

# The quality of sports services in karate club based on users' perception

## Authors' Contribution:

- A** Study Design
- B** Data Collection
- C** Statistical Analysis
- D** Manuscript Preparation
- E** Funds Collection

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## Abstract

### Background and Study Aim:

A club is a basic organizational unit where key karate processes take place (learning, training, competition, recreation and promotion). The quality of a karate club is important not only for sport result, but also for its economic survival. Analyses show that most of karate clubs live from their members' payments and because of this it is necessary for them to continually monitor and improve the service quality. The purpose of research is the quality of sport services in Serbian professional karate club.

### Material and Methods:

The sample of 214 users of a karate club (74 competitors, 87 recreational users and 51 parents) was examined via the questionnaire for evaluation of the quality of sports services. The application of Oblimin rotation produced a single factor structure which shows that the questionnaire can be used as a sole measuring scale.

### Results:

An isolated factor of sports service quality explained for the 40.45% of the total variance. A hierarchical structure of Component Matrix shows that this factor is saturated the most by items related to positive experiences of sports services (expertise, sense of security, quality of offered activities, programs' educational value). Surveying of the users showed that the chosen karate club has been offering high quality sports services. Not a single difference has been noted between the scalar means that were gotten in different sub-samples formed on the basis of users' roles, sex and training experience.

### Conclusions:

This study presents the instrument SQKC that was used for the evaluation of sports services in karate clubs. This questionnaire has a good measuring system which should be utilized in other sports clubs (not only in karate).

### Key words:

quality of service • martial arts • reliability analysis • SQKC questionnaire

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Authors have declared that no competing interest exists

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**A Likert scale** – is a psychometric scale commonly involved in research that employs questionnaires. It is the most widely used approach to scaling responses in survey research, such that the term (or more accurately the **Likert-type scale**) is often used interchangeably with **rating scale**, even though the two are not synonymous [29].

**SQKC questionnaire** – Service Quality of a Karate Club questionnaire specially designed for the evaluation of sports services in karate clubs.

**Reliability analysis** – is determined by obtaining the proportion of systematic variation in a scale, which can be done by determining the association between the scores obtained from different administrations of the scale [30].

**Quality of service** – technical (outcome of the delivered service) and functional dimension (delivery service process) [12].

**Club** – **noun 1.** a stick or bat used in some sports, especially golf, to hit a ball **2.** an association of people with a common interest **3.** an organisation formed for the pursuit of a sport [31].

**Martial arts** – **plural noun** any of various systems of combat and self-defence, e.g. judo or karate, developed especially in Japan and Korea and now usually practised as a sport [31].

**Martial Arts** – are systems of fight practices (practiced in many reasons: self-defence, competition, self-improvement, physical health and fitness, mental and physical development) [32].

## INTRODUCTION

The major part of communication among all sports subjects (individuals, other clubs, associations, branch associations etc.) goes through club activities. The quality of a sports (and as well karate) club is important not only for realization of good sports results (on competitions), but also for its economic survival on the market. Analyses show [1-3] that most karate clubs in Serbia live from membership fees and thus it is necessary for them to continually monitor and improve the quality of service. Nonetheless, for economic survival of clubs the most important is the opinion of their direct users (competitors, regular and occasional club members, parents who bring their children, etc.). The quality of service can be evaluated based on different aspects – economic, managerial, sports, pedagogical, educational, and so on, that is, external and/or internal stakeholders. This study dealt with users' view of quality of sports services and it included: the quality of a coach, program, the exercising space, safety, hygiene, and the quality of educational and pedagogical elements. Services in non-profit sports organizations are determined by mental and physical socially useful content. They represent actions, processes and performances whose result is an intangible form [4]. Success in the functioning of sports (and karate) clubs depends on how effectively and competently they satisfy their users' needs [5], that is, what is the range of organizational capacities through which they can offer quality sports services to the sports market [6]. For creation and distribution of sports services it is important to take into consideration service ambient which is formed by different elements of social environment and these influence users' perception. [7]. Karate clubs are sports and service entities. Their goals have to be adjusted to users' perceptions and expectations, that is, they should be focused on pleasing their users. Aside from the objective indicators of service quality, the subjective experience, which depends on psycho-social users' characteristics, their beliefs, expectations, individual patterns and value system, habits, motives and desires, is also significant [8].

