Analysing the relationship between metacognitive learning strategies and image levels of sports students at the universities[#]

Murat Aygün[1*], Elif Kübra Demir[2] and Talha Murathan[1]

[1]School of Physical Education and Sports, Ardahan University, Ardahan, Turkey.
[2]Faculty of Education, Ege University, İzmir, Turkey.

ABSTRACT

Sports activities contribute both to the physical, mental and psychological development of the individual and to the development of skills. The effectiveness of the desire to learn becomes more apparent with the continuity of development. The objective is to analyse relationship between metacognitive learning strategies and image levels of students. The study group includes 308 students in School of Physical Education and Sports and Faculty of Sport Sciences at Ardahan and Ege Universities. As data collection tool; Personal Information Form, "Metacognitive Learning Strategies Scale" and "Sport Imagery Questionnaire (SIQ)" are used. Unrelated groups t-test and variance analysis are performed to determine whether there is a significant difference between the imagination and metacognitive learning strategies of the students considering demographic variables. The relationship between the imagination and metacognitive learning strategies in the sport is identified by canonical correlation analysis. According to findings, cognitive variable is the highest variable to give value the imagination in sports similar to the first function in the values of canonical function. All variables related to imagination in sports have positive values. These variables share same direction as the organizational and supervisory variables. Regarding second canonical function, organization and control variables have the most effect on the metacognitive learning strategy. The common variance shared by imagery and metacognitive learning strategies is calculated as 28.5%. As a consequence, it is observed that the skills of the individual and being active in the learning process play an effective role in determining the relationship between metacognitive learning strategies and imagery.

Keywords: Sports education, university students, metacognitive learning, imagery in sports.

*Corresponding author. E-mail: aygunmurat06@gmail.com.

INTRODUCTION

Sports is a universal phenomenon in which individuals show great interest and participation from all age groups. Thanks to the universal feature of sports, the fact of education dramatically plays an active role in sports and thus conscious athletes can grow up by raising awareness. Therefore, the phenomenon of education contributes to the development of physical, mental, social and emotional characteristics in mankind. Learning processes formed by education reshape all lives of individuals including their attitudes and behaviours. In this settlement; metacognitive learning strategies and the concepts of imagery will play an active role in both learning the current situation and determining the prospective situation of a person.

The information that we have obtained about the events occurring in the universe, how these information have gone through the mind, and factors related how we seek solutions to problems are included in cognitive

psychology (Solso et al., 2007). Although we have negative thoughts in many moments of our lives, some individuals are stronger in some situations such as anxiety and depression due to their nature. Therefore, it is stated that there is a close relationship between emotion and cognitive processes by the reason of understanding how the concept of cognition works and perceiving the significance of conscious experiences (Wells, 2009) around ourselves and our environment (Smith and Kosslyn, 2014). It is important to know the concept of cognition in order to ease the understanding process in this relationship. Thusly, the concept of cognition can be defined as following:

Learning is a process that covers our entire life and also concepts such as changes in behaviour (Baymur, 1972; Aytaç et al., 2018); acquisition of knowledge; habits, abilities, attitudes, awareness and achievements in our daily life are defined as "learning" (Terry, 2011). Providing learning is based on important cognitive and metacognitive learning processes (Berthold et al., 2007). There are many psychological skills to improve physical performance (Tiryaki, 2000). One of these skills is imagery, a new perspective and a way of thinking on verbal techniques (Goldstein, 2013), is described as using mental senses without physical effort and carrying out that skill using by those senses (Kızıldağ and Tiryaki, 2012).

Imagery, which is also expressed as a daily experience, can be occurred through our sense organs (sight, taste, sound, touch, smell and movement). One of the common ways we live in is creating or re-creating an experience in mind. Many people describe creation of a rich and versatile experience as mental imagery (Cooper, 2009). Apart from mental imagery, an individual's visual dream of an object that is not physically present in here is called as visual imagery (Goldstein, 2013). Imagery work which is not an easy action is actualization the phenomenon by a person or athlete with all the senses (Tiryaki, 2000). On the basis of this process, the positive effects in sports with imagery increase thanks to the experiences and gains we have acquired and remembering information in the memory (Weinberg and Gould, 2015).

