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AN INVESTIGATION OF THE FACULTY OF SPORT SCIENCES STUDENTS' PROBLEM-SOLVING SKILLS IN TERMS OF SOME VARIABLES

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Abstract

The study aims to determine whether the problem-solving skill levels of students studying at the faculty of sports sciences differ according to some variables. The model of the research is descriptive, one of the quantitative research methods. The research group consists of 185 students (Mean age = 21.42 ± 2.45) studying at the faculty of sports sciences. The "Problem Solving Inventory" and "Personal Information Form" developed by the researcher to determine the personal characteristics of the students were used as data collection tools. Seven types of problem-solving scores are obtained with the scale, including the total problem solving and its sub-dimensions: impetuous approach, considering approach, avoidant approach, evaluative approach, self-confident approach and planned approach. As a result of the Skewness-Kurtosis technique performed to determine whether the measurements were suitable for normal distribution, it was understood that all dimensions showed normal distribution. X̄, S and t-Test, One-Way ANOVA analysis of variance and Bonferroni test were used to determine the source of the difference. It was determined that the students participating in the study have above the middle level of the problem-solving skills and its sub dimensions, but they have below the mid-level of the impetuous approach from the problem-solving sub-dimensions. It was concluded that there was a statistically significant difference in terms of gender, age and class variables of the participants according to their personal characteristics, while there was no statistically significant difference in terms of the duration of doing sports and having difficulty in evaluating their leisure time.

Keywords: Problem Solving, Sport, Student

INTRODUCTION

The concept of the problem has a wide scope. While a student fails in his classes creates a problem, for a scientist, many inventions that are already present and to be researched, and many discoveries to be made for the future, emerge as a problem and require a solution (Heppner & Krauskopf, 1987). This situation creates a problem for the athlete who participates in a sports competition, such as being injured or defeated in a tough competition. The problem refers to a disability and distress situation, which means solving, learning, and reaching a conclusion (Kalaycı, 2001). The problem is anything that confuses the human mind, challenges it, and obscures belief. The obstacle that confronts a person's current strengths that one has gathered in order to reach the desired goal is a problem. The problem is expressed as a conflict situation in which the individual is prevented from reaching a goal (Guclu, 2003). Problem solving has different meanings in different fields. Problem solving is one of the highest levels of mental processes as it requires different abilities and skills at every stage. The development and well-being of humanity depends on the development of this skill. Because people have to deal with their environment and problems within the framework of their own power (Fidan, 1985). In other words, problem solving; choosing the appropriate action to achieve a goal, creating solution options to the difficulties encountered while reaching the goal, evaluating and choosing between them can be defined as the systematic process of intervention in undesirable situations (Aksu, 1988). Problem solving skills can be explained as the process of reaching a solution by using information and adding originality, creativity or imagination to it. Problem solving skill is essential for an individual to lead a healthy life and to protect mental health (Basmacı, 1998). For many people, life is full of daily quarrels and stressful events. All of these stressful events are closely related to both important and non-important events. Stressful events, both important and seemingly insignificant, can affect whether individuals are physically and psychologically well (Selye, 1983). When looking at the problems, they can have very different features. According to Bingham (1998), problems have three main characteristics. He stated these characteristics as the purpose determined by the individual, an obstacle to the individual on the way to the goal, and an internal tension that pushes the individual to reach his/her goal. Ogulmus (2001) summarized the features of the situation involving problems as follows:

1. There is a difference between the current situation and the situation that should be,

2. Perceiving this difference by the person

3. The person attempting to relieve the tension

4. Preventing the person's attempts to relieve tension

Success in the problem solving process includes defining the problem correctly depends on the ability to cope with problematic situations; concentrating on the problem (Heppner & Baker, 1997), how the individual approaches the problem, and how the individual evaluates himself / herself in dealing with their personal and real problems (Heppner & Petersen; 1982).There are some factors that affect problem solving skills. These are factors such as self-confidence,

