

THE INFLUENCE OF PHYSICAL ACTIVITIES ON THE QUALITY OF LIFE OF ADOLESCENTS

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Abstract

The article points to relationship between the level of physical activity during the week and the quality of life of adolescents with different of sport performance level in the middle and late adolescence. There were involved 470 adolescents with different level of sport performance level. Data about motor activity and quality of life were obtained through a modified questionnaire SQUALA. The final data are presented by basic descriptive statistics. The differences and relationships between variables were assessed by non-parametric tests. The results presented differential relation between motor activities realized during the week and the quality of life of respondents in the middle and late adolescence or in different level of sport performance level. The highest values of significant relationships with the quality of life from the perspective of satisfaction were found among adolescents in the middle period of adolescence. We have found a positive relationship to the most spheres of quality of life in registered athletes in middle adolescence and occasional athletes in late adolescence. In the group of registered athletes we have not found any causality of physical activity during the week to the individual spheres of quality of life.

Key words: *quality of life. physical activity. sport. adolescence*

Introduction

The term "quality of life" has become a modern term used by both amateur and professional sports people. Its importance is associated with several attributes, the concept is relatively new, interdisciplinary, multidimensional, but its notion is very controversial and relatively difficult to grip (Heřmanová, 2012). For the first time we encounter the term "quality of life" in Greek philosophy, which was the idea of happiness based on the feeling of subjective well-being and the internal arrangement of things. Democritus argued that happiness and satisfaction do not depend on our surroundings but on our attitude to it (Sýkorová, 2008). Šulganová according to Aristotle (2009) characterized happiness as a feeling of one's own goodness. The satisfaction and prosperity were represented by the term "eudaimonia". Beatitude was defined as the highest goodness realized by the activity of people as a presumption of moral perfection which can be understood as filling and realization of morality every day. The term "quality of life" is thus influenced by its history and occurs also in the works of classical authors, albeit in different contexts as it is understood today. Ondrejko (2003) describes this term as overall satisfaction with life, general feeling of mental harmony, life satisfaction and personal well-being. It is also linked to the maturity and integrity of the person, his education and intelligence, with health issues, the value of the individual and society. The quality of life can be analyzed from several perspectives - psychological, philosophical, biological, sociological, economic and political. According to Sadovsky (2011) quality of life is divided into two basic dimensions, which are objective and

subjective quality of life. Objective well-being of the quality of life in a wider social understanding is assessed by the industrial and economic development, the level of health in society and education and achieving social and cultural needs of members of society. Křivohlavý (2004) puts forward three theories how to understand the subjective well-being based on the life goals, the satisfaction of living needs theory and the theory of biological foundations of feelings of well-being. Subjective well-being is defined by the author as "cognitive and emotional evaluation of one's own life". This concerns both positive and negative emotions, affects and moods, a man's point of view of on his future plans, their realization and expectations. It is always based on a specific person and on questioning of his subjective feelings and states. According to Kebza (2005), between predictors and determinants of personal well-being are: health state, objective indicators of activity, physical functions, subjective assessment of overall health, socio-economic status, age, religious activities, ethnicity, retirement, widowhood, parenthood, social support, life events, orphanage, personality features and self-esteem. The quality and quantity of their development according to Šolcová and Kebza (2004) have close connection with personal well-being. Developmental period of adolescence lasts from about 13-15 to 20-22 years. This period is characterized by the onset and culmination of physical and sexual maturation. Beginning of specific hormonal activity accelerates the growth and development of secondary sexual signs. Boys start this period with first nocturnal emission, which begins at around 15th year of age, while in girls menarche starts at the age of 13.