In this study, the relationship between the metacognitive learning strategies and the imagery levels of sports students at the universities has been tried to be determined due to the fact that learning is continuous and one of the most fundamental components of our life.

METHOD

Research design

In this research, a relational research pattern which is for examining relation and level between variables has been used (Fraenkel and Wallen, 2006; Erkuş, 2013).

Research sample

The study group consists of 308 university students studying at School of Physical Education and Sports in Ardahan University and at Faculty of Sport Sciences in Ege University. Descriptive statistics of the study group are presented in the findings section of the research.

Research instrument and procedure

In the research, Personal Information Form including demographic features, Metacognitive Learning Strategies Scale (MLSS) and Sport Imagery Questionnaire (SIQ) have been used as data collection tools.

Personal Information Form (PIF): It is a form with demographic variables belonging to individuals formed by researchers. There are questions such as gender, age, university, department, class level, grade point average and actively doing sports in this form.

Metacognitive Learning Strategies Scale (MLSS): "Metacognitive Learning Strategies Scale" developed by Gilbert (1986) and Oxford (1990) and its scale adaptation conducted by Namlu (2004) has been used in order to measure the information about the individual's own learning; cognitive system, structure and study style. Comprising four lines of categorical responses; MLSS includes 21 items and four sub-dimensions. These sub-dimensions are: Planning Strategies (6 items: 1. 2. 3. 4., 5. And 6.), Organizing Strategies (6 items: 7. 8. 9. 10., 11. And 12.), Control Strategies (5 items: 13. 14. 15., 16. And 17.), Assessment Strategies (4 items: 18. 19. 20. And 21.). The internal consistency coefficient of the scale has been found to be 0.82.

Sports Imagery Questionnaire (SIQ): Sports Imagery Questionnaire, which was developed by Hall et al. (1998), its Turkish adaptation, validity and reliability study done by Kızıldağ and Tiryaki (2012) has been used so as to determine the type of imagery of the students participating in the research. SIQ consists of 21 items and four sub-dimensions. These sub-dimensions are: Cognitive Imagery (9 items: 1. 2. 4. 5. 7. 9. 13. 14. and 15.), Motivational Specific Imagery (5 items: 3. 6. 8. 10. and 20.), Motivational General-Arousal (4 items: 11. 12. 17. and 19.), Motivational General-Mastery (3 items: 16. 18. and 21.) Sports Imagery Questionnaire (SIQ) has been evaluated on 7-point Likert type. The total reliability coefficient of the scale is 0.86.

Statistical analysis

Descriptive statistics regarding demographic features of the students and their scores from the data collection

tools have been calculated. T-test and variance analysis have been done in order to determine whether there is a significant difference between sports imagery and metacognitive learning strategies of the students' according to demographic variances under the scope of this study. The relationship between sports imagery and metacognitive learning strategies has been examined by canonical correlation analysis. The objective of canonical correlation is to examine the relation between two sets of variances. In canonical correlation, canonical variables are obtained from the linear components of the variables (Tabachnick and Fidell, 2007). Canonical function is defined between canonical variance pair. The number of canonical variance pairs that can be created in canonical correlation analysis is as the number of variances in the variances set including fewer variances. In Figure 1, general structure of canonical correlation, data sets (X and Y), load values and canonical correlation between the two sets are presented schematically.

Hypotheses have been primarily tested for analyses. It has been observed that all the data provided univariate / multivariate normal distribution and variances are homogeneous. When outliers have been analysed in the dataset, observations involving outliers of 15 people are removed from the dataset. Linearity test has been performed for variables and it has been observed that linearity was acquired. VIF for multiple interconnections and Durbin Watson values for Tolerance values and for autocorrelation have been analysed. Then, it has been determined that hypotheses are provided. It is necessary to observe approximately 20 times about the number of variables in the dataset. Sports imagery and metacognitive learning strategies totally composes 8 variables. The sample size is sufficient since the study group contains 308 observations.

