



ORIGINAL SCIENTIFIC ARTICLE

THE CORRELATION BETWEEN THE LEVEL OF HEALTH-IMPROVING AND RECREATIONAL PHYSICAL ACTIVITY AND FAMILY WELL-BEING

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Abstract

Study purpose. The purpose of the study was to assess the correlation between the level of health-improving and recreational physical activity and family well-being.

Materials and methods. Theoretical analysis of data from special scientific and methodological literature, generalization, systematization, sociological methods, and mathematical statistics. A research among parents was conducted using online surveying through completing an online questionnaire created with Google Forms. The study involved 106 married couples. The average age of the respondents was 35.1±4.2 years. The vast majority of the studied families (95.1%) had up to two children (preschool and school age).

Results. The respondents were divided into two clusters according to their level of motor activity. Cluster 1 included families with a low level of physical activity, and cluster 2 included those with an average level of physical activity. Depending on the level of physical activity, statistically significant ($p < 0.05$) differences were found between the families in terms of the following parameters: motivations for engaging in active leisure, amount of leisure time, level of knowledge and skills in organizing active leisure, reasons preventing participation in active leisure, etc. The families differed significantly ($p < 0.05$) in 23 categorical parameters. It was found that the families with different levels of physical activity did not differ in their desire to engage in winter recreational activities. Reasons preventing participation in health-enhancing and recreational physical activity programs were identified. A comparative analysis of the current state of family well-being revealed statistically significant ($p < 0.05$) differences in all studied parameters between the families with different levels of physical activity, i.e. the families with a proper level of physical activity had higher scores of satisfaction, well-being, and quality of life. Low indicators of family well-being indicated the rationale for such families to engage in active recreation and increase their level of health-enhancing and recreational physical activity.

Conclusions. A relationship was identified between the level of health-enhancing and recreational physical activity and indicators of satisfaction, family well-being, and quality of life.

Keywords: active leisure, family satisfaction, quality of family life, winter recreation.

Introduction

One of the most important issues of the modern family is the organization of its leisure which includes active family leisure time (Currie, 2012). By leisure, scientists mean the

ability of an individual to satisfy their interests in the use of free time related to recreation, self-development, health-improving, education, communication, etc. Modern society is oriented towards organized leisure. The search for new approaches in working with families regarding the introduction of various health-improving and recreational technologies into the practice of family leisure is extremely relevant (Yelizarova et al., 2020a). Today in the world and Ukraine,

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in connection with the increase in the need for the organization of active leisure, the industry of entertainment and recreation is developing at a rapid pace (Ustian, 2019). The entertainment industry has become one of the most important areas of society's everyday life. A significant number of scientists have devoted their research to the issue of the development of the entertainment and recreation industry using the means of health-improving and recreational physical activity (HRPA) (Bakiko et al., 2022; Grygus, 2017; Krutsevich et al., 2019). The results of modern scientific research demonstrate numerous advantages of using active leisure for the integral development of the emotional, cognitive, physical, and social abilities of young people (Freire, 2018; Rodríguez, 2018). It has been confirmed that organized leisure brings more benefits than unorganized one (Monteagudo et al., 2017). The impact of active family leisure on the level of satisfaction and quality of life has been revealed (De Neve et al., 2013; Zabriskie et al., 2018). It has been confirmed that the family is a privileged environment for the development of children's leisure (Stodolska et al., 2020; Valdemoros et al., 2014). Joint family leisure time benefits family functioning (Agate et al., 2009; Sanz et al., 2018). Scientists have established that active family leisure significantly affects the psychological climate, as well as the emotional background and social activity of the family (Burns et al., 2022). The scientific interest of modern researchers is focused on establishing the connection between psychological well-being and the state of physical health, level of material well-being, education, social status, age, gender, etc (Mandolesi et al., 2018; Taylor et al., 2012). Numerous researches demonstrate that internal factors of the psychological well-being of a person (e.g., contentment, joy, and desire to be active) are associated with maintaining an appropriate level of physical activity (Bogantes et al., 2021; Mahlovany et al., 2021). Thus, it is noted that the level of life satisfaction was higher among the students who took part in health-improving activities for a longer period and more often than others. Researchers have identified a positive correlation between family leisure and family outcomes (solidarity, adaptability, family functioning, and satisfaction with family life) in a multinational sampling. At the same time, the assessment of the connection between the level of HRP and family well-being has not been the subject of scientific research which determines the relevance of the research in this direction.

