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The Importance of Hiking and Mountain Trips in Leisure and Extracurricular Activities of Students – Part 2/ Interpretation of the Utility and Effects-financial Accessibility Components

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Abstract: *Background and Study Purpose: Physical activities in the mountain environment are recognised for their multiple benefits on health, fitness levels, stress reduction and communication. The research aims to identify differences in the usefulness, effects, and affordability of trips and hiking for pre-university students. Material and Methods: The sociometric research investigated a group of 647 students. A 3-component structured questionnaire based on closed-ended items with five levels investigated students' responses to the usefulness and financial effects/financial accessibility of trips and hiking. Results: We obtained the gender difference for all utility factor items, with higher scores attributed to females. Gender differences were also significant in favour of females for the effects/accessibility factor, except affordability (P>0.05). The F-values for the rural-urban difference are all significant and in favour of rural students for both components, except affordability, which is higher for urban. Conclusions: At the level of the utility component, the highest scores are obtained by the items associated with the level of health, socialization group integration, and personality formation. For the effects component, high scores are obtained for items associated with stress reduction/recreation, then optimising endurance and fitness levels. Financial accessibility of trips and hiking scores lower, with only 50% of students perceiving them as affordable and very affordable. Rural students have higher values of confidence in the usefulness of hiking vs. urban students, and this is maintained for the effects component items, the only exception being for financial accessibility, where urban has significantly better values than rural.*

Keywords: *nature; mountain hikes; socialisation; fitness; health; recreation; accessibility.*

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Introduction

Since ancient times in various people's cultures, long-distance walking has stood out as a variant of psychotherapy, with obvious primary beneficial effects on mental health and reduction of emotional distress, but also secondary for well-being (Mau et al., 2021). Tourism in natural environments and outdoor recreation options offer dozens of benefits at individual and community levels, ensuring the sustainable development of society. Climatic and social changes and demographic and economic developments influence people's access to opportunities for outdoor recreation (Winter et al., 2020). Mountain ranges provide diversified possibilities for those passionate about sports activities (hiking, skiing, climbing). The sustainable development of mountain tourism has social, economic, and environmental impacts (Debarbieux et al., 2014). Activities and natural experiences during childhood (through non-formal education programmes) play a crucial role in forming a social environment identity (Williams & Chawla, 2016). Outdoor physical activities are essential for physical literacy geared toward maintaining health throughout life (Sæther & Lyngstad, 2024). Tourism activities influence people's health, with health being seen as a driver of tourism but also as an effect/outcome of tourist's experiences (Derrien et al., 2019). Economic crises and climate change have significantly increased the segment of same-day trips (Stetic et al., 2011). Other research identifies the usefulness and high potential of planning tourist travel using rail transport. The requirements for tourist trains vary depending on the duration of trips: shorter journeys or cruise travel (Barash et al., 2017).

Hiking connects people with multiple points/objectives of a trail, being part of human history and a means of escape, and healthy recreation in nature, ensuring physical and mental health (Sales et al., 2018). Hiking is an easy/soft version of an adventure activity that involves low risk. Hiking in the mountains fosters shared social experiences and occurs in a healthy environment. The benefits of hiking are diverse: mental and physical well-being, discovery, and relaxation/disconnection, which positively contribute to the satisfaction of those involved (Bichler & Peters, 2020). Participants in other mountain sports activities (whitewater paddling, rock climbing, and mountain biking) are motivated by experiences in nature and the socialisation associated with involvement in these variants (Zwart & Hines, 2022). Research on groups of day hikers

found that 27% are motivated by enjoying nature, 22% by the desire to experience new situations, and 15% by the opportunity to learn from other participants, with only 14% mentioning involvement in exercise. Proximity to the area chosen for hiking is essential, with nearly all respondents residing within 30 miles of the selected location/nature park (Wilcer et al., 2019). Mountain hikes are limited in their success rate, and injuries may be reported due to lack of experience, poor fitness level, inability to understand the physical and psychological difficulties of the route, or inadequate equipment (Mykletun et al., 2021). Hiking speed on mountain bikes depends on fitness level, age, slope, and trail difficulty (Schamel & Job, 2017). Organising multi-day hiking trips requires identification of the participants' psychological aspects, good information and intensive planning, and these activities are also oriented towards self-discovery (Basil, 2023).

Tourism in the low mountains offers prospects for optimising health and achieving the relaxing/disconnecting effect. Most tourists want a change of environment and scenery, with routes and activities that restore physical, psychological, and spiritual strength (Dunets et al., 2020). Human contact with the natural environment is increasingly important in the current period due to the benefits it offers in multiple directions. The adverse effects of pandemics, urbanisation and the high number of mental disorders can be alleviated through this solution (Kazdin & Vidal-González, 2021). Deterioration in mental health, especially in females during the Covid 19 pandemic, can be ameliorated by using outdoor tourism. Therapeutic landscapes, nature and adventure tourism, outdoor recreation or leisure and stress reduction are variants that generate beneficial effects in multiple directions (Buckley & Westaway, 2020). Outdoor adventure tourism improves well-being and mental health, reconnection to nature, and facilitates pro-environmental attitudes through sustainable tourism (Hanna et al., 2019). Visitor engagement in mountain tourism in the Alps/Austria is conditioned by perceived benefits (e.g. peace of mind) and the quality of local services (Milman et al., 2017). Recreation based on leisure time nature activities has spiritual effects, enabling spiritual experiences and spiritual well-being (Heintzman, 2009).

Motivation for Active sports tourism has variations/differences between generations (Millennials vs baby boomers). The health dimension is the primary motivation for older Millennials/baby boomers. Millennials' orientation towards tourism activities is generated by other motives:

adrenaline, escape from daily routine, and overcoming challenges (IJspeert & Hernandez-Maskivker, 2020). Differences in motivation and goals of proximate vs. distant visitors for different trails in conserved natural areas are evident. Proximate visitors are oriented towards health, a high level of fitness, and stress reduction. Distant visitors mainly aim towards environmental exploration, landscape observation and fewer encounters with other tourist groups (Kil et al., 2015) —a related exploration of family adventure tourism targets hedonic and eudaimonic well-being. Hedonic themes reduce feelings of boredom and distress, and eudaimonic themes are optimal experiences, challenges, and personal development (Pomfret, 2021). Research on young Polish mountain hikers identified two categories: hard adventure hikers (high level of satisfaction, positive emotions, and reasonable control over life) and soft adventure hikers (high level of negative emotions, medium level of satisfaction with life, average value of psychological capital) (Próchniak, 2022). Mountain adventure tourism contributes to physical and mental well-being, health, and self-achievement (Ritpanitchajchaval et al., 2023). Research on people in the UK involved in nature-adventure activity examines how therapeutic landscapes favourably impact well-being (Milligan et al., 2021). Other studies investigate the possibility of developing wellness tourism activities as a viable option for mountain areas in China (Pan et al., 2019).

Mountaineering – as a leisure option – provides participants with opportunities for socialization, experiencing new situations, escape from everyday life, psychological well-being, and enjoyment of being in nature (Ertaş, 2022). The role of physical activities in nature for the elderly with benefits in terms of socialization, personal well-being, and stress reduction is highlighted by (Marquez & Dolma, 2021). The social dimension of hiking in the Italian mountains is also analysed by (Sestrem & Zaslavsky, 2021).

