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The aim of the study was to investigate the relationship between recreational sport participation and satisfaction with life among adult Slovenian participants of the Ljubljana Marathon. A survey was sent electronically to everyone registered for the 2010 Ljubljana Marathon. This method yielded 1,324 usable survey responses, entailing a 23% response rate; 50.3% of the respondents were women and 49.7% men, with a mean age of  $37.8 \pm 10.9$  years. Participation in recreational sports was measured by asking the respondents how many times a week they typically engage in recreational running and what is the average weekly running distance. Satisfaction with life was measured using the scale of Diener, Emmons, Larsen and Griffin (1985) in which respondents answered five statements about how satisfied with life they are on a 5-point scale. The relationship between recreational sport participation and satisfaction with life was evaluated with general linear models. The results indicated that the respondents run  $3.4 \pm 1.2$  times per week, with an average weekly running distance of  $35.3 \pm 18.9$  km. In the first model (R Squared = .047 (Adjusted R Squared = .037),  $p < .001$ ), expected satisfaction with life increases by a .207 z-value for each additional session of recreational running per week. In the second model (R Squared = .033 (Adjusted R Squared = .023),  $p = .001$ ) expected satisfaction with life increases by a .005 z-value by every kilometre run within a week.

**IZVLEČEK**

Namen raziskave je bil ugotoviti povezanost med ukvarjanjem z rekreativnim športom in vrednotenjem zadovoljstva z življenjem pri odraslih slovenskih udeležencih Ljubljanskega maratona. Podatki so bili pridobljeni s pomočjo elektronskega anketnega vprašalnika, ki je bil poslan prijavljenim na Ljubljanski maraton 2010. Vzorec udeležencev raziskave je obsegal 1324 tekačev, 50.3% žensk in 49.7% moških, povprečne starosti  $37.8 \pm 10.9$  let. Ukvarjanje z rekreativnim športom je bilo opredeljeno s številom dni ukvarjanja z rekreativnim tekom ter številom pretečenih km na teden. Zadovoljstvo z življenjem je bilo vrednoteno s petstopenjsko lestvico (Diener, Emmons, Larsen in Griffin, 1985). Povezanost spremenljivk smo izračunali s splošnimi linearnimi modeli. Rezultati so pokazali, da se udeleženci ukvarjajo z rekreativnim tekom  $3,4 \pm 1,2$  krat na teden in v povprečju pretečejo  $35,3 \pm 18,9$  km. V prvem modelu (R Squared = .047 (Adjusted R Squared = .037),  $p < .001$ ) pričakovana vrednost zadovoljstva z življenjem narašča za .207 z-vrednosti z vsakim dodatnim tekaškim treningom na teden. V drugem modelu (R Squared = .033 (Adjusted R Squared = .023),  $p = .001$ ) se pričakovana vrednost zadovoljstva z življenjem poveča za .005 z-vrednosti z vsakim dodatnim pretečenim km na teden. Na podlagi dobljenih rezultatov lahko sklepamo, da so udeleženci Ljubljanskega maratona, ki tečejo večkrat na teden

In conclusion, participants of the Ljubljana Marathon who are more actively engaged in recreational running are more satisfied with their lives, bearing in mind that age, gender and education are the factors controlled.

*Key words:* recreational sport, emotional well-being, Slovenian runners

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in pretečejo daljše razdalje, bolj zadovoljni s svojim življenjem, ob upoštevanju vpliva starosti, spola in izobrazbe.

*Ključne besede:* rekreativni šport, dobro počutje, zadovoljstvo, slovenski tekači

## INTRODUCTION

While the physiological benefits of physically active leisure time are well established (Seefeldt, Malina, & Clark, 2002; Penedo & Dahn, 2005; USDHHS, 2008; ACSM, 2010), less is known about the psychological/emotional benefits and costs of physical activity (PA), particularly among adults who participate in recreational running. PA is one of several components of a healthy lifestyle. It is defined as any bodily movement produced by skeletal muscles that require energy expenditure (Penedo & Dahn, 2005). Beside structured and planned sport activity (SA), it contains walking and cycling for transport methods, gardening, house work etc. For the purpose of our study we focused on SA, recreational running in particular. SA as part of PA has more intensive effects on health (Swan, Otago, Finch, & Payne, 2009), which is closely related to a better quality of and overall satisfaction with life.

Studies have shown that the frequency of PA is correlated to greater satisfaction with life (Fox, Stathi, McKenna, & Davis, 2007; Stubbe, de Moor, Boomsma, & de Geus, 2007). Researchers have also stated that the physically active are happier (Thogersen-Ntoumani, Fox, & Ntoumanis, 2005). Those who are more active are more optimistic and in a better mood overall (Penedo & Dahn, 2005) and their evaluation of the quality of their lives in general is higher (Wendal-Vos, Schuit, Tijhuis, & Kromhout, 2004). In addition, the results of a Finnish study conducted on adults aged 25–64 years of age showed that individuals who have engaged in recreational sports at least twice a week significantly improved some indicators of health. They reported fewer signs of depression, lower stress, and better overall satisfaction with life (Hassmen, Koivula, & Uutela, 2000). Thogersen-Ntoumani et al. (2005) stated that being sport active at least once a week leads to a higher evaluation of life satisfaction.

