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THE EFFECTS OF SELF-EFFICACY LEVELS ON IMAGERY SKILLS OF ATHLETES WITH INFRASTRUCTURE TRAINING IN HANDBALL

OS EFEITOS DOS NÍVEIS DE AUTO-EFICÁCIA NAS HABILIDADES DE IMAGEM DOS ATLETAS COM INFRA-ESTRUTURA DE TREINAMENTO EM HANDEBOL*

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Abstract: The aim of this study is to examine the relationship between the self-efficacy levels and imagery skills of the athletes who receive infrastructure training in handball. In the 2021-2022 season, 285 handball players selected by random method participating in the infrastructure of the teams competing in the Turkish Handball Federation leagues participated in the study. Google Forms platform was used for data collection. This method has been preferred to maintain social distance during the pandemic process. During data collection, information about the study and questionnaires were communicated to the participants via social networks. Volunteers participating in the study were asked to fill in the personal information form, the General Self-Efficacy Scale, and the Sport Imagery Questionnaire. The data obtained in the research were analyzed in the computer environment. Number, percentage, mean±standard deviation were used as descriptive statistical methods in the evaluation of the data. Variables were evaluated after controlling for normality and homogeneity of variances (Kolmogorov-Smirnov and Levene Test). Regression analysis was applied to reveal the relationships between the scales. As a result, it has been revealed that the self-efficacy levels of the athletes, cognitive imagery and motivational special imagery skills have similar and significant effects on their performance. It is thought that this situation arises from the fact that the concepts of self-efficacy and imagery, which are seen as two important concepts in terms of preserving and improving athlete performance, are related.

Keywords: Handball. Self-Efficacy. Imagery Skills.

Resumo: O objetivo deste estudo é examinar a relação entre os níveis de auto-eficácia e as habilidades de imagem dos atletas que recebem treinamento de infraestrutura no handebol. Na temporada 2021-2022, 285 jogadores de handebol selecionados por método aleatório participaram do estudo, participando da infra-estrutura das equipes que competem nas ligas da Federação Turca de Handebol. A plataforma Google Forms foi utilizada para a coleta de dados. Este método tem sido preferido para manter a distância social durante o processo pandêmico. Durante a coleta de dados, as informações sobre o estudo e os questionários foram comunicados aos participantes

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através de redes sociais. Os voluntários participantes do estudo foram solicitados a preencher o formulário de informações pessoais, a Escala Geral de Auto-Eficácia e o Questionário de Imagens Esportivas. Os dados obtidos na pesquisa foram analisados no ambiente do computador. Número, porcentagem, média± desvio padrão foram usados como métodos estatísticos descritivos na avaliação dos dados. As variáveis foram avaliadas após o controle da normalidade e homogeneidade das variâncias (Kolmogorov-Smirnov e Teste de Levene). A análise de regressão foi aplicada para revelar as relações entre as escalas. Como resultado, foi revelado que os níveis de auto-eficácia dos atletas, as imagens cognitivas e as habilidades motivacionais especiais das imagens têm efeitos similares e significativos em seu desempenho. Pensa-se que esta situação decorre do fato de que os conceitos de auto-eficácia e de imagem, que são vistos como dois conceitos importantes em termos de preservação e melhoria do desempenho do atleta, estão relacionados.

Palavras-chave: Handebol. Auto-eficácia. Habilidades de imagem.

1. INTRODUCTION

The analysis of psychological factors that can affect the performance of athletes has been the subject of study in many disciplines in recent years (Brown & Fletcher, 2017). There is a growing understanding of how aspects such as anxiety, motivation, mood, imagery, and self-efficacy are interrelated (Sklett, *et. al.,* 2018; Reigal *et. al.,* 2018). Therefore, during the training process, the psychological state of the athletes has become an issue that is considered more and more day by day (Gonzalez *et. al.,* 2018). Among the most relevant psychological symptoms associated with sports performance, the concepts of self-efficacy and imagery, which need to be controlled to improve competitive adaptation processes and are currently the subject of interest of many researchers, are on the agenda.