By completion of physical development at the age of about 25 years adolescents become socially and emotionally mature personalities. According to Vágnerová (2000) adolescence is divided into pubescence period (between 11th and 15th year of age) and adolescence period (between 15 and 20 years of age). According to Macek (2003) adolescence is divided into three phases: early adolescence (10-13 years), middle adolescence (14-16 years), and late adolescence (17-22 years). The period of adolescence is characterized by the gradual release of relations with parents and preference of relations with peers. Emotional and sexual life develops very intensively, however at the beginning adolescent is socially and morally not matured enough; he seeks security, does not trust any authority, and has a tendency to take risks. This period is also characterized by rebellion, idealism and dramatic world of conflicting tendencies. Later there appear and extend the abilities of abstract thinking, attitudes, beliefs, and mental life consolidate. This leads to the development of self-confidence, self-esteem, independence, integration of personality. At the end of adolescence mature individual reaches the peak of intelligence and cognitive abilities (Macek, 2003). According to the quoted author and Taxová (1987), in adolescence period it is equally essential, besides biological criteria (completion of physical growth and sexual maturation), achieving psychological (achieving full autonomy), sociological (acquiring the appropriate role for social adaptation) and teaching (reaching a certain level of education to obtain professional qualifications) criteria. By fulfilling these criteria individual becomes an adult.

The Quality of life is closely related to the different stages of development. The quality of life is perceived differently in adolescence and in adulthood or retirement period. Some of the common features that affect satisfaction or dissatisfaction with life, however, can be found in all stages of development (Sejčová, 2006). The evaluation of life satisfaction depends on personal comparisons of one's own criteria and perceived life circumstances (Valois et al., 2002). As reported by Sýkorová and Blatný (2008), overall life satisfaction in adolescents is associated with different variables, and environmental and demographic variables, socioeconomic status, temperament variables and personality. Life satisfaction is determined more by positive orientation of mental health, which defines psychological wellbeing as the absence of psychopathology symptoms (Valois et al., 2002). The studies of satisfaction with the quality of life in adolescents were monitored in relation to the frequency of leisure activities (Gilman 2001), gender (Hall-Lande, 2007), risky and violent behavior, risky sexual behavior, use of alcohol, tobacco, drugs, etc. (Züllig et al., 2001, Valois et al., 2002). The results point to the lack of work experience of adolescents in the spheres of communication, stress management, decision making, problem solving and goal setting.

The adolescents with poor experience can compensate their own dissatisfaction by risky sexual behavior, and symptoms of depression may also occur in a higher rate. After the age of 15, girls reported depressive symptoms and depression two times higher than boys (Hall-Lande, 2007). It turns out that boys are more satisfied with life than girls are (Sýkorová and Blatný, 2008). Psychologists have found that people dedicated to physical exercise regularly at least three times a week as compared to individuals who do not perform any activities, are more satisfied with their lives. During physical activities certain substances such as endorphin (brings elation, a feeling of calm, pleasant feeling of relaxation, improves the quality of sleep and sexual desire) and serotonin (fabric hormone affecting blood coagulation, which raises the temperature of the hypothalamus and stimulates the - bottom part of the midbrain) which act as desired harmless "drug" enhancing a person's mood, are released in the body.

Human body is shaped by regular physical activity, physical fitness of a man improves, while creating the habit of correct body posture. Physical activity brings joy and enhances self-esteem of man. It is also an important means of disease prevention and stress relief. Especially air exercises work as active antidepressant because the body produces melatonin - an antidepressant hormone (Havranová, 2001). The content assessment dimensions of quality of life are dependent on the monitoring of specific sample of population. Original SQUALA questionnaire of the quality of life was originally created by Zannotti (1994) in France in 1992 and was designed for psychiatric patients, but in the words of the author is also suitable for the intact population. Skoda et al. (2007) in their research have highlighted the factors affecting the quality of life of 14-16 years old adolescents. They reported health and relationships with family and friends among the most important factors considered by adolescents. The slightest importance is attributed to activities outside the home and property of objects. By Sejčová (2006) maturing adolescents consider family, health and love as the most important part of their lives. Interviewed adolescents were largely satisfied with the quality of life and most with the relationships and their performance. On the other hand, they are least satisfied with the social quality of life and quality of environment. Teens are mostly satisfied with their current life, they feel happy and are focused on the values like love, happiness, health, education, wisdom, peace, and less on money, success and prosperity. Ocetková (2007) recommends in her researches to focus on spheres of physical well-being, psychosocial well-being, spiritual well-being, material well-being, education, leisure, appearance and property affairs, respectively orientation on the future. Sýkorová and Blatný (2008) used a shortened version of the questionnaire by Ocetková for adults and adapted it to the pediatric and adolescent population.

