

Full Length Research Paper

The validity and reliability study of the sports facility utilization scale of university students: The case of Karabük University

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This study aims to develop a valid and reliable measurement instrument with the intent of determining the interest levels of university students towards utilizing sports facilities. In the context, target population of the study consists of the Karabük University while its sampling consists of 700 (290 females and 410 males) students who study in different departments. During the preparation of the scale, phases of determining scale items, preparing test scale, implementing the scale, determining reliability and validity were applied respectively. Firstly, the scale was created from the items selected from the item pool for the test application and exploratory factor analysis was conducted to the data collected from this draft. As a result of the exploratory factor analysis which was conducted for construct validity, it was concluded that the scale was of a single factorial construct and explained 40.39% of the total variance. The factor load values of the 13 items which constitute the single factor vary between .35 and .80. The fit of the factor and the items constituting this factor was examined through confirmatory factor analysis (CFA). When the fit index values obtained as a result of CFA and error values were evaluated, it was concluded that the 13 items exhibited perfect with the single factorial construct. When the Cronbach Alpha reliability coefficient was evaluated to calculate the internal consistency coefficient of the scale, it was concluded that it had a high level of reliability with .87.

Key words: University youths, sports facilities, sports areas, service, scale.

INTRODUCTION

University education undoubtedly constitutes one of the most important processes in education. University is education unit where not only scientific but also occupational theory and implementation are taught and which prepares one for life socio-culturally as well. Students have educational (academic), social, cultural,

sportive expectations from university at different levels (Şahin et al., 2011: 433). These expectations emerge as a distinguishing factor for universities with higher quality. It is believed that right, productive and student-utilizable sportive investments which have been made with the increasing number of universities in our country will affect

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the university preferences of students in the medium and long term.

Students both see the concept of sports as a social need and need sport to get away from the intensity and stress of daily life. Sport has been observed to be an effective factor especially in the socialization process of the youth (Büküşoğlu and Bayturan, 2005: 174). On the other hand, immobility and obesity which are among the biggest problems of our age pose serious threats to the health of the youth with an increasing trend; and individuals who did not gain the habit of exercising in their adolescence and adulthood period can be deprived of the positive effects sports would bring to their lives. Therefore, it is necessary to create areas which provide the habit of doing exercise to university students (Güleç et al., 2008: 108).

It has been discovered that the habit of exercising rises with the higher education process and that in the next generation, parents make their own children exercise and advise them on making use of their spare times with sports (Can, 2010: 868). In other words, the habit of exercising rises in families in direct proportion to level of education.

On the other hand, the studies conducted in our country have found that the participation and interest level of the university youth to sports is still below the required and desired levels (Yıldırım et al., 2006: 52). Among the reasons behind these low sports participation levels is also the fact that the university youth do not utilize the facilities sufficiently (Gizir, 2005: 206). In our world where the importance of sport is ever-increasing, all these data demonstrate that the university youth require competent, well-operable sports facilities with quality.

University years are a suitable period in which gaining sport habits has been a bit delayed but this last chance can still be made use of (Bayrak et al., 2010: 103). When sports facilities render accurate and effective services, both universities and students will find the chance of utilizing the emerging positive effects mutually.

Research significance

In this study, factors such as the university students' awareness status of the existing sports facilities, their level of ability in using these facilities, the service-rendering level of the facilities were investigated and the subject of "sports facilities in universities", which is one of the importance factors in the playing and prevalence of sports were questioned through various factors. The answer to the question of "Are the sports services, which must be rendered to the youth in the same process as the university education in terms of being adopted as a lifestyle especially in the preparation to life and post-adolescence period, symbolic and non-functional service units in universities or are they functional and productive service areas?" was sought.

METHOD

Research design

The study aims to develop a valid and reliable measurement instrument with the intent of determining the interest levels of university students towards utilizing sports facilities. From this perspective, the study is of a screening model. According to Karasar (2007), screening model is a research approach which aims to describe a past or still-existing situation as it is.