The concept of self-efficacy was introduced by Bandura (1977). According to Bandura, self-efficacy is the belief that one can achieve success in behavior to achieve desired results. Self-efficacy refers to people's judgments about their ability to perform a task (Bandura, 1986: 1997). In other words, it is the individual's belief about himself that he will be successful by overcoming the difficulties he may experience in the future. Senemoğlu (2010), on the other hand, defined self-efficacy as an individual's self-judgment about his capacity to cope with different situations and reach his goals. That self-efficacy belief plays a powerful role in human behavior has been implied in social cognitive theory. Although self-efficacy belief is not dependent on one's abilities, the achievement of a job is provided by believing in one's abilities. Therefore, belief affects an individual's action plans (Zeldin *et. al.,* 2008). Bandura (2012) states that self-efficacy is a variable that directly affects the behavior of individuals.

In addition to physical expectations, another concept used in terms of psychological expectations such as increasing self-confidence, self-efficacy and concentration levels is imagery.

The dictionary definition of the concept of imagination, which is the other subtitle of the study, is defined as the ability or action of forming new ideas, images or concepts of external objects that are not available in the senses, the ability of the mind to be creative or resourceful, the part of the mind that imagines something. In other words, a mental (non-real) cognitive process can be included in the definition of imagination. Byrne (2007) used the expression "imagine" explaining the alternative situation according to reality and defined the counterfact as "imaginary alternative". Power (1995) and Wurgaft (2010) used the term imagination to describe the concept.

In the literature review made by the researcher; Studies investigating self-efficacy (Turan *et. al.,* 2016; Korkut & Babaoğlan, 2012; Yilmaz *et. al.,* 2020; Doğaner *et. al.,* 2020; Aslan, 2017) and imagery skills (Aldemir *et. al.,* 2014; Dinçer, 2016; Doğan, 2019; Savaş & Yazıcı, 2019) in various sample groups were encountered. However, there are no studies examining the self-efficacy and imagery levels of athletes competing in both upper and lower categories in Handball. Studies conducted in this direction in handball are important in terms of accurately determining the athlete's behavior and revealing training strategies. The aim of this study is to examine the effect of the self-efficacy levels of the athletes who receive infrastructure training in handball on the imagery skill.

2. METHODOLOGY

Study Model

In the research, a method for descriptive survey (survey) and relational survey aiming to reveal the current situation was used. Descriptive survey models are research approaches that aim to describe a past or present situation as it is. The event, individual or object that is the subject of the research is tried to be defined in its own conditions and as it is. No effort is made to change or influence them in any way. Relational screening models, on the other hand, are research models that aim to determine the existence and/or degree of covariance between two or more variables (Karasar, 2004).

Creating Volunteer Groups

In the 2021-2022 season, 285 handball players selected by the random method (Çıngı, 1994) participated in the study in the infrastructures of the teams competing in the Turkish Handball Federation Super league, first league and second leagues.

Table 1. Descriptive Statistics of Participants

Variables	Groups	N	%
Gender	Female	141	49.5
	Male	144	50.5
	Total	285	100
Sport Age	1-5 years	161	56.5
	6-10 years	118	41.4
	11-15 years	6	2.1
	Total	285	100
League Level	Super League	40	14
	First League	56	19.6
	Second League	75	26.3
	Infrastructures	114	40
	Total	285	100
Educational Status	Highschool	237	83.2
	Bachelor	48	16.8
	Total	285	100

When Table 1 is examined, it was seen that 49.5% of the participants were women, while 50.5% were men. It was understood that 56.5% had a handball background between 1-5 years, 41.4% between 6-10 years, and 2.1% between 11-15 years. Looking at the league levels, it is seen that they are in the super league 14%, the first league 19.6%, the second league 26.3% and the infrastructure 40%. In terms of educational status, it was determined that 83.2% were high school graduates and 16.8% bachelor graduates.