age, individual differences, sense of responsibility, level of knowledge about problems, the effect of emotions, past experiences and experiences, culture, interpersonal interaction, personality (Sonmez, 2002). In the process of transition from individuality to sociality, the process of being together with the most crowded groups of individuals is observed during their student years. When considered as a development period, universities are the period when this occurs with more logical and conscious choices (Kaya, 2011). Participation of university youth in recreational activities takes place in a semi-organized manner within the scope of the opportunities offered by the schools during their university education. In this context, universities can also play a guiding role for students to make good use of their time outside of their formal education (Ozsaker, 2012). Sport has taken its place among most recreational forms with the increase of leisure time (Ramazanoglu et al., 2004). When it comes to recreation, sports activities mostly based on physical activities come to the minds. Sports activities, or in other words recreational sports, constitute a large part of recreation as a leisure activity that has become increasingly popular and widespread in our age. Appealing to every segment, being easy to access, having positive qualities such as a healthy life and staying fit are among the strengths of sportive recreation. As a result of the scientific researches, it has been revealed that the number of people who prefer recreational sports activities is higher than the number of people participating in other recreational activities (Sahın & Kocabulut, 2014).

METHODS

In this chapter; it contains information about the model of the research, research group, data collection, data collection tools and the operations performed in the process of data analysis.

Research Model

Research is a descriptive study. Descriptive statistics are statistical operations that allow the collection, description and presentation of numerical values of a variable (Büyüköztürk, 2010).

Research Group

Research group; Karamanoglu Mehmetbey University (KMU) consists of 185 students studying in the 2019-2020 academic year.

Table 1: Demographic information related to the research sample

Variables	Groups	f	%
Gender	Male	123	66.5
	Female	62	33.5
Age	18-20 Age	45	24.3
	21-23 Age	115	62.2
	24 and +	25	13.5
Class	1. Class	56	30.3
	2. Class	31	16.8
	3. Class	65	35.1
	4. Class	33	17.8
Duration of Doing Sport	0-2 Year	45	24.3
	3-5 Year	46	24.9
	6-8 Year	34	18.4
	9 and +	60	32.4
Having Difficulty in Utilizing Their Free Time	Always	20	10.8
	Sometimes	124	67.0
	Never	41	22.2

When Table 1 is examined, it is seen that 66.5% of the students participating in the study are males and 33.5% are females. 24.3% of the students participating in the study are between the age of 18-20, 62.2% of the students are between the age of 21-23 and 13.5% of the students are between the age 24 and over. When analyzed by grade levels, first grade students make up 30.3% of participants, second graders make up 16.8%, third graders make up 35.1% and fourth graders make up 17.8% of the total. According to the duration of the doing sport, 24.3% of the students participating in the study are between 0-2 years, 24.9% is between 3-5 years, 18.4% is between 6-8 years and 32.4% is

9 and over years. According to the "Having Difficulty in Utilizing Their Free Time", 10.8% of the students participating in the study said "always", 67.0% said "sometimes" and 22.2% said "never".

Data Collection

Firstly, the available information regarding the purpose of the research was given systematically by scanning the literature. Thus, a theoretical framework has been created on the subject.

Data Collection Tools

The data collection tools required to achieve the determined goals related to the research is given below:

An information form consisting of 5 questions by the researcher in order to gather information about the personal characteristics of the students who participate in the research and to create the independent variables of the research,

Problem Solving Inventory (PSI) was used for the dependent variable of the study. The scale was developed by Heppner and Petersen (1982) in order to determine the dimensions of the problem-solving method as well as how the person perceives himself / herself about the competence to solve their problems (Savasır & Sahın, 1997). Within the framework of the Turkish adaptation studies of the scale, the translation studies were performed by Akkoyun and Oztan, 1988; Taylan, 1990; Sahin, Sahin, & P.P. Heppner, 1993; Tras, Ferah, 2000, while the validity and reliability studies were conducted by Taylan (1990), Sahin, Sahin, and P.P. It was made by Heppner (1993) and Cam (1995). As a result of the factor analysis performed by Sahin and Heppner (1993), the scale's;