The most common difficulty in defining the notion of quality service in sports industry is connected to dilemma of what needs to be measured – the service quality itself or the experience of service users [9-11]. Another methodological problem is related to a doubt whether the

evaluation of quality can be done objectively. Most authors believe that the main focus of service quality has to be users [12]. Formation of users' experience about service quality is mostly determined by inner factors related to organization of a club (team work, continuous improvements, permanent quality control, etc.), but also by relationship with other stakeholders [13, 14]. This relationship produces a lot of difficulties due to which measuring of delivered services is a very sensitive issue [11].

The research practice has so far created several different instruments for evaluation of quality which make the measuring of management quality much easier. This primarily relates to Servqual model [15] and its modification Servperf [10], which measure gaps between users' expectations and their perception of quality after they have used the service. Even though these instruments have been used a lot in tourism and some other non-profit areas (public services, education and such), they haven't been checked nor standardized in sport. For evaluation of service quality in this study, a special questionnaire has been created whose metric characteristics were checked in several former pilot researches.

The purpose of research is the quality of sport services in Serbian professional karate club.

## MATERIAL AND METHODS

This empirical research has a transversal character. By applying a specially designed questionnaire (SQKC), service quality of a karate club from Serbia (YU Karate Do Club, Novi Sad) was evaluated. The sample was composed of 214 participants divided into three categories: (1) 76 competing athletes (healthy individuals of both sexes, aged 16 to 40 years and have more than 4 years in the regular system of training and official competitions), (2) 87 amateurs (healthy people of both sexes, aged 16 to 40 years who have been regularly practicing karate three times a week for 90 minutes for more than one year and (3) 51 parents (adults aged 36-53 years whose children regularly practice in the karate club for more than a year).

The applied instrument was designed to be a scale for individual evaluation of quality of sports service elements in a karate club. The final version

of the questionnaire was preceded by several trial researches on users of several karate clubs in the city of Novi Sad (Republic of Serbia). The initial questionnaire consisted of 25 claims, but after the first test of metrics, only 18 items were kept (Table 1). The participants expressed their evaluation by choosing one of five positions on the Likert scale, where 1 represented the lowest, and 5 the highest degree of users' satisfaction. The questionnaire metrics was analyzed via two procedures: (1) Scale reliability analysis (determination of Cronbach's alpha) and (2) Factor analysis, Principal components analysis (PCA), with direct Oblimin method of rotation. All statistical conclusions are carried out at the level of significance 0.05 (Sig. <.05). The results show that the scale has a good internal consistency, which is implied

by the Cronbach's alpha coefficient that is significantly higher than the recommended theoretical value 0.7 [16]. All the 18 items have a high internal consistency.

The application of SQKC questionnaire in practice is shown in the case of YU Karate DO Club from Novi Sad. Based on participants' answers to 18 items from the questionnaire, the average scalar value was calculated for each participant, and this value was used as numerical data for evaluation of the quality of delivered sports services. Descriptive statistical indicators for different subsamples were calculated out of these scalar averages. The significance of differences between means was tested by Univariate analysis of variance and one way ANOVA.