Data Collection Tools

It was prepared using the Google Forms platform to collect data. This method has been preferred to maintain social distance during the pandemic process. During the data collection process, information about the study and questionnaires were conveyed to the participants via social networks. Volunteers participating in the study were asked to fill in the personal information form, general self-efficacy, and imagery in sports scales.

Personal Information Form

Four questions including gender, sports age, league level and educational status were applied to the handball players participating in the study.

General Self-Efficacy Scale

The general self-efficacy scale, which was developed by Jerusalem and Schwarzer in 1979 as 20 items, reduced to 10 items in 1981, revised by Schwarzer and Jerusalem (1995), and adapted into Turkish by Aypay (2010), was used. The scale consists of 10 items and the alpha internal consistency coefficient was calculated as 0.83. All items in this form of a 4-point Likert type (completely false=1, completely true=4) scale, are scored positively. The lowest score that can be obtained from the scale is 10, and the highest score is 40. A high score means high general self-efficacy.

Sport Imagery Questionnaire

Developed by Hall et al., (1998), the Sport Imagery Questionnaire consists of five sub-dimensions that originally consisted of 30 items in seven-point Likert type (1= I totally disagree and 7= I totally agree). The validity and reliability study of the questionnaire for the Turkish population was conducted by Kızıldağ and Tiryaki (2012); the statements were shaped as 21 items. The five sub-dimensions in the original form were reduced to four sub-dimensions as cognitive imagery, motivational specific imagery, motivational general arousal, and motivational general mastery. The internal consistency values of the four-factor structure revealed as a result of the study, calculated with "Cronbach alpha", were determined as .81 for the cognitive imagery sub-dimension, .80 for the motivational specific sub-dimension, .71 for the motivational general arousal sub-dimension, and .59 for the motivational general mastery sub-dimension. The overall Cronbach Alpha value of the "Sports Imagery Questionnaire (SIQ)" is .86.

The Analysis of Data

Evaluation of the data was done in computer environment. Variables were expressed using mean±standard deviation, percentage, and frequency values. Variables were evaluated after controlling for normality and homogeneity of variances (Kolmogorov-Smirnov and Levene Test). Regression analysis was applied to reveal the relationships between the scales. The values of $p<0.05$ and $p<0.01$ were accepted for the significance level of the tests.

Table 2. Descriptive Statistics of Scores Obtained from Scales

	N	Min	Max	X±Sd
Start	285	9.00	37.00	17.456±5.744
Not Give Up	285	11.00	21.00	16.333±2.020
Insistence	285	5.00	15.00	11.414±1.998

Cognitive Imagery	285	18.00	63.00	48.547±9.462
Motivational Special Imagery	285	5.00	35.00	28.214±6.921
Motivational General Arousal	285	4.00	28.00	20.649±5.663
Motivational General Mastery	285	3.00	21.00	17.600±3.830

When Table 2 is examined, it has been determined that the sub-headings of self-efficacy of the handball players participating in the study were 17.456±5.744 to start, 16.333±2.020 to not give up, and 11.414±1.998 to insistence.

When the imagination skill levels of the participants were examined, it was determined that cognitive imagery was 48.547±9.462, Motivational Special Imagery was 28.214±6.921, Motivational General Arousal was 20.649±5.663, and Motivational General Mastery was 17.600±3.830.

3. RESULTS

Table 3. Regression Table for the Prediction of Participants' Self-Efficacy Start Sub-title of Imagination Skills Levels.

		β	t	*p*	*R*	*R²*	F	p
Self-Efficacy Start	**Imagination Skills**				.236	.056	4.143	.003
	Cognitive Imagery	-.068	-1.257	.210				
	Motivational Special Imagery	.028	.409	.683				
	Motivational General Arousal	.180	2.622	.009				
	Motivational General Mastery	-.241	-1.677	.095				

When Table 3 is examined, the model presents a significant relationship between handball players' self-efficacy initiation sub-title and imagination skills (R=.236, R2=.056, p<0.005). When the t-test results regarding the significance of the regression coefficients are examined; motivational general arousal (t=2.622, p=.009) subtitle predicted self-efficacy initiation subtitle and explained 6% of the total variance (F (4.280) = 4.143, p <.05).