The role of universities in promoting and supporting educational tourism (which targets learning processes) is supported by (Tomasi et al., 2020). Participating in field trips for Peruvian students provides knowledge, experience, and academic benefits for future careers in tourism management (Sotomayor, 2021). Educational strategies should aim to connect Taiwanese students with the natural environment. Reduced or lack of contact with the natural environment leads to apathy towards outdoor activities, physical health, and well-being deficiencies (Tseng & Wang, 2020). Day-long school trips offer favourable perspectives on cultural achievement for Indonesian students,

generating opportunities for new learning experiences (Dabamona & Cater, 2019). As an extracurricular activity, health tourism for students at the end of school hours brings multiple benefits for physical health, fitness level, mental state, and resilience. Hiking, active games, walks, trips, and competitions are used (Halyna et al., 2017).

*Our research aim*s *to identify differences in the usefulness, effects, and financial accessibility of trips and hiking (as extracurricular and leisure options) for a sample of pre-university students*. Although studies directed at exploring gender differences have been done before, identifying variations in opinions between secondary school vs. high school and rural vs. urban requires further investigation.

Materials and methods

We anticipated obtaining significant differences related to the responses of the pairs of defined groups (gender, area variables, and training levels) for the questionnaire items in the utility and effects/affordability components.

Participants. The randomized selection of participants was carried out in schools and high schools in Vaslui County/Romania, with a numerical balance between the two levels of education. The investigated group included 647 students (253 males/14.76 years old, and 394 females/15.23 years old, 360 urban/15.16 years old and 287 rural/14.90 years old, 336 secondary school/13.45 years old and 311 high school/16.78 years old). Information on the analysed subgroups (resulting from the interaction of the three independent variables can be found in Table 1 for the first part of this study). The requirements associated with research with human subjects/Helsinki Declaration (World Medical Association Declaration of Helsinki, 2013; Sandu, 2012) were followed. The study received the approval of the educational institution on research ethics (168/27.05.2024) and the consent of the School Inspectorate of Vaslui (1051/26.03.2024).

Research Design. The questionnaire was developed in the Human Performance Research Centre of the Faculty of Physical Education and Sports of "Dunarea de Jos" University of Galati, and its distribution in the selected schools was carried out between March and May 2024 in printed format. Students were instructed on the meaning of the items and the corresponding Likert scale/5 level scores. The results presented in this manuscript analyse students' attitudes toward the utility and effects/affordability components, with values for the attractiveness component interpreted in the first part of the study.

Statistical Analysis. SPSS Software (Statistical Package for the Social Sciences/IBM Vers.24 Chicago, IL, USA, was used for data processing. The interpretation of the influence of the 3 independent variables on the responses of the participants (for the items of the two components) was carried out by ANOVA statistical techniques. The confidence interval was set at 95%. (Armstrong, 2014; Murariu & Munteanu, 2018; Opariuc, 2011; Sarma & Vardhan, 2018).

Results

The data presented in this manuscript is a second part of the research (which identifies the influence of the independent variables on the factors unity and effects/financial accessibility). The first part of the study has already been published and includes the factor analysis of the questionnaire used (where the three components and their associated items are identified), but also the influence of the same independent variables for the items of the utility factor. For this reason, the titles of the tables and graphs, the names of the variables, their interaction and the statistical interpretation provided by the SPSS software are similar to the first part of the study, being a continuation and a complement to the presentation of the results, according to Mocanu et al. (2024).

The mean scores of the items associated with component 2/*Utility* (at the whole group level) are represented in Fig. 1. The highest benefits are associated with items Q19/health status, Q14/formation of socialization and group integration skills, Q13/student personality formation, Q16/physical development and body harmony, Q15/moral conduct. The weakest benefits are associated with item Q17/intellectual skills and problem-solving.

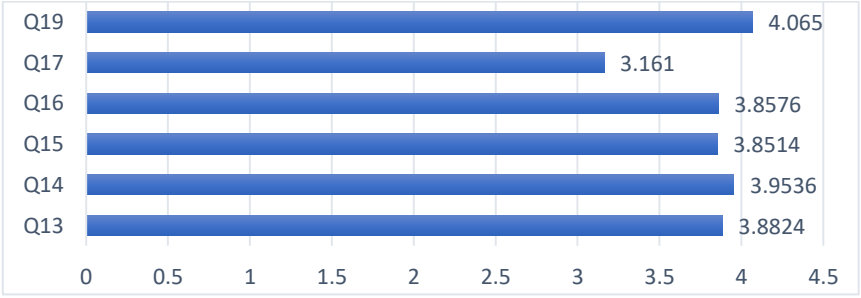


Figure 1. Mean score of the ***Utility*** factor items for the whole sample (N=647)

The mean scores of the items associated with component 3/Effects/Accessibility (at the whole group level) are represented in Fig. 2. Students' opinions assign the highest values to Q20/effects related to recreation and stress reduction and Q23/favourable effects on strength/endurance. The third position is occupied by Q21/effects on fitness level and exercise capacity. The lowest mean scores are given to Q18/financial accessibility of trips and hiking and Q22/effects on the strength of major muscle groups.

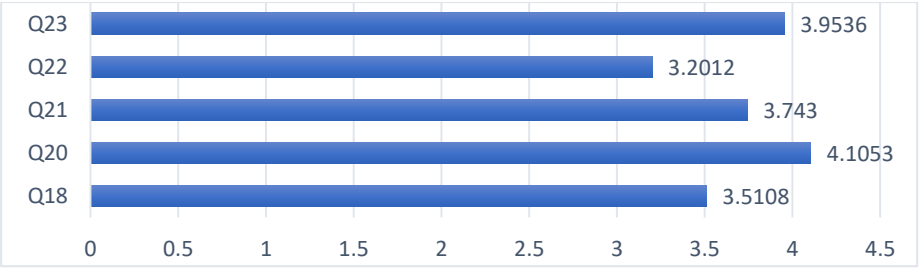


Figure 2. Mean scores of the ***Effect/Financial Accessibility*** factor items for the whole sample (N=647)

The responses of the studied group at the level of the questionnaire items for the two components (percentage values for the five levels of the Likert scale) are summarized in Table 1. Regarding the *usefulness* of trips and hiking, almost all items associated with this component obtain very high percentages for scores 4 and 5: Q19/more than 77% appreciate the decisive influence on health optimization, Q14/more than 73% indicate a beneficial influence on socialization and group integration, Q15/more than 65% indicate strong influences on compliance with rules and moral profile, Q16/more than 66% give higher scores for the influence on harmony and body development. The lowest confidence is given for Q17 (only 35% of students believe tourism activities strongly influence intellectual availability). For *accessibility*/Q18, about half of the students consider them accessible and very accessible, with only 11% indicating low accessibility or inaccessibility. In terms of *effects*, higher scores are indicated for Q20/stress reduction by more than 80% of students, Q21/fitness improvement by more than 63%, Q23/endurance improvement by more than 73%.

