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DETERMINANTS OF SATISFACTION WITH LIFE AMONG CADET FOOTBALL PLAYERS

Miroljub Ivanović [1], Uglješa Ivanović[2]

[1]Serbian Academy of Innovation Sciences, Belgrade, Serbia
[2]Telecom Serbia, a. d. Belgrade, Serbia

ABSTRACT

The aim of this empirical research was to examine the contribution of the predictors physical activity, physical self-description, and health status in explaining the satisfaction with life in adolescent football players. The average age of participants was 15.62±1.19 years of age. The sample included (N = 163) cadets from Valjevo football clubs. The following measuring instruments were used: The International Physical Activity Questionnaire-Short Form (IPAQ-S), The Physical Self-Description Questionnaire-Short Form (PSDQ-S), and The short form-36 Health Survey (SF-36), and Satisfaction with life Scale (SWLC). The Cronbach's alpha was used to examine the internal consistency of the measuring instruments, and it has confirmed their reliability, which means that these questionnaires and scales can be used on Serbian population for future research. The regression results obtained in the first step revealed a statistically significant correlation between the independent variable self-description and the criterion satisfaction with life, with 8% of the variance ($\beta = 0.20$, $p \leq 0.01$). It means that the participants who more positively perceive physical self-description are more satisfied with their life. In addition, in the second step of the regression equation, the predictor physical functioning ($\beta = 0.21$, $p \leq 0.01$), with the positive direction of 14% of the variability, predicts the dependent variable satisfaction with life. It means that the young athletes who perceive their physical functioning as more prominent are more satisfied with life. This transversal study offers discussion on theoretical and potentially practical implications of the findings on the relations of determinants of physical activity, physical self-description, and health status in predicting the construct satisfaction with life among cadet football players.

Key words: physical activity, physical self-description, health status, physical functioning, adolescents

Corresponding author
Miroljub Ivanović
miroljub.ivanovic@gmail.com

INTRODUCTION

The second half of the XXI century has seen an increase in the number of research on the role of determinants physical activity, physical self-description, and health status in predicting the construct satisfaction with life among adolescent football population. *Satisfaction with life* is a new construct of the so-called positive psychology which refers to global evaluation of individual life and it includes cognitive component of subjective well-being, which is structured by emotion components – emotions, well-being, and quality of life (Ávalos-Ramos et al., 2024). Additionally, the term satisfaction with life includes the basic component of individual well-being which is determined as a global self-evaluation of the quality of life based on individual criteria, not dependent on specific values, norms and goals (M. Ivanović & U. Ivanović, 2023). Researching satisfaction with life among adolescents is of particular interest to sport psychology. Adolescence is a critical stage of development during which physiological and metal functions transform and generate faster development of cognitive and social competences, which can have relevant influence on development, including the key multi-dimensional construct self-concept for understanding personality and human behavior (Sitota, & Tefera, (2024). A significant number of international studies deals with the relations between the dimensions of physical activity, physical self-description, and health status as possible predictors of the complex construct of satisfaction with life in adolescence. Athletes who are satisfied with life are more motivated to be physically active, they have better health and work efficiency (Allsabah et al., 2024). According to the research authors (Chrysidis et al., 2020) *satisfaction with life* is evaluation, a complete self- perception of the quality of one's own life based on the criteria chosen by that individual. It the study (Moral-Garcie et al., 2021), it has been found that satisfaction with life in adolescents has positive effect on satisfaction with success. The aforementioned researchers have determined that correlation between the constructs of satisfaction with life and satisfaction with success is more expressed in adolescents which were more physically active. Additionally, the results of the study (Bi et al., 2021) indicate that participants who engage in physical activity of moderate or high intensity are more satisfied with life than those who engage in physical activity of low intensity.

Football is one of the most dynamic sports, where footballer's satisfaction with life is a relevant (Ivanović & Ivanović, 2014). Due to its social dimension, that sport has a positive effect on psychosocial results of adolescents (Chrysidis et al., 2020). A great number of factors affects the criterion variable satisfaction with life of adolescents who practice some sport. In their empirical study, the authors (Magson et al., 2021) define physical activity as planned, organized, repeated, and purposeful activity which has a goal to improve health, strengthen cognitive and bodily functions, as well as reduce the danger of chronic illness. Additionally, engaging in physical activities of aerobic and anaerobic type has positive effect on emotional well-being, it reduces symptoms of depression, anxiety, and stress, and it increases self- respect.