Table 4. Regression Table for the Prediction of the Participants' Self-Efficacy, Not Intimidation Sub-title of Imagination Skills Levels.

		β	t	*p*	*R*	*R²*	F	p
Self-efficacy (Not give up)	**Imagination Skills**				.249	.062	4.634	.001
	Cognitive Imagery	.062	3.280	.001				
	Motivational	-.012	-.488	.626				

	Special Imagery			
	Motivational General Arousal	-.048	-2.018	.044
	Motivational General Mastery	-.017	-.339	.735

When Table 4 is examined, the model presents a significant relationship between the handball players' self-efficacy, not giving up subtitle, and their imagination skills (R=.249, R2=.062, p<0.005). When the t-test results regarding the significance of the regression coefficients are examined; cognitive imagery (t=3.280, p=001) and motivational general arousal (t=-2.018, p=.044) subtitles were found to predict self-efficacy and explain 6% of the total variance (F (4.280) = 4.634, p <.05).

Table 5. Regression Table for the Predictions of Participants' Self-Efficacy Insistence Subtitle of Imagination Skills

		β	t	*p*	*R*	*R²*	F	p
Self-efficacy (Insistence)	**Imagination Skills**				.345	.119	9.471	.000
	Cognitive Imagery	.072	3.963	.000				
	Motivational Special Imagery	-.014	-.593	.554				
	Motivational General Arousal	-.016	-.687	.493				
	Motivational General Mastery	.029	.607	.544				

When Table 5 is examined, the model presents a significant relationship between the self-efficacy insistence subtitle of handball players and their imagination skills (R=.345, R2=.119, p<0.005). When the t-test results regarding the significance of the regression coefficients are examined; cognitive imagery (t=3.963, p=.000) sub-title predicted self-efficacy insistence and explained 12% of the total variance (F (4.280) = 9.471, p <.05).

4. DISCUSSION

Considering the necessity of having mental abilities as well as physical skills for a successful sports life, it is thought that success can be achieved more easily with the ability of imagination that will enable him to overcome the obstacles he may encounter, as well as the perception of self-efficacy that convinces him that he can succeed.

Self-efficacy is considered a behavior modifier and develops through experienced achievements in past behavior, vicarious experiences, verbal persuasion, or presented physiological situations (Weinberg and Stockham, 2000). While some researchers emphasize the need to evaluate specific measures of self-efficacy (Bandura, 1986), others point out that a general perception of self-efficacy may be an adequate predictor of behavior (Schwarzer, 1992). Self-efficacy, which is one of the constructs related to athletic performance, has been analyzed in depth in many studies in the field of sports (Chang et. al., 2014; Hepler and Feltz, 2012).

Kaya and Günay (2020) expressed imagination in terms of sports as an athlete's imagination of the movement he is considering to do, in order to reveal his individual performance independently of internal and external factors. Similar studies on the subject emphasized the importance of mental training.

It is known that the relationship between the variables included in the sports psychology profile of self-efficacy and imagery skill has been analyzed in various studies. Considering its connection with competitive performance, it is considered important to evaluate the relationship between these variables.

In the current study, it was determined that the handball players participating in the study were above the average in the level of self-efficacy, starting, not giving up and insistence. When the imagination skill levels of the participants were examined, it was determined that they were at high levels in the sub-titles of Cognitive Imagery, Motivational Special, Motivational General arousal and Motivational General mastery.

In the present study, the model presents a significant relationship between the self-efficacy levels of handball players who receive infrastructure training and their imagination skills. In addition, between the motivational general arousal subtitle of the imagination skill and the subtitles of start and insistence of self-efficacy; a relationship was found between the subtitle of cognitive imagery and the subtitles of not give up and insistence of self-efficacy.