Table 1. Items and resulting percentages for the 5 Likert scale levels (utility and effects-affordability dimensions)

Item	5	4	3	2	1
Q13	*How useful are trips and hiking in shaping your personality and character?*				
	Very useful (25.4%)	Useful (43.3%)	Quite useful (26%)	Little useful (4.6%)	Useless (0.6%)
Q14	*Do you think that through trips and hiking, you could develop social, communication, and group interaction skills?*				
	With certainty (29.4%)	To a large extent (43.7%)	Moderate (21.1%)	To a small extent (4.6%)	No (1.2%)
Q15	*Could learning and following the rules during trips and hiking for students contribute to the formation of an attitude towards moral conduct?*				
	With certainty (25.7%)	To a large extent (39.6%)	Moderate (29.7%)	To a small extent (4%)	No (0.9%)
Q16	*How much do you think that practicing trips and hiking could influence/contribute to your physical development and body harmony?*				
	Very strong influence (23.8%)	Strong influence (43.3%)	Moderate influence (28.2%)	Low influence (4%)	No influence (0.6%)
Q17	*Do you think that by practicing trips and hiking could improve your intellectual skills and the ability to solve problems quickly?*				
	With certainty (4%)	To a large extent (29.7%)	Moderate (48.6%)	To a small extent (13.6%)	No (4%)
Q18	*As an option for spending free time (leisure), do you think that trips and hiking are for young people?*				
	Very affordable (12.4%)	Affordable (38.1%)	Quite affordable (38.4%)	Not affordable (10.5%)	Unaffordable (0.6%)
Q19	*How much do you believe that trips and hiking could contribute to improving and optimizing your health?*				
	Very much (32.2%)	Much (44.9%)	Moderate (20.4%)	Little (2.2%)	Not at all (0.3%)
Q20	*Do you think that trips and hiking could reduce stress and recreation after intellectual efforts from other school subjects?*				
	With certainty (36.5%)	To a large extent (43.7%)	Moderate (14.6%)	To a small extent (4.3%)	No (0.9%)
Q21	*Select the effect of trips and hiking on your effort capacity and on your physical training/fitness level:*				
	Very strong effect (18.3%)	Strong effect (45.5%)	Moderate effect (29.1%)	Low effect (6.5%)	Lack of effect (0.6%)
Q22	*Select the effect of trips and hiking on muscle strength of major body segments:*				
	Very strong effect (2.8%)	Strong effect (31.6%)	Moderate effect (50.5%)	Low effect (13.3%)	Lack of effect (1.9%)
Q23	*Select the effect of trips and hiking on stamina/endurance:*				
	Very strong effect (26.2%)	Strong effect (47.1%)	Moderate effect (21.7%)	Low effect (4.3%)	Lack of effect (0.3%)

The differences between *males and females* for the *utility* factor are summarised in Table 2. For all items of this factor, we found significant superiority of the mean scores for females ($P < 0.05$), so they are more optimistic about the usefulness of trips and hiking for personality formation, socialization, group integration, moral conduct, body harmony, intellectual abilities, and health optimization.

Table 2. Results of ANOVA and pairwise differences in data for the gender-independent variable (male=253, female=394) at the utility component level

Item	Group	Mean	Std. Deviation	Std. Error	a-b	F(1, 645)	Sig[b].	η^2_p	Observed Power
Q13	a. Male	3.7302	.96482	.054	-.250*	13.128	.000	.020	.951
	b. Female	3.9797	.77466	.043					
Q14	a. Male	3.7937	1.02025	.056	-.262*	13.446	.000	.020	.956
	b. Female	4.0558	.78919	.045					
Q15	a. Male	3.6746	1.00063	.055	-.290*	17.013	.000	.026	.985
	b. Female	3.9645	.77739	.044					
Q16	a. Male	3.7381	.90310	.053	-.196*	8.313	.004	.013	.821
	b. Female	3.9340	.80121	.042					
Q17	a. Male	3.0317	.91848	.053	-.212*	9.572	.002	.015	.871
	b. Female	3.2437	.80173	.043					
Q19	a. Male	3.9524	.80691	.050	-.185*	8.314	.004	.013	.821
	b. Female	4.1371	.78568	.040					

*. The mean difference is significant at the .05 level.
The F tests the effect of gender. / This test is based on the linearly independent pairwise comparisons among the estimated marginal means.
b. *Adjustment* for multiple comparisons: Bonferroni.

The differences between *males and females* in terms of the *effects/accessibility* factor are summarised in Table 3. Females are more optimistic about the beneficial effects of trips and hiking for Q20, Q21, Q22, and Q23, with significantly better values ($P < 0.05$). For Q18/affordability of trips and hiking, even though the whole female group has a higher mean value, the difference from the male group is however not significant ($P > 0.05$).

Table 3. Results of ANOVA and pairwise differences in data for the gender-independent variable (male=253, female=394) at the effects/accessibility component level

Item	Group	Mean	Std. Deviation	Std. Error	a-b	F(1, 645)	Sig[b].	η^2_p	Observed Power
Q18	a. Male	3.4841	.87218	.054	-.044	.395	.530	.001	.096
	b. Female	3.5279	.85930	.044					
Q20	a. Male	4.0159	.91890	.055	-.147*	4.379	.037	.007	.552
	b. Female	4.1624	.83438	.044					
Q21	a. Male	3.5873	.95534	.053	-.255*	14.111	.000	.021	.963
	b. Female	3.8426	.76208	.042					
Q22	a. Male	3.0317	.82719	.048	-.278*	20.550	.000	.031	.995
	b. Female	3.3096	.71377	.038					
Q23	a. Male	3.8651	.86870	.052	-.145*	4.763	.029	.007	.587
	b. Female	4.0102	.79432	.042					

*. The mean difference is significant at the .05 level.
The F tests the effect of gender. / This test is based on the linearly independent pairwise comparisons among the estimated marginal means.
b. *Adjustment* for multiple comparisons: Bonferroni.

The differences between *urban vs. rural students* for the *utility* factor are summarized in Table 4. The superiority of scores for rural is evident and statistically significant for all six items ($P < 0.05$).

Table 4. ANOVA and pairwise differences result for the independent *Area variables* (urban=360, rural=287) at the utility component level

Item	Group	Mean	Std. Deviation	Std. Error	a-b	F(1, 645)	Sig[b].	η^2_p	Observed Power
Q13	a. Urban	3.7611	.89171	.045	-.274*	16.480	.000	.025	.982
	b. Rural	4.0350	.79835	.050					
Q14	a. Urban	3.8278	.92523	.047	-.284*	16.447	.000	.025	.981
	b. Rural	4.1119	.83018	.052					
Q15	a. Urban	3.6667	.87681	.045	-.417*	37.701	.000	.055	1.000
	b. Rural	4.0839	.83348	.051					
Q16	a. Urban	3.7167	.87856	.044	-.318*	23.277	.000	.035	.998
	b. Rural	4.0350	.77153	.049					
Q17	a. Urban	3.0278	.87319	.044	-.301*	20.342	.000	.031	.995
	b. Rural	3.3287	.80154	.050					
Q19	a. Urban	4.0000	.83782	.042	-.147*	5.428	.020	.008	.643
	b. Rural	4.1469	.73945	.047					

*. The mean difference is significant at the .05 level.
The F tests the effect of gender. / This test is based on the linearly independent pairwise comparisons among the estimated marginal means.
b. *Adjustment* for multiple comparisons: Bonferroni.

Differences between *urban vs. rural students* for the *effects/accessibility* factor are summarized in Table 5. Rural students have

higher mean and statistically significant scores than urban students ($P < 0.05$) for Q20/stress reduction and recreation after intellectual effort, Q21/effects on fitness levels, Q22/effects on muscle group strength, and Q23/effects on endurance. However, urban students are significantly more optimistic about the affordability of trips and hiking than rural students.

