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INVESTIGATION OF PROBLEM SOLVING SKILLS OF HANDBALL PLAYERS PLAYING IN PROFESSIONAL LEAGUES

Research article

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Abstract

In this study, it was aimed to examine the problem solving skills of the athletes over the age of 18 who participated in the Turkish Handball Federation Women's and Men's 1st and 2nd Leagues in terms of some variables. In the study, scanning model was used. While the population of the research consists of adult handball players who compete professionally in the Men's and Women's 1st and 2nd leagues affiliated to the Turkish Handball Federation, the sample of the research is a total of 202 adult handball players, 110 male and 92 female, who were reached by random methods. forms. In the research, the Personal Information Form developed by the researcher and the Problem Solving Skills Scale for Adults developed by Yaman and Dede (2008) were used as data collection tools. It was determined that the collected data showed normal distribution, Independent Simple T test and One Way Anova tests were used. As a result, the problem solving skills of the handball players were determined, and it was determined that there was a significant difference between age, gender, playing time in the league and problem solving skills. In addition, it was concluded that as the age increases, problem solving skills increase, the problem solving skills of male handball players are significantly higher than the problem solving skills of female athletes, and the longer the time they play in the league, the higher the problem solving skills.

Keywords: Handball; handball player; problem solving; skill

1. Introduction

The rapid development and change in today's technology raises expectations for individuals to keep up with this speed. Humanity today lives in a period that requires not only the ability to search, process and create information, but also the ability to think quickly and in detail. The use of necessary techniques for acquiring and using these skills may cause some problems. Overcoming these problems is not by memorizing basic knowledge and processes, but by raising people who can keep up with technology, solve problems and create models (Lesh & Zavojewsky, 2007).

In order to solve a problem, it is necessary to deal with the problematic situation first. If there is a distance between the current place and the desired place and it is not known how to overcome this distance, then there is a problem (Öğülmüs, 2001). Dewey (1938) defines the concept of problem as a situation that challenges the human mind by confusing it. For this reason, the problem affects the individual both physically and psychologically (Karasar, 2008).

Problems differ in solution and difficulty. Some problems can be solved logically, others with emotional maturity. Also, some problems require looking at things from a different angle. The common denominator in problem solving is to remove the obstacles that prevent you from reaching your goals (Cüceloğlu, 2009). Morgan (1993) defines problem solving as the process of understanding and resolving the gaps between the obstacles you encounter on your way to

your goals and the goals you set for yourself. Problem solving is an activity that requires both expertise and selection and application of appropriate cognitive strategies. An important part of problem solving is finding the tools to reach your goals and getting to work (Senemoğlu, 1997).

Problem-solving skills encourage intellectual thinking. Therefore, it contributes positively to the spiritual development of the individual. Problem solvers not only apply what they have learned in the past, but also apply what they have learned for the future. Overcoming the problems faced by the individual throughout his life is directly related to the problem-solving ability of the person (Açıkgöz, 2003).

Of course, it is important to get the right results in the problem solving process. However, it is also important what the desired solution is, what the individual thinks while solving a problem, whether he understands the problem and what strategies he uses to solve the problem (Özsoy, 2002). For this reason, the problem solving process should not be seen only as a skill to reach a goal. The concept of problem solving was defined by Polya (1957) as steps that include overarching mental processes and skills. Polya explained the concept of problem solving as not only finding results but also finding ways to solve difficult situations and get out of them. Polya described this process under four headings.

1. Understanding the Problem

2. Creating a Plan for the Solution

3. Implementation of the Solution Plan

4. Evaluation of the Results are the steps.

Accordingly, in order to solve the problem, it is necessary to first understand the problem. Then, a problem resolution plan should be developed and necessary steps should be taken according to the plan. Finally, the results should be evaluated and the previous steps reviewed if the problem persists.

In the Leagueht of this information, in this study, it is aimed to examine the problem solving skills of the handball players who compete professionally in the Men's and Women's 1st and 2nd leagues affiliated to the Turkish Handball Federation in terms of some variables.