Material & methods

Study participants

The research involved 106 families; most of them had been married for more than 12 years. The average age of parents was 35.1 ± 4.2 years. 95.3% of surveyed families had 1 or 2 children. All participants of the survey were informed in detail about the purpose and tasks of the research and indicated their voluntary consent to participate in the research.

Study organization

The research among parents was conducted using online surveying through completing an online questionnaire created with Google forms. The link to the questionnaire was distributed through social networks (Facebook, Instagram) and other available online resources (Viber, Telegram mes-

sengers). In total, the questionnaire contained 74 questions, among which 38 questions suggested receiving textual information, and the rest – numeric data.

Statistical analysis

To analyze the reliability of the questionnaire «Family leisure» offered to the participants, the Cronbach's alpha was used, the basis of which is the ratio of the variances of each individual question to the variance of the total scale. If not the real value but the random error in the answers to the questions is measured, then the variance of the sum will be the same as the sum of the variances of the individual items, so the value of the coefficient will approach zero. Cronbach's alpha was 0.92, and the standardized coefficient was 0.898, that is, it was close to 1 which indicates the high reliability of the questionnaire. The questions that suggested receiving answers in text form were considered separately. In order to assess the representativeness of the sample, the entire set of responses was randomly divided into equal parts, after which Kendall's τ coefficient was calculated. It should be noted that the aforementioned correlation coefficient was calculated for the questions suggesting receiving unambiguous answers. The calculations showed that for all questions the coefficient approached one ($\tau > 0.64$) and was statistically significant ($p < 0.05$). A comparative analysis between categorical variables was carried out using the Pearson's chi-squared test χ^2 . Regarding continuous variables, F-test was used for a comparative analysis. For a comparative analysis of indicators of the current state of well-being of families, depending on the cluster, average ranks of indicators r were calculated and Kruskal–Wallis H test was used. The figure $\alpha = 0.05$ was taken as the level of statistical significance. At the same time, the article gives the exact values of the p-level, and in the case when its value was less than 0.0001, it was noted that $p < 0.01$. Statistical processing of raw data was carried out with the use of the computer program Statistica 10.0 and its additional module Data Mining. In the course of the research clustering was implemented through the use of Data Mining, with the help of which families with children were divided into clusters via the k-means clustering. Data Mining is an intellectual analysis of data, with the help of which artificial intelligence means based on the processing of input data reveal hidden patterns. Moreover, in this module the division of the set of input data into clusters was carried out automatically, and the decision on the number of clusters was taken using cross-validation, in particular V-fold cross-validation which allows selecting and evaluating the best solutions to the problem of clustering mission automatically. Therefore, having analyzed continuous and categorical variables (a total of 74 indicators, 36 of which are categorical variables), the respondents were divided into two clusters. Depending on the type of question, respondents were asked to choose one of the answers, several answers, or to rank the suggested answers in order of their importance. Data mining allows to analyze text data. This approach was used to analyze the answers to the questionnaire without prior coding.

Results

A comparative analysis of parents' answers using k-means clustering showed that the families that partici-

pated in the research were divided into two clusters. The centroids for clustering are presented in the figure (Fig. 1).