Table 5. ANOVA and pairwise differences result for the independent variable *Area variables* (urban=360, rural=287) at the effects/accessibility component level

Item	Group	Mean	Std. Deviation	Std. Error	a-b	F(1, 645)	Sig[b].	η^2_p	Observed Power
Q18	a. Urban	3.8444	.77440	.041	.754*	149.086	.000	.188	1.000
	b. Rural	3.0909	.78503	.046					
Q20	a. Urban	4.0222	.90775	.046	-.188*	7.473	.006	.011	.779
	b. Rural	4.2098	.81092	.051					
Q21	a. Urban	3.6333	.87618	.044	-.248*	13.773	.000	.021	.960
	b. Rural	3.8811	.79903	.050					
Q22	a. Urban	3.0944	.76626	.040	-.241*	15.945	.000	.024	.979
	b. Rural	3.3357	.75806	.045					
Q23	a. Urban	3.8389	.86507	.043	-.259*	16.017	.000	.024	.979
	b. Rural	4.0979	.75221	.048					

*. The mean difference is significant at the .05 level.
The F tests the effect of gender. / This test is based on the linearly independent pairwise comparisons among the estimated marginal means.
b. *Adjustment* for multiple comparisons: Bonferroni.

The differences between *secondary vs. high school students* for the utility factor are summarized in Table 6. We report higher values for high school students for all six items, but with statistically significant differences ($P < 0.05$) only for three items: Q14/formation of socialization, communication, and group interaction skills, Q15/formation of moral conduct, and Q17/improvement of intellectual skills and problem-solving ability.

Table 6. ANOVA and pairwise differences in data results for the independent variable *training level* (secondary school=336, high school=311) at the utility component level

Item	Group	Mean	Std. Deviation	Std. Error	a-b	F(1, 645)	Sig[b].	η^2_p	Observed Power
Q13	a. Secondary school	3.8631	.83880	.047	-.040	.349	.555	.001	.091
	b. High school	3.9032	.88697	.049					
Q14	a. Secondary school	3.8393	.88995	.048	-.238*	11.604	.001	.018	.925
	b. High school	4.0774	.88523	.050					
Q15	a. Secondary school	3.7262	.91229	.048	-.261*	14.403	.000	.022	.966
	b. High school	3.9871	.82820	.050					
Q16	a. Secondary school	3.8214	.86953	.046	-.075	1.276	.259	.002	.204
	b. High school	3.8968	.82182	.048					
Q17	a. Secondary school	3.0893	.89329	.046	-.149*	4.958	.026	.008	.604
	b. High school	3.2387	.80519	.048					
Q19	a. Secondary school	4.0655	.78903	.044	.001	.000	.988	.000	.050
	b. High school	4.0645	.80995	.045					

*. The mean difference is significant at the .05 level.
The F tests the effect of gender. / This test is based on the linearly independent pairwise comparisons among the estimated marginal means.
b. *Adjustment* for multiple comparisons: Bonferroni.

The differences between *secondary school vs. high school students* for the effects/accessibility factor are summarized in Table 17. Significant F values ($P < 0.05$) are obtained for Q18/financial accessibility, with higher scores for high school students, and for Q21/fitness improvement, with higher scores for secondary school students. For the other items, the mean values are close between the groups, with no significant differences.

Table 7. ANOVA and pairwise differences in data for the independent variable *training level* (secondary school=336, high school=311) at the effects/accessibility component level

Item	Group	Mean	Std. Deviation	Std. Error	a-b	F(1, 645)	Sig[b].	η^2_p	Observed Power
Q18	a. Secondary school	3.4464	.91918	.047	-.134*	3.909	.048	.006	.506
	b. High school	3.5806	.79538	.049					
Q20	a. Secondary school	4.0952	.90924	.048	-.021	.093	.761	.000	.061
	b. High school	4.1161	.82795	.049					
Q21	a. Secondary school	3.8155	.81508	.046	.151*	5.104	.024	.008	.616
	b. High school	3.6645	.88334	.048					
Q22	a. Secondary school	3.1964	.78993	.042	-.010	.027	.869	.000	.053
	b. High school	3.2065	.75210	.044					
Q23	a. Secondary school	3.9583	.84891	.045	010	.023	.879	.000	.053
	b. High school	3.9484	.80286	.047					

*. The mean difference is significant at the .05 level.
The F tests the effect of gender. / This test is based on the linearly independent pairwise comparisons among the estimated marginal means.
b. *Adjustment* for multiple comparisons: Bonferroni.

The ANOVA results for the interaction between *Gender and Area variables* at the level of the *Utility* factor are presented in Table 8. For half of the items, we identified significant F values ($P < 0.05$): Q13/role in personality and character formation, Q15/role in moral conduct formation, and Q17/improvement of intellectual skills and problem-solving ability.

Table 8. ANOVA results for the interaction between Gender and Area variables on the *Utility* factor

Item	Interaction	Mean Square	F (1, 639)	Sig.	η^2_p	Noncent. Parameter	Observed Power
Q13	Gender *Area variables	3.575	5.087	.024	.008	5.087	.615
Q14	Gender *Area variables	.035	.046	.829	.000	.046	.055
Q15	Gender *Area variables	9.423	13.847	.000	.021	13.847	.960
Q16	Gender *Area variables	1.987	2.923	.088	.005	2.923	.400
Q17	Gender *Area variables	6.774	9.896	.002	.015	9.896	.881
Q19	Gender *Area variables	2.373	3.857	.050	.006	3.857	.500

The mean scores for the interaction of *Gender*Area variables* for the *Utility* component are represented in Fig. 3. It can be seen that the female rural and male rural groups have the best mean values for all items. The exception is item Q19/health optimization roll, where the urban female group has a similar superior value. The urban male group obtains the worst values, obviously lower than those of the rural male group, and the urban female group has lower scores than the rural female group on all items of this factor.

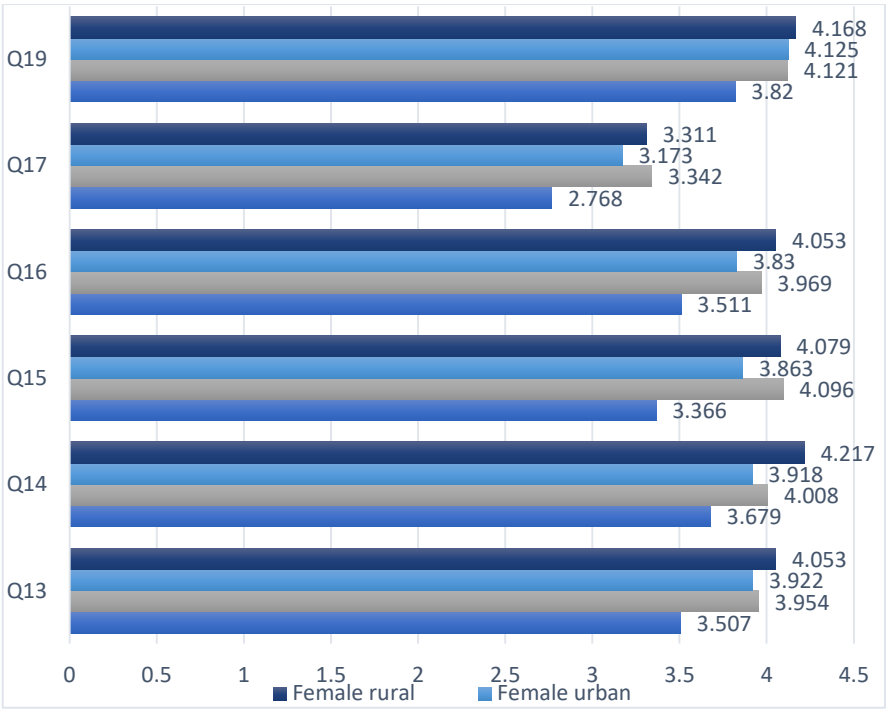


Figure 3. Comparative mean values for the *Gender*Area variables* interaction at the *Utility* component level

The ANOVA results for the interaction between *Gender and Training level* on the *Utility* factor are presented in Table 9. The only item where the value of F is statistically significant ($P < 0.05$) is Q16/influence of trips and hiking on physical development and body harmony. For the remaining items, we identified only statistically insignificant thresholds.

