

DEVELOPMENT OF A SCALE FOR ASSESSING THE QUALITY OF MASS RECREATIONAL EVENTS

UDC 796.035.4.093

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Abstract. *Regular physical activity is one of the most important factors for maintaining health and quality of life. Mass recreational sports events is a good way to promote physical activity. In this research, the Sports Olympics of Vojvodian Workers (SOVW) was evaluated as an example. The main aim of the study is to analyze a recreational sports event as a mass activity significant for public health. The secondary aim is the development of a valid questionnaire which is applicable in practice. On a sample of 205 participants of the 12th SOVW, of different age and gender, an instrument was applied that showed a good metric. The factor analysis gave a stable one-factor model with a unique scale for assessing the quality of mass recreational sports events. It is a simple and understandable questionnaire, easily applicable in practice. The results of this study showed that the ratings of respondents of different age and gender did not differ significantly. The SOVW was evaluated as an event of medium quality (total score amounts to 66.19% of the maximum).*

Key words: *Physical Activity, Recreation of Employees, Quality Measurement, Mass Event*

1. INTRODUCTION

Sedentary lifestyle is characteristic of modern humans and the frequent cause of many chronic non-communicable diseases (Atorkey, 2019; Kandola, Stubbs and Koyanagi, 2020; Uddin et al., 2020; Wagner and Brath, 2012; WHO, 2018). Regular physical activity is one of the most important factors for maintaining health and quality of life. Mass recreational sports events are often used to promote exercise and health, particularly among adult employees. Quality evaluation plays a significant role in the management of any recreational sports event. The universal definition of the quality of mass sporting

Received April 30, 2020 / Accepted June 28, 2021

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events and the standard way of their assessment do not yet exist. In research practice, the most used standards and instruments belong to the service quality area and are tailored to the specificities of each individual event (Nešić, Ahmetović, Srdić and Badrić, 2017). Service quality is based on the opinion of the users formed during the consumption of the offered content, but it can also be analysed as the quality of the relationships established between the users and the service providers (Segoro, 2013).

Services in sports and recreation are processes whose results have an intangible form (Vargo and Morgan, 2005). The successful functioning of sport-recreative providers depends on the level to which they meet the needs of their users (Kaplan, 2001) and whether they have the organizational capacity to deliver quality services (Nešić, Dačić and Srdić, 2014). The social environment and user characteristics have a significant impact on the perception of service quality (Grönroos, 2002). In addition to objective indicators of service quality, customer experience is also very significant, and it depends on culture, psycho-social characteristics, beliefs, expectations, the adopted value system, habits and desires (Evans and Lindsey, 2010). The biggest difficulties when evaluating the quality of sport-recreational events are related to the dilemma of what is more important to measure: tangible quality indicators or customer experiences (Cairns, Harris, Hutchison & Tricker, 2004). Another methodological problem is related to the objectivity of quality assessment. Modern researchers think that the main focus of service quality measuring should be directed towards customer experience (Cairns et al., 2004; Campbell, 2002).

Several different instruments have been created in research practice to assess the quality of services. The SERVQUAL model was used most (Parasuraman, Zeithaml & Berry, 1988; Parasuraman et al., 1991), which measures the gaps between customer expectations and their perception of quality after using the service, followed by its variation SERVPERF (Cronin and Taylor, 1992). SERVQUAL recognizes five dimensions of quality: reliability (the ability to perform the promised service dependably and accurately), assurance (the knowledge and courtesy of the employees and their ability to convey trust and confidence), tangibles (the appearance of the physical facilities, equipment, personnel and communication materials), empathy (the provision of caring, individualized attention to customers), and responsiveness (the willingness to help customers and to provide prompt service). Many researchers have adapted SERVQUAL for the specific needs of their studies (Backman and Velfkamp, 1995; Crompton et al, 1991; Hung-Chih Yu, Morais and Chick, 2005).