At the same time, 62.3% (n = 66) of families were included into Cluster 1 (families with a low level of physical activity), and the remaining 37.7% (n = 40) formed Cluster 2 (families with a medium level of physical activity). The responding families differ statistically significantly (p < 0.05) in terms of the age of the children, overweight of parents, lifestyle, sports activities in childhood, previous physical activity experience, the systematic character of health-improving physical activities together with their child/children, the awareness of how active family leisure affects the well-being of the family, the desire to devote more time to active rest, unhealthy habits of parents – in total, according to 23 categorical indicators. Depending on the cluster, parents prefer different types of active family leisure, have different skills to organize active family rest based on health-improving and recreational technologies, devote different amounts of time to active family rest, etc. (Table 1).

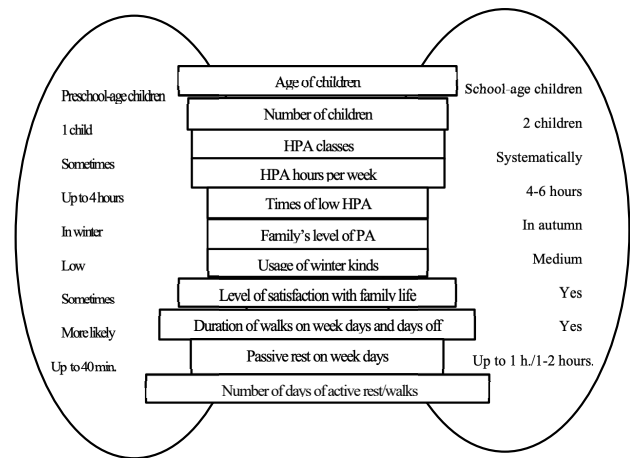


Fig. 1. The centroids for clustering respondents using k-means clustering

Table 1. A comparative analysis of parents' answers (nominal measurement scale), n=106

No.	Questionnaire questions supposing receiving text information	Statistical calculations		
		df	χ^2	p-level
1	Specify the period of your family life	2	4,36	0,1132
2	How many children do you have?	2	4,14	0,1259
3	What is the age of your children?	3	35,78*	0,0000
4	Do you have any chronic diseases?	3	9,88*	0,0196
5	Are you overweight?	3	4,98	0,1731
6	How can you describe the lifestyle of your family?	2	13,14*	0,0014
7	Did you go in for sports in your childhood?	3	12,12*	0,0070
8	Is your professional activity related to physical education and sports?	3	2,38	0,4976
9	Do you regularly engage in health-improving physical activities together with your child/children?	2	6,85*	0,0326
10	How much time per week do you usually devote to active family rest?	3	42,02*	0,0000
11	Do you know how to organize active family rest based on health-improving and recreational technologies?	2	0,71	0,6997
12	Do you know how active family rest impacts the family well-being?	2	2,31	0,3154
13	What kinds of active family leisure do you prefer?	43	81,48*	0,0004
14	What period during the year does your family have less active leisure?	3	35,19*	0,0000
15	Do you care about the state of health of your family members?	1	9,56*	0,0020
16	What measures do you take to preserve the health of your family members?	38	72,82*	0,0006
17	What prevents you from engaging in health-improving and recreational activities?	14	35,67*	0,0012
18	How do you assess the level of family well-being?	3	18,61*	0,0003
19	How do you assess the level of physical activity of your family members?	3	34,22*	0,0000
20	Would you like to expand your knowledge on organizing active leisure?	3	0,50	0,9188
21	How do you assess the level of satisfaction with your family leisure?	3	22,89*	0,0000
22	Do you use winter types of recreation in the organization of active leisure?	2	39,30*	0,0000
23	Would you like to use winter types of recreation in the organization of active leisure?	2	11,45*	0,0033
24	Would you like to devote more time to active recreation?	3	5,21	0,1572
25	Thinking about your family life do you feel satisfied?	3	7,17	0,0666
26	How much time do you usually devote to active family leisure on weekdays?	4	4,65	0,3256
27	How much time do you usually devote to active family leisure on days off?	4	13,81*	0,0079
28	How satisfied are you with the availability of places for active family leisure?	2	6,59*	0,0371
29	How important is joint active family leisure for your family?	2	2,66	0,2640
30	Do you have any unhealthy habits?	3	2,42	0,4906
31	How long do your walks usually last on working days?	4	12,74*	0,0126
32	How long do your walks usually last on days off?	4	18,49*	0,0010
33	How much time do your children usually spend passively resting on working days?	4	20,16*	0,0005
34	How much time do your children usually spend passively resting on days off?	4	6,00	0,1993
35	How do you usually spend time with your children?	50	95,12*	0,0001
36	Do you have children of school age?	1	8,15*	0,0043