Table 9. ANOVA result for the interaction between Gender and Training level in the *Utility* component

Item	Interaction	Mean Square	F (1, 639)	Sig.	η^2_p	Noncent. Parameter	Observed Power
Q13	Gender *Training level	.931	1.325	.250	.002	1.325	.210
Q14	Gender *Training level	.198	.261	.610	.000	.261	.080
Q15	Gender *Training level	.019	.028	.866	.000	.028	.053
Q16	Gender *Training level	2.919	4.293	.039	.007	4.293	.543
Q17	Gender *Training level	1.528	2.232	.136	.003	2.232	.320
Q19	Gender *Training level	.010	.016	.898	.000	.016	.052

The mean scores for the interaction of the variables Gender*Training level for the *Utility* component are represented in Fig. 4. The highest values are obtained by the female high school group for all items analysed, followed by the female secondary school group. The male secondary school group has the lowest values, except for items Q13/personality formation and Q16/utility on body harmony, for which the average scores are better than those of the male secondary school group.

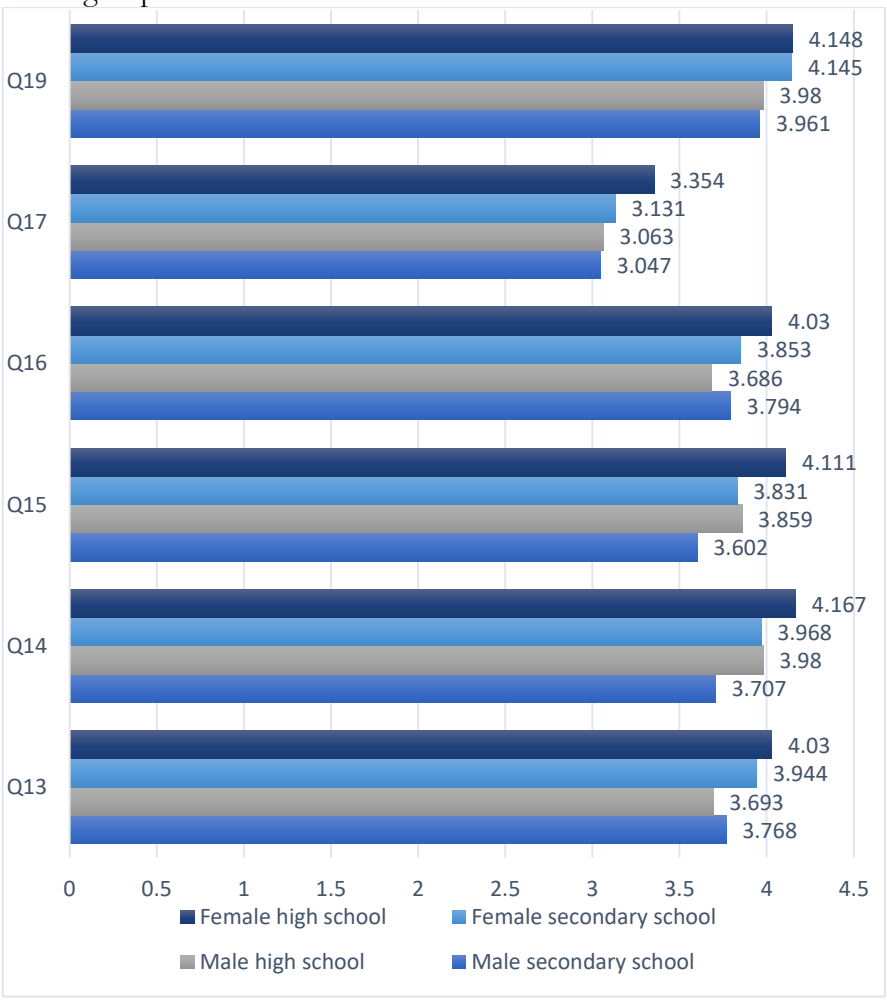


Figure 4. Comparative mean values for the *Gender*Training level* interaction at the *Utility* factor level

The ANOVA results for the interaction between *Area variables and Training level* at the *Utility* factor level are presented in Table 10. With the exception of item Q19/role of trips and hiking in optimizing health, where the value of F corresponds to a statistically significant threshold ($P < 0.05$), for the rest of the items, we identified only non-significant thresholds ($P > 0.05$).

Table 10. ANOVA results for the interaction between Area variables and Training level in the *Utility* component

Item	Interaction	Mean Square	F (1, 639)	Sig.	η^2_p	Noncent. Parameter	Observed Power
Q13	Area variables *Training level	.076	.108	.742	.000	.108	.062
Q14	Area variables *Training level	.222	.292	.589	.000	.292	.084
Q15	Area variables *Training level	.454	.667	.414	.001	.667	.129
Q16	Area variables *Training level	.022	.032	.858	.000	.032	.054
Q17	Area variables *Training level	.042	.061	.805	.000	.061	.057
Q19	Area variables *Training level	4.523	7.351	.007	.011	7.351	.773

The mean scores for the *Area variables*Training level* interaction for the *Utility* component are presented in Fig. 5. Note the higher values of the rural high school group vs. the rural secondary school group, except for Q13 (role in personality formation), where both groups have similar values. Both groups have better mean values than the urban high school and urban secondary school groups (except Q19/health optimization, where the urban secondary school group has a similar value). The lowest scores for the remaining items (Q13 – Q17) are for the urban secondary school group, followed by the urban high school group, which are less optimistic about the value of trips and hiking on character traits, socialization, moral conduct, body harmony, and intellectual skill development.

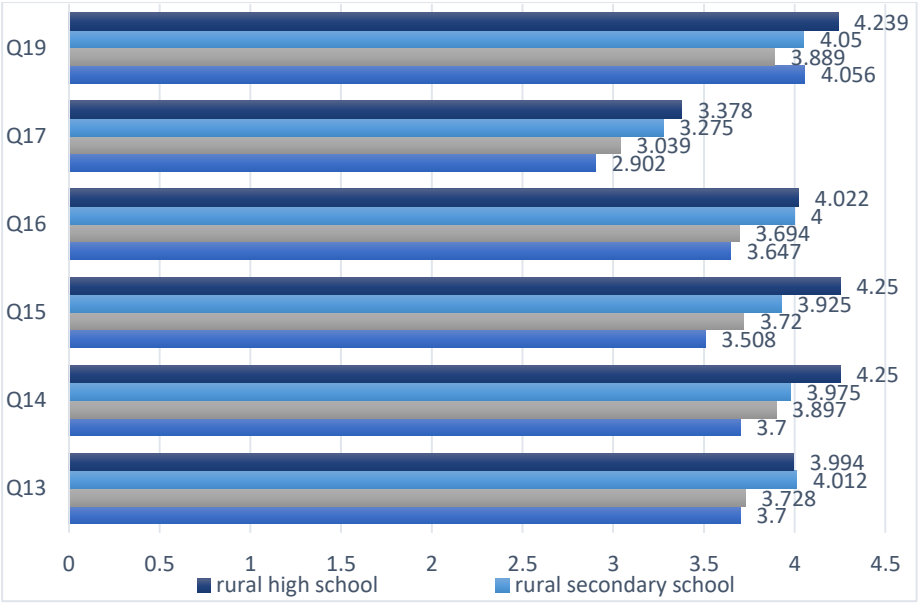


Figure 5. Comparative mean values for the interaction *Area variables*Training level* at the level of the *Utility* component

The ANOVA results for the interaction between *Gender and Area variables* at the level of the *Effects/Accessibility* factor are shown in Table 11. Only for two items: Q20/effect on stress reduction and Q23/beneficial effect on endurance/strength, are statistically significant thresholds ($P < 0.05$) reported, associated with F values.