The authors (Auer et al., 2020) have classified physical activity into sedentary, light, moderate, and vigorous activities depending on the intensity, from low to high, where

adolescents are recommended 60 minutes of moderate to high intensity exercise per day, and 90 minutes of high intensity exercise minimum three days a week. The intensity of physical activity shows how hard it is, and it is defined as relative strain compared to the maximum potential of the body, and it is also based on the energy used for it. Based on the intensity, physical activities are classified as into sedentary, light, moderate, and vigorous activities.

Physical self-description is defined as assessment of one's own motor skills and physical appearance. It is one of the components of global self-description, together with social and emotional self-description (Ivanović & Ivanović, 2022). It includes the perceived physical appearance and perceiver sport competence which are significant for general self-perception and psychological well-being, especially in adolescents. The aforementioned authors believe that examining physical self-perception can help establish relations between individuals' self-image and their later engagement in physical activities, and that regular physical activity reduces dissatisfaction with physical appearance and has positive effect on general self-esteem by improving one's image of self.

According to the authors (González-Chávez et al., 2023), the multidimensional construct *health status* represents the state of complete physical, mental and social well-being, and is a relevant factor of the quality of life in adolescence. Its self-assessment implies the relevance of individual perception of health and quality of life, independent from the objective indicators. In their study, the authors (Thornton et al., 2021) indicate that when there are internal and external negative influences on the functioning of an individual, it comes to the disruption of homeostasis, which consequently generates lower satisfaction with life, and activates the mechanisms which aim to bring the quality of life to normal. In addition, the author (Vuletić, 2022) points out that bad health is an external factor which has negative influence on the life of an individual and generates unfavorable mental state.

Keeping in mind the understandings of developmental psychology findings of the earlier empirical studies, as well as the fact that identical studies have not been conducted in Serbia on adolescent sport population, the main aim of this research was to define the predictive contribution of physical activity, physical self-description, and health status to satisfaction with life of cadet football players. In accordance with the aforementioned goal, the *hypothesis* has been formulated (*H*): it is expected that young athletes would perceive their satisfaction with life more positively if they engage more in physical activity, have better bodily functions and health status, meaning that they have fewer limitations due to their physical difficulties.

METHOD

Participants and procedure

The research has been conducted on a pertinent sample of 163 cadet football players from Valjevo football clubs: FC „Budućnost" (West Serbian League), FC „Radnički" (Kolubara-Mačva Zone League), and FC „ZSK" (Kolubara Regional League).

The average age of participants was (M =15.62 years of age, SD = 1.19). All participants had minimum two years of systematic and organized training, three or more times a week. The data was collected during June 2024.

The testing was conducted in groups, in club facilities, during the hours of regular training sessions, when each participant filled in questionnaires individually. Before getting the questionnaires, the football players were introduced to the goal of the research, they were told that the testing was anonymous, and they were instructed on how to fill in the questionnaires and scales. The testing lasted approximately 20 minutes, and was conducted in the presence of the researchers. Each participant could quit at any moment during the testing, without giving a particular reason. Three participants with significant Mahalanobis distance on the level of $p \leq 0.01$ were excluded as multivariate outliers (Tabachnik & Fidell, 2013). The research was approved by the parents of football players and the coaches of the aforementioned clubs, as well as the by the science committee of the Serbian Academy of Innovation Sciences from Belgrade.

Measuring instruments

Satisfaction with Life Scale – SWLS

SWLS (Diener et al., 1985) examines the global assessment of the degree of satisfaction with life independently from concrete values, norms, and goals. Seven -point Likert-type scale was used for assessing SWLS (1 = *strongly disagree*; 2 = *disagree*; 3 = *somewhat disagree*; 4 = *neither agree nor disagree*; 5 = *somewhat agree*; 6 = *agree*; 7 = *u strongly agree*). Total score is calculated as a sum of results of all items, where higher score means higher satisfaction with life. Reliability coefficient (Cronbach's alpha) in this research is α = 0.90, which according to the author (Dinić, 2019) indicates high internal consistency.