There is a lack of literature where the correlation between SA and satisfaction with life is described and examined among already physically active populations, such as recreational runners who are the focus of this study (95% of them were engaged in recreational sports at least twice a week). The results could represent a novelty in analysing the effects of participation in recreational running on satisfaction with life of a population of active runners since, according to our knowledge, no such study has been conducted to date. Since running has become a very popular recreational sport in Slovenia with 12% of the population being engaged (Pori & Sila, 2010), we wanted to answer the question of whether there is a relationship between the frequency of recreational running and weekly running distances and life satisfaction among recreational runners – participants of the Ljubljana Marathon; age, gender and education are the factors controlled.

## MATERIALS AND METHODS

### Respondents

The sample of respondents consisted of 1,323 Slovenian adult recreational runners (49.7% male, 50.3% female), aged  $37.8 \pm 10.9$  years. More than half of them had a university degree (45% Bachelor, 10% Master's, and 3% PhD) The study was conducted according to the Helsinki-Tokyo Declaration.

### Variables

Data were collected via an electronic survey. It was sent out to 5,700 e-mail addresses of participants of the Ljubljana Marathon in 2010 (all participants of the marathon race must apply on-line). Within 21 days, 1,353 surveys had been completed. Participation in SA was determined by asking the respondents to indicate how many running sessions and kilometres they run per week. To determine how satisfied they were with their lives, the items of the Satisfaction with Life Scale (SWLS) were used (Diener, Emmons, Larsen, & Griffin, 1985). The respondents answered five statements about how satisfied with life they are on a 5-point scale (1=strongly disagree to 5=strongly agree). Controlling variables for computing the relationship between recreational sport participation and SWLS were age, gender and level of education.

### Statistical methods

Data were analysed with PASW Statistics 18.0. Distribution statistics were computed for all non-missing values of variables. A composite score for satisfaction with life was computed with principal component analysis using the Anderson-Rubin method. The effects of recreational sport participation on the satisfaction with life score were evaluated with general linear models.

## RESULTS

The results indicate that the respondents run  $3.4 \pm 1.2$  times per week,  $4.2 \pm 2.3$  hours per week, with an average weekly running distance of  $35.3 \pm 18.9$  km. Answers 3 (neither agree nor disagree) or 4 (agree) were most frequently selected for the satisfaction scale items (Table 1). The scale has satisfactory consistency with Cronbach's  $\alpha = .86$ .

Table 1: Principal component weights and distribution statistics for the satisfaction scale of the study sample

Scale	Item	Study sample				f (%)				
		n	a	Me	IQR	1	2	3	4	5
Satisfaction	In most ways my life is close to my ideal.	1197	.85	3.48	1.27	3	10	38	41	8
	The conditions of my life are excellent.	1195	.77	3.68	1.31	2	8	33	42	15
	I am satisfied with my life.	1202	.85	3.93	1.12	1	5	23	49	22
	So far I have gotten the important things I want in life.	1188	.79	3.57	1.42	2	14	31	39	14
	If I could live my life over, I would barely change a thing.	1190	.74	3.17	1.66	8	21	32	29	10

*n* – number of cases; *a* – weight on first principal component; *Me* – Grouped median; *IQR* – inter quartile range; *f* – frequency of responses

In order to evaluate the effect of SA (recreational running) on satisfaction with life (expressed as the score on the first principal component) controlled by age, gender and education, general linear models were constructed. The set of predictors has a small but significant effect (R Squared = .047 (Adjusted R Squared = .037),  $p < .001$ ) on satisfaction with life in the first model (number of running sessions per week) as well as in the second one (R Squared = .033 (Adjusted R Squared = .023),  $p = .001$ ) (number of km run per week) (Table 2). SA was a statistically significant but weak predictor in both models.

Table 2: General linear models for the prediction of running activity (expressed as the number of running sessions and kilometres run per week) on satisfaction controlled for gender, age and education level

Parameter	Model 1 Satisfaction (SA = number of running sessions per week)			Model 2 Satisfaction (SA = number of km run per week)		
	(R <sup>2</sup> = .037; $p < .001$ )			(R <sup>2</sup> = .033; $p = .001$ )		
	F	P	$\eta^2_{part.}$	F	p	$\eta^2_{part.}$
Intercept	11.893	.001	.017	4.270	.039	.006
Sport activity (SA)	13.241	<.001	.018	7.186	.008	.010
Age	2.998	.084	.004	1.183	.277	.002
Gender	4.499	.034	.006	4.733	.030	.007
Education	3.846	.004	.021	2.794	.025	.016

*F* – F-test value; *p* – statistical significance;  $\eta^2_{part.}$  – partial Eta squared

In the first model (SA = number of running sessions per week), expected satisfaction with life increases by a .207 z-value for each additional session of recreational running

per week (Table 3). In the second model (SA = number of km run per week), expected satisfaction with life increases by a .005 z-value for every kilometre run within a week.