Table 11. ANOVA results for the interaction between Gender and Area variables at the level of the *Effect/Accessibility* component

Item	Interaction	Mean Square	F (1, 639)	Sig.	η^2_p	Noncent. Parameter	Observed Power
Q18	Gender *Area variables	.160	.265	.607	.000	.265	.081
Q20	Gender *Area variables	3.736	5.186	.023	.008	5.186	.623
Q21	Gender *Area variables	.343	.515	.473	.001	.515	.111
Q22	Gender *Area variables	.271	.488	.485	.001	.488	.107
Q23	Gender *Area variables	3.711	5.756	.017	.009	5.756	.668

The mean scores for the interaction of *Gender*Area variables* for the *Effects/Accessibility* component are presented in Fig. 10. We show the very large difference related to affordability (Q18) between urban vs. rural females and urban vs. rural males, to the advantage of urban females. In terms of the effects of trips and hiking, the lowest scores are obtained by urban males and the highest by rural females, who are the

most optimistic in this respect. Also, for effects, rural females have better scores vs. urban females, and rural males have better scores vs. urban males.

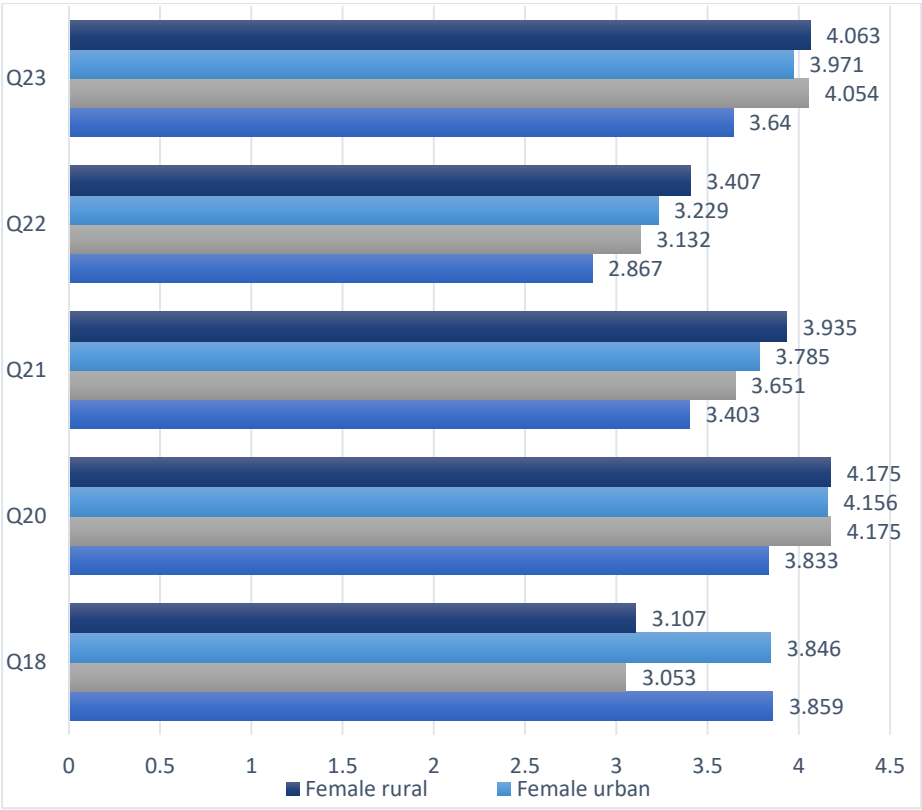


Figure 6. Comparative mean values for the *Gender*Area variables* interaction at the level of the *Effects/Accessibility* component

The ANOVA results for the interaction between *Gender and Training level* on the *Effects/Accessibility* factor are presented in Table 12. Statistically significant thresholds ($P < 0.05$) are obtained for the F values for items Q21/effect on fitness level and Q22/effect on muscle group strength level.

Table 12. ANOVA results for the interaction between Gender and Training level in the *Effects/Accessibility* component

Item	Interaction	Mean Square	F (1, 639)	Sig.	η^2_p	Noncent. Parameter	Observed Power
Q18	Gender *Training level	.283	.469	.494	.001	.469	.105
Q20	Gender *Training level	1.847	2.564	.110	.004	2.564	.359
Q21	Gender *Training level	5.937	8.913	.003	.014	8.913	.846
Q22	Gender *Training level	4.492	8.102	.005	.013	8.102	.811
Q23	Gender *Training level	2.384	3.698	.055	.006	3.698	.484

The mean scores for the interaction of *Gender*Training level* variables for the *Effects/Accessibility* component are represented in Fig. 7. We noted the clear superiority of high school females vs. high school males' values for all 5 items, which is also reinforced for the secondary school females vs. secondary school males' pair, except for items Q18. High school females score better than secondary school females (except Q21/effect on fitness level), and secondary school males score better than high school males (except Q18/affordability).

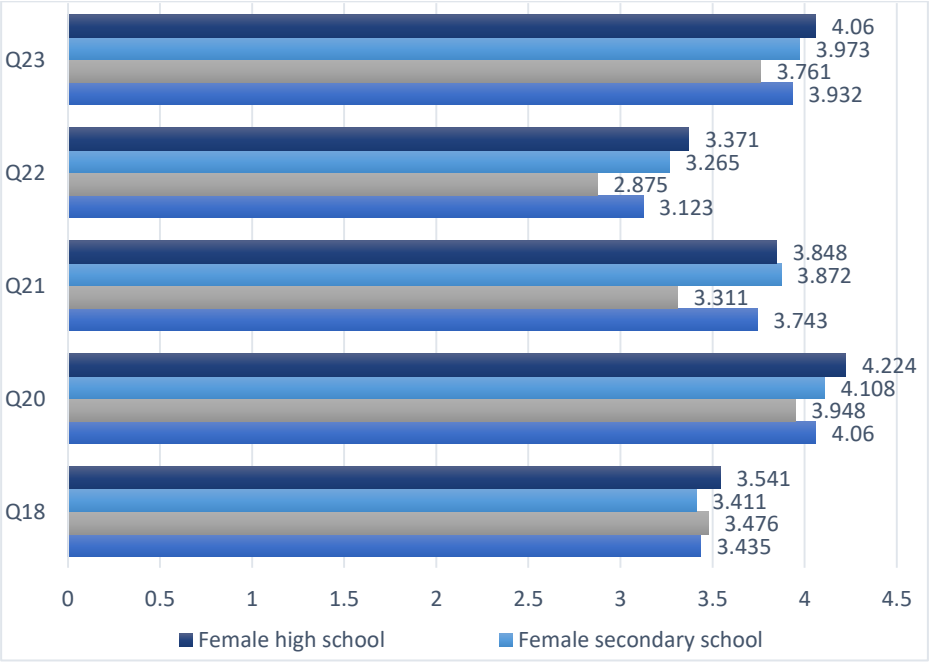


Figure 7. Comparative mean values for the *Gender*Training level* interaction at the *Effects/Accessibility* component level

The ANOVA results for the interaction between *Area variables and Training level* at the level of the *Effects/Accessibility* factor are presented in Table 13. Only non-significant F-values (P > 0.05) are obtained for all analysed items.