2. Method

Since it is aimed to examine the problem solving skills of the handball players who compete professionally in the Men's 1st and 2nd League and Women's 1st and 2nd Leagues affiliated to the Turkish Handball Federation, the survey model was used. This model is a scan to be made on the whole universe or the sample to be taken from it in order to reach a general judgment about the universe in a universe consisting of many elements (Karasar, 2014). The research was carried out in accordance with the Principles of the Declaration of Helsinki, but ethics committee approval was not obtained because it was not experimental and only used scale form.

Population and Sample of the Research

The population of this research consists of adult handball players over the age of 18 who compete professionally in the Men's 1st and 2nd league and in the Women's 1st and 2nd leagues affiliated to the Turkish Handball Federation, while the sample of the research is 110 men and 92 women, who are reached by random methods. A total of 202 adult handball players are over the age of 18.

Data Collection Tools

Personal Information Form

The Personal Information Form was developed by the researcher and it is aimed to obtain information such as the age, gender, league they played, and how many years they competed in the league.

Adult Problem Solving Skills Scale

The Problem Solving Skills Scale for Adults, developed by Yaman and Dede (2008), consists of 18 items and five factors. The factors of the 5-point Likert-type scale (1: Never, 2: Rarely, 3: Sometimes, 4: Often, and 5: Always) are listed as follows:

• Considering the Effects of Solving the Problem

• Problem Solving Through Modeling

• Researching Alternative Solutions

• Stability in Implementing the Determined Solution

• Analyzing the Encountered Problem

The internal consistency coefficient (Cronbach's alpha coefficient) of the scale was found to be .88. The internal consistency coefficients of the factors forming the scale are; .95 for factor-1; .98 for factor-2; .82 for factor-3; It is .82 for Factor-4 and .87 for Factor-5 (Yaman & Dede, 2008). All of the items in the scale are positive statements, and there is no reverse coded item in the scale. r. Since the scores in the scale are between 1 and 5, it was accepted that the level of participation in the proposition of the individuals was higher as the scores approached 5, and lower as the scores approached 1.

Analysis of Data

Table 1. *The skewness and kurtosis values of the Problem Solving Skills scale*

Sub-Dimensions	Skewness	Kurtosis
Considering the Effects of Solving the Problem	-273	-1,346
Problem Solving Through Modeling	-368	-1,362
Researching Alternative Solutions	-269	-1,732
Stability in Implementing the Determined Solution	-345	-1,132
Analyzing the Encountered Problem	-522	-,264

The data collected for the sub-problems whose answers were sought within the framework of the purpose of the research were first processed into the data coding form. All 202 data were included in the research. Then, statistical analyzes were applied to the data transferred to the computer on the SPSS 25.0 program. The results of personal information, scale and inventory scores, frequency and percentage values of the candidates were analyzed. The normal distribution of the scores and the skewness and kurtosis coefficients were examined. Cooper-Cutting explained that the skewness and kurtosis values were in the range of ±2 as a suitable situation in terms of normality. In the study, Independent T Test and One Way ANOVA test, which are parametric tests, were applied since it was seen that the skewness-kurtosis values of the scores were not at extreme levels and there were no excessive deviations in the normal distribution curves.

3. Findings

The participants' ages ranged between 18 and 35+, and the total players were 202. The demographic data are presented in Table 1 below.

Table 2. *Frequency and percentage distribution of the data of the participants*

		f	**%**
Gender	Male	110	54,5
	Female	92	45.5
	Total	202	100
Age	18-25 age	79	39,2
	26-33 age	83	41,1
	34 and upper	40	19,7
	Total	202	100
League	Super League	62	30,6
	1. League	94	46,6
	2. League	46	22,8
	Total	202	100
Year of the playing at leageus	1-5 year	57	28,3
	6-10 year	81	40,1
	11 year and upper	64	31,6
	Total	202	100

$p<0,05$

Considering the frequency and percentage distributions of the handball players participating in the research, 54.5% are male, 45.5% are female, 39.2% are in the 18-25 age range, 41.1% are in the 26-33 age range, 19.7% of them are in the age group of 34 and above, 30.6% are super league players, 46.6% are 1st league players, 22.8% are 2nd league players, 28.3% It has been determined that students have participated in handball leagues for 1-5 years, 40.1% for 6-10 years, 31.6% for 11 years or more.