Crompton (1991) did not obtain interpretable results by applying SERVQUAL to evaluate the quality of sport and recreation services and proposed a new questionnaire known as REQUAL. His scale contains four dimensions of quality (security, reliability, accountability and tangibility). Kim and Kim (1995) developed the QUESC model (Quality Excellence of Sport Centres) on a sample of sports centres in Korea. This model measures as many as 12 dimensions of quality: ambience, employee behaviour, employee reliability, sociability, information availability, programs offered, staff reputation, prices, privileges, serenity, incentives and benefits. McDonald et al. (1995) presented the TEAMQUAL model. They tested 39 elements, based on five original SERVQUAL dimensions. Howat et al. (1999) developed the CERM-CSQ model (Centre for Environmental and Recreation Management – Customer Service Quality) which measures three dimensions of quality: the main services, personal and peripheral services. The authors often used this model to measure the service quality of fitness centres in Australia and New Zealand (Murray and Howat, 2002). Ko and Pastore (2004, 2007) developed a detailed scale for service quality measuring in recreational sports (SSQRS). Four dimensions are isolated: program quality, interaction quality, outcome

quality, and physical environment quality. Based on this instrument, Ko et al. (2011) developed the MEQSS (Model of Event Quality for Spectator Sport). Testing whether visitor satisfaction with small outdoor sporting events acts as a mediator of the relationship between service quality and immediate behaviour, Tzetzis, Alexandris and Kapsampeli (2014) implemented a model with the following three dimensions of quality: approach, venue, and content. At the karate club example, Perić et al. (2017) offered an instrument for assessing the service quality of specific sports organization (SQKC questionnaire). The instrument has a unique scale for service quality measurement and has demonstrated good validity and reliability.

The aim of this study was to test the metric characteristics of an instrument for assessing the quality of a mass recreational sports events (MRSEQ). The research was conducted as a case study named the Sports Olympics of Vojvodian Workers (SOVW). The specific instrument was constructed by using elements of the previously cited instruments (selected questions and statements), and corrected during a few pilot studies. The final version of the instrument was applied at the last Olympics held in 2019.

2. METHOD

2.1. Sample

The study was conducted on 205 respondents (119 male) of the 12th Vojvodian Workers' Sports Olympics (SOVW). The respondents' ages ranged from 18 to 65 years, and the following distribution was obtained: 28 (13.7%) respondents under 24 (Youth), 91 (44.4%) participants between 25 and 39 (Young Adults), 73 (35.6%) respondents between 40 and 60 (Middle Adults), and 13 (6.3%) respondents over 60 (Older Adults). The sample is very representative because there were a total of 463 participants in the 12th SOVW.

A survey was conducted among the participants during 3 days of competition in Novi Bečej. The respondents were randomly selected, and the only criterion was to answer the survey questions voluntarily and honestly. Everyone was informed of the survey aim and resolved the questionnaire anonymously.

2.2. Variables and materials

For the purpose of this research, a questionnaire was designed to evaluate the quality of mass recreational sports events (MRSEQ). The questionnaire consists of 19 items (variables) according to which the respondents express their position by selecting the appropriate position on a 5-point Likert-type scale. A scalar value of 1 means complete dissatisfaction, and a value of 5 means complete satisfaction with a particular aspect of quality. The basis for defining the item-statements were instruments used in previous similar research (Shonk, Carr and De Michele, 2010; Currie and Ipson, 2002; Jae Ko and Pastore, 2004; Lee et al., 2011; Packianathan and Kyungro, 2000; Perić et al., 2016 i 2017; Tzetzis et al., 2014). Items that showed good metrics in previous research were included in the initial instrument. Nineteen items (Table 1) were defined, which hypothetically related to three aspects of quality: 1) event management (Items No: 1, 4 and 8), 2) the role of the local community (Items No: 2, 3, 5, 6, 7, 14, 15, 18 and 19) and 3) involvement of the company (employers) where the participants are employed (Items No: 9, 10, 11, 12, 13, 16 and 17). Cronbach's Alpha was significantly higher than the recommended theoretical value of 0.7 (DeVellis, 2003) and showed that the initial instrument had good internal reliability.