Table 13. ANOVA results for the interaction between Area variables and Training level in the Effects/Accessibility component

Item	Interaction	Mean Square	F (1, 639)	Sig.	η^2_p	Noncent. Parameter	Observed Power
Q18	Area variables *Training level	1.411	2.343	.126	.004	2.343	.333
Q20	Area variables *Training level	.323	.449	.503	.001	.449	.103
Q21	Area variables *Training level	.184	.276	.600	.000	.276	.082
Q22	Area variables *Training level	1.172	2.113	.147	.003	2.113	.306
Q23	Area variables *Training level	.248	.385	.535	.001	.385	.095

The mean scores for the *Area variables*Training level* interaction for the *Effects/Accessibility* component are presented in Fig. 8. Only for item Q18, urban (secondary and high school) students have higher values than rural (secondary and high school) students, indicating higher financial possibilities for engaging in trips and hiking. However, in terms of effects, rural secondary school students, followed by rural high school students, have the highest scores, so they perceive a higher influence in terms of stress reduction, fitness level, strength development and endurance compared to urban students (secondary school and high school), where opinions are relatively balanced.

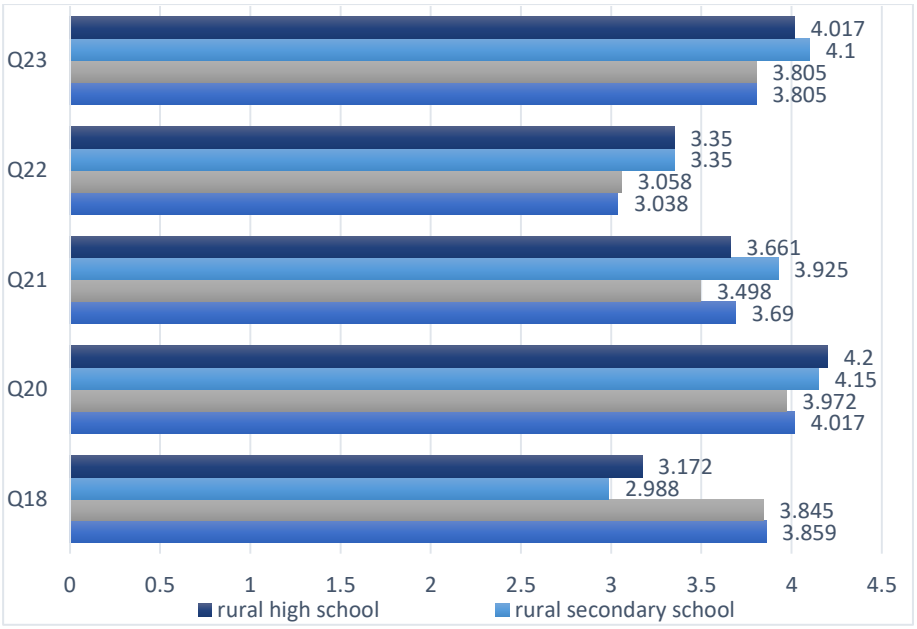


Figure 8. Comparative mean values for the *Area variables*Training level* interaction at the *Effects/Accessibility* factor level

Discussion

Involvement in hiking is conditioned on income and distance (as limiting factors), and for people with high levels of activism, high chances of involvement in hiking are identified. Attachment to the place visited is another strong reason for justifying some trips (Fredman & Heberlein, 2005). For German adolescents from less privileged backgrounds, limited opportunities to participate in more expensive mountain activity programmes are identified. The identified beneficial effects of outdoor adventures are reduced stress and increased resilience, happiness, and satisfaction (Mutz & Müller, 2016). In the US, hiking is considered a financially accessible option (low cost) for physical activity in nature. Its benefits are apparent: physical, mental, and emotional health, reduced stress levels and depressive states, socialization, improved immunity, lower body weight, lower blood pressure, and overall wellness (Mitten et al., 2018). Research on rural mothers has highlighted how they engage in family-based nature activities, focusing on family members' mental, physical, and social health in conditions of poverty/low income (Izenstark et al., 2016). School tourism provides children with information

about nature, biodiversity, and forest conservation. Implementing educational tourism for children may be hampered by limited financial resources or lack of specialized instructors in this area, according to (Bhuiyan et al., 2010). Across the whole group, we identified that half of the students consider trips and hiking to be very accessible and affordable, while only 11% indicate such problems. We found no significant differences between males and females, but for urban students, these activities are certainly more accessible, and the situation is similar for high school students compared to secondary school students. In contrast, urban females and males have very good scores for affordability compared to rural females and males. The group reporting the highest financial problems is rural secondary schools.

Mountain tourism replaces media consumption and virtual socialization as a good anti-stress, disconnection and quality-of-life improvement solution (Slusariuc & Bîcă, 2015). The role of mental and physical activities in reducing stress and providing recreational side is identified by (Fatîh et al., 2020; Rareş & Gloria, 2014; Zaytzev et al., 2022). For pubertal-aged children, a 3-day mountain hike in Taiwan at a high altitude (3886) has favourable influences in decreasing negative emotions, especially for those with acute mountain sickness/AMS (Chao et al., 2019). Physical activities are crucial to students' mental hygiene (Bahadirovna, 2023; Khamraeva, 2023). Natural settings play a beneficial role in Finnish students' emotional and cognitive development. Activities in nature reduced stress caused by pandemics, contributing to social bonds and strengthening the sense of freedom (Puhakka, 2021). Our study found highly favourable opinions for stress reduction through tourism activities (80% of students give high scores for this effect). Females have significantly better opinions than males, rural vs. urban, high school vs. secondary school students. The least confident are those in the male urban, male high school, and urban high school groups and the most optimistic are those in the rural high school, female high school, male rural and female rural groups.

Eco-tourism training for children in Ukraine has beneficial effects on directions such as fitness level, active rest, cognitive development, formation of interest and information related to the natural environment. (Andrieieva et al., 2017). The importance of physical activities in influencing cognitive abilities is supported by (Katanic et al., 2024; Olanescu et al., 2022; Vizitiu et al., 2023). Mountain hiking in the Stołowe Mountains National Park area is very

popular, providing conditions for active exploration of the natural environment and spending time outdoors. Cognitive learning, prophylaxis, and rest are the primary motivations for participation in hiking (Rogowski, 2017). However, the benefit for intellectual training and improved problem-solving ability scores the lowest for our group (almost half of the students indicate medium values, and 17.6% indicate little or no benefit). Female rural and high school students are more optimistic about this issue. Urban males, secondary school males, and urban secondary school students have the most pessimistic ratings for cognitive development and problem-solving through trips and hiking.