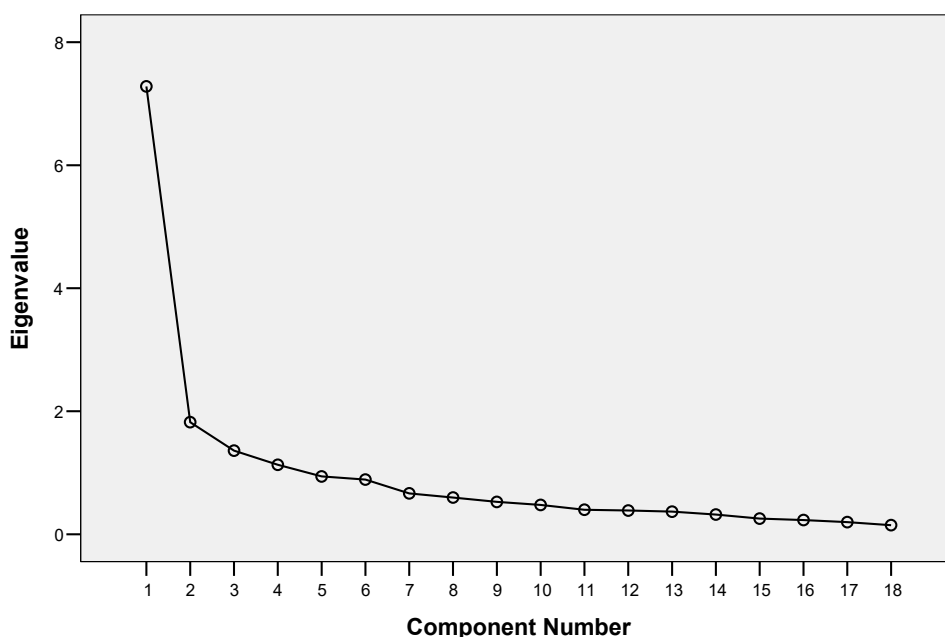
**Table 1.** Reliability Statistics for SQKC questionnaire.

Q	Statements	Cronbach's alpha if item deleted
1.	Quality of professional work (training management) by the club's coach	.897
2.	Number of employed coaches in the club	.894
3.	Expertise of the coaches that work in the club	.899
4.	Prevailing atmosphere during training sessions	.898
5.	Coach's treatment of athletes	.897
6.	General quality of all services provided by the club	.893
7.	Space where the service of the club is provided	.895
8.	Hygiene in training facilities	.898
9.	Safety level during exercising and staying in the club	.889
10.	Availability of professional information related to club service	.888
11.	Spatial capacity as related to the needs of individual athletes	.893
12.	Programs and activities offered by the club to its users	.889
13.	Users' subjective feeling during their stay and use of the club	.890
14.	Location of the club (exercising room)	.897
15.	Educational programs organized by the club	.891
16.	The quality of sports camps organized by the club	.891
17.	Availability of information about programs and activities of the club	.897
18.	Marketing activities of the club	.901
	Cronbach's alpha	.908

## RESULTS

With the aim of evaluation of SQKC questionnaire's validity, Principal component analysis (PCA) was used on 18 items of the scale. Before PCA, the appropriateness of data for a factor analysis was assessed. After the correlation matrix was checked, a lot of coefficients with 0.3 and higher values were marked. Kaiser-Meyer-Olkin Measure of sampling adequacy (KMO) was 0.871 which exceeded the recommended value of 0.6 [17, 18]. Bartlett's test of sphericity [19] also came out with a statistical significance. All of this indicates factorability of the correlation matrix.

The analysis of the main components gotten after Oblimin rotation, revealed the presence of four components with Eigenvalues over one, which explained 40.45%, 10.13%, 7.56% and 6.28% of the variance. A resulting scree plot showed the existence of a clear breaking point already after the first component (Figure 1). Based on Cattell criterion [20], it was decided to keep only one component. This was supported by the results of a parallel analysis with one component whose characteristic values exceed the matching threshold obtained via equally large matrix of random numbers (18 variables x 214 participants). That single component solution explained a large portion of the total variance. All of the 18 variables gave significant factor weight to one extracted component (Table 2) which proved that the SQKC questionnaire has a high validity and that it can be used as an independent scale for evaluation of the sports service quality in karate. A hierarchical



**Figure 1.** Scree Plot for SQKC questionnaire.

structure of the component matrix shows that the extracted factor is most saturated by items related to positive experiences of sports services (expertise, sense of safety, offered activities, educational value of programs).