Table 1 Results of Scale reliability analysis for the initial questionnaire of 19 items

No	Items (Variables)	Cronbach's Alpha if Item Deleted	Mean	SD
V1	Conditions for SRA in the company where you work	0.918	2.87	1.370
V2	Conditions for SRA in the place of residence	0.911	3.99	0.937
V3	Conditions for SRA in the municipality	0.911	3.97	0.920
V4	Real-world opportunities for SRA in a company	0.915	3.27	1.311
V5	The prevalence and organization of SRA in the country	0.907	3.64	1.161
V6	Local politicians' support for RSE	0.908	3.07	1.312
V7	Financing RSE at the municipal level	0.906	3.07	1.272
V8	Financing SRA by employers	0.915	3.16	1.294
V9	Regularity and respect for RSE in the country	0.907	3.80	0.943
V10	The current sustainability of the RSE concept	0.908	3.97	0.936
V11	Quality of the RSE organization at the national level	0.909	3.93	0.916
V12	RSE organization at the municipal level	0.907	3.94	0.960
V13	General organization RSE where you participate	0.908	4.02	0.931
V14	The host city relation to the RSE where you participate	0.909	4.17	0.947
V15	Quality of facilities and equipment for competitions	0.912	3.98	0.918
V16	The attractiveness of the RSE competition program	0.909	4.01	0.863
V17	Accompanying entertainment and educational content	0.907	4.07	1.029
V18	Severity of RSE promotion and general media support	0.906	3.54	1.274
V19	Media coverage of RSE where you participate	0.907	3.60	1.247
Cronbach's Alpha		0.920	3.688	0.407

2.3. Statistical analysis

The gathered data were processed using descriptive and comparative statistical procedures. Descriptives (Mean and Std. Deviation) were calculated from scalar values used by the participants to express their opinion. Scale reliability was tested by using Cronbach's Alpha. The questionnaire validity was assessed by Factor analysis (model: Principal Components Analysis, PCA), using the Direct Oblimin method of rotation and Kaiser Normalization. The effect of gender and age on the differences between the Mean in different subgroups was tested using the Two-Way Analysis of Variance, ANOVA (Tabachnick and Fidell, 2013). All the conclusions were realized on the 0.05 level of significance ($p < 0.05$).

The portable IBM SPSS v.21 application (License Stats Prem: 761b17dcfd1bf20da576 by Heame software) was used for complete statistical analysis.

3. RESULTS

3.1. Factorial validity of the instrument

Factor analysis of the principal components (PCA) was conducted on the data collected using the initial 19-item questionnaire. Assessment of the suitability of the data for factorization preceded the explanation of the components. Many coefficient values of 0.3 or more were recorded by a review of the correlation matrix. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was 0.879, which is higher than the recommended minimum theoretical value of 0.6 (Kaiser, 1970; 1974). Bartlett's test of sphericity (Bartlett,

1954) also indicated the statistical significance of the obtained factor model (Chi-Square =2391.795; $p=0.000$). These statistics proved the good factorability of the correlation matrix.

A principal component analysis, which was obtained after Oblimin rotation, revealed as many as five components with Eigenvalues over 1. The obtained Scree plot (Fig. 1) shows that the scree point was already behind the first component. Based on Kattel's (1966) criterion, it was decided only one component that was above the scree point would be retained. This decision was supported by the results of a parallel analysis (Horn, 1965) that used a matrix with 19 variables, 205 subjects and 100 replications (Watkins, 2000), because only the first characteristic value was less than the corresponding empirical Eigenvalue.