Similar research methods were applied to specific groups of adolescents, university students, adults (Vašíčková-Valach-Votík, 2012) and teachers. In the works by Brodání (2012); Brodání and Bradáčová (2012); Brodání and Špáníková (2013), Brodání and Maťašová (2014), Brodání and Žiškova (2014), Pašková (2010) positive relationships between frequency of physical activity during the week and different spheres of quality of life in a group of adolescents, college students, kindergarten and primary schools teachers who realized physical activity 3-6 times a week, were demonstrated. Physical activities with lower, respectively higher frequency in the week did not show significant relationships with different spheres of the quality of life. In this paper, we focus on adolescents with the different level of physical activity, where we try to look for a relationship between the physical activity in a week and the quality of life. As one of important factors that should affect the mentioned causality in relation to the results are also the middle and late adolescence.

Aim

The aim of this article is to contribute to the problem of tracking of relationship between physical activity and the quality of life in population of adolescents and also the possibilities of influencing it by physical activities. It should point to causality between the total amount of physical activity per week and individual quality of life among respondents in the middle and late adolescence.

Methods

A questionnaire survey was distributed among 470 respondents with different sport performance level (Fig. 1). Respondents were divided according to Macek (2003) into two groups: middle (age 14-16) and late (age 17-20) adolescence. The level of physical activity was presented by the overall number of hours in a week and the sport performance level: 1) Passive athletes - do not seek physical activity, attend mandatory sports activities; 2) Occasional athletes - search for physical activity, unorganized physical activity; 3) Active athletes - regular organized physical activity; 4) Registered athletes - the frequency of training, competition, national and global level. Modified questionnaire according to Dragomerická et al. (2006), Zannotti - Pringuey (1992) and Ocetková (2007) included selected parts from the SQUALA questionnaire.

The parts of SQUALA questionnaire were evaluated from the point of view of different spheres as follows (Sýkorová and Blatný, 2008): 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 plenty of things for fun; 7th: appearance and ownership of things - look good, to dress nicely, have things that I like; 8th: orientation to the future - to have children and jobs in the future that will entertain me.

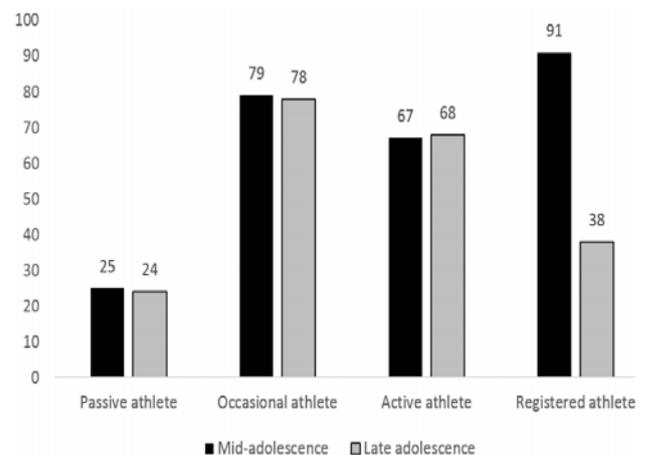


Figure 1 Frequency of adolescents according to the level of sports performance

The questionnaire is divided into 2 parts. The first part defines spheres from objective aspect: "how it is important to you ..." and the second from the subjective viewpoint: "how you are satisfied with ...". Both items are assessed on a 5-point scale (1 very important; 2 important; 3 medium important; 4 unimportant; 5 completely unimportant) depending on the importance of each item for their life. In the second part concerning satisfaction the scales are: 1 very satisfied; 2 satisfied; 3s medium satisfied; 4 dissatisfied; 5 very dissatisfied. Satisfaction with the focus on the future of the monitored adolescents is not evaluated with respect to age.

For the presentation of data, basic descriptive statistics (frequency N, arithmetical mean M, standard deviation SD) was used. Statistical significance of differences between related groups was assessed using Mann-Whitney U-test ($p < 0.05$). For finding the causality between criteria "physical activity in a week" and "the quality of life" Spearman's correlation coefficient (r_s ; $p < 0,20$) was used. The data were processed in MS Excel and SPSS.