In this study, it is aimed at revealing the relationship between metacognitive learning strategies consisting of planning, organization, control, and assessment variables nominal combinations and sports imagery including cognitive, specific, arousal, mastery nominal combinations. In accordance with this purpose, canonical correlation analysis has been carried out. The number of canonical function pairs to be created is 4 since both data sets contain 4 variances.
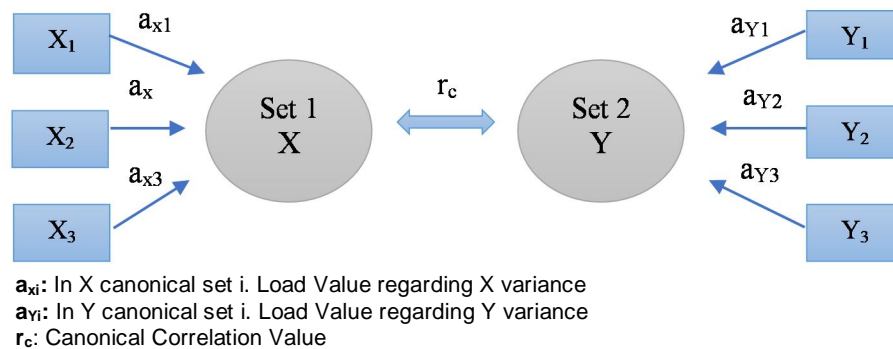

a_{xi}: In X canonical set i. Load Value regarding X variance
a_{Yi}: In Y canonical set i. Load Value regarding Y variance
r_c: Canonical Correlation Value

Figure 1. Canonical correlation general schema.

FINDINGS

General information about the demographic features of students who have been participated in this research has been presented in Table 1. When the table is analysed, it is clear that 39.5% of the study group is female and 59.5% is male. The percentage of students in Ardahan and Ege University is 64.6 and 34.4%, respectively. It has been observed that the age group of students is mostly between 18 and 20. This age group represents 53.4% of the participants. Accordingly, 53.4% of the students study Sports Management; 21.2% of the students study Physical Education and Sports Education and 23.5% of them receive Coaching education. The distribution of students in the study group according to their grade levels 49.2, 27.0, 15.4 and 7.4%, respectively. While 52.4% of the participants are actively doing sports, 46.6% are non-active in sports.

Descriptive Statistics of Sports Imagery Questionnaire (SIQ) and Metacognitive Learning Strategies Scale (MLSS) used in the research are presented in Table 2.

It has been probed whether there is a significant difference in the scales and sub-dimensions in terms of demographic features or not. None of the demographic variables: age, university, department, class level, grade point average and active sports status showed any significant difference in the scales and sub-dimensions. In terms of gender variance, it has been acquired that there is a significant difference between females and males in the total score gathered from sports imagery scale; the scores obtained from specific, arousal and mastery; lastly the planning sub-dimension of the metacognitive learning strategies scale. This finding has been presented in Table 3.

Table 1. Statistics on demographic variances.

Demographic variances		N	%
Gender	Female	123	39.5
	Male	185	59.5
University	Ardahan University	201	64.6
	Ege University	107	34.4
Age	18-20	166	53.4
	21-23	111	35.7
	24-26	31	10.0
Department	Sport Management	169	54.3
	Physical Education and Sports Teaching	66	21.2
	Coaching	73	23.5
Class Level	Freshman	153	49.2
	Sophomore	84	27.0
	Junior	48	15.4
	Senior	23	7.4
Active Sports Status	Active	163	52.4
	Non-active	145	46.6
Grade Point Average	0 - 1.99	17	5.5
	2.00 - 2.49	92	29.6
	2.50 - 2.99	101	32.5
	3.00 - 3.49	42	13.5
	3.50 - 4.00	56	18.0

Table 2. Descriptive statistics on measuring tools.