The International Physical Activity Questionnaire-Short Form – IPAQ-S

IPAQ-S (Craig et al., 2003) examines the intensity of physical activity conducted every day during work, at home, while studying and during leisure. The measuring instrument includes the frequency and duration of physical activity during walking, activities of moderate (carrying light objects, tennis, regular cycling) and high (lifting heavy objects, aerobic, fast cycling) intensity, as well as the time spent walking during the previous week. Moderate intensity activities include physical labor where breathing is faster than normal, and the duration of an activity is 10 minutes minimum. Participant's task was to circle the number of days in the past week (from 1 to 7) in which they did high intensity activities, marking the time spent doing such activities and the number of days in a week. The amount of physical activity is calculated based on the data on the frequency (number of days) and duration of an activity of certain intensity (minutes and hours) within the past seven days in order to calculate the energy spent on each activity in METs (metabolic unit) or MET minutes. MET minute is defined as a measuring unit obtained through producing MET score of an activity

and the duration of the activity in minutes, where MET score for walking is 3.3, for physical activity of moderate intensity 4.0, and for physical activity of high intensity is 8.0. The reliability of the internal consistency type of this measuring instrument is high, because the Cronbach's alpha coefficient in the examined sample is (α = 0.93).

The Physical Self-Description Questionnaire-Short Form – *PSDQ-S*

PSDQ-S (Marsh et al., 2010) is one of the most frequently used questionnaires in researching body image and physical self-assessment. It uses 40 items to measure dimensions of physical self-description, meaning how participants feel regarding their physical condition and physical skills, how satisfied they are with their physique. The questionnaire consists of nine factors or subscales specific to the concept of physical self - description (health, coordination, physical activity, body fat, sport competence, appearance, strength, flexibility and endurance), and two general subscales (general physical self-concept and self-esteem). The participants' task is to give answers on a six point Likert-type scale about how much they agree with a given claim (1 = *very untrue*, 6 = *very true*). An example of the item is: „I do sports, exercise, dance or do some other form of physical activity almost every day". Total score for each subscale is calculated as an arithmetic mean of the answers, where higher score means higher degree of self-description. The measuring instrument has satisfactory internal consistency since the reliability coefficient for Cronbach's alpha for the subscale physical activity is (α = 0.80).

The short form-36 Health Survey – SF-36

SF-36 (Burholt & Nash, 2011) examines participants' quality of life, and self-assessment of mental and physical health, as well as social functioning. This questionnaire consists of eight domains of health, but only two were used here: physical functioning and limitations due to physical difficulties. The score number ranges from 0 to 100 for each dimension, where 0 means lowered or limited functioning of health, while 100 means non-existence of health limitations, meaning health condition is good, painless and with no functional limitations. The reliability expressed through Cronbach's alpha in this research is (α = 0.89) for the subscale physical functioning, and (α = 0.91) for the subscale limitations due to physical difficulties.

Statistical data processing

Descriptive parameters of central tendency, skewness and kurtosis, and the Kolmogorov- Smirnov test for normality were calculated for all variables included in the analysis. Bivariate analysis (the Pearson correlation coefficient) and hierarchical multiple regression analysis were used to check the postulated hypothesis. Statistically significant result was based on the level of 5%, or 99% of probability. The acquired data were processed on the software IBM SPSS 21, Chicago, IL, USA.

Descriptive parameters

Basic descriptive statistical parameters of the analyzed manifest variables of the participants, as well as the reliability of the measuring instruments applied on the sample are shown in Table 1.