1. Impetuous Approach: Items 13, 14, 15, 17, 21, 25, 26, 30 and 32, α = 0.78,

2. Thinking Approach: Items 18, 20, 31, 33 and 35, α = 0.76,

3. Avoidant Approach: Items 1, 2, 3 and 4, α = 0.74,

4. Evaluative Approach: Items 6, 7 and 8, α = 0.69,

5. Self-Confident Approach: Items 5, 11, 23, 24, 27, 28 and 34, α = 0.64,

6. Planned Approach: It is stated that items 10, 12, 16 and 19 consist of 6 factors with α = 0.59.

Internal consistency (Cronbach Alpha) reliability coefficient was found to be 0.72 (Cited in: Ferah, 2000).

In this study; the participants' problem-solving scale internal consistency (Cronbach Alpha) reliability coefficient was 0.72, from sub dimensions of the scale, Impetuous Approach internal consistency (Cronbach Alpha) reliability coefficient was 0.78, Thinking Approach internal consistency (Cronbach Alpha) reliability coefficient was 0.76, Avoidant Approach internal consistency (Cronbach) Alpha) reliability coefficient was 0.70, Evaluative Approach internal consistency (Cronbach Alpha) reliability coefficient was 0.74, Self-Confident Approach internal consistency (Cronbach Alpha) reliability coefficient was 0.70, and Planned Approach internal consistency (Cronbach Alpha) reliability coefficient was 0.79.

Data Analysis

During the analysis and evaluation of the data; T-the data were analyzed using SPSS 25.0 for Windows package program, which was prepared in Microsoft Excel 2003 program. Percentage and frequency method was used to determine the distribution of personal information of the participants. Skewness-Kurtosis normality distribution test was used to determine whether the measurements were suitable for normal distribution. According to Tabachnick and Fidell (2013), kurtosis-skewness values should be between +1.5 and -1.5. In this context, since the research is focused on determining the relationship between variables, it is also suitable for the relational scanning model, which is one of the general scanning models (Karasar, 2010). In addition; as a statistical method for data analysis, in order to decide which post-hoc multiple comparison technique will be used after t-test, one-way analysis of variance (ANOVA), firstly the Levene's test was used to test the hypothesis of whether the variances of the group distributions were homogeneous, and it was determined that the variances were homogeneous (p>.05). Complementary Post-Hoc test statistics (Bonferonni) were used to determine which groups caused the significant difference after ANOVA. The statistical error margin in the study was taken as a = .05.

RESULTS

The data and comments related with the students participating in the study are given below.

Table 2: Results of Participants' Average and Standard Deviation Values Regarding Problem Solving Sub-Dimensions and Total Score

Problem Solving Inventory Sub-Dimensions	n	X̄	Ss	Skewness	Kurtosis	Levene Test	Min	Max
Impetuous Approach	185	21.82	6.03	-.169	-.106	.385	9	36
Thinking Approach	185	19.69	4.79	-.192	-.472	.242	5	30
Avoidant Approach	185	20.16	2.18	-.123	-.917	.636	4	26
Evaluative Approach	185	12.31	3.72	.294	-.138	.243	3	18
Self-Confident Approach	185	27.99	3.76	.156	.108	.240	7	42
Planned Approach	185	16.09	3.38	.128	-.559	.496	4	26
Total Score	185	123.06	8.76	.148	-.324	.829	32	192

In Table 2, the problem-solving sub-dimensions and problem-solving total scores of the students in general are examined. As a result of this examination; it can be concluded that the mean score of the students included in the study from the total problem solving score average=113.06, the thinking approach point average from the sub-dimensions of the problem solving inventory average=19.69, avoidant approach mean average=20.16, the evaluative approach mean average=12.31, self-confident approach mean score mean=27.99, and they are above the middle level, but the impetuous approach level average score is below the middle level with average=21.82.