In the literature review made by the researcher; There are studies presenting a significant relationship between self-efficacy levels and self-confidence (Besharat and Pourbohlool, 2011; Lane et. al., 2002) in sample groups formed in different sports branches. Again, in the sample groups formed in different sports branches, it was determined that there is a significant relationship between the imagination skill, sportive

self-confidence (Callow and Hardy, 2001; Adegbesan, 2010) and focused attention (Calmels et al., 2004).

Beauchamp et al. (2002) examined the relationship between pre-competition self-efficacy and imagery on golfers. In the study, they found that there is a positive relationship between self-efficacy and imagery, and golfers with high self-efficacy use imagery more frequently and more than others. Mills et al. (2001) in their study examining the relationship between self-efficacy and imagery of competitive athletes, they revealed that athletes with high self-efficacy use motivational imagery more than athletes with low self-efficacy. Moritz et al. (1996) found a positive correlation ($p < 0.05$) between sportive self-confidence and Motivational General mastery and Motivational General arousal as a result of their study on the content of sportive self-confidence and imagination.

Similarly, in the studies of Feltz and Riessinger, (1990), it was concluded that the self-efficacy perceptions of the athletes who use imagery increased, therefore, the mental processes and confidence skills of the students who received sports training were better. Again, in support of our study, Nordin and Cumming (2005) stated that the use of imagery in team sports has significant effects on performance by referring to the importance of performance enhancement and self-efficacy levels. In the study conducted by Sarı (2015), it was concluded that imagery is a variable that positively affects self-efficacy. In the study conducted by Jones and Stuth (1997) as a literature review, it was revealed that the studies on imagery generally focused on the physical components of imagery as well as its relationship with regulating the level of psychological arousal, emotional and cognitive regulation. In studies on the self-efficacy imagery relationship, it has been observed that there is an increase in the self-confidence of the athletes when they imagine their successful performances. In addition, Liew et al. (2019), Nergiz et al. (2015), Bayköse (2014), Crust and Swann (2011) conducted similar studies on the concepts of self-efficacy and imagery.

Motivational General arousal is the expression of emotions such as the control of anxiety and arousal levels accompanying competitions by athletes. Kocaekşi et al. (2020) revealed in their study that the absence of a significant difference between Motivational General arousal and self-efficacy beliefs indicates that athletes cannot benefit from the imagery dimension as much as others, and that there is no significant relationship between Motivational General arousal and self-efficacy beliefs. Massuca et al., (2014), Ortín-Montero et al., (2013), Bresciani et al., (2010) examined different reflections of sport psychology in

handball. In support of the findings obtained in the study, Short and Short (2005) examined the relationship between imagery and self-confidence in 79 football players in terms of high and low sportive confidence and found that those with high confidence had a positive significant difference between Cognitive Imagery and Motivational General stimulation.

It was determined that the sub-title of Motivational General arousal was in a significant relationship with self-efficacy initiation and self-efficacy, and at the same time, the subtitle of Cognitive Imagery was in a significant relationship with self-efficacy, persistence, and self-efficacy. Working on imagery and self-efficacy beliefs, Munroe-Chandler et al. (2008), Short et al. (2005) found a significant relationship between self-efficacy beliefs and imagination sub-dimensions. The study shows parallel results with other studies in the literature.

In the light of the data obtained, the functionality of the applications that can improve this ability is understood for a more productive sports life of the athletes, since it is important in terms of imagination, imagination, and creativity in terms of expressing oneself, producing and contributing to the society.

5. CONCLUSION

As a result, it has been revealed that the self-efficacy levels of the athletes, cognitive imagery and motivational special imagery skills have similar and significant effects on their performance. It is understood that the concepts of self-efficacy and imagery, which are seen as two important concepts in terms of preserving and improving athlete performance, are related. In the light of this information, the interrelationships of these skills, which should be considered for the success of the athlete, should be considered in athlete performance studies. It is thought that examining the relations between self-efficacy and imagery concepts and other psychological skills will contribute to the related literature.

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