Table 1. *Descriptive parameters of the variables used in the research* ***(****N* ***= 163)***

Variables	*M*	*SD*	*Min*	*Max*	*Sk*	*Ku*	*α*
PA of high intensity	19.46	3.05	0.00	100.00	0.19	0.47	–
PA of moderate intensity	2.63	13.94	0.00	4903.00	.77	0.08	–
Walking	1636.02	3.03	14.00	422.06	.78	-0.55	–
Sitting	5.00	3.03	0.45	16.00	0.36	0.80	–
Total PA(MET-min/week**)**	6728.05	3525.10	0.00	16088	0.70	0.12	–
PSDQ-S	5.17	1.16	1.36	6.98	1.17	0.39	0.80
SWLS	4.96	1,15	1.32	6.87	0.59	0.11	0.90
SF-36 Physical functioning	77.26	40.08	0.00	100.00	0.65	0.21	0.89
Limitations due to physical difficulties	79.22	2.96	0.00	100.00	0.26	0.73	0.91

Legend. PSDQ-S = The Physical Self-Description Questionnaire-Short Form; SWLS = Satisfaction with Life Scale; SF-36 = The short form-36 Health Survey; PA = Physical activity; *M* = Arithmetic mean; *SD* = Standard deviation; *Max* = Achieved maximum; *Min* = Achieved minimum; *Sk* = Skewness; *Ku* = Kurtosis; *α* = The internal consistencycoefficient. Value of standard error (*SE*) of the indicator *Sk* is 0.10, and of *Ku* is 0.18.

RESULTS

The measures of central tendency and dispersion, as well as the reliability of the applied measuring instruments are shown in Table 1. Testing the scores of the normality of distribution, it has been found that the values of the standardized coefficients skewness and kurtosis of the applied variables do not statistically significantly deviate from the normal Gaussian distribution because they do not go over the allowed range of +1 and - 1, which allows for the use of parametric statistical method in further data processing (Tabachnick & Fidell, 2013).

Bivariate linear correlations between variables

The Pearson correlation coefficients were used to show correlation between the examined variables (Table 2). Correlations between variables range from 0.01 to 0.39. The obtained correlations (of low and moderate intensity) are statistically significant on the risk level lower that 1 %, or 5%.

Table 2. *Partial correlations (r) between the used variables (N=163)*

Variables	1	2	3	4	5	6	7	8
PA of high intensity	–	0.44**	0.09	0.22*	0.23**	0.09**	-0.26**	0.05
PA of moderate intensity		–	0.38**	-0.39**	0.03	0.01	0.11	0.10
Walking			–	-0.36**	0.01	-0.08	0.06	0.02
Sitting				–	0.36**	0.06	-0.20	-.0.08
TA (PSDQ-S)					–	0.16*	0.04	0.18*
Physical functioning						–	0.43**	0.15*
Limitations due to physical difficulties							–	-0.26**
Satisfaction with life 8. (SWLS)								–

Annotation. Level of statistical significance *$p \leq 0.05$; **$p \leq 0.01$.

Analyzing the calculated coefficients within the correlation matrix, positive correlation was found between manifest variables physical activity of high and moderate intensity (r = 0.44, $p \leq 0.01$), and negative interaction between physical activity of high intensity and sitting (r = -0.36, $p \leq 0.01$), as well as positive correlation between physical activity of moderate intensity and walking (r = 0.36, $p \leq 0.01$), which is in accordance with earlier studies (Kovačević-Lepojević, et al. 2022). Analysis of the correlation between different intensities of physical activity and physical activity as a segment of self-description of adolescents has only shown a significant positive correlation to the variable physical activity of high intensity (r = 0.23, $p \leq 0.01$). It means that participants who engage themselves in physical activities of high intensity have more statistically relevant assessment of their physical self-description. Besides, physical activity of high intensity is in significant negative correlation to the constructs of quality of life and health limitations due to physical difficulties (r = 0.26, $p \leq .01$). It means that participants who engage in physical activit of high intensity perceive relevantly fewer limitations due to physical difficulties. There has also been found a significant positive linear correlation between two correlates – satisfaction with life and physical activity as a segment of self-awareness (r = 0.18, $p \leq 0.01$), and a positive correlation between health and satisfaction with life (r = .22, r = .16, $p \leq$ .05). On the other hand, the correlation matrix did not reveal interaction between the manifest variables of the intensity of physical activity (high, moderate intensity, walking, sitting) and the construct satisfaction with life.