Participants

The target population of the study consists of the 40176 (15094 females and 25082 males) students who were receiving education in the Karabük University in the 2014 – 2015 Academic Year. 1000 (368 females and 632 males) undergraduate students who continued their education at different Faculties and Colleges of the Karabük University were included in the research sample. In the implementation phase of the scale survey, 87 students stated that they did not wish to participate in the study. As a result of the conducted pre-assessment, it was detected that draft surveys of 213 scales were deficient or insufficient and the draft surveys of the scale which was filled by 700 (290 females and 410 males) students were taken into consideration. 70% of the sample included within the research scope was accessed to. As this was a scale development study, generalization from the sample to the target population was not carried out. According to 0.04 error amount in the 96% reliability interval, the sampling number which can represent the universe composed of 40176 students is 649 and, hence, 700 samples which were determined for validity and reliability are at a number which can represent the universe. Access date: 02.10.2015 <http://www.raosoft.com/samplesize.html>

Operation

In this study, the data collection tool was implemented to the students of the Karabük University by the researcher. Before collecting the data of the research, meetings were held with the Presidency of the Karabük University and official permits which were required in the scale implementation phase of the study were obtained. Firstly, students were informed about the aim of the study and how the scale would be filled and then those who agreed to participate in the study were included in the research after answering their questions. The data collection tool was handed out to the participants with the instruction page on top and the information form right under it. It was especially underlined in the instruction page that the research was being conducted with academic purposes and did not aim to collect information about the participants on an individual basis and, hence, there was no need to write names or any information which would reveal identity.

Data collection tools

A measurement tool consisting of two parts was utilized in the data collection phase. The first part of the measurement tool is the demographic information form and the second part is the *sports facility utilization scale* which has been prepared to determine the interest levels of university students towards utilizing sports facilities.

Demographic Information Form: In the demographic information form, demographic questions (age, gender, registered faculty or college, height, weight, etc.) were included to obtain information of the students participating in the research. As well as the demographic questions, students were asked about their alcohol

and cigarette use status, the sport branch they were interested in, the football team they sport and their active exercising status.

Sports Facility Utilization Scale: This scale was developed to determine the interest levels of undergraduate students receiving education in the University towards utilizing sports facilities. The scale development effort was executed in four phases. These were named as the determining scale items, preparing test scale, implementing the scale, determining reliability and validity phase.

a. Determining Scale Items Phase: In this phase, the related literature and studies on the subject of determining the interest levels of individuals towards utilizing sports facilities were examined. During the creation of the scale, studies conducted by Arthur (2004), Ceyhun (2006), Daly (2000), Ekenci (1998), Theodorakis (2001), Flannery (1999), Gustafsson and Johnson (2003) were utilized.

b. Preparing Test Scale: In this phase, 20 efficacious element statements such as "Sports facilities are primarily used for competitions and performances in our university", "I can use the sports hall regularly in our university", "I feel strong after exercising" which determine the approach of university students towards sports facilities and sports were compiled one under the other. 24 of these statements are related to sports facilities while 20 of them are about sport interest levels. A scale in the 5 Point Likert format which expresses an opinion as "5- Agree completely", "4- Agree", "3- Partially Agree", "2- Indecisive", "1- Disagree" was placed across these statements. The data was processed by inversely coding the items included in the scale which are negative in terms of meaning. Moreover, instructions which inform about the aim of the scale and answering style were written at the beginning of the scale. The 20 items which were prepared were checked by both an expert in this field and 2 experts on Turkish Grammar with the aim of determining whether there was a confusion in the wording which could cause deficiency or misunderstanding.

c. Implementing the Pretesting Phase: The pretesting of the sports facility utilization scale of individuals which was prepared as a draft and consisted of 20 items in total was implemented on 400 university students.

d. Determining Reliability and Validity Phase: In this phase, *exploratory factor analysis* was conducted in the first phase to determine the construct validity while implementing the factor analysis and the dimensions of the scale were identified. *Confirmatory factor analysis* was conducted to confirm these identified constructs (Tabachnick and Fidell, 2007).

Data analysis

The information obtained with the scale survey was analyzed via the "SPSS for Windows 15.0" and "Lisrel 8.8" statistical package programs. Frequency distributions were found for all questions. Firstly, extreme value analysis and lost data analyses were conducted on the data to be used in the study and means and standard deviations were calculated for the items.

Exploratory factor analysis was conducted first in the scope of validity and reliability analyses of the scale. After the exploratory factor analysis the confirmation of the determined factors, in other words confirmatory factor analysis with the purpose of determining whether the determined factors and the attitude statements within each factor were really associated with that dimension for the sports facility utilization scale, was conducted via the LISREL 8.8 package program.