Table 3: Parameters of general linear models for the prediction of running activity (expressed as the number of running sessions and kilometres run per week) on satisfaction, controlled for gender, age and education level

Parameter	Model 1 (SA = number of running sessions per week) (R <sup>2</sup> = .037; p< .001)				Model 2 (SA = number of km run per week) (R <sup>2</sup> = .033; p=.001)			
	$\beta$	SE	p	$\eta^2_{part.}$	$\beta$	SE	p	$\eta^2_{part.}$
Intercept	-.381	.231	.099	.004	-.060	.192	.754	.000
Activity	.207	.057	<.001	.018	.005	.002	.008	.010
Age (years)	.006	.004	.084	.004	.004	.004	.277	.002
Gender=male	-.155	.073	.034	.006	-.165	.076	.030	.007
Education level=I+II	-.361	.210	.086	.004	-.358	.206	.083	.004
Education level=III	-.406	.122	.001	.016	-.316	.125	.012	.009
Education level=IV	-.435	.156	.005	.011	-.278	.161	.086	.004
Education level=V	-.189	.111	.090	.004	-.082	.113	.469	.001

The reference category for education level is VI (master's degree or higher). Education level I+II –finished vocational high school or less, III – finished high school; IV – finished professional college; V – university degree

$\beta$  – beta coefficient; SE – standard error; p – statistical significance;  $\eta^2_{part.}$  – partial Eta squared

## DISCUSSION AND CONCLUSIONS

Physical activity is often recommended as a strategy for improving one's quality of life. In contrast with previous research, we focused on a population that was active in sport. Therefore, the aim of this project was to determine whether participation in recreational running plays an important role in levels of life satisfaction.

We found that respondents who were more engaged in recreational running were more satisfied with their lives. Life satisfaction could be understood as a construct of hedonic well-being (Grant, Vardle, & Steptoe, 2009), thus the basic component of subjective well-being. Obviously, those respondents who went running more often and ran more kilometres per week experienced higher satisfaction with their life situation and therefore better well-being. Blace (2012) suggested that those who are more active might have better functional ability, which might play a role in better health status and higher life satisfaction. Similar findings were also reported by Fox et al. (2007) and Stubbe et al. (2007). USDHHS (2008) stated that at least 150 minutes of moderate or 75 minutes of vigorous intensity PA a week is needed to maintain health. SA is well documented as a

factor having positive effects on health which is consequently related to good quality of life as well.

Previous studies have shown that individuals who were sport active at least twice a week reported significantly better overall satisfaction with life (Hassmen et al., 2000). Even engaging in SA once a week led to a statistically significant higher evaluation of life satisfaction (Thogersen-Ntoumani et al., 2005). Recreational running represents an aerobic activity which is documented to have the greatest effect on health in general (ACSM, 2012). Running is affordable, suitable for all age groups and one can practise it throughout the entire year. Our study showed that the expected satisfaction with life increased with each additional session of recreational running per week as well as with the number of kilometres run per week. The results of a study conducted on a representative sample of Slovenians showed that those who are the most satisfied with their lives are individuals who have engaged in recreational sports five times a week (Planinšek, Škof, Leskošek, Žmuc Tomori, & Pori, 2014). To date, no study has been conducted where the relationship between recreational sport participation and satisfaction with life among recreational runners was taken into consideration. It has been stated that overall satisfaction with life could contribute to successfulness in all areas of life (Diener, Suh, & Oishi, 1997). Therefore, running as a type of SA should be understood as an important pattern of an individual's health-promoting behaviour.

In both models, male and less educated respondents have lower expected values of life satisfaction, whereas age is not considered a significant predictor of satisfaction with life.

The strength of the present study is the large sample size and the novelty of analysing the effects of participation in recreational running on satisfaction with life. Some limitations are worth noting. The research is based on self-reported data with only one time assessment of the subjective experience of satisfaction with life and the SA level. Especially for assessing SA this may not be an accurate depiction of total SA behavior. In future work, objective measures of SA levels could be an alternative to self-reported data. Further, the 23% response rate of usable surveys should be taken into consideration when interpreting the study results.

In conclusion, runners with a higher level of SA (recreational running) reported significantly higher satisfaction in life. SA should be understood in the context of individual patterns of health-promoting behaviours. Moreover, since middle-aged adults are often at risk of developing a number of chronic conditions (e.g., overweight/obesity, diabetes, arthritis, hypertension), it is important for healthcare providers and recreational agencies to encourage adults to adopt and continue participating in enjoyable PA such as recreational sports.

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