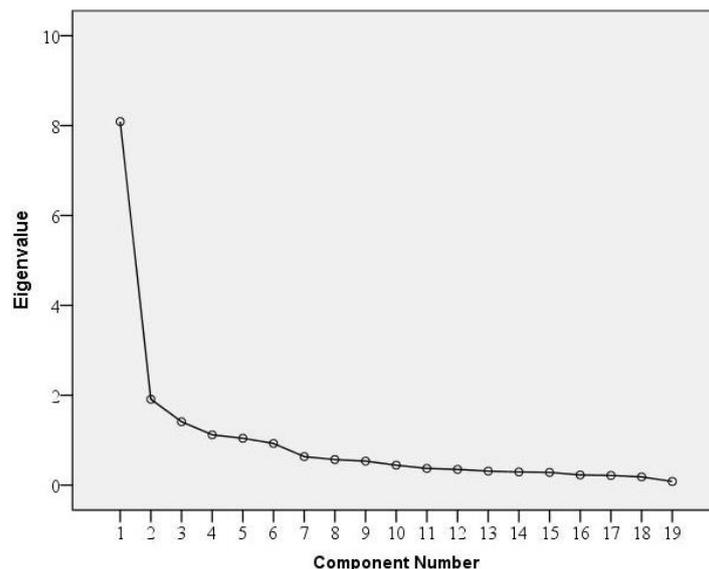


Fig. 1 Scree plot for results obtained from the initial questionnaire

The same PCA procedure was repeated for the one-component solution. Among the received utilities, three values (for variables 1, 4, and 8) were less than 0.3, which is why all three were eliminated from the system, and then PCA was repeated with the retained 16 variables. The newly obtained solution was very stable and confirmed the fulfillment of basic statistical assumptions for the application of a factor analysis ($KMO=0.889$; Chi-Square =2146.063; $p=0.000$). This one-component solution explained a satisfactory 48.664% of the total variance. All 16 communalities were over 0.3, which fulfilled the recommended statistical criterion (Thurston, 1947). Each of the 16 retained variables gave significant factor loading to the principal component (Table 2). This one-factor solution proves the high validity of the 16-item MRSEQ instrument and enables it to be used as a single scale to measure the quality of mass recreational sports events.

Table 2 Factor analysis results conducted on 16 retained variables (hierarchical view)

No	Variables	Factor Loadings	Communalities
13	General organization RSE where you participate	0.766	0.587
17	Accompanying entertainment and educational content	0.760	0.577
12	RSE organization at the municipal level	0.752	0.565
16	The attractiveness of the RSE competition program	0.750	0.562
10	The current sustainability of the RSE concept	0.745	0.554
18	Severity of RSE promotion and general media support	0.722	0.521
19	Media coverage of RSE where you participate	0.715	0.512
7	Financing of RSE at the municipal level	0.711	0.505
9	Regularity and respect for RSE in the country	0.710	0.504
11	Quality of RSE organization at the national level	0.695	0.483
5	The prevalence and organization of SRA in the country	0.694	0.481
14	The host city relation to the RSE where you participate	0.687	0.472
6	Local politicians' support for RSE	0.680	0.462
15	Quality of facilities and equipment for competitions	0.595	0.354
2	Conditions for SRA in your place of residence	0.574	0.329
3	Conditions for SRA in the municipality	0.563	0.317

SRA = Sports and recreational activities; RSE = Recreational sports events

3.2. Normative scale data

Confirmation that it is possible to use MRSEQ as a single scale allows the final result of quality measurement to be expressed as a total score, or to calculate the sum of 16 estimates (scalar values). The total score is in the range of 16 to 80 because the maximum scalar value is 5 and the minimum is 1 for each item. A larger score indicates that a mass recreational sports event is more valuable (higher quality). The score obtained in this way enables the comparison of similar events in the world, but also the quality of the same event over time.

Data from this study were collected during the 12th Sports Olympics of Vojvodian Workers (SOVW) and were used to evaluate it. For each subgroup formed by age and gender, as well as for the complete sample, average scores (Mean) were calculated (Table 3). The results of the ANOVA (Table 4) revealed that age and gender individually, as well as interactively, did not

Table 3 Descriptive parameters for the MRSEQ scores obtained in different subgroups

Age group	Gender	N	Mean	SD
Youth	Male	14	50.71	11.364
	Female	14	53.57	8.715
	Total	28	52.14	10.043
Young Adults	Male	59	49.85	10.975
	Female	32	54.13	10.051
	Total	91	51.35	10.800
Middle Adults	Male	38	53.29	8.902
	Female	35	56.11	9.193
	Total	73	54.64	9.091
Older Adults	Male	8	59.75	11.756
	Female	5	51.00	1.000
	Total	13	56.38	10.029
Complete sample	Male	119	51.71	10.654
	Female	86	54.66	9.180
	Total	205	52.95	10.144

significantly influence the differences between the Mean. This allowed the MRSEQ score to be interpreted for the complete sample. The average score in this case is 52.95 (or 66.19% of the maximum), which marks the 12th SOVW as a medium-quality mass recreational event. The coefficient of variation ($SD / Mean = 0.19$) was very low, proving the homogeneity of all the respondents' scores and increasing the conclusion probability.

