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The interaction of physical activity, joy of movement and quality of life of high school students at different ages

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Abstract

Introduction: The paper presents the results of the interaction analysis between physical activity (PA), joy of movement (PACES) and areas of quality of life (SQUALA) of high school students with different levels of sport performance and different ages. These factors have wider background. Phenomenon of the subjective assessment "PACES" is stepping to the foreground. "PACES" proves high frequency of interactions with the areas of SQUALA, more than a single volume of PA. Despite of enough PA in week and high level of PACES, no expected interactions with areas of SQUALA in high school students were demonstrated. The low number of positive interactions points to the necessity of monitoring this construct, also in the relation to gender, to different sports level, type of school, region, country and age. *Material and Methods:* The survey was attended by 16–19 years old (n = 1302) high school students. The quality of life was examined through SQUALA questionnaire, enjoyment of physical activities by the PACES questionnaire and the level of physical activity in hours per week (PAQ) and by sport level. The data are presented by the descriptive characteristics and statistical significance of the differences, respectively the interactions were evaluated by nonparametric methods. *Results:* The interactions between PA, PACES and SQUALA in high school students with different sports level with different ages have been proven very sporadically. Positive correlations of PA with areas of SQUALA prevails in 18 and 19 years old students. The joy of movement correlates with spiritual well-being in groups of students who carry out the physical activities occasionally and regularly. Positive interactions of joy of movement with physical well-being have not been proven. Negative interactions between the PA, PACES and SQUALA prevails between 16 and 17 years old students. *Conclusion:* The higher age factor and factor of the regular movement in high school students appears to be very important in this study. The results reaffirm the importance of voluntary and organized physical activities which have potential to raise the level of the joy from the movement in life of high school students.

Keywords: joy of movement, physical activity, quality of life

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INTRODUCTION

The quality of life (QOL) can be understood by different layers and perspectives. For our study the quality of life is a concept of the relationship between biological and social aspects mediated by environmental, mental and cultural conditions [1]. According to the World Health Organization [2] the term quality of life represents the individual's perception of their life and their value system in relation to their expectations, goals, standards and involves features as self-perception, subjectivity, satisfaction, physical, cognitive and affective states. The term quality of life can be used many times as a synonym of the health condition [3,4].

Regular physical activity is important in all age groups and it has positive effects on quality of life. There are many benefits of physical activities to psychological-wellbeing which is important especially in age of adolescence. Adolescents are exposed to several stressors from increased demands from school and their personal stormy period lifestyle [5]. Different changes in their lives can be result of decrease in physical activity and increase of emotional and psychological stress which has negative impact to their QOL [6,7].

There are interactions between the quality of life, joy of movement and physical activity. Especially in the process of ontogenesis of adolescents these interactions arise and disappear [8,9]. In academic researches of these interactions we monitor that there are higher positive interactions in early and late adolescence. Lower or no interactions of physical activities with areas of quality of life we monitor in pupils in middle-aged adolescence [10,11]. Another important role in this study is different sports level of adolescents. Correlation between joy of movement and spiritual well-being was found in group of students who perform physical activities occasionally and regularly. According to the [12] participation at any physical activity in the past predicts future overall level of physical activity and the regular physical activity in adolescence has positive impact to be persistently active in the adulthood. Adolescents who did not have any membership in sports club in the past has strong likelihood of being inactive [13]. According to this fact, there is need to organize various sports events which may attract many young people and give them opportunity to find the positive effect of sport for their lives.

The objective of this study was to analyze the interaction between the physical activity, joy of movement and quality of life of adolescents and assess if these interactions differs according to age and sports level.

MATERIAL AND METHODS

The questionnaire survey focused on finding the frequency of physical activity in a week, level of sport performance, joy from the physical activity and the quality of life. The survey was attended by 16–19 years old (n=1302) high school students from Slovak Republic. All participants were informed of the procedures and the main purpose of the study. The procedures presented were in accordance with the ethical standards on human experimentation stated in compliance with the Helsinki Declaration. Physical activity in the week was determined from the total realized hours of the week and hours without physical education. Respondents reported their sport performance levels by their subjective evaluation:

- Passive athletes – do not seek physical activity, attend mandatory sports activities at school or at work
- Occasional athletes – seek physical activity, not regular in a week, physical activity is not organized
- Active athletes – regular activity in a week, no membership in sport organization, member
- Registered and Top athletes – they are members of sport organization, national level, international level, performance and top sport.