The results collected by surveying users of sports services showed that the chosen karate club offers high quality sports services. On the scale from 1 to 5, the total average grade of the complete sample greatly surpassed the value of 4, and in certain sub-samples it reached the value of 4.5 (Tables 3 and 4). The results of discriminative analysis showed that the experience of sports service quality wasn't influenced by any of the three analyzed characteristics of participants – users' roles (competitors, amateurs, and parents), sex and training experience. The discriminative analysis of the average scalar grades of participants with different training experiences was carried out only on competitors and amateurs.

## DISCUSSION

The relationship between service quality and users' pleasure is very significant for modeling of work of a sports club and represents a very sensitive issue. It is conditioned by users' individual perception and specific experience of quality either through one's positive or negative emotions after the use of a service [8]. Sports clubs

utilize different concepts of quality management and apply different models for measuring of service quality [21-24]. Most karate clubs in Serbia still aren't oriented toward management quality and measuring of different aspects of quality. Measuring of users' satisfaction is especially neglected. This lessens the possibility of improvement of management efficiency, internal organization and marketability. The importance of quality management is indicated by the experiences shared by many organizations which deal with sports and recreation [25-27], and especially martial arts clubs [28].

Most commonly evaluated elements of quality in previous researches carried out in sports-recreational clubs were connected to material conditions (the size and quality of an object, space and exercising equipment, availability and such), leaving out quality of activities (the kind of activities, training technology, educational concepts, etc.). In order to design instruments in this study, both material and non-material aspects of quality were taken into consideration. Even though it was expected that those two components would be extracted in the factor analysis, in the end the conclusion was that the quality in a karate club should be observed as a single space. By getting a single factor structure, maximal parsimony was achieved and validity of the SQKC questionnaire was confirmed. That was a good recommendation for its use in direct practice in karate clubs.

**Table 2.** Factor Analysis for SQKC questionnaire.

Item hierarchy	Component Matrix	Communalities
Q10	.807	.754
Q09	.786	.695
Q12	.777	.774
Q13	.773	.728
Q15	.758	.624
Q16	.709	.561
Q11	.680	.646
Q06	.650	.702
Q02	.629	.477
Q01	.596	.659
Q07	.586	.804
Q05	.579	.720
Q14	.532	.475
Q17	.532	.706
Q08	.531	.408
Q04	.485	.670
Q03	.472	.566
Q18	.336	.625

KMO Measure of Sampling Adequacy = .871; Bartlett's Test of Sphericity = 2025.303; Sig. = .000

High internal consistency of the chosen items contributed to good metrics of this instrument, which shows that it can be used as an independent scale for evaluation of the quality of sports services in karate.

Practical applicability of the instrument is additionally supported by numerical nature of the data. Respondents evaluated certain aspects of the quality with scalar values from 1 to 5, which allows for the calculation of descriptive statistical indicators as well as the application of most of the comparative procedures in parametric statistics. Using this option in the present study, we compared the average grades of quality obtained in different subsamples (athletes, recreational athletes, parents, as well as subjects with varying duration of training experience). This detail is particularly important in measuring of the quality of sports services because the perception of individual elements of the quality depends on the characteristics of different stakeholders. For this study, for example, it was important to determine whether parents, as external stakeholders, and their children as direct consumers of services of the karate club, have the same (or different)