Table 3: Results of Independent Samples T-Test Analysis of the Total and Sub Dimension Scores of the Problem-Solving Scale According to Students' Gender

Variables	Groups	n	X̄	S	T Test		
					Sd	t	p
Impetuous Approach	Male	123	36.58	6.19	.558	-.758	.449
	Female	62	37.29	5.73	.728		
Thinking Approach	Male	123	14.57	4.61	.416	-.468	.640
	Female	62	14.92	5.16	.655		
Avoidant Approach	Male	123	20.42	2.09	.189	2.314	.022*
	Female	62	19.64	2.28	.290		
Evaluative Approach	Male	123	8.16	3.75	.338	-.776	.439
	Female	62	8.61	3.67	.466		
Self-Confident Approach	Male	123	21.98	3.93	.354	-.055	.956
	Female	62	22.02	3.44	.437		
Planned Approach	Male	123	11.27	3.32	.299	1.029	.305
	Female	62	10.72	3.52	.447		
Total Score	Male	123	112.98	8.87	.799	-.165	.869
	Female	62	113.21	8.61	1.093		

*P<.05.

As seen in the table, the difference between the arithmetic mean of the groups was found to be statistically significant as a result of the independent group t test performed to determine whether the students' problem-solving scale avoidant approach sub-dimension scores differ significantly according to the gender variable (t=2.314; p<05). A statistically significant difference was found between male students and female students in favor of those in the female student group. This situation reveals that students in the male student group have a higher level of avoidant approach to problem solving than the female student group.

Table 3: One-Way ANOVA Results Conducted to Determine Whether the Total and Sub-Dimension Scores of the Participants' Problem-Solving Skills Scale Differentiated by Age Variable

Variables	Age	N	X̄	S	SE	SS	Sd	MS	F	p
Impetuous Approach	18-20 Age	45	38.29	5.45	.813	129.585	2	64.793	1.796	.169
	21-23 Age	115	36.37	5.95	.555					
	24 and +	25	36.20	7.12	1.425					
Thinking Approach	18-20 Age	45	13.22	4.50	.671	165.868	2	82.934	3.718	.026*
	21-23 Age	115	14.91	4.95	.462					
	24 and +	25	16.28	3.92	.784					
Avoidant Approach	18-20 Age	45	20.15	2.07	.308	3.203	2	1.602	.334	.717
	21-23 Age	115	20.23	2.23	.208					
	24 and +	25	19.84	2.23	.446					
Evaluative Approach	18-20 Age	45	8.04	3.75	.559	23.783	2	11.892	.858	.426
	21-23 Age	115	8.23	3.61	.336					
	24 and +	25	9.20	4.17	.835					
Self-Confident Approach	18-20 Age	45	21.15	3.35	.499	81.118	2	40.559	2.925	.056
	21-23 Age	115	22.02	3.66	.341					
	24 and +	25	23.40	4.58	.916					
Planned Approach	18-20 Age	45	10.35	3.54	.528	39.954	2	19.977	1.758	.175
	21-23 Age	115	11.21	3.36	.314					
	24 and +	25	11.84	3.06	.613					
Total Score	18-20 Age	45	111.22	8.64	1.288	495.086	2	247.543	3.308	.039*
	21-23 Age	115	112.97	8.64	.805					
	24 and +	25	116.76	8.73	1.747					

*P<,05

As seen in the table, as a result of one-way analysis of variance (One-Way ANOVA) in order to determine whether the arithmetic mean of the problem-solving scale differs significantly according to the age variable or not, the difference between the problem-solving scale total problem-solving dimension of the age groups was found to be statistically significant (F = 3.308; p> .05). As a result of the one-way analysis of variance, which was performed to determine which groups the total problem-solving dimension scores of the problem-solving scale differed according to the age variable, a statistically significant difference has been determined. This situation reveals that students in the age group 24 and over have more problem-solving skills than students in the 18-20 age group.

The difference between the thinking approach dimension, one of the sub-dimensions of the problem-solving scale of age groups, was found to be statistically significant (F = 3.718; p> .05). As a result of the one-way analysis of variance performed to determine which groups the thinking approach dimension scores from the sub-dimensions of the problem-solving scale differ according to the age variable, the post hoc Bonferroni test was statistically significant in favor of those aged 24 years and over between the ages of 18-20 and over the age of 24 a meaningful difference was detected. This situation reveals that students in the age group of 24 and over are more thinking in problem solving than students in the 18-20 age group.