For the evaluation of the joy of physical activity we used questionnaire PACES – Physical Activity Enjoyment Scale which consist of 16 statements to which are respondents express themselves by the 5 points, Likert scale. Total score is obtained by the counting of individual answers. High values represent the joy from the physical activity and the low values from summary score represents less joy from the physical activity [14].

The questionnaire of quality of life contained several parts from the SQUALA questionnaire [15,16]. The questionnaire parts were evaluated from the point of view:

- 1st: sphere of physical well-being – health, sleep, solution of everyday activities, do not have problems
- 2nd: sphere of psychosocial well-being – family, personal relationships, intimate relationships, hobbies, safety
- 3rd: sphere of spiritual well-being – justice, freedom, beauty and art, truth
- 4th: sphere of material well-being – money, good food
- 5th: education – to be educated, to go to school
- 6th: leisure time – possibility to spend your free time, have enough things for play and fun
- 7th: appearance and ownership of the things – look good, to dress nicely, have things that I like
- 8th: orientation to the future – to have children and job in the future that will enjoy

The questionnaire defines spheres from the objective aspect: *"how it is important to you ..."* and from the second subjective viewpoint: *"how are you satisfied with ..."*

Both items are assessed on a 5-point scale depending on the importance of each item for their life (1 totally unimportant; 2 little important; 3 medium important; 4 very important; 5 the most important) and (1. Very dissatisfied, 2. Dissatisfied, 3. Medium satisfied, 4. Satisfied, 5. Very satisfied). For the data presentation we used basic descriptive statistics (frequency n, arithmetical mean M, standard deviation SD, mathematical difference of averages "d"). Differences between dependent groups were assessed by Kruskal Wallis Test. For finding the interaction between criteria "frequency of physical activity in a week" and "areas of quality of life" we used the Spearman´s correlation coefficient (r_s). For the assessment of the statistical significance of differences we used the level of significance $p<0.20$, $p<0.10$, $p<0.05$, $p<0.01$.

RESULTS

By the comparison analysis of 16 to 19 years-old high school students can be said that statistically significant differences between groups with different sports level are very sporadic (Table 1, 2, 3). The load of physical activities of high school students divided to groups according to sports level is closely related with increasing sports level ($p<0.01$). With increasing sports level of 16 to 18 years-old groups the joy of movement has also grown ($p<0.05$). In 19 years-old students with different sports level was the joy of movement at the same level.