Table 4 Results of ANOVA obtained for the data from Table 3

Impact	F	p	Partial Eta Squared
Age & Gender	1.529	0.208	0.023
Age	1.262	0.289	0.019
Gender	0.026	0.873	0.000

4. DISCUSSION

4.1. The scale metrics and structure

By applying the appropriate statistical procedures (Scale Reliability and Factor Analysis), it was determined that the final 16-item questionnaire had high validity, confirming that proper items were taken from previous research and that a new scale could be used in practice. The items related to the organization of events (variables 13 and 12) and to the contents offered to the respondents (variables 17 and 16) gave the greatest loadings to the general factor. It is important to note that the accompanying entertainment and educational contents have more factor loadings than the competition program. This shows that psycho-social motives are dominant among participants in mass recreational sports events (MRSE). This information justifies the fact that MRSE organizers pay considerable attention to the accompanying contents that emphasize the socialization needs of the modern human. The host city of the event (the 12th SOVW) organized concerts of several popular national bands, and engaged a scientific-educational institution (Faculty of Sport and Tourism from Novi Sad) to conduct anthropometric and functional testing of the participants and organize a knowledge quiz. The quality of the accompanying entertainment and educational content (variable 17) had the second highest scalar average among the ratings of particular aspects of the event (Table 1).

Observation of the dominant role of the socialization aspects of MRSE is supported by information on the items ranks related to the material conditions (facilities and equipment) in which the SOVW was organized. Variables 2, 3 and 15 (Table 2), namely, had the least factor loadings. This confirms the findings of previous studies (Caro and Garcia, 2007; Derom and Taks, 2011; Lynch and Dibben, 2015; Okayasu, 2016; Perić et al., 2016 and 2017; Rauter, 2014) in which intangible (psycho-social) elements influenced participants' satisfaction more than material conditions (facilities and equipment).

It is important to look at the items that were eliminated from the initial questionnaire (variables 1, 4 and 8 at Table 1). All three items indicate the employers' attitudes toward the employees' recreational and sports activities (material requirements and support for participation in MRSE). These items had very low communalities and a negligible share in explaining the total variability. These were also the elements that were the least rated by the respondents (Table 1). The low predictive value of these three variables can be explained by the fact that their estimates were the least homogeneous, that is, they had the highest standard deviations (SD) with the least Mean. The results of this study show

that employers in Serbia do not pay sufficient attention to regular physical activity and that they are saving on healthcare in order to maximize profits. Employees in Serbia today have to take care of their recreational exercise themselves. Education is important for the selection of healthy activities and their proper implementation, so these contents could be the trump card of the organizers to improve the quality of the next SOVW.

In addition to the items related to the role of employers (companies in which the respondents are employed), specific items that evaluate the role of two important public life entities - the municipality (variables 12 and 7) and the state (variables 9, 11 and 5) - are represented in the hierarchical structure of the MRSE general factor. Municipality-related items have higher factor loadings and are in higher positions than all state-related items. This shows that the improvement of the quality of MRSE (and physical activity in general) can be promoted primarily through action in the local community. Poor care and insufficient material investment of the state in sports recreation are most seen in periods of economic crisis. The governments of most states are committed to top sport that provides the opportunity for faster and more widely visible promotion of state administration. Real life takes place in local communities, which is why they are primarily concerned with the development of MRSE. MRSEs are also suitable for tourism development and the promotion of local culture (Radichi, 2013; Wäsche and Woll, 2010).

4.2. SOVW brief review

The workers' sports Olympics is a decades-long project which started in the old SFR Yugoslavia. It was used to promote the health and socialization importance of recreational sport, but also as a way for the leading (in that period the only political organization), the Communist Party, to show concern for the working class. With the collapse of Yugoslavia and the great economic crisis, the idea of a workers' Olympics fell apart too. The only region of the former state where these events have been preserved is the Autonomous Province of Vojvodina. The Sports Olympics of Vojvodian Workers (SOVW) was founded in 1975 and is regularly held every 4 years in different cities. The number of participants decreased significantly compared to the first Olympics which was given maximum financial and organizational support by state-owned companies. Today, only the Vojvodian Federation of Sport for All takes serious care of the SOVW, with the financial support of the Provincial Secretariat for Sport and Youth and the local authorities of the host city. SOVW has been in crisis in recent years, which is one of the reasons for conducting this research. The aim was to evaluate the current quality of the event and identify elements for improvement.