Table 3. *Analysis of Problem Solving Skills by Gender Variable*

	Gender	n	X± Ss	t	p
Considering the Effects of Solving the Problem	Female	110	4,21±0,52	3.575	,01*
	Male	92	3,87±0,50		
Problem Solving Through Modeling	Female	110	4.42±0,54	4,356	,02*
	Male	92	4,01±0,52		
Researching Alternative Solutions	Female	110	4,06±0,50	4,632	,01*
	Male	92	3,72±0,48		
Stability in Implementing the Determined Solution	Female	110	4.37±0,53	4,953	,01*
	Male	92	3,99±0,51		
Analyzing the Encountered Problem	Female	110	4,33±0,53	4,358	,03*
	Male	92	4,05±0,52		

*p<.05

According to Table 3, the results of the analysis made between the genders of the handball players participating in the research and their problem solving skills, the sub-dimensions of the problem solving skills scale are "Thinking the Effects of Solving the Problem, Solving Problems by Modeling, Searching for Alternative Solutions, Determination in Applying the Determined Solution, Analyzing the Encountered Problem". It was determined that there was a statistically significant difference between the sub-dimensions and the gender variable, and the significant difference was due to the fact that men's problem-solving skills scores were significantly higher than women's problem-solving skills scores in all sub-dimensions.

Table 4. *Analysis of Problem Solving Skills by Age Variable*

	Age	n	X± Ss	F	p	Tukey HSD
Considering the Effects of Solving the Problem	18-25 y[1]	79	2,91± 0,43	2,211	,001*	1-2
	26-33 y[2]	83	3,43±0,47			1-3
	34+above[3]	40	3,97±0,54			2-3
Problem Solving Through Modeling	18-25 y[1]	79	3,15±0,41			1-2
	26-33 y[2]	83	3,54±0,46	2,843	,002*	1-3
	34+above[3]	40	4,01±0,55			2-3
Researching Alternative Solutions	18-25 y[1]	79	3,67±0, 52			1-2
	26-33 y[2]	83	3,98±0,54	3,547	,014*	1-3
	34+above[3]	40	4,21±0,58			2-3
Stability in Implementing the Determined Solution	18-25 y[1]	79	3,01±0,40	2,441	,024*	1-2
	26-33 y[2]	83	3,21±0,42			1-3
	34+above[3]	40	3,88±0,52			2-3
Analyzing the Encountered Problem	18-25 y[1]	79	2.35±0,40	2,561	,035*	1-2
	26-33 y[2]	83	2,98±0,41			1-3
	34+ above[3]	40	3,52±0,50			2-3

p<.05

According to Table 4, the results of the analysis made between the age ranges of the handball players participating in the research and their problem solving skills, the sub-dimensions of the problem solving skills scale are "Thinking about the Effects of Solving the Problem, Solving Problems by Modeling, Searching for Alternative Solutions, Determination in Applying the Determined Solution, Analyzing the Encountered Problem". It was determined that there was a statistically significant difference between the sub-dimensions and the age variable. When the scores were examined, it was seen that the problem solving skill score increased significantly as the age level increased.