FINDINGS

The validity of the sports facility utilization scale's Turkish

form was discussed in terms of language and scope validity and constructs validity.

Construct validity: Exploratory factor analysis (EFA) validity study of the sports facility utilization scale

The construct validity of the scale was tested via factor analysis. For that purpose, whether the data obtained from the test implementation was appropriate to factor analysis was examined. The results of the Kaiser-Meyer-Olkin (KMO) and Bartlett tests, which show the appropriateness of data to factor analysis, have been presented in Table 1.

As can be seen in Table 1, the calculated KMO adequacy measure value is 0,90. Leech et al. (2005); Şencan (2005); Tavşancıl (2005) have stated that factor analysis cannot be conducted under the value of 0,50 which is accepted as the critical value (Büyüköztürk et al., 2010, p: 207; Tavşancıl, 2010). When the Kaiser-Meyer-Olkin value of the scale is compared with the critical values, it was concluded that "0.90-1.00" was at a very high level (Büyüköztürk et al., 2010, p: 207). The Bartlett Test of Sphericity which was calculated for the same data is 2357.11 and is significant at the 0,01 level ($X^2_{78}=2357,11$). These values demonstrated that the data obtained from the test application can be subjected to factor analysis. It was concluded that the sampling number on which application was made is adequate for factor analysis.

The results of the factor analysis which was conducted by using the principal components analysis are in Table 2.

As can be seen in Table 2, there is 1 factor with a eigenvalue greater than 1.5. The variance which is explained by this one factor is the 40.39% of the total variance. Taking the initial eigenvalues into consideration, the eigenvalue of the first factor (5,25) is stated as 1 factor as it is greater than 1.5.

The factor load the items included in the test survey possessed is presented in Table 3.

In Table 3, the 1st, 2nd, 6th, 7th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 17th and 20th items have the highest load value in the first factor. The factor loads of items in the first factor vary between .35 and .80. According to these load values, the scale is single factorial and all items have a load value which can be included in the scale. As the 3rd, 4th, 5th, 8th, 16th, 18th and 19th items which went through factor analysis are below the .30 factor load, which is considered as the threshold value, they were excluded from the study. According to Tabachnick and Fidell (2001), if the load value of each item is below the 0.30 critical value, it is determined "mediocre" (quoted in Büyüköztürk et al., 2010). The threshold value was identified as ,30 to increase the explanation variance of the determined factor.

The results of the item analysis which was conducted based on the item total correlation have been presented

Table 1. Results of KMO and Bartlett Tests.

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | | .90 |
|--|----------|------------|
| | χ^2 | 2357,11 |
| Bartlett Test of Sphericity | Sd | 78 |
| | P | ,000 |

Table 2. Factor eigenvalues and explanation variances.

| Factor | Initial Eigenvalue | | |
|---------------|---------------------------|-------------------|--------------|
| | Total | Variance % | Cum % |
| 1 | 5,25 | 40,39 | 40,39 |

Table 3. Factor load of items and item total correlation results.

| | 1 | r |
|-----|----------|----------|
| b10 | 0,80 | 0,74 |
| b7 | 0,72 | 0,66 |
| b12 | 0,68 | 0,63 |
| b14 | 0,66 | 0,60 |
| b9 | 0,65 | 0,59 |
| b15 | 0,64 | 0,58 |
| b11 | 0,64 | 0,60 |
| b6 | 0,59 | 0,53 |
| b17 | 0,54 | 0,50 |
| b20 | 0,50 | 0,46 |
| b13 | 0,46 | 0,43 |
| b2 | 0,37 | 0,39 |
| b1 | 0,35 | 0,36 |

*p<,05

in Table 3. According to these results, correlation values vary between $r=.36$ (b1) and $r=.74$ (b10) and are significant at the 0,05 level. The total correlations of the 13 items which remained on the final scale survey are of an acceptable quality; in other words, as the characteristic which can be measured with all of the scale is the same with the characteristic which is tried to be measured with each item, it can be stated that these 13 items have the quality to be included in the scale.