Higher values of total physical activity per week are found at 17 years-old ($M_{17} = 8.69$, $SD = 3.26$) and 18 years-old ($M_{18} = 7.97$, $SD = 3.45$) active athletes with comparison with 16 years-old ($M_{16} = 7.68$, $SD = 2.89$) and 19 years-old ($M_{19} = 7.11$, $SD = 3.36$), $\chi^2 = 12.93$, $p < 0.01$. Groups of passive, occasional and registered – top athletes with different age achieve the same level of total physical activity, out-of-school physical activity in a week and joy of movement (Table 3). By comparing quality of life level between 16 to 19 years-old high school students with different sports level, differences were found rarely. They can be found in groups of passive athletes in evaluation of subjective quality of life from the point of view of importance $\chi^2 = 10.37$, $p = 0.02$. Passive athletes with a growing age attached to the area of education higher importance ($M_{16} = 3.50$, $SD = 0.81$, $M_{17} = 3.52$, $SD = 0.81$, $M_{18} = 4.03$, $SD = 0.83$, $M_{19} = 3.97$, $SD = 0.79$). 17 and 18 years-old students in group of passive athletes attached higher importance to the area of appearance and property affairs ($\chi^2 = 10.37$, $p = 0.02$) than the 16 years-old students. Registered and top athletes in the age of 17 years ($M_{17} = 4.22$, $SD = 0.78$) and 18 years-old ($M_{18} = 4.21$, $SD = 0.85$) attached higher importance to the future focusing than the 16 years-old students ($M_{16} = 4.04$, $SD = 0.79$) and 19 years-old students ($M_{19} = 3.93$, $SD = 0.90$), $\chi^2 = 9.48$, $p = 0.02$. Differences between the age groups in the areas of quality of life from the viewpoint of well-being were registered only in occasional athletes in education area ($\chi^2 = 13.04$, $p < 0.00$) and in active athletes at the psychosocial area ($\chi^2 = 8.74$, $p = 0.03$). The occasional athletes in age of 17 years ($M_{17} = 3.74$, $SD = 0.80$) and 18 years ($M_{18} = 3.61$, $SD = 0.84$) are less satisfied with the education area than their 16 years-old ($M_{16} = 3.88$, $SD = 0.77$) and 19 years-old schoolmates ($M_{19} = 3.95$, $SD = 0.75$). Active athletes in the age of 18 years are least satisfied with the psychosocial area ($M_{16} = 3.69$, $SD = 0.55$, $M_{17} = 3.73$, $SD = 0.55$, $M_{18} = 3.59$, $SD = 0.52$, $M_{19} = 3.76$, $SD = 0.58$). In the remaining areas of quality of life in students with different age and sports level, no statistically significant differences were noted.

Results of correlation analysis showed differential interactions between the total physical activity, joy of movement and the quality of life areas in 16, 17, 18 and 19 years-old high school students with different sports level (Table 4, 5).

Positive interactions of total PA with PACES and SQUALA prevails in 18 and 19 years-old students who perform physical activities occasionally, actively and passively (Table 4). In occasional athletes in the age of 18 years the total PA correlates with joy of movement (r_s = 0.145, p = 0.112), psychosocial well-being (r_s = 0.141, p = 0.121), material area (r_s = 0.157, p = 0.085) and with the area of appearance and property affairs (r_s = 0.177, p = 0.051). In 18 years-old students who perform PA actively the positive interactions with material well-being (r_s = 0.209, p = 0.018) and with the area of free time in active athletes (r_s = 0.210, p = 0.018) and registered and top athletes (r_s = 0.150, p = 0.166) were noticed. Positive interactions of physical activity with the joy of movement have been proven in 19 years-old students who perform physical activities passively (r_s = 0.417, p = 0.122), also there were interactions with spiritual well-being (r_s = 0.469, p = 0.078) and with material well-being of occasional athletes (r_s = 0.281, p = 0.017). Positive interactions of total physical activity with joy of movement have been proven in 16 years-old active and 17 years-old passive athletes. Negative associations of physical activity with joy of movement and the quality of life areas were noticed only in 16 and 17 years-old students.

Table 1. Level of physical activity, joy of movement and quality of life areas of 16 and 17 years-old students with different sports levels