Note. * – in the case of proven statistically significant difference between indicators at p < 0.05 where df=n-1 is the degrees of freedom, which are the number of answer options provided for a question in the questionnaire; χ^2 is the Pearson's chi-squared test, used for the analysis of contingency tables; p-value is the achieved significance level

Dividing families by the duration of recreational activities on days off made it possible to make sure that the majority of families of Cluster 2 (whose share was 87.5%) are involved in health-improving and recreational activities for more than 2 hours. At that time, Cluster 1 included 54.5% of such families. There have been revealed differences in dividing by the duration of family walks on weekdays with regard to clusters. Among the families of Cluster 1, there are 13.2% more those who do not take walks at all and 6.4% less of those who take walks for more than 2 hours on weekdays. At the same time, among them, 20.4% more families take walks with a duration of up to 40 minutes, and 23.8% less of those who walk in the fresh air on weekdays for over 40 minutes up to 1 hour. A comparative analysis of the dividing families by the duration of walks on days off showed that Cluster 1 included 27.2% more families that either do not take walks on days off at all, or their walks last up to 40 minutes. Among the families of Cluster 2, no family indicated that they do not have walks on days off or that their walks are short. In the course of the research, dividing of families according to the duration of passive recreation of their children was studied. It was found that Cluster 2 included the families in which 9.5% more children do not use passive recreation. Among the families of Cluster 1, there are 30.0% more families whose children have passive rest for 1-2 hours and 12.7% more of those whose passive rest lasts for more than 2 hours (Fig. 2).

The respondents differed in terms of separate evaluations of the motives for engaging in active leisure and the reasons that prevent them from it; evaluations of motives for engaging in winter recreation and the reasons limiting their opportunities; evaluations of the state of their families in the current period; the number of days per week when they engage in recreational activities on weekdays and days off, as well as the number of days per week when they engage in health-improving physical activity and take walks together with their children. It is worth emphasizing that regardless of the cluster, the ranks of motives for engaging in winter recreation of the families do not differ among themselves (Table 2). The research allowed establishing that, according to the cluster to which the family was assigned, there were found statistically significant ($p < 0.05$) differences between them in the following ranks: hardening, moving games and joint performance of physical exercise complexes as motives for engaging in active leisure time, lack of time, lack of interesting offers, a low level of quality of services provided by entertainment centers, limited budget, lack of knowledge and skills in organizing active leisure, and lack of desire to systematically engage in health-improving and recreational physical activity as reasons that prevent from engaging in active leisure, the results of ranking of reasons that prevent from engaging in winter recreation activities, self-assessment of the current state of the family according to all the studied indicators, as well as the number of days when the family was engaged in family recreation activities during the previous week and the number of days when the family went for a walk during the previous week.