The Hudson model (2008) is applicable for complex consideration of the quality and position of SOVW in the social environment. It analyses the following elements: 1) the mass and appeal of the event; 2) potential attraction for sponsors; 3) the possibility of creating and developing new sports, recreational and tourist facilities in the venue; 4) the incentive to build new or improve existing infrastructure; 5) adaptation of the facilities to different categories of participants and spectators; 6) raising the confidence of the local environment; 7) contribution to the specific perception of the culture and tradition of the local community (destination) in which the event is held, and 8) assistance in branding the local area as a tourist destination. These elements are the basis for considering the justification and sustainability of the SOVW, and according to Hover et al. (2016) the three main spaces for their analysis are: 1) production of the event (rights holders, organizers); co-production (participants, financiers, sponsors, media, sports organizations, volunteers),

and 3) consumers (locals, non-direct visitors, NGOs, companies, agencies). These analyses are the basis for the concept of Sport for All development, primarily in local communities. Institutions responsible for implementing local strategies should continually evaluate consumer satisfaction with all the elements of the MRSE. The instrument proposed in this study (MRSEQ) can be used in such evaluations.

Previous research confirms that many recreational organizations in the world use similar quality management concepts and implement specific models of service quality measurement (Carr and De Michele, 2010; Currie and Ipson, 2002; Lee et al., 2011; Jae Ko and Pastore, 2004; and Kyungro, 2000). Most sports and recreational organizations in Serbia, however, are still not sufficiently oriented towards the implementation of quality management and the measurement of its aspects. This is especially true of measuring participants' satisfaction, thus reducing the possibility of improving the efficiency of management and internal organization (Nešić et al., 2016).

5. CONCLUSION

The majority of professional activities are performed by employees who spend long hours in passive positions which cause fatigue and have a detrimental effect on postural status. Regular physical activity is one of the most important factors for maintaining health and quality of life. A large number of employees today neglect their regular physical activity or engage in inadequate fitness programs that are attractive but do not bring health benefits (for example: high intensity training or exaggerated resistance training). Involving employees in organized recreational programs is a good way to tackle hypokinesia problems. Local governments and companies should be the main providers of such programs. Mass Recreational Sports Events (MRSE) are one of the forms for the promotion and realization of regular physical activity of employees and are widely used within the international organization Sport for All. Such events need to be valorised and the quality of their key elements measured to deliver the expected effects - health and social benefits for employees. The main role in the process of valorisation and quality management is played by users (participants in the MRSE), their perception of quality and level of satisfaction. One such event (Vojvodian Workers' Sports Olympics) was analysed in this study with the aim of developing an instrument for measuring the quality of MRSE. A valid 16-item instrument (MRSEQ) was obtained based on empirical data. It is a simple and understandable questionnaire, easily applicable in practice. Measurement results are expressed as numerical values of a single scale where higher values indicate higher quality of MRSE.

Acknowledgement: *The authors thank the Association Sport for All of Vojvodina, which provided data collection and financially supported the publication of the article (grant number 388-1/2019).*

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RAZVOJ SKALE ZA PROCENU KVALITETA MASOVNIH SPORTSKO-REKREATIVNIH DOGAĐAJA

Redovna fizička aktivnost je jedan od najvažnijih preduslova za očuvanje zdravlja i kvaliteta života. Masovni sportsko-rekreativni događaji su dobar način da se promoviše fizička aktivnost. U ovom istraživanju kao primer je ocenjena Sportska olimpijada radnika Vojvodine (SORV). Osnovni cilj studije je analiza rekreativnog sportskog događaja kao masovne aktivnosti značajne za javno zdravlje. Sekundarni cilj je izrada validnog upitnika koji je primenljiv u praksi. Na uzorku od 205 učesnika 12. SORV, različitog uzrasta i pola, primenjen je instrument koji je pokazao dobru metriku. Faktorska analiza dala je stabilan jednofaktorski model sa jedinstvenom skalom za procenu kvaliteta masovnih sportsko-rekreativnih događaja. To je jednostavan i razumljiv upitnik, lako primenljiv u praksi. Rezultati ove studije su pokazali da se ocene ispitanika različitog uzrasta i pola nisu značajno razlikovale. SORV je ocenjen kao događaj srednjeg kvaliteta (ukupan rezultat iznosi 66,19% od maksimuma).

Ključne reči: fizička aktivnost, rekreacija zaposlenih, merenje kvaliteta, masovni događaji