	Indicators	Sports performance 16 years								Sports performance 17 years							
		Passive [n=28]		Occasional [n=120]		Active [n=125]		Registered and Top [n=112]		Passive [n=24]		Occasional [n=139]		Active [n=106]		Registered and Top [n=109]	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
	Physical activities per week without physical education [h]	1.04	0.96	2.73	1.72	5.61	2.87	5.61	2.87	0.88	1.15	3.14	2.01	6.47	3.34	9.28	3.82
	Total physical activities per week [h]	2.96	1.10	4.92	1.80	7.68	2.89	7.68	2.89	2.83	1.46	5.13	1.98	8.70	3.26	11.38	3.81
	Joy of movement	49.04	7.27	50.08	6.25	51.82	6.84	51.82	6.84	51.08	8.11	49.12	5.12	50.05	5.18	51.01	6.13
How important for you ...	Physical well-being	4.06	0.54	4.20	0.58	4.02	0.67	4.02	0.67	4.34	0.59	4.24	0.63	4.19	0.58	4.23	0.54
	Psychosocial well-being	3.50	0.48	3.73	0.49	3.73	0.52	3.73	0.52	3.68	0.46	3.71	0.55	3.78	0.48	3.85	0.50
	Spiritual well-being	3.89	0.70	4.03	0.64	3.94	0.67	3.94	0.67	3.96	0.75	3.98	0.71	4.06	0.63	4.03	0.60
	Material well-being	3.80	0.66	3.67	0.84	3.68	0.85	3.68	0.85	3.98	0.84	3.80	0.89	3.87	0.80	4.00	0.74
	Education	3.50	0.81	3.91	0.80	3.81	0.84	3.81	0.84	3.52	0.81	3.77	0.90	3.75	0.85	3.86	0.78
	Leisure time	3.73	0.84	3.81	0.83	3.81	0.83	3.81	0.83	4.19	0.84	3.96	0.84	3.92	0.88	4.06	0.79
	Appearance and Property affairs	3.14	0.92	3.49	0.84	3.50	0.77	3.50	0.77	3.79	0.78	3.43	0.93	3.57	0.88	3.66	0.79
	Focusing on the future	3.88	1.02	4.13	0.78	4.04	0.79	4.04	0.79	3.63	1.07	4.05	0.81	4.25	0.82	4.22	0.78
How are you satisfied ...	Physical well-being	3.59	0.59	3.72	0.61	3.68	0.65	3.68	0.65	3.69	0.72	3.72	0.64	3.79	0.51	3.86	0.59
	Psychosocial well-being	3.49	0.46	3.66	0.55	3.69	0.55	3.69	0.55	3.72	0.59	3.69	0.54	3.73	0.55	3.82	0.49
	Spiritual well-being	2.82	0.68	2.93	0.75	3.07	0.71	3.07	0.71	3.22	0.94	3.01	0.74	3.04	0.77	3.23	0.73
	Material well-being	3.45	0.74	3.61	0.79	3.60	0.83	3.60	0.83	3.69	0.92	3.53	0.77	3.59	0.87	3.63	0.89
	Education	3.75	0.67	3.88	0.77	3.77	0.75	3.77	0.75	3.63	1.11	3.74	0.80	3.71	0.78	3.66	0.73
	Leisure time	3.63	0.74	3.68	0.80	3.82	0.79	3.82	0.79	3.65	1.05	3.64	0.90	3.81	0.85	3.84	0.88
	Appearance and Property affairs	3.57	0.68	3.81	0.70	3.87	0.75	3.87	0.75	3.89	0.78	3.88	0.60	3.98	0.58	3.96	0.68

M – average; SD – standard deviation; n – count; h – hour

Table 2. Level of physical activity, joy of movement and quality of life area of 18 and 19 years-old students with different sports levels