The degree of family well-being was assessed with the selected parameters that reflect the family condition in the current period using a 10-point scale, where 0 is the worst condition and 10 is the highest degree of satisfaction. A comparative analysis of the current state of family well-being

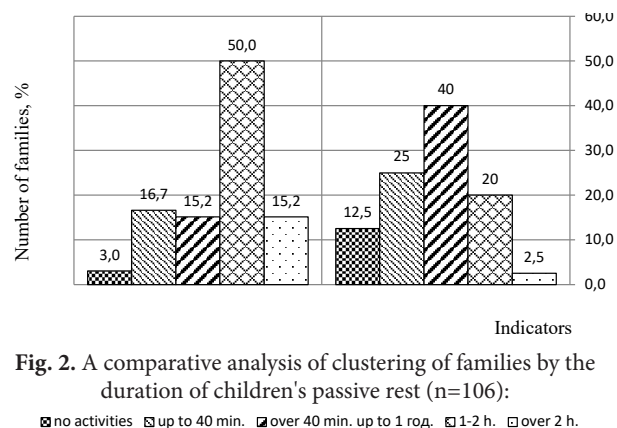


Fig. 2. A comparative analysis of clustering of families by the duration of children's passive rest (n=106):

made it possible to establish that according to all studied indicators statistically significant ($p < 0.05$) differences can be observed in the families, and the families of Cluster 2 have higher evaluations of indicators (Table 3). Dividing families according to the level of family well-being showed that Cluster 2 included all families with a high level of current family well-being, and Cluster 1 consisted of families, among which 47.0% have high, 37.8% – medium, and 15.2% – low level. Obviously, families assigned to Cluster 1 have untapped potential for achieving family well-being through the use of active forms of leisure, in particular means of health-improving and recreational physical activity.

Discussion

The analysis of literature on the subject shows that despite the interest of scientists in increasing the level of family well-being and the search for the latest technologies to improve it, there are some contradictions between the complexity of properly organizing active family leisure and the lack of clearly defined connections with the components of family well-being; the urgent need to increase the levels of physical activity and family well-being and a lack of understanding of the factors affecting them (Agate et al., 2009; Alonso et al., 2019; Taylor et al., 2012). Rational planning of family leisure, taking into account the interests of all family members while choosing the kind of family leisure contribute to a high-grade rest and interesting spending of free time. Active rest associated with various health-improving and recreational activities is one of the constructive, socially approved, and personally useful types of leisure activities and recreation (Andrieieva et al., 2019; Galan et al., 2019, 2021; Yelizarova et al., 2020b). The importance of increasing the level of HRPAs in various population groups is indicated in the works of numerous authors (Drozdovska et al., 2020; Kashuba et al., 2021a,b). Besides, the value of using means of HRPAs to improve the quality and satisfaction with life is emphasized (Alonso et al., 2019; Hakman et al., 2020; Krutsevich et al., 2021). We have confirmed and expanded the results of the research on the correlation between family functioning and life satisfaction (Hodge et al., 2018; Williamson et al., 2019). Another result of this research was an increase in the level of family well-being and life satisfaction in the group with a higher level of participation in family health-improving and recreational activities. In the course of the research, families were divided according to the levels

Table 2. Comparative analysis of parents' answers (rank measurement scale), n=106