**Table 3.** Descriptive Statistics for SQKC questionnaire

Subsamples	Gender	N	Mean	SD
Competitors	Male	41	4.549	.316
	Female	35	4.454	.375
	Total	76	4.505	.345
Amateurs	Male	45	4.428	.427
	Female	42	4.479	.455
	Total	87	4.453	.439
Parents	Male	16	4.267	.316
	Female	35	4.305	.531
	Total	51	4.293	.471
Total sample	Male	102	4.452	.379
	Female	112	4.417	.460
	Total	214	4.433	.423

Univariate Analysis of Variance for Subsamples:  
F = 5.599; Sig. = .152

Univariate Analysis of Variance for Gender:  
F = .002; Sig. = .967

experience of certain aspects of quality. For the analysis of specific experiences of different stakeholders it is very important to choose the target group that affects functioning of karate club the most. In this case, when the existence of the club is predominantly tied to membership fees, parents represent the most targeted group because they make decisions in which club their child will exercise. In the present study of this particular karate club it was shown that all stockholders, irrespective of their age and role evaluated the service quality highly positively and among them there are no statistically significant differences. If the differences of the quality assessment by different stakeholders had been significant, the management team would have had clear quantitative indicators how to focus their attention on a specific target group.

The hierarchical structure of the extracted factors show that in the process of evaluation of service quality in the karate club users perceive most intensively overall experience of consumed services. Although they rated all the factors of quality positively, the most dominant influence of the factor is reflected in the positive experience

**Table 4.** Descriptive Statistics for SQKC questionnaire (only athletes and amateurs)

Training experience (years)	N	Mean	SD
Less than 5	78	4.419	.369
From 5 to 10	73	4.512	.429
More than 10	12	4.638	.342
Total	163	4.477	.398

One Way ANOVA:  $F = 2.122$ ; Sig. = .123

of availability of technical information, in their sense of security while staying and exercising in the club, in possibility of choice and availability of different exercising activities, as well as educational influence of the offered programs. These data are important for the management of the club because they suggest which activities to undertake for continuous improvement of karate club's quality. By evaluation of certain elements of quality, service users send clear information to the management about areas for improving. It is worth noting that in all the subsamples non-material part of services was more important for the formation of a positive evaluation of the karate club's quality. In the future studies it would be interesting to monitor these elements in other clubs and check the extent to which this observation is confirmed. Data from those potential future researches might be used for ranking of karate clubs, whether that would be at a local, regional or national level.

## CONCLUSIONS

This study shows the construction and application of a questionnaire suitable for evaluation

of the quality of sports services in karate clubs. Through several pilot studies, 18 stable items were defined due to which the questionnaire has good metrics. The application of the scale reliability analysis resulted in the high value of Cronbach's alpha, and the factor analysis proved a good validity of the scale. Maximal parsimony and a single factor structure were produced in the analysis of the main components. The hierarchical structure showed that the general definition of quality factors of sports services is most affected by the items which are related to the positive experience of sport services (expertise, sense of security, offered activities, educational programs). The presence of only one factor allowed the use of a single scale for assessment whose final result is the average value calculated from the score that was obtained from respondents' evaluations of certain aspects of quality. The application of the designed questionnaire is shown through the example of one sports club. The next researches are expected to test the questionnaire in other sports clubs. Starting with good psychometric characteristics obtained in this study, it is reasonable to expect that the survey proves reliable in other martial arts as well.

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## EDITORIAL NOTE

The authors of the manuscript have deviated from the principle that 'Results' section in the original article is a set of a **perceptual sentence** (in the methodological meaning is constative utterance the result of some observation – result of the measurement [33]). In 'Results' section the authors interpret the results and put references to the scientific literature (a feature of the 'Discussion' section). Such deviation is acceptable in this paper due to the innovative elements in the methodological meaning. However, conscious deviations from editorial standards of the original article should be described and justified. The Archives of Budo's Editorial Board, in the pursuit of the educational mission of the journal, particularly concerned with the highest standards of methodological correctness [34] makes it in the name of the authors. We also refer to original papers, where such deviations are clearly justified [33, 35-37].

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