Table 4: One Way ANOVA Results Performed to Determine Whether the Total and Sub-Dimension Scores of the Participants' Problem-Solving Skills Scale Differentiated According to the Class Variable

	F, x and Sd Values				One Way ANOVA Test				
Variables	**Grade**	**N**	**X̄**	**S**	**SE**	**SS**	**Sd**	**MS**	**F**	***p***
Impetuous Approach	1st Grade	56	38.14	6.26	.836	188.240	3	62.747	1.745	.159
	2nd Grade	31	36.61	6.38	1.147					
	3rd Grade	65	36.58	5.79	.719					
	4th Grade	33	35.21	5.54	.964					
Thinking Approach	1st Grade	56	12.84	4.58	.612	419.078	3	139.693	6.642	.000*
	2nd Grade	31	14.45	5.10	.917					
	3rd Grade	65	15.09	4.63	.574					
	4th Grade	33	17.24	3.94	.685					
Avoidant Approach	1st Grade	56	20.43	1.83	.244	30.233	3	10.078	2.154	.095
	2nd Grade	31	20.81	2.21	.397					
	3rd Grade	65	19.88	2.33	.289					
	4th Grade	33	19.67	2.30	.400					
Evaluative Approach	1st Grade	56	7.61	3.31	.443	117.718	3	39.239	2.925	.035*
	2nd Grade	31	7.32	3.43	.616					
	3rd Grade	65	8.81	3.88	.481					
	4th Grade	33	9.45	3.98	.694					
Self-Confident Approach	1st Grade	56	21.12	3.47	.464	146.778	3	48.926	3.602	.015*
	2nd Grade	31	21.03	3.40	.611					
	3rd Grade	65	22.54	3.88	.482					
	4th Grade	33	23.30	3.88	.75					
Planned Approach	1st Grade	56	10.48	3.39	.454	46.797	3	15.599	1.369	.254
	2nd Grade	31	11.35	3.70	.665					
	3rd Grade	65	11.05	3.25	.403					
	4th Grade	33	11.94	3.27	.569					
Total Score	1st Grade	56	110.62	8.18	1.093	917.902	3	305.967	4.196	.007*
	2nd Grade	31	111.58	7.47	1.342					
	3rd Grade	65	113.95	8.48	1.052					
	4th Grade	33	116.82	10.06	1.751					

*P<.05.

As seen in the table, as a result of the one-way analysis of variance (One-Way ANOVA) performed to determine whether the arithmetic means of the problem-solving scale differ significantly according to the class variable, the difference between the problem-solving scale total problem-solving dimension of the class groups was found to be statistically significant (F = 4.196.; p> .05). As a result of the one-way analysis of variance performed to determine which groups the total problem-solving dimension scores of the problem-solving scale differ according to the class variable, the post hoc Bonferroni test was found to be statistically significant between the 1st grade student group and the 4th grade student group in favor of those in the 4th grade student group a meaningful difference was detected. This situation reveals that 4th grade students have more problem-solving skills than 1st grade students.

As a result of the post hoc Bonferroni test; after one-way analysis of variance to determine which groups the thinking approach dimension scores, one of the sub-dimensions of the problem-solving scale, differ according to the class variable, the 3rd and 4th grade students, there was a statistically significant difference in favor of those in the group. This situation reveals a more thinking approach skill during problem solving than the students in the 3rd and 4th grade groups compared to the 1st grade students.

As a result of the post hoc Bonferroni test, performed to determine which groups the evaluative approach dimension scores from the sub-dimensions of the problem-solving scale differed according to the class variable, statistically significant a difference was detected. This situation reveals a more evaluative approach skill during problem solving than the students in the 4th grade group than the 1st grade students.