Contribution of predictors in explaining satisfaction with life in young football players

The hierarchical linear regression analysis (Table 3) was conducted with the aim of defining the level of significance that the examined group of eight predictor variables (physical activity of high intensity, physical activity of low intensity, walking, sitting, PA/physical self-description, physical functioning, and limitations due to physical difficulties) has on predicting the criterion variable satisfaction with life. Multicollinearity of data was checked before conducting the regression model. Seeing how degrees of tolerance ranged from 0.39 to 0.95, and the rule of using standard criteria is that the acceptable degree is ≥ 0.20, it is concluded that there were no problems with singularity, meaning that multicollinearity of data is not a problem for testing and interpreting standard regression partial coefficients (Miles, 2014).

Table 3. *The results of the hierarchical multiple regression analysis of the prediction of the criterion satisfaction with life (N=163)*

Predictors	1. Step *β (SE)*	2. Step *B(SE)*
PA of high intensity	-0.10 (0.04)	-0.06 (0.03)
PA of moderate intensity	-0.05 (0.01)	-0.09 (0.01)
Walking	-0.01 (0.01)	-0.04 (0.05)
Sitting	-0.11 (0.02)	-0.07 (0.02)
PA/PSDQ-S	0.18* (0.05)	0.16* (0.04)
Physical functioning (SF-36)		0.20** (0.03)
Limitations due to physical difficulties		-0.17* (0.01)
SF-36		16* (0.02)
ΔR^2	0.03*	0.05*
R^2	0.08	0.14

Legends β = Standard regression partial coefficient Beta; R^2 = Coefficient of multiple determination; ΔR^2 = Corrected coefficient of multiple determination; SE = Standard error of predicting the regression parameter β, PA = Physical activity; PSDQ-S = Physical self-description; SF-36 = Health status; Probability * $p \leq 0.05$; ** $p \leq 0.01$.

The results of the hierarchical regression analysis of the first step showed that the variables of high and moderate physical intensity are not significant predictors of life satisfaction. However, in this step, the variable of physical exercise as a segment of physical self-report proved to be significant (β = -0.18, $p \leq 0.08$), which contributes to the explanation of 8% of the variance for the satisfaction with life criterion. This means that cadet football players, who have a more positive physical self-concept, are more satisfied with life. In the 2nd step, the additional predictor physical functioning additionally explains 8% of the criterion variance. Athletes who perceive their physical functioning as best as possible are more satisfied with life. Significant predictors explain a total of 14% of the variance of the life satisfaction criterion.

The obtained values of β-coefficient indicate that the aforementioned predictors predict changes in satisfaction with life. Finally, the last regression model signals that the set of the used positive and negative predictor variables explains ⅕ of the criterion satisfaction with life of adolescent athletes, which means that the initial *hypothesis* (*H*) has been confirmed, so it can be said that cadet football players who perceive better physical functioning and health, or fewer limitations due to physical difficulties, are more satisfied with life.

DISCUSSION

This work tries to examine the predictive influence of the variables of physical activity, health status, and the construct satisfaction with life in cadet football players. With that in mind, it was expected that cadet football players will more positively experience their satisfaction with life if they have higher level of physical activity, better physical functioning and health status, or fewer limitations due to physical difficulties.

Examining the intensity of physical activity is especially important at the start of a physical exercising because high intensity physical activities require relevant increase of heart rate, breathing and sweating (Stojanović, 2023). The recommendation of the World Health Organization for ages 18 to 64 is daily activity of more than 30 minutes in duration, or 60-minute exercising three times a week (World Health Organization, 2022). Additionally, the study (Mateja, 2023) has shown that systematic and moderate physical activity during adolescence is a significant factor in achieving optimum state of psychophysical health of an individual, respect of one's own body, and increase of satisfaction with life. The research authors (Kim & Shin, 2020) recommend 75 to 150 minutes of high intensity physical activity for adolescents in order for it to have positive influence on their body. Same results can be seen in the study (Vrdoljak, 2023) where it has been determined that adolescents who engage in high intensity physical activities have lower risk of chronic illnesses and achieve better school success.