	Indicators	Sports performance 18 years								Sports performance 19 years							
		Passive [n=40]		Occasional [n=122]		Active [n=127]		Registered and Top [n=87]		Passive [n=15]		Occasional [n=72]		Active [n=53]		Registered and Top [n=23]	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
	Physical activities per week without physical education [h]	1.35	1.23	3.16	2.07	5.83	3.47	9.11	3.93	0.80	1.01	3.29	1.72	5.36	3.21	9.74	3.74
	Total physical activities per week [h]	3.23	1.40	5.13	2.14	7.97	3.45	11.10	4.01	2.80	1.42	4.93	1.99	7.11	3.36	12.09	3.73
	Joy of movement	53.65	7.25	49.69	6.33	51.69	6.84	52.13	6.29	50.87	8.85	51.54	7.79	52.64	6.64	54.52	5.84
How important for you ...	Physical well-being	4.04	0.68	4.24	0.61	4.11	0.73	4.17	0.68	3.92	0.66	4.16	0.68	3.93	0.80	3.91	0.78
	Psychosocial well-being	3.74	0.46	3.78	0.56	3.80	0.58	3.77	0.63	3.62	0.64	3.83	0.48	3.75	0.46	3.76	0.51
	Spiritual well-being	3.92	0.70	3.96	0.65	3.89	0.72	3.84	0.78	3.68	0.82	3.90	0.66	4.00	0.52	3.86	0.63
	Material well-being	3.88	0.81	3.77	0.84	3.83	0.84	3.90	0.83	3.43	1.00	3.63	0.87	3.66	0.80	4.04	0.74
	Education	4.03	0.83	3.70	0.72	3.74	0.91	3.72	0.89	3.97	0.79	3.76	0.79	3.81	0.84	3.93	0.74
	Leisure time	3.91	0.80	3.94	0.83	3.86	0.92	3.96	0.76	3.93	0.86	3.93	0.71	3.86	0.89	3.70	0.79
	Appearance and Property affairs	3.76	0.75	3.61	0.85	3.51	0.96	3.60	0.91	3.58	1.10	3.58	0.81	3.60	0.83	3.83	0.72
	Focusing on the future	3.81	0.83	4.07	0.89	4.00	1.00	4.21	0.85	3.70	0.90	4.21	0.66	4.08	0.79	3.93	0.90
How are you satisfied ...	Physical well-being	3.54	0.66	3.63	0.61	3.74	0.60	3.78	0.64	3.53	0.53	3.83	0.58	3.80	0.76	3.62	0.68
	Psychosocial well-being	3.62	0.45	3.64	0.58	3.59	0.52	3.71	0.54	3.70	0.48	3.81	0.46	3.76	0.58	3.73	0.54
	Spiritual well-being	3.05	0.68	3.06	0.74	3.20	0.77	3.11	0.81	3.32	0.89	3.26	0.75	3.32	0.78	3.39	0.90
	Material well-being	3.58	0.87	3.57	0.86	3.56	0.82	3.66	0.83	3.43	1.08	3.61	0.68	3.69	0.88	3.78	0.78
	Education	3.65	0.94	3.61	0.84	3.67	0.82	3.60	0.90	4.13	0.74	3.95	0.75	3.93	0.74	3.63	1.06
	Leisure time	3.48	1.01	3.79	0.88	3.76	0.88	3.72	0.95	3.60	1.00	3.88	0.69	3.82	0.81	3.93	0.87
	Appearance and Property affairs	3.68	0.64	3.81	0.75	3.86	0.70	3.85	0.76	3.60	0.69	3.89	0.58	4.11	0.62	4.04	0.71

M – average; SD – standard deviation; n – count; h – hour

Table 3. Comparison of physical activity in the week, joy of movement and quality of life between 16, 17, 18 and 19 years-old students with different sports levels

	Indicators	Sports performance							
		Passive		Occasional		Active		Registered and Top	
		χ^2	p	χ^2	p	χ^2	p	χ^2	p
	Physical activities per week witout physical education [h]	3.88	0.27	6.11	0.11	6.93	0.07	1.91	0.59
	Total physical activities per week [h]	2.25	0.52	0.93	0.82	**12.93****	**0.00**	2.68	0.44
	Joy of movement	7.32	0.06	2.93	0.40	5.72	0.13	7.02	0.07
How important for you ...	Physical well-being	5.85	0.12	1.24	0.74	6.02	0.11	6.32	0.10
	Psychosocial well-being	4.16	0.25	2.99	0.39	1.17	0.76	4.98	0.17
	Spiritual well-being	1.19	0.76	2.32	0.51	2.84	0.42	2.64	0.45
	Material well-being	4.24	0.24	4.09	0.25	4.23	0.24	1.10	0.78
	Education	**10.37***	**0.02**	4.74	0.19	0.60	0.90	1.46	0.69
	Leisure time	3.68	0.30	3.72	0.29	1.24	0.74	6.11	0.11
	Appearance and Property affairs	**9.04***	**0.03**	4.28	0.23	1.15	0.77	1.70	0.64
	Focusing on the future	1.20	0.75	1.33	0.72	5.85	0.12	**9.48***	**0.02**
How are you satisfied ...	Physical well-being	1.07	0.78	4.70	0.20	3.20	0.36	2.65	0.45
	Psychosocial well-being	2.60	0.46	4.16	0.24	**8.74***	**0.03**	1.72	0.63
	Spiritual well-being	4.76	0.19	5.48	0.14	7.12	0.07	3.44	0.33
	Material well-being	1.26	0.74	1.12	0.77	1.12	0.77	0.57	0.90
	Education	3.96	0.27	**13.04****	**0.00**	5.43	0.14	2.05	0.56
	Leisure time	0.64	0.89	3.76	0.29	0.17	0.98	1.42	0.70
	Appearance and Property affairs	3.12	0.37	0.39	0.94	5.74	0.12	2.07	0.56