Results and discussion

In the result section we are focusing on the differences between groups of respondents in the middle and late adolescence with different sport performance level. We try to point out to the relationship between the level of physical activity in a week and individual quality of life. As one of the important factors that should affect the mentioned causality in relation to the results is the phase of life in the middle and late adolescence.

Table 1 Descriptive characteristics of age, physical activity per week and quality of life among respondents in middle adolescence with different sport performance level

		Mid-adolescence 14-16 years								
Sports performance		Passive athlete		Occasional athlete		Active athlete		Registered athlete		
Indicators		M	SD	M	SD	M	SD	M	SD	
Age		15,56	0,51	15,57	0,57	15,60	0,52	15,42	0,75	
Physical activity		0,64	1,29	2,91	1,92	5,09	3,06	7,48	4,29	
How important for you ...	Physical well-being	4,08	0,61	4,23	0,54	4,28	0,48	4,37	0,47	
	Psychosocial well-being	3,65	0,49	3,80	0,47	3,92	0,47	3,87	0,53	
	Spiritual well-being	4,03	0,63	4,10	0,61	4,12	0,61	4,07	0,69	
	Material well-being	3,60	0,61	3,65	0,79	3,81	0,90	3,91	0,94	
	Education	3,66	0,92	4,03	0,75	4,08	0,70	3,87	0,80	
	Leisure time	3,96	0,64	3,99	0,82	4,11	0,74	4,05	0,87	
	Appearance and Property Affairs	3,36	0,87	3,54	0,89	3,63	0,97	3,71	0,91	
	Focusing on the future	4,06	0,91	4,18	0,77	4,22	0,70	4,10	0,81	
	How are you satisfied ...	Physical well-being	3,54	0,43	3,77	0,52	3,78	0,60	4,02	0,58
		Psychosocial well-being	3,58	0,43	3,69	0,49	3,76	0,51	3,93	0,51
Spiritual well-being		2,69	0,77	2,81	0,64	2,85	0,75	3,13	0,73	
Material well-being		3,38	0,75	3,58	0,84	3,56	0,89	3,99	0,75	
Education		3,44	0,62	3,80	0,76	3,76	0,93	3,87	0,86	
Leisure time		3,64	0,80	3,73	0,83	3,90	0,89	4,18	0,69	
Appearance and Property Affairs		3,48	0,75	3,68	0,80	3,79	0,72	4,13	0,60	

Table 2 Descriptive characteristics of age, physical activity per week, and quality of life among respondents in late adolescence with different sport performance level.

		Late adolescence 17-20 years								
Sports performance		Passive athlete		Occasional athlete		Active athlete		Registered athlete		
Indicators		M	SD	M	SD	M	SD	M	SD	
Age		17,92	0,83	17,58	0,71	17,40	0,55	17,26	0,45	
Physical activity		0,85	1,36	2,39	1,50	4,00	2,70	7,39	4,66	
How important for you ...	Physical well-being	4,41	0,46	4,28	0,56	4,37	0,47	4,32	0,46	
	Psychosocial well-being	3,46	0,53	3,83	0,51	3,85	0,49	3,89	0,48	
	Spiritual well-being	4,02	0,49	3,98	0,60	4,15	0,50	4,10	0,68	
	Material well-being	3,96	0,88	3,69	0,83	3,59	0,80	3,96	0,63	
	Education	3,90	0,98	3,75	0,76	3,84	0,89	4,03	0,85	
	Leisure time	4,10	0,85	3,75	0,83	3,96	0,79	3,92	0,84	
	Appearance and Property Affairs	3,67	1,05	3,44	0,80	3,39	0,86	3,57	0,82	
	Focusing on the future	3,77	0,98	4,28	0,61	4,50	0,55	4,25	0,73	
	How are you satisfied ...	Physical well-being	3,78	0,63	3,69	0,61	3,92	0,45	4,03	0,57
		Psychosocial well-being	3,88	0,50	3,64	0,52	3,85	0,41	3,84	0,51
Spiritual well-being		2,89	0,61	2,92	0,57	2,90	0,66	3,12	0,72	
Material well-being		3,60	0,91	3,51	0,58	3,62	0,68	3,86	0,64	
Education		3,94	0,71	3,67	0,75	3,88	0,61	3,86	0,79	
Leisure time		3,69	1,20	3,74	0,68	3,92	0,78	4,00	0,69	
Appearance and Property Affairs		3,61	0,68	3,71	0,58	3,95	0,53	4,10	0,45	