Confirmatory Factor Analysis (CFA)

Whether the construct of 1 factor and 13 items related to the sports facility utilization scale was confirmed was examined through confirmatory factor analysis (CFA). Confirmatory factor analysis (CFA) aims to evaluate to

what extent a factorial model which consists of factors formed by many observable variables (latent (implicit) variables) fits with real values. The model to be examined can define a construct which was determined by using the data of an empirical study or was built based on a certain theory (Sümer, 2000). Various fit indices are used to evaluate the validity of the model in CFA. The most frequently used among these are (Cole, 1987; Sümer, 2000) Chi-Square Goodness of Fit Test (χ^2), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Non-Normed Fit Index (NNFI), Normed Fit Index (NFI), Goodness of Fit Index (GFI). The fact that values observed in the scale model are in $\chi^2/d<3$; $0<RMSEA<0.05$; $0.97\leq NNFI\leq 1$; $0.97\leq CFI\leq 1$; $0.95\leq GFI\leq 1$ ve $0.95\leq NFI\leq 1$ intervals demonstrate perfect fit whereas $4<\chi^2/d<5$; $0,05<RMSEA\leq 0.08$; $SRMR\leq 0,08$; $0.95\leq NNFI\leq 0.97$; $0.95\leq CFI\leq 0.97$; $0.90\leq GFI\leq 0.95$ and $0.90\leq NFI\leq 0.95$ demonstrate acceptable fit (Kline, 2005; Sümer, 2000).

Confirmatory Factor Analysis (CFA) validity study of the sports facility utilization scale

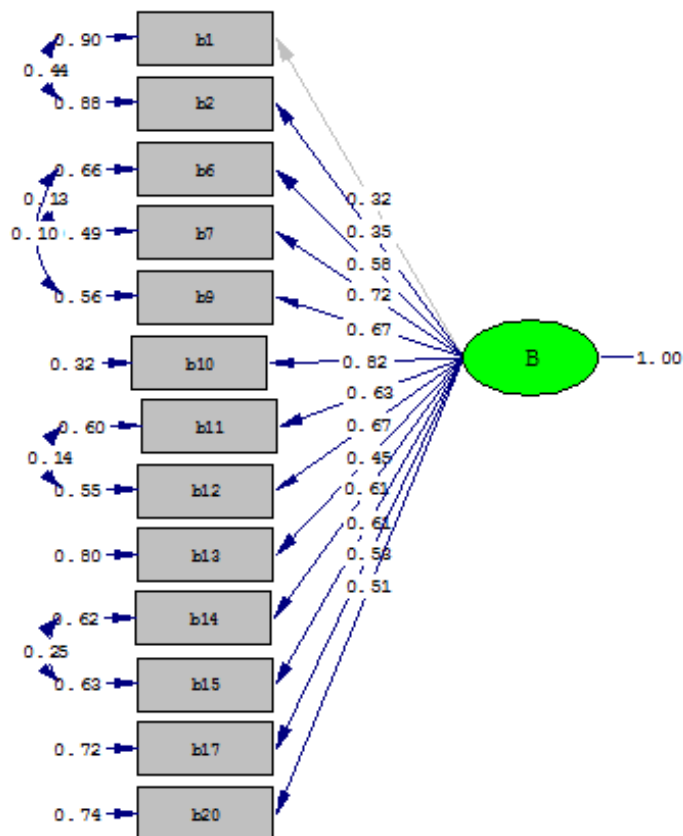
Confirmatory factor analysis (CFA) was used in the confirmation of the single factorial construct which was obtained as a result of the exploratory factor analysis used in the research. In the values included below, the analysis results on whether the scale provided multivariate normality assumption have been stated. According to these values:

Relative Multivariate Kurtosis = 1.195, as this value is greater than the value of 1.00, the multivariate normality assumption found to not have been provided. In addition, considering the Skewness and Kurtosis values, these are observed to have not provided the multivariate normality assumption as they are significant according to $p<,05$.

Test of Multivariate Normality for Continuous Variables

| Skewness | | | Kurtosis | | | Skewness and Kurtosis | |
|----------|---------|---------|----------|---------|---------|-----------------------|---------|
| Value | Z-Score | P-Value | Value | Z-Score | P-Value | Chi-Square | P-Value |
| 17.389 | 21.347 | 0.000 | 233.034 | 13.447 | 0.000 | 636.507 | 0.000 |

If the multivariate normality assumption had been provided according to these results, we would have used the Maximum Likelihood (ML) parameter estimation



Chi-Square=125.24, df=60, P-value=0.00000, RMSEA=0.047

Figure 1. Path diagram of the scale based on the 1st Level 1 Factorial Robust ML Method.

method; however, as it did not provide it and our sample was small, we directly used the Robust Maximum Likelihood (Robust ML) parameter estimation method as it does not depend on sampling. Our model is the 1st Level 1 Factorial Robust ML method.