No.	Questionnaire questions supposing receiving numeric data (rank)	Statistical calculations			
		Intergroup variance (df=1)	Total variance (df=104)	F	p-level
1	regular health-improving and recreational physical activities	3,38	431,72	0,81	0,3692
2	visiting resorts/sanatoriums	5,57	369,49	1,57	0,2135
3	walks in the fresh air	12,02	399,91	3,13	0,0800
4	hardening	20,58	361,45	5,92*	0,0167
5	visiting entertainment centres	0,41	442,53	0,10	0,7560
6	moving games	16,58	352,93	4,89*	0,0293
7	joint performance of physical exercise complexes	33,11	361,04	9,54*	0,0026
8	lack of free time	70,19	483,93	15,08*	0,0002
9	lack of interesting offers	85,31	323,60	27,42*	0,0000
10	low level of quality of services provided by entertainment centres	25,17	362,91	7,21*	0,0084
11	limited budget	104,05	346,86	31,20*	0,0000
12	lack of knowledge and skills in organizing active leisure	52,20	362,37	14,98*	0,0002
13	lack of desire to systematically engage in health-improving and recreational physical activity	64,55	440,36	15,24*	0,0002
14	lack of reasons	15,49	561,05	2,87	0,0932
15	improvement of physical health of family members	1,00	341,00	0,31	0,5812
16	hardening of family members	4,68	358,77	1,36	0,2469
17	improvement of family well-being	0,01	380,72	0,00	0,9623
18	interesting and emotionally charged leisure	0,41	292,53	0,15	0,7023
19	common hobbies	0,49	363,85	0,14	0,7077
20	improving endurance and physical performance of family members	0,17	412,67	0,04	0,8350
21	improving mental performance	1,35	449,60	0,31	0,5779
22	lack of time	119,05	355,17	34,86*	0,0000
23	lack of interesting offers	81,65	309,76	27,41*	0,0000
24	low level of quality of services provided by entertainment centres	32,51	269,72	12,53*	0,0006
25	lack of knowledge	102,82	236,92	45,13*	0,0000
26	lack of skills in organizing active leisure	117,33	279,24	43,70*	0,0000
27	lack of opportunities to join organized leisure	99,70	343,90	30,15*	0,0000
28	lack of reasons	19,43	511,07	3,95*	0,0494
29	quality of family life	189,80	628,16	31,42*	0,0000
30	state of health of family members	139,68	549,72	26,43*	0,0000
31	psychological climate in the family	136,74	595,79	23,87*	0,0000
32	level of social well-being of the family	177,61	518,24	35,64*	0,0000
33	level of satisfaction with everyday family life	115,05	531,60	22,51*	0,0000
34	usual emotional background	122,13	637,73	19,92*	0,0000
35	level of mutual support of family members	153,03	784,63	20,28*	0,0000
36	social activity of the family	97,67	605,84	16,77*	0,0001
37	number of days when the family was engaged in family recreation activities	54,24	260,22	21,68*	0,0000
38	number of days when the family went for a walk	32,29	437,75	7,67*	0,0066

Note. * - in the case of proven statistically significant difference between indicators at $p < 0.05$ where $df=n-1$ is the degrees of freedom for the between group variance, which reflects character variation in each cluster of parents, and $df=n_1+n_2-2$ is the degrees of freedom for the total variance, which is calculated for the entire set of data; F is the Fisher's test; p-value is the achieved significance level

Table 3. Well-being of families depending on the level of physical activity

Indicators of the state of families in the current period	Low level of physical activity		Medium level of physical activity		Statistical calculations	
	Σr	r	Σr	r	H	p
quality of family life	2726,50	41,31	2944,50	73,61	28,28	<0,001
state of health of family members	2819,00	42,71	2852,00	71,30	22,42	<0,001
psychological climate in the family	2871,50	43,51	2799,50	69,99	18,97	<0,001
level of social well-being of the family	2686,00	40,70	2985,00	74,63	31,07	<0,001
level of satisfaction with everyday family life	2886,00	43,73	2785,00	69,63	18,10	<0,001
usual emotional background	2916,50	44,19	2754,50	68,86	16,38	0,0001
level of mutual support of family members	2978,50	45,13	2692,50	67,31	13,37	0,0003
social activity of the family	2827,50	42,84	2843,50	71,09	21,68	<0,001

Note. PA – physical activity, is the average rank of parameter; Σr is the sum of the ranks; H is the Kruskal–Wallis test; p-value is the achieved significance level