As a result of the one-way analysis of variance, conducted to determine which groups the scores of the self-confident approach dimension from the sub-dimensions of the problem-solving scale differ according to the class variable, the results of the post hoc Bonferroni test statistically a significant difference was found. This situation reveals a more self-confident approach skill during problem solving than the students in the 4th grade group than the 1st grade students.

DISCUSSION and CONCLUSION

The perception results of the research conducted to determine the perceptions of the students studying at the faculty of sports sciences towards problem solving skills;

It is understood that the problem-solving skill levels of the students included in the study and the thinking approach, avoidant approach, evaluative approach and self-confident approach levels from the sub-dimensions of the problem-solving scale are above the medium level, but the hasty approach levels are below the medium level. The fact that university students are engaged in sports and their education at school may have been effective in their perceptions of problem-solving skills above the middle level. It can be said that the positive effects of sports on students are effective in the development of these skills.

While these results are consistent with similar research results in the literature, it is understood that they do not match with some studies.

Among the studies conducted on university students in many studies in the literature, Aksan and Sözer, 2007; Altunçekiç, Yaman and Koray, 2005; Elkin and Karadağlı, 2015; Saracaloğlu, Yenice and Karasakaloğlu, 2009 problem solving skills were found to be at an adequate level. Differently from this study, in a study conducted by Işık and Kar (2011) with middle school students, it was determined that students' problem-solving skills were at a low level. Parallel to the results of this research, in the study conducted by Duban and Yanpar- Yelken (2010), Sağır and Bertiz (2016), Soft (2015), Elmalı and Kici (2018) with university students, the students' reflective thinking dispositions were high., Gedik, Akhan and Kılıçoğlu (2014), Demirel, Derman, and Karagedik (2015) and Al-Tarawneh (2015).

When the problem-solving levels and sub-dimension levels of the students participating in the study are examined; a significant difference was not found between the variables of duration of doing sports and having difficulty evaluating leisure time. Some studies supporting these results were found in the literature review.

Katkat's (2001) study on teacher candidates and Taylan (1990) study on students of Anakara University are not in line with the current study.

When the problem-solving levels and sub-dimension levels of the students participating in the study are examined; a significant difference was found between the variables of Gender, Age and Class.

Accordingly, it can be concluded that the statistically difference between the male student group and the female student group is that the students in the male student group have a higher level of avoidant approach in the sub-dimensions of the problem-solving scale than the female student group. Therefore, it is possible to say that male students behaved in an avoidant manner rather than in a hurry since they question the causes and solutions of the problem more than female students.

In a few studies in the literature (Dündar, 2009; Karaca, Akyol, Karaca, & Can Yaşar, 2016; Kuloğlu & Arı, 2015; Saracaloğlu, Yenice, & Karasakaloğlu, 2009) students' problem-solving skills did not differ significantly according to gender.

The statistically significant difference between age variable groups and the total problem-solving dimension is that students in the age group 24 and over have more problem-solving skills than students in the 18-20 age group,

It reveals that students in the age group of 24 and over have a more thoughtful approach to problem solving than students in the 18-20 age group.

The statistically revealed difference between the class variable groups and the total problem-solving dimension is that the 4th grade students have more problem-solving skills than the 1st grade students,

Students in the 3rd and 4th grades exhibit a more thinking approach skill during problem solving than 1st grade

students,

The students in the 4th grade group showed more evaluative approach skills during problem solving than the 1st grade students,

Students in the 4th grade group demonstrate more self-confident approach skills during problem solving than 1st grade students.

Supporting this research, Dündar's (2009) study with university students found that 4th grade students have higher problem-solving skills than lower grade students.

Based on the results of this research, suggestions for the development of applications and new researches are given below:

- This research is limited to scale as a data collection tool. By providing a variety of data such as interviews and observations, the information about students' problem-solving skills perceptions can be examined in detail.

- This research is limited to university students studying at the Faculty of Sport Sciences of Karamanoglu Mehmetbey University. By using the stratified sampling method, sampling studies can be conducted with university students studying in different regions, provinces and universities.

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