CFA was implemented to evaluate whether the 1 factor and 13 item construct of the scale was confirmed. In the first applied CFA, items which have the statistically non-significant t value were examined. According to this examination, no item which had the non-significant t value was found. The resulting path diagram is presented in Figure 1.

Fit indices were found as $\chi^2=125,24$, $sd=60$, $\chi^2/sd=2,09$, $CFI=0,99$, $NNFI=0,98$ ve $NFI=0,98$, $GFI=0,95$, $RMSEA=0,047$, $SRMR=0,040$. When the coefficients which show the relationship between the observed variables and factors of the model which shows the factorial construct of the scale were examined, it was concluded that the fit indices were at an adequate level. When the fit indices values and RMSEA and SRMR values which indicate error values were examined, it was concluded that there was a perfect fit. Considering the fit statistics calculated with CFA, it was decided that the

single factorial construct of the scale which was determined via EFA generally fit with the collected data.

When Figure 1 is examined, it is observed that the scale whose final form has been presented consists of 13 items and 1 factor.

The regression values and t values of the items are included in Table 4.

When Table 4 is examined, it was determined that the obtained regression coefficients and t values were significant and the model was confirmed. From a general perspective, it was concluded that with the value of $R^2=0,68$, b10 was the most important item of the scale whereas with the value of $R^2=0,10$, b1 was the least important item of the scale.

Reliability study of the sports facility utilization scale

The Cronbach Alpha internal consistency coefficients of the items which were determined for the one factor of the sports facility utilization scale for the reliability of the scale are presented in Table 5. As this coefficient is calculated by taking all questions into consideration, it is a

Table 4. Regression and T Values of the CFA.

| Sports Facility Utilization Scale | | |
|--|----------------------|----------|
| M | R² | t |
| b1 | 0.10 | Sabit |
| b2 | 0.12 | 7,03 |
| b6 | 0.34 | 6.81 |
| b7 | 0.51 | 6.71 |
| b9 | 0.44 | 6.55 |
| b10 | 0.68 | 7,14 |
| b11 | 0.40 | 6,40 |
| b12 | 0.45 | 6,65 |
| b13 | 0.20 | 5,80 |
| b14 | 0.38 | 6,62 |
| b15 | 0.37 | 6.65 |
| b17 | 0.28 | 6,54 |
| b20 | 0,26 | 6,07 |

Table 5. Alpha reliability coefficients of the factors.

| Sports facility utilization scale | |
|--|-----|
| Number of Items | 13 |
| Cronbach α | ,87 |

coefficient which reflects the general reliability construct of the measurement tool better than any other coefficient (Özdamar, 2004).

According to Table 5, the Cronbach alpha internal consistency coefficients are observed to have .87 reliability coefficient in the sports facility utilization scale with 13 items. It was concluded that the reliability coefficient of this scale was highly reliable, which also demonstrates that the scale had an acceptable level of internal consistency. The fact that the items are highly-reliable within themselves is stated with the reliability coefficient mentioned above. Tezbaşaran (1997: 47) states that a reliability coefficient which can be considered adequate in a likert type scale must be as close to 1 as possible. According to these results, it is seen that the reliability of the whole scale which was used for the research is at a high level.

DISCUSSION AND CONCLUSION

A tool which can measure the sports facility utilization levels of university students in Turkey has been developed through this study. Although an original study was not encountered in the related literature review, it has been observed that similar studies have been implemented as surveys. In a study conducted by Hacicaferoğlu et al. (2012: 65), it was determined that

even the undergraduate students at the School of Physical Education and Sports cannot utilize sports facilities at a rate of 74.1%. This scale, which we believe can assist as a measurement tool on the subject of to what extent universities with ever-increasing budgets in recent years can fulfil the sportive needs of the youths, can be improved with various factors and innovations in the future. Therefore, this study is expected to contribute to the literature and studies to be carried out in the relevant field. Based on the findings, it can be observed that "Sports facility utilization scale of university students" is a valid and reliable tool which can be used in different disciplines.

Conflict of Interests

The author has not declared any conflicts of interest.

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