Table 3 Comparison of physical activity and quality of life of individual respondents in the middle and late adolescence with different sport performance level (Mann-Whitney U test; p<0.05)

		Sports performance	Passive athlete	Occasional athlete	Active athlete	Registered athlete	
Physical activity			0,325	,053	,022	,829	
How important for you ...	Physical well-being		0,017	,598	,286	,465	
	Psychosocial well-being		0,266	,830	,399	,812	
	Spiritual well-being		0,591	,118	,972	,813	
	Material well-being		0,111	,800	,091	,719	
	Education		0,271	,014	,135	,297	
	Leisure time		0,298	,052	,226	,353	
	Appearance and Property Affairs		0,407	,416	,071	,501	
	Focusing on the future		0,210	,594	,016	,382	
	How are you satisfied ...	Physical well-being		0,077	,441	,171	,835
		Psychosocial well-being		0,024	,465	,303	,181
Spiritual well-being			0,268	,221	,511	,645	
Material well-being			0,402	,152	,825	,244	
Education			0,009	,294	,798	,923	
Leisure time			0,618	,765	,883	,246	
Appearance and Property Affairs			0,736	,857	,170	,292	

Table 4 Relationship of physical activity in a week and individual spheres of quality of life among respondents in late adolescence with different sport performance level

		Late adolescence 17-20 years				
		Passive athlete	Occasional athlete	Active athlete	Registered athlete	
How are you satisfied ...	Physical well-being	r_s	-,263	0,255***	-,093	,207
		p-value	,214	,024	,449	,212
	Psychosocial well-being	r_s	,034	,109	-,091	,107
		p-value	,876	,343	,462	,522
	Spiritual well-being	r_s	,140	-,025	-,120	-,168
		p-value	,513	,831	,328	,314
	Material well-being	r_s	-,028	,070	-,110	-,026
		p-value	,898	,544	,374	,875
	Education	r_s	-,017	0,192**	-0,269***	-,173
		p-value	,938	,092	,027	,299
	Leisure	r_s	-0,377**	,045	,062	-,120
		p-value	,069	,694	,614	,474
	Appearance and Property Affairs	r_s	-,242	0,225***	-0,237**	-,142
		p-value	,254	,048	,052	,395

Spearman's correlation coefficient r_s ; $p < 0,20^*$; $p < 0,10^{**}$; $p < 0,05^{***}$; $p < 0,01^{****}$

By comparing the groups of adolescents with their physical activity (table 1, 2, 3) incorporated in life stages in the middle and late adolescence, we found statistically significant differences among active athletes ($p = .022$). The group of respondents in late adolescence went in physical activity of shorter duration during a week (M: 4.00, SD: 2.70) than the group of adolescents in middle adolescence (M: 5.09, SD: 3.06). Among the groups of passive, occasional and registered athletes we did not record any significant differences in physical activity (Table 3). Hourly volume of physical activities of adolescents in a week is closely associated with the sport performance level. Passive athletes (who do not like physical activity) go in for minimum hourly volume of physical activities, which have mostly compulsory character. Hourly volume of load of occasional athletes averages between 2.39 and 2.91 hours. The highest hourly volume of load was registered in the group of registered athletes (7.39-7.48 hrs.). Differences between groups of athletes at different stages of adolescence were also found in the subjective assessment of the quality of life from the perspective of importance and satisfaction. Higher importance was attributed by passive athletes to physical well-being in late adolescence ($p = .017$). Occasional athletes understand importance of education in a greater extent in the middle adolescence ($p = .014$).

Active athletes in late adolescence attach greater importance to orientation for the future than active athletes in middle adolescence ($p = .016$). Among the groups of registered athletes we did not find statistically significant differences. By comparing the groups of adolescents from the perspective of satisfaction with different spheres of the quality of life we have found differences only in passive athletes (table 3). Passive athletes in late adolescence reported higher satisfaction with physical well-being ($p = .0077$), psychosocial well-being ($p = .024$) and education ($p = .009$) than passive athletes in middle adolescence.