Table 5. *Analysis of Problem Solving skills according to the variable of playing time in the league*

Time	League Play	n	X± Ss	F	p	Tukey HSD
Considering the Effects of Solving the Problem	1-5 Years[1]	79	2,84± 0,45	2,113	,014*	1-2
	6-10 Years[2]	83	3,12±0,46			1-3
	11 Years & Above[3]	40	3,36±0,47			2-3
Problem Solving Through Modeling	1-5 Years[1]	79	3,11±0,46			1-3
	6-10 Years[2]	83	3,17±0,44	2,252	,022*	2-3
	11 Years & Above[3]	40	3,66±0,53			
Researching Alternative Solutions	1-5 Years[1]	79	3,47±0, 51			1-2
	6-10 Years[2]	83	3,58±0,53	2,558	,017*	1-3
	11 Years & Above[3]	40	3,61±0,54			2-3
Stability in Implementing the Determined Solution	1-5 Years[1]	79	3,15±0,46	2,192	,043*	
	6-10 Years[2]	83	3,19±0,47			1-3
	11 Years & Above[3]	40	3,47±0,49			2-3
Analyzing the Encountered Problem	1-5 Years[1]	79	2.93±0,40	2,137	,026*	
	6-10 Years[2]	83	2,99±0,41			1-3
	11 Years & Above[3]	40	3,21±0,43			2-3

p<.05

According to Table 5, the results of the analysis made between the time intervals of playing in the league and the problem solving skills of the handball players participating in the research, the sub-dimensions of the problem solving skills scale are "Thinking the Effects of Solving the Problem, Solving Problems by Modeling, Searching for Alternative Solutions, Determination in Applying the Determined Solution, Encountered Problem". It was determined that there was a statistically significant difference between the "Analyzing" sub-dimensions and the variable of playing time intervals in the league. When the scores were examined, it was determined that the scores of the handball players who played in the league for 1-5 Years, 6-10 Years, 11 years and more in the sub-dimensions of "Thinking the Effects of Solving the Problem and Searching for Alternative Solutions" increased significantly as the years of playing in the league increased. In the sub-dimensions of "Problem Solving Through Modelling, Determination in Applying the Determined Solution and Analyzing the Encountered Problem", the scores between 1-5 Years and 11 years and above, and between 6-10 Years and 11 years and above increased significantly, and as the duration of playing in the league increased, the problem It was determined that the solving skill score also increased.

Table 6. *Analysis of Problem Solving Skills by League Variable*

	League	n	X± Ss	F	P	Tukey HSD
Considering the Effects of Solving the Problem	Super League[1]	79	3.21± 0,54	2,007	,021*	1-3 2-3
	1.League[2]	83	3,19±0,53			
	2.League[3]	40	3,01±0,51			
Problem Solving Through Modeling	Super League[1]	79	3,69±0,59	2,582	,017*	1-3 2-3
	1.League[2]	83	3,64±0,57			
	2.League[3]	40	3,27±0,52			
Researching Alternative Solutions	Super League[1]	79	3,57±0, 56	2,894	,026*	1-3 2-3
	1.League[2]	83	3,48±0,55			
	2.League[3]	40	3,11±0,51			
Stability in Implementing the Determined Solution	Super League[1]	79	3,22±0,52	2,557	,023*	1-3 2-3
	1.League[2]	83	3,17±0,51			
	2.League[3]	40	2,87±0,49			
Analyzing the Encountered Problem	Super League[1]	79	3,31±0,53	2,387	,039*	1-2 1-3 2-3
	1.League[2]	83	3,02±0,51			
	2.League[3]	40	2,87±0,48			

p<0,05

Table 6 demonstrates that the results of the analysis made between the league played by the handball players participating in the research and their problem solving skills, the sub-dimensions of the problem solving skills scale are "Thinking the Effects of Solving the Problem, Solving Problems by Modeling, Searching for Alternative Solutions, Determination in Applying the Determined Solution, Analyzing the Encountered Problem". It has been determined that there is a statistically significant difference between the sub-dimensions of " and the variable of the league they play. When the scores were examined, it was determined that the super league scores were significantly higher than the 2nd league scores and the 1st league scores were significantly higher than the 2nd league scores in the sub-dimensions of "Thinking about the Effects of Problem Solving, Problem Solving Through Modeling, Searching for Alternative Solutions, and Determination in Applying the Determined Solution". In the Analysis of the Encountered Problem sub-dimension, it was determined that the super league scores were significantly higher than the 1st league scores and the 2nd league scores, and the 1st league scores were significantly higher than the 2nd league scores.

