	0:46	2:07	3:15	4:39	41	1	1	1	4	3	10	2	3	**14**
26	259	P.A.	9:15	9:58	11:08	12:17	13:47	0:43	1:53	3:02	4:32	61	1	1	1	3	3	9	4	2	**13**
27	260	I.A.	9:18	10:01	11:23	12:27	13:52	0:43	2:05	3:09	4:34	59	1	1	1	2	3	8	3	2	**13**
28	50	M.G.	9:21	10:01	11:23	12:27	13:46	0:40	2:02	3:06	4:25	63	1	1	1	3	3	9	4	3	**16**
29	51	V.G.	9:24	10:20	11:30	12:27	13:46	0:56	2:06	3:03	4:22	59	1	1	1	4	3	10	3	3	**16**

Table 3. *Distribution of the candidates for mountain guides according to the points on the entrance test*

18 points	17 points	16 points	15 points	14 points	13 points	12 points	7 points
2	4	5	5	5	6	1	1

4. Math-statistical methods

To make the results objective and mainly to create a table for complex evaluation of the candidates for training, we processed the individual achievements (registered in points) with a variation analysis and the method of sigma digressions of Martin in a seven-degree scale.

Table 4. *Distribution of the percentage values and the theoretical evaluation margins*

MARK	P (%)	MARGINS	
VERY LOW	2,27	BELOW Av–2 S	
LOW	13,59	FROM Av–2 S	TO Av–1 S
BELOW AVERAGE	14,99	FROM Av–1 S	TO Av–0,5 S
AVERAGE	38,29	FROM Av–0,5 S	TO Av+0,5 S
ABOVE AVERAGE	14,99	FROM Av+0,5 S	TO Av+1 S
HIGH	13,59	FROM Av+1 S	TO Av+2 S
VERY HIGH	2,27	ABOVE Av+2 S	

RESULTS AND DISCUSSION

The obtained statistical values characterizing the variable *result – number of points* (the last column in Table 2) are the following:

Table 5. *Table of variances for statistical values characterizing the variable (number of points)*

STATISTICAL VALUES
n = 29
Av = 14,69
S = 2,22
1s = 2,22
2s =2,22.2 = 4,44
0,5s =2,22/2 = 1,11
V = 15,1%

Operating with the mean value of the evaluated indicator (Av) and the standard deviation (S), we created the table to evaluate the integral preparation of the candidates and the respective margins.

Table 6. *Evaluation of the integral preparation of the candidates and the respective margins*

MARK	P (%)	MARGINS	
VERY LOW	2,27	BELOW 10,25 points	
LOW	13,59	FROM 10,25	TO 12,47 points
BELOW AVERAGE	14,99	FROM 12,48	TO 13,58 points
AVERAGE	38,29	FROM 13,59	TO 15,8 points
ABOVE AVERAGE	14,99	FROM 15,81	TO 16,91 points
HIGH	13,59	FROM 16,92	TO 19,13 points
VERY HIGH	2,27	ABOVE 19,13 points	

DISCUSSION

Table 5 shows how the number of points varies in the different zones. Having particular results, the committee should start ranging the candidates for mountain guides from the ones who fall in the zone of "very high mark" to the next ones in the standing. Provided a training course quota exists, the committee can freely and objectively announce the classification. If there are other conditions, the committee should carefully select the candidates who fall under the "average mark".

Another conclusion we can formulate in this case is that the group of candidates was relatively homogeneous – the variety coefficient was 15,1% (leaning to low). This is very important for the future training process at Professional Training Centers, where there is a group organization.

CONCLUSION

We recommend that NPTEA and all professional education centers use this methodology to evaluate the preliminary preparation and admittance of the candidates for mountain guides.

Analyzing the route outlined on the topographic map, we recommend that it be with the same start and final. Most rationally, its shape should be with crossing (eight) because this will enable the change of direction of the movement (Figure 1).

The tourist map on which the route for the entrance test is outlined is recommended not to include names of huts, shelters, and other captions.

REFERENCES

Brogli, Ya. (1979). *Sportna statistika.* M i F.S. // Брогли, Я. (1979). Спортна статистика. М и Ф.С.

NAREDBA № 3 ot 7 mart 2016 g. za obrazovanieto, prakticheskata podgotovka i profesionalnata kvalifikatsia, neobhodimi za pridobivane na pravosposobnost za uprazhnyavane na profesiyata „Planinski vodach".

Popyordanov, L. et al. (2008). *Planinite otblizo*. Odiseya-IN OOD, S.

Turisticheska karta na Vitosha M1:25000 "Iskartour". S. (2020).

Corresponding author:
Alexander Shopov
Tourism, Alpinism, Orienteering Department
National Sports Academy "Vassil Levski"
Sofia, Bulgaria
E-mail: sasho_sh@abv.bg

National Sports Academy "Vassil Levski"
Sofia, Bulgaria

International Scientific Congress "Applied Sports Sciences"

2–3 December 2022

PROCEEDING BOOK

Volume 2

WWW.ICASS2022.COM

INTERNATIONAL SCIENTIFIC CONGRESS "APPLIED SPORTS SCIENCES"

2 - 3 December 2022
Sofia, Bulgaria

PROCEEDING BOOK

VOLUME 2

EDITORS OF THE PROCEEDING BOOK:

Prof. Tatiana Iancheva, DSc

Assoc. Prof. Stefka Djobova, PhD

Assist. Prof. Milena Kuleva, PhD

SCIENTIFIC COMMITTEE

Members of the Editorial board from National Sports Academy „Vassil Levski"	International members of the Scientific committee
Prof. Nikolay Izov	Prof. Alexander Garcia Mas, PhD
Prof. Ivan Maznev	Prof. Juris Grants, PhD
Prof. Apostol Slavchev	Prof. Branislav Antala, PhD
Prof. Krasimir Petkov	Prof. Marta Bobo-Arce, PhD
Prof. Ognyan Miladinov	Prof. Milovan Bratic, PhD
Prof. Daniela Lyubenova	Prof. Lence Aleksovska Velickovska, PhD
Prof. Daniela Dasheva	Prof. Monica Stanescu, PhD
Prof. Kiril Andonov	Assoc. Prof. Jan Konarski, PhD
Prof. Evgenia Dimitrova	Dr Uri Schaefer
Prof. Diana Dimitrova	
Prof. Svilen Neykov	
Prof. Albena Alexandrova	
Prof. Lubomir Petrov	
Assoc. prof. Zdravko Stefanov	
Assoc. prof. Michail Michailov	

Design: Stanislav Hristov, Svetla Kostova, Radostina Angelova
Printed and bounded by: ZONA ArtPRINT Ltd.
Publisher: Scientific Publishing House NSA Press
ISBN (Online): 978-954-718-702-3
ISBN (Print): 978-954-718-701-6