The phase of life during the middle and late adolescence appears to be an important factor in the evaluation of causality of physical activity and quality of life of adolescents. Proven relationships are differentiated from the perspective of life stages of adolescence, and also from the perspective of the achieved level of sports activity (Tables 4 and 5). Higher number of statistically significant relationships between hourly volume of physical activities in a week and satisfaction with the quality of life were found among respondents in the middle adolescence. In the middle phase of adolescence we found the highest number of positive relationships of physical activity with the spheres of life in the group of registered athletes. We observed the opposite trend in the registered of athletes in late adolescence. Registered athletes showed no relationship with the satisfaction in the spheres of the quality of life. Positive relationship of physical activity to physical well-being was recorded in active ($p < 0.10$) and registered athletes ($p < 0.01$) in the middle adolescence and occasional athletes in late adolescence ($p < 0.05$). Hourly volume of load in a week positively influenced psychosocial well-being of the active ($p < 0.20$) and registered athletes ($p < 0.10$) in the middle adolescence. Relations of physical and spiritual activity ($p < 0.20$) respectively the material well-being ($p < 0.10$) were found in the middle adolescence in the groups of passive and registered athletes. The sphere of education correlates with physical activity in the group of late adolescents. Negative relationship of physical activity in a week negatively affected satisfaction with free time in the group of occasional athletes in the middle adolescence ($p < 0.10$) and passive athletes in late adolescence ($p < 0.10$). Positive relationships of physical activity with the looks and property of things are in the middle adolescence in passive athletes ($p < 0.20$), registered athletes ($p < 0.05$) and late adolescence with occasional athletes ($p < 0.05$). Active athletes in late adolescence showed a negative relationship with this sphere ($p < 0.10$).

Conclusion

In this paper we dealt with the problem of how the level of physical activity in a week affects satisfaction with different spheres of the quality of life in adolescents with different levels of sport performance level in middle and late stages of adolescence. The phase of life during the middle and late adolescence appears to be an important factor in the evaluation of causality of physical activity and quality of life of adolescents with different sport performance level. The results show better possibilities of influencing the quality of life by physical activities in students in middle adolescence. Positive influence of physical activities on physical well-being was achieved in active and registered athletes in the middle adolescence and occasional athletes in late adolescence.

Positive effect of physical activities on most spheres of quality of life was found in the registered athletes in the middle adolescence and occasional athletes in late adolescence. When comparing our results with other similar researches we again did not confirm relationship with the quality of life in athletes, who practice sports at a higher rate, or on a professional level. The results show the importance of physical activity in the life of adolescents in stages of life in a mid and late adolescence, the possibilities of influencing the quality of life through physical activities. It will be inevitable to create optimum conditions for the possibility of increasing the quality of life.

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UTJECAJ FIZIČKIH AKTIVNOSTI NA KVALITETU ŽIVOTA ADOLESCENATA

Sažetak

Članak pokazuje veze između razine fizičke aktivnosti tijekom tjedna i kvalitete života adolescenata s razlikama u razini sportskog izvođenja u srednjoj i kasnoj adolescenciji. Bilo je uključeno 470 adolescenata s različitim razinama sportskog izvođenja. Podaci o motoričkoj aktivnosti i kvaliteti života su dobiveni kroz modificirani upitnik SQUALA. Konačni podaci su predstavljeni osnovnom opisnom statistikom. Razlike i veze među varijablama su bile ocijenjene neparametrijskim testovima. Rezultati su predstavili diferencijalni odnos između motoričkih aktivnosti tijekom tjedna i kvalitete života ispitanika u srednjoj i kasnoj adolescenciji i u različitim razinama sportskog izvođenja. Najveće vrijednosti značajnih veza s kvalitetom života iz perspektive zadovoljstva su pronađene među adolescentima u srednjem razdoblju adolescencije i ponekih sportaša u kasnoj adolescenciji. U grupi evidentiranih sportaša nije pronađena nikakva uzročnost fizičke aktivnosti tijekom tjedna za pojedina područja kvalitete života.

Ključne riječi: kvaliteta života, fizička aktivnost, sport, adolescencija

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