4. Conclusion and Discussion

In this study, the problem solving skills of the handball players who competed professionally in the Men's 1st and 2nd League and Women's 1st and 2nd Leagues affiliated to the Turkish Handball Federation were examined in terms of some variables.

According to the results of the analysis carried out within the research, it was determined that there was a statistically significant difference between the sub-dimensions of the problem solving skills scale and the gender variable, and the significant difference was due to the fact that the problem solving skills scores of men in all sub-dimensions were significantly higher than the scores of women's problem-solving skills. The reason for this situation can be said that men have a more cold-blooded and calm nature than women, and women have a more emotional structure than men.

When the literature is examined, Aksoy (2021) reported in his study that the problem solving skills scores of male students studying in sports sciences are significantly higher than the scores of female students. In their study, İnce and Şen (2006) found a significant difference between the gender variable and problem solving skills of the athletes playing basketball in Adana. Türkçapar (2007) found a significant difference between gender variable and problem solving skills in the study he conducted with students studying at physical education and sports school. In addition, Katkat (2001), Korkut (2002), Ülger (2003), Düzakın (2004), Onursal (2004), Germi (2006) found a significant difference between the gender variable and problem solving skills. These studies support the results of the research.

According to the results of the analysis made between the age ranges and problem solving skills of the handball players participating in the research, it was determined that there was a statistically significant difference between the sub-dimensions of the problem solving skills scale and the age variable. When the scores were examined, it was determined that the problem solving skill score increased significantly as the age level increased. As the reason for this, it can be said that as the age level increases, the problem solving skills of the athletes increase due to the increase in the experience level of the athletes.

When the literature was examined, Ulupınar (1997) found in his research that as the age level of the participants increased, their problem solving skills also increased. In addition, Kanbay and Bozok (2004) and Bezci (2010) concluded in their study that problem solving skills increased as the age level increased. In addition, Tanrıkulu (2002), Güçlü (2003), Kaya (2005), Arın (2006), Tekin and Tasgın (2006) obtained similar results in their studies. These results support our study.

According to the results of the analysis made between the time intervals of playing in the league and the problem solving skills of the handball players participating in the research, it was determined that there was a significant difference between the sub-dimensions of the problem solving skills scale and the time intervals of playing in the league, and the problem solving skills increased as the time to play in the league increased.

When the literature is examined, it has been seen that studies on playing time in the league are limited. Looking at other studies in the literature, Kat (2009) found that as the years of doing sports of the participants increased, their problem-solving skills also increased. This result supports our study. In addition, there are studies in the literature that contrast with our study. The studies of Çelik, (2017), Yıldırım and Özcan (2011) can be examples of studies showing opposite results.

According to the results of the analysis made between the league and problem solving skills of the handball players participating in the research, it was determined that there was a significant difference between the sub-dimensions of the problem solving skills scale and the league in which the handball players played, and as the league level increased, the problem solving skills also increased significantly.

When the literature is examined, it is seen that the studies examining the relationship between the level of league played and problem solving skills are limited. In the research of Gülşen (2008) on the problem-solving skills of football players playing at different league levels, it was determined that there was no significant difference between the league level and the problem-solving level, but the 1st league players had better problem-solving skills than the other league players. This result obtained by Gülşen partially supports our study.

4.1 Recommendations

Studies can be carried out to investigation of Problem Solving Skills of Handball Players Playing in Professional Leagues. Here are five tips to help develop your problem solving skills and become an efficient problem solver; Identity and understand the right problem, Research the systems and practices behind the problem, Visualise the problem, Brainstorm creative solutions, Identify the best answer.

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