While examining the role of physical activity and physical functioning in predicting satisfaction with life on the examined sample of Serbian football players using the hierarchical regression analysis, relevant determinants which explain this criterion variable were obtained, or it has been determined that participants who engage more in physical activities are more satisfied with life. The findings of the regression analysis suggest that adolescents who engage more in physical activity are more satisfied with life, and better perceive their physical functioning. This corresponds with the research results (Asgeirsdottir & Sigfusdottir, 2021; Kim et al., 2023) which found the significant correlation between physical activity and satisfaction with life during adolescence. In their research, the authors (Đonlić, 2021; Psarrou et al. 2023) indicate that more active adolescents are more satisfied with life, as well as those who perceive their physical functioning as better, and that the participants who engage in high intensity physical activities have significantly fewer physical difficulties. The research authors (Belošević & Ferić, 2022; Meyer et al., 2023) point out that satisfaction with life increases if adolescents engage daily in physical

activity. Interaction between physical activity and general satisfaction with life was presented in the study (Daly, 2022), where it was determined that high intensity physical activities significantly contribute the quality of life and health, and increase satisfaction with life in adolescents. On the other hand, the empirical study (An et al., 2020) shows that the construct satisfaction with life is not in correlation with the level of physical activity.

The biggest advantage of this study is that all observed variables are examined with relatively minimal statistical error. The practical application of the obtained findings can be seen in creating optimal correlation-regression model with adolescent football players, which means giving answers to how satisfied with life can young athletes be based on their predictor potential (physical activity, intensity, physical self-description, and health status). Additionally, the obtained results enable comparison with current research results in Serbia and the region in Europe. Finally, the obtained findings can be helpful for creating educational curriculum which would deal with the contribution of the determinants physical activity, physical self-description and health status to satisfaction with life in adolescent athletes.

However, this research has certain methodological limitations which should be taken intoaccount when interpreting the obtained results. Firstly, the research was conducted in only three football clubs in Valjevo, meaning on a very limited location, which means that generalizing the results on the Serbian population of football players is a relatively big problem. Besides, the applied measuring instruments of self-assessment have their limitations, for example the ability of participants to perceive their behavior and giving desirable responses. Also, the age range of the participants is small which limits the generalization of results.

Keeping in mind all the methodological limitations, further research is required, with sample containing more football player from different regions, and with inclusion of the regression model and other variables (relationship with peers, self-efficacy, optimism, value of a task, athletic achievements, brother, sister, coach, etc.). That would improve knowledge about the examined constructs in cadet football players. In addition, instead of using self-assessment, assessment from independent sources should be included.

CONCLUSION

Keeping the importance of the predictors in mind (physical activity, physical self- description, and health status), this empirical study with the sample of 163 participants examined the contribution the aforementioned independent variables have on the variability of the construct satisfaction with life of cadet football players.

The values of Cronbach's alpha calculated on this sample indicate satisfactory criterion validity and reliability of the internal consistency of IPAQ-S, PSDQ-S, SF-36, and SWLS, which means that they can be regarded as valid measuring instruments for examining young sport population in Serbia. The obtained coefficient of multiple determination indicates that the predictor variables accounted for ⅕ of the total variability of the dependent variable satisfaction with life of young athletes, which

means that the applied model of multiple regression has significant practical value. Moreover, this transversal research determined that the intensity of physical activity is not a dominant factor for statistically significant variance satisfaction with life, but general perception of an adolescent about their engagement in physical activity is.

The calculated values of the Cronbach α coefficient on the current sample indicate satisfactory criterion validity and reliability of the internal consistency type of the IPAQ-S, PSDQ-S and SF-36 questionnaires, as well as the SWLS scale, which indicates that they can be considered valid measuring instruments for testing cadet sports Serbian population. A football player who has higher level of physical activity and the construct self-description, and those who perceive their physical functioning manifest higher satisfaction with life. In conclusion, considering the obtained results and the methodological limitations of the research, further identical empirical research is needed in order to more precisely identify the predictive contribution of physical activity, physical self-description, and health status to satisfaction with life of young football players.

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