χ^2 – Kruskal Wallis Test, **p < 0.01; *p < 0.05

Table 4. Correlation of total physical activity in the week with joy of the movement and quality of life of 16 to 19 years-old high school students with different sports performance

			Sports performance															
			16 years				17 years				18 years				19 years			
			Passive	Occasional	Active	Registered and Top	Passive	Occasional	Active	Registered and Top	Passive	Occasional	Active	Registered and Top	Passive	Occasional	Active	Registered and Top
	Joy of movement	r_s	**-0.419**$^{\#}$	0.105	**0.127***	0.047	**0.548**$^{\#}$	-0.085	0.008	-0.048	0.046	**0.145***	0.047	0.108	**0.417***	0.145	-0.169	-0.258
		p	**0.026**	0.253	**0.160**	0.625	**0.006**	0.320	0.932	0.621	0.777	**0.112**	0.602	0.321	**0.122**	0.224	0.228	0.235
How are you satisfied ...	Physical well-being	r_s	-0.048	-0.071	0.030	-0.022	0.156	0.097	0.004	0.005	-0.039	0.050	-0.010	0.016	-0.149	0.060	0.085	0.125
		p	0.806	0.439	0.739	0.815	0.466	0.254	0.971	0.962	0.812	0.582	0.909	0.884	0.596	0.615	0.545	0.571
	Psychosocial well-being	r_s	0.129	-0.046	-0.029	-0.024	0.009	-0.027	0.009	0.075	0.062	**0.141***	0.024	-0.080	0.115	0.082	-0.009	0.245
		p	0.513	0.616	0.745	0.802	0.966	0.751	0.923	0.436	0.706	**0.121**	0.792	0.464	0.683	0.493	0.952	0.260
	Spiritual well-being	r_s	-0.189	-0.068	0.096	-0.072	0.017	0.055	0.004	-0.034	-0.111	0.103	0.028	-0.001	**0.469****	0.069	-0.160	-0.013
		p	0.336	0.458	0.288	0.449	0.936	0.521	0.968	0.728	0.494	0.260	0.758	0.994	**0.078**	0.565	0.253	0.952
	Material well-being	r_s	-0.094	-0.021	0.017	0.031	-0.181	-0.038	0.030	**-0.146***	0.199	**0.157****	**0.209**$^{\#}$	-0.002	-0.259	**0.281**$^{\#}$	0.013	0.060
		p	0.634	0.819	0.854	0.746	0.399	0.655	0.763	**0.130**	0.218	**0.085**	**0.018**	0.986	0.351	**0.017**	0.928	0.786
	Education	r_s	-0.083	0.019	**-0.129***	**-0.143***	-0.207	0.088	-0.057	**-0.178****	0.052	0.106	0.024	-0.031	-0.165	-0.066	0.024	0.180
		p	0.675	0.833	**0.150**	**0.133**	0.331	0.303	0.564	**0.064**	0.751	0.246	0.788	0.777	0.557	0.584	0.863	0.411
	Leisure time	r_s	-0.125	-0.069	-00.013	-0.103	-0.193	-0.015	-0.065	-0.116	0.147	0.027	**0.210**$^{\#}$	**0.150***	-0.336	0.057	-0.051	-0.013
		p	0.528	0.455	.887	0.279	0.366	0.863	0.506	0.229	0.365	0.770	**0.018**	**0.166**	0.220	0.634	0.715	0.951
	Appearance and Property affairs	r_s	-0.133	-0.087	-0.038	-0.004	**-0.478**$^{\#}$	0.000	0.017	0.052	-0.100	**0.177****	0.003	0.101	-0.214	0.133	0.122	0.015
		p	0.500	0.344	0.674	0.968	**0.018**	0.996	0.859	0.595	0.540	**0.051**	0.976	0.354	0.444	0.266	0.384	0.944

r_s – Spearman's rank correlation coefficient; * $p < 0.20$; ** $p < 0.10$; $^{\#}$ $p < 0.05$; $^{\#\#}$ $p < 0.01^{\#\#}$