of family well-being, physical activity, and satisfaction with leisure time. In general, respondents are characterized by good or satisfactory levels. More than half of respondents with a sufficient level of physical activity rated their family well-being and satisfaction with family leisure as high or good. A more thorough examination of this issue reveals a more complex connection between involvement in active family leisure and well-being. Similar results are reported in Townsend's research indicating that family involvement in leisure is an important predictor of elements of family well-being from different perspectives (Townsend et al., 2017). This confirms the importance of family in the formation of a healthy lifestyle, communication skills, social integration, and the formation of such positive psychological aspects as self-esteem and moral values. Internal and external factors influence the organization and content of family leisure (Bakiko et al., 2022). We have updated the information on factors of external influence, that is the dependence of family leisure time on the workload and professional activity of parents, previous physical activity experience, family type (in accordance with the period of being officially married), an unformed culture of family leisure, lifestyle, etc. There have been specified innovative forms of leisure activities, in particular, winter types of recreation suitable for families for the following reasons: relative financial availability, convenient location, availability on days off, independence from the season, and weather conditions. Provisions regarding ensuring the proper quality and satisfaction with life and family well-being through HRP, approaches in the direction of forming an appropriate level of physical activity, and the connection of well-being with the level of physical activity of families have gained further development.

Conclusions

The relationship was identified between the level of health-improving and recreational physical activity and family well-being. Thus, the families that participated in the survey by the cluster analysis method were divided into two clusters with a medium and a low level of physical activity. Such families differ significantly ($p < 0.05$) according to 23 categorical indicators. Depending on the cluster, parents prefer different types of active family leisure, have different skills in organizing active family recreation based on health-improving and recreational technologies, and devote different amounts of time to active family recreation. All families with a high level of the current state of family well-being belonged to Cluster 2 (with a medium level of physical activity). Only 47.0% of families included in Cluster 1 (with a low level of physical activity) have a high level of family well-being, which indicates the need to increase the level of their health-improving and recreational physical activity.

Conflicts of interest

The authors declare that they have no competing interests.

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ВЗАЄМОВ'ЯЗОК МІЖ РІВНЕМ ОЗДОРОВЧО-РЕКРЕАЦІЙНОЇ РУХОВОЇ АКТИВНОСТІ І СІМЕЙНИМ БЛАГОПОЛУЧЧЯМ

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Реферат. Стаття: 8 с., 3 табл., 2 рис., 33 джерела.

Мета дослідження – оцінити взаємозв'язок між рівнем оздоровчо-рекреаційної рухової активності та сімейним благополуччям.

Матеріали та методи. Теоретичний аналіз даних спеціальної науково-методичної літератури, узагальнення, систематизація, соціологічні методи дослідження, методи математичної статистики. Дослідження серед батьків проводилося шляхом онлайн-анкетування через заповнення онлайн-анкети, створеної за допомогою гугл-форм. У дослідженні взяли участь 106 сімейних пар. Переважна більшість досліджених сімей (95,1%) мали до двох дітей (дошкільного та шкільного віку).

Результати. Респонденти були розділені за рівнем рухової активності. До кластеру 1 увійшли сім'ї з низьким рівнем рухової активності, до кластеру 2 – із середнім рівнем рухової активності. Залежно від рівня рухової активності виявлено статистично значущі ($p < 0,05$) відмінності між сім'ями за такими параметрами: мотивація до заняття активним дозвіллям, кількість вільного часу, рівень знань та вмінь щодо організації активного дозвілля, причини, що перешкоджають активному відпочинку тощо. Сім'ї вірогідно відрізнялися ($p < 0,05$) за 23 категоріальними параметрами. Виявлено причини, які перешкоджають участі в оздоровчих та рекреаційних програмах рухової активності. Порівняльний аналіз поточного стану сімейного благополуччя виявив статистично значущі ($p < 0,05$) відмінності за всіма досліджуваними параметрами між сім'ями з різним рівнем фізичної активності, тобто сім'ї з належним рівнем фізичної активності мали вищі показники задоволеності, добробуту та якості життя. Низькі показники сімейного благополуччя свідчать про доцільність залучення таких сімей до активного відпочинку та підвищення рівня оздоровчої та рекреаційної рухової активності.

Висновки. Виявлено зв'язок між рівнем оздоровчо-рекреаційної рухової активності та показниками задоволеності, сімейного благополуччя та якості життя.

Ключові слова: активне дозвілля, задоволеність, якість сімейного життя, зимовий відпочинок.

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