Education and outdoor activities provide opportunities for connections with the environment and the self and foster social interactions (Cottrell & Cottrell, 2020). For volunteer trips (Hong Kong), travel's central perceived values are improving relationships, taking a different view of life, and personal development. Among the factors that significantly influence the decision to engage in tourism activities are the degree of safety, time, and financial availability (Lo & Lee, 2011). Participants in group tourism activities (2 weeks) stand out for their improved social status, risk-taking and increased cohesion (Torres, 2016). Studying the opinions of Turkish students/high school level indicates positive assessments of tourism's social, economic, and cultural effects. Females have more favourable opinions about these aspects than males, and high school students give better scores than secondary school students (Koca & Yıldırım, 2018). Outdoor adventure activities significantly affect participants' mental and physical well-being and facilitate interpersonal relationships (Huynh & Torquati, 2019). Optimising socialisation and group integration through tourism activities is positively assessed by 73% of the students we studied, with only 6% indicating little usefulness in this direction. Females are significantly more confident than males, rural compared to urban, and high school compared to secondary school. Rural high school sample, Female rural and female high school obtain the highest mean values expressed, while male secondary school, male urban, and urban secondary school groups indicate the lowest mean values.

Recent research has identified the central role of sports tourism in shaping a healthy lifestyle at the level of youth groups in Kazakhstan. The benefits of intellectual qualities, physical/fitness level, personality formation, and outdoor skills training are highlighted. For these reasons, its inclusion as a variant of extracurricular activities is essential in the

future (Batyrbekov et al., 2024). Explorations of tourists' motivations in South Korea identify four main components: trying new travel options, healthy life, the need for privacy, the pleasure of enjoying the natural environment, and escape from everyday life (Kim et al., 2015). Outdoor activities, such as the presence of trees and natural areas, have proven to be health benefits for children (Chawla, 2015). Hiking, cycling, and 4WD-based trips in Australian national parks indicate imported participant gains and improvements in satisfaction, social connection, health, competence, sense of environmental stewardship, and well-being (Wolf et al., 2015). A comparative study of secondary school students in Ukraine found that recreational tourism-associated activities (hiking and biking) had superior physical health effects compared to using a sports game/volleyball (Leonenko et al., 2019). The usefulness of trips and hiking for improving physical health obtains very high confidence scores for our group (77% indicate higher values, and only 5% are sceptical). Male and urban students have lower confidence values than female and urban students, and between secondary school and high school students, we observed equal mean values. The lowest confidence we noted was among urban males, secondary school males, high school males, and urban high school groups. The most confident were those in the rural high school, female high school, female secondary school, and rural female groups.

Physical training of a tourist is a component that strongly influences the ability to walk mountain trails, overcome obstacles and solve specific daily tasks. A particular tourist-specific training programme for young people in Ukraine enabled them to walk the trail 11.7% faster, overcome natural obstacles by 43% easier, and increase the time spent on games and entertainment by 78%, according to (Mozolev et al., 2020). In large metropolises, parks and green spaces play a role in maintaining and optimizing the population's health. In Australia's national parks, the highest energy consumption is recorded for hikers (due to steep slopes and challenging trails), followed by runners, then walkers. These physical activities are also associated with other objectives (socialising, sightseeing, and experiencing nature), according to (Wolf & Wohlfart, 2014). Participation of young people in specific activities in the Urban Tourism Environment (Adventure Park, Brasov, Romania) provides high satisfaction scores and a recreational component. Positive effects on fitness levels and student engagement/participation are found (Badau & Badau, 2018). The assessments of our group regarding the influence of tourist activities on

fitness levels and effort capacity are optimistic. (64% consider the effects to be strong and very strong, and only 7% indicate little or no effects). Again, females and those from rural areas have higher scores, but we identified significantly better values of secondary school vs. high school students. Female secondary school, Female rural and rural secondary school groups are the most optimistic, while male urban, male high school and urban high school groups are the most sceptical.

Adapting Ukrainian students' cardiovascular system to hiking demands is crucial to completing the trails. For a 6-day mountain hike, heart rate monitors indicate good adaptation to exertion on the first day, solid demands and adaptation problems on the third day and better adaptation to the environment and stress generated by physical exertion on the last days (Skaliy et al., 2023). Implementing extracurricular physical activities for Ukrainian high school students (15 years old) based on walking tourism has positive results in decreasing the level of sedentarism (characteristic of the Covid-19 pandemic). There are gains in physical health and fitness levels and improvements in respiratory and cardiovascular parameters (Andrieieva et al., 2022). Tourist activities are an essential means of forming a healthy lifestyle for school children in Uzbekistan. During walks (as a variant of active recreation), the respiratory, cardio-vascular (with implications for endurance), and muscular systems are stressed (Nazirjonovich & Alidjanovna, 2022). The effects of hiking on endurance are rated favourable for our group by more than 73% of students, and only 4.6% indicate limited effects. The influence on muscle strength results in less confidence (only 34% rate it as favourable, 50% indicate moderate effects, and 15% show poor effects). Female and rural students have significantly higher scores than male and urban students, but we noted similar scores and insignificant differences between secondary and high school students.

Study limitations and future research directions:

The large number of defined independent variables did not allow a detailed presentation of the pairwise comparisons resulting from the interaction of the three variables (Gender*Area variables*Training level). The limitation of the research to a single county and the non-involvement of several study groups at the level of different regions constitute a deficient aspect of the research, which does not allow the generalization of the obtained results. However, the investigation identified important differences between genders, variable areas and

levels of training regarding the involvement and utilization of mountain trips and hiking. The newly outlined research directions aim to explore the involvement and attractiveness of other variants of mountain activities, such as climbing, tourist orienteering competitions, skiing, mountain biking, and canyoning.

Conclusions

The research results partially confirm the working hypothesis, with significant differences being identified between the pairs of independent variables for most of the items associated with the utility factors and financial accessibility effects.

At the level of the usefulness factor, the highest scores are obtained by the items associated with the level of health, socialization, group integration, and personality formation. High scores are obtained for items associated with stress reduction/recreation for the effects factor, then optimising endurance and fitness level. Financial accessibility of trips and hiking scores lower, with only 50% of students perceiving them as affordable and very affordable. The female group is more optimistic about the usefulness of hiking compared to males (for all items). This is also true for the effects component items but with no significant difference between females and males for affordability. Rural students have higher values of confidence in the usefulness of hiking vs. urban students, and this is maintained for the effects component items, the only exception being for affordability, where urban has significantly better values than rural. We noted the significantly higher optimism of high school students related to socialization and communication, moral conduct, and improved problem-solving skills. Financial accessibility is better for high school students, and secondary school students perceive improved fitness levels more confidently.

The rural female and rural male groups have the highest scores for the utility dimension items, and the urban males have the lowest. Also, for utility, we noted the higher scores of female high school and female secondary school, with the lowest scores obtained by male secondary school. The rural high school and rural secondary school groups record higher scores for hiking utility, and urban secondary schools record the lowest.

Urban females and urban males perceive tourism activities and hiking as more affordable than rural males and females. However, rural females are the most optimistic about the positive effects of tourism

activities. High school females and high school males score higher on attractiveness-related items than equivalent secondary school groups. Rural secondary school students and rural high school students are more optimistic about stress reduction, fitness level, strength development, and endurance than urban secondary and urban high school students.

Acknowledgement

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Conflict of interest

The authors declare no conflict of interest related to this investigation.

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