Table 5. Correlations of joy of movement with individual areas of quality of life of 16–19 years-old high school students with different sports performance

			Sports performance															
			16 years				17 years				18 years				19 years			
			Passive	Occasional	Active	Registered and Top	Passive	Occasional	Active	Registered and Top	Passive	Occasional	Active	Registered and Top	Passive	Occasional	Active	Registered and Top
How are you satisfied ...	Physical well-being	r_s	-0.099	-0.105	0.007	-0.114	0.131	0.028	**-0.178****	**-0.184****	-0.071	0.101	**-0.191**$^{\#}$	-0.099	-0.083	-0.067	-0.080	-0.028
		p	0.615	0.253	0.936	0.231	0.542	0.745	**0.068**	**0.056**	0.663	0.266	**0.032**	0.362	0.770	0.576	0.568	0.900
	Psychosocial well-being	r_s	0.190	**-0.125***	-0.096	**-0.205**$^{\#}$	-0.203	0.089	**-0.138***	**-0.156***	-0.192	0.047	-0.062	**-0.165***	-0.099	**-0.177***	-0.151	0.000
		p	0.333	**0.172**	0.286	**0.030**	0.341	0.295	**0.158**	**0.106**	0.237	0.609	0.490	**0.127**	0.724	**0.137**	0.282	0.998
	Spiritual well-being	r_s	0.017	0.084	**0.211**$^{\#}$	**0.207**$^{\#}$	0.108	0.108	0.024	**0.214**$^{\#}$	**0.371**$^{\#}$	**0.403**$^{\#\#}$	**0.215**$^{\#}$	**0.246**$^{\#}$	0.202	**0.339**$^{\#\#}$	**0.294**$^{\#}$	**0.399****
		p	0.931	0.359	**0.018**	**0.029**	0.616	0.208	0.805	**0.026**	**0.018**	**0.000**	**0.015**	**0.022**	0.471	**0.004**	**0.033**	**0.060**
	Material well-being	r_s	0.156	0.052	0.097	**0.200**$^{\#}$	-0.212	0.054	0.053	-0.003	0.176	**0.159****	-0.010	-0.062	**-0.738**$^{\#\#}$	0.101	0.035	-0.185
		p	0.428	0.572	0.284	**0.034**	0.319	0.524	0.587	0.975	0.277	**0.081**	0.907	0.566	**0.002**	0.396	0.802	0.398
	Education	r_s	0.241	**-0.201**$^{\#}$	**-0.174****	0.041	-0.122	**0.212**$^{\#}$	-0.083	**0.132***	0.099	**0.134***	-0.053	**0.229**$^{\#}$	-0.004	0.027	-0.075	-0.044
		p	0.218	**0.028**	**0.053**	0.668	0.570	**0.012**	0.396	**0.173**	0.545	**0.141**	0.555	**0.033**	0.990	0.825	0.595	0.843
	Leisure time	r_s	**0.282***	-0.068	**-0.166****	**-0.216**$^{\#}$	**-0.272***	-0.014	-0.113	-0.113	-0.038	0.035	0.053	-0.005	**-0.365***	-0.083	-0.033	-0.093
		p	**0.146**	0.463	**0.065**	**0.022**	**0.198**	0.869	0.247	0.244	0.817	0.703	0.558	0.965	**0.181**	0.490	0.812	0.674
	Appearance and Property affairs	r_s	**0.433****	0.014	**-0.173****	**-0.418**$^{\#\#}$	**-0.328***	0.038	-0.093	**-0.140***	-0.171	0.027	-0.080	**-0.143***	**-0.685**$^{\#\#}$	0.096	-0.118	**-0.420****
		p	**0.021**	0.876	**0.054**	**0.000**	**0.118**	0.659	0.341	**0.147**	0.292	0.768	0.373	**0.185**	**0.005**	0.424	0.401	**0.046**

r_s – Spearman's rank correlation coefficient; * $p < 0.20$; ** $p < 0.10$; $^{\#}$ $p < 0.05$; $^{\#\#}$ $p < 0.01$

The highest appearance of interactions in both positive and negative terms were noticed at correlation of joy of movement with quality of life areas (Table 5). High appearance of positive interactions with spiritual well-being are found in 16 to 19 years-old students who performs physical activities occasionally ($p < 0.05$), actively ($p < 0.05$) and on top level ($p < 0.05$). Positive interactions of joy of movement are found in education area of 17 and 18 years-old occasional athletes (17 years-old: $r_s = 0.212$, $p = 0.012$; 18 years-old: $r_s = 0.134$, $p = 0.141$) and registered athletes (17 years-old: $r_s = 0.132$, $p = 0.173$; 18 years-old: $r_s = 0.229$, $p = 0.033$). Joy of movement associated with the material well-being is found in 16 years-old registered athletes ($r_s = 0.200$, $p = 0.034$) and 18 years-old occasional athletes ($r_s = 0.159$, $p = 0.081$). In 16 years-old students who perform physical activities passively were found positive interactions of joy of movement with the areas of free time ($r_s = 0.282$, $p = 0.146$) and appearance and property affairs ($r_s = 0.433$, $p = 0.021$). Overall, the negative interactions predominate with areas of psychosocial well-being, free time, appearance and property affairs.

DISCUSSION

Adolescence period in high school belongs to the most sensitive period of self-awareness, need to look for regular physical activity connected with joy and subjective need for improving quality of life. It shows that subjective evaluation of satisfaction attribute with areas of quality of life significantly affects results of interactions between defined factors. Joy of movement [17] is one of the main attribute of any free-time activity [18] and it forms a basis of long-term participation on the physical activities [19] and in top sport performance [20] of an individual.

In comparison with all-Slovak researches [10], apart from the influence of gender factor [9], sports level [8,10,21], sport preference, type of high school and region on the observed construct in high-school students, the influence of age factor has also been confirmed. Influence of age factor to the interaction between the physical activity and quality of life was confirmed in the ontogenesis of adolescents and in kindergarten teachers in younger, middle and older adults [22]. Monitored high-school students reached the highest physical activity in the age from 17 to 18 years and they were more critical to the evaluation of their quality of life. Positive interactions of physical activity with joy of movement and quality of life prevails in 18 and 19 years-old students. In 16 and 17 years-old high school students is frequency of positive interactions unique. This fact is probably related with arrival and social adaptation on the high school environment, adulting and preparation for universities.

The joy of movement shows highest occurrence of positive interactions with areas of spirituality (satisfaction with justice, freedom, beauty, art and truth) and with area of education (satisfaction with level of education, school possibilities) in most high-school students with different sports level. In the case of subjective well-being, positive correlation occurs in 18 and 19 years-old students who search for physical activities, performs them actively or they are active athletes. Positive interactions of joy of movement with the area of education are most common in 17 and 18 years-old students who searching for the physical activity occasionally or they are top athletes.

CONCLUSION

Despite of increasing volume of physical activities and reasonable joy of movement, in high-school students divided to groups according sports level and age, the positive interactions with the areas of quality of life has been proven minimally. However, these rare interactions confirm the claim from previous researches about the positive influence of physical activities realized with joy and fun, pleasure and enthusiasm to the areas of quality of life in high-school students who perform organized physical activities regularly.

Low frequency and significance of interactions of physical activities with areas of quality of life points to the necessity of further observation of this construct in the life of high-school students. Questions which will can concretize another determinant factor of this relationship are arise. One of them can by deeper selection of files based on the level of joy of movement.

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