Measuring tools	Sub-dimensions	$\bar{X}$	S
Sports imagery	Cognitive	46.33	12.38
	Motivational Specific	26.10	7.19
	Motivational General - Arousal	20.88	5.73
	Motivational General- Mastery	16.20	4.52
	Total	109.52	28.24
Meta-cognitive learning strategies	Planning	13.58	2.30
	Organization	15.83	4.23
	Control	13.73	3.60
	Assessment	9.99	2.67
	Total	53.14	9.94

When the Table 3 is analysed, it is obvious that the average scores of women ($\bar{X}$ = 113.78) gathered from sports imagery questionnaire is higher than male scores ($\bar{X}$ = 106.69). As a result of t-test fulfilled between women and me, there is a significant difference in favour of women at p<.05 level (t306 = 2.175, p = .038). In the following sections of the table, t-test results considering gender sub-dimensions of cognitive learning strategies scale are given. In the planning sub-dimension, women received lower scores at p < .05 significance level than men (t306 = 1.993, p = .046). In terms of specific, arousal and mastery sub-dimensions, the average scores of

Table 3. Statistics of unrelated group t-test on gender variances.

Test	Group	N	$\bar{X}$	S	t	sd	p
Sports Imagery	Female	123	113.78	26.71	2.175	306	0.038*
	Male	185	106.69	28.93			
Planning	Female	123	13.26	2.25	1.993	306	0.046*
	Male	185	13.80	2.31			
Specific	Female	123	27.08	6.77	1.989	306	0.048*
	Male	185	25.45	7.39			
Arousal	Female	123	21.77	5.66	2.234	306	0.026*
	Male	185	20.29	5.72			
Mastery	Female	123	16.96	4.21	2.433	306	0.016*
	Male	185	15.69	4.65			

$p < .05.$

females are remarkably higher than males.

The significance of canonical functions obtained in canonical correlation analysis has been tested. Statistics on these functions are given in Table 4.

When Table 4 is reviewed, correlation value of the first canonical function has been calculated as 0.480. Accordingly, the first function represents 23% of variance in data sets between metacognitive learning strategies and sports imagery correlation value of the second canonical function has been scaled as 0.284 and it refers to proximate 8% of common variance. When the significance values are examined in the table, the first two functions are significant at the level of p < .05. While the significance value of the first function is p = .000, the significance value of the second function is .037. The last two functions are not interpreted as these functions are not important.

In canonical correlation analysis, the parts explained by canonical variances in their sets are expressed as canonical loads. The canonical loads obtained from Function 1 and Function 2 is given in Table 5.

Each of the load values given in Table 5 is higher than

.30. In this case, variances can be interpreted as part of cluster they belong to (Johnson and Wichern, 2007; Tabachnick and Fidell, 2007). The canonical load values for the first canonical function and canonical correlation coefficient between the data sets are presented in Figure 2. Similarly, the canonical structure of the second function is shown in Figure 3.

When the values considering the first canonical function are analysed, all the factor loads of sports imagery variances are meaningful and they have same direction with each other. The variance which has the most loads to sports imagery variance is Cognitive Variance with -0.9 load value. In metacognitive learning strategies variance; planning and assessment variances have opposite directions with organization and control variances. When Figure 2 is reviewed; it is clear that the assessment variance gives the highest contribution to metacognitive learning strategies with 0.73 load values. While planning and assessment variances have positive values, all the other variances exact opposite. This finding proves that as students' levels of sports imagery increase, their control and organization strategies also increase.

**Table 4.** Functions and meaningfulness on canonical variances.

	Canonical correlation	Wilks' λ	sd	p
1	.480	.469	16	.000
2	.284	.743	9	.037
3	.091	.892	4	.676
4	.051	.999	1	.554

The load values and canonical correlation of the second function related to sports imagery and metacognitive learning strategies are shown in Figure 3.

When the values of the second canonical function are examine, the variance that gives the highest value to sports imagery is cognitive variance like the first function.

Table 5. Canonical structure on function 1 and function 2.

Canonical load	Function 1	Function 2
Sports Imagery		
Cognitive	- .926	.944
Specific	-.603	.978
Arousal	-.865	.484
Mastery	-.834	.667
Metacognitive Learning Strategies		
Planning	.394	-.427
Organization	-.321	.992
Control	-.482	.408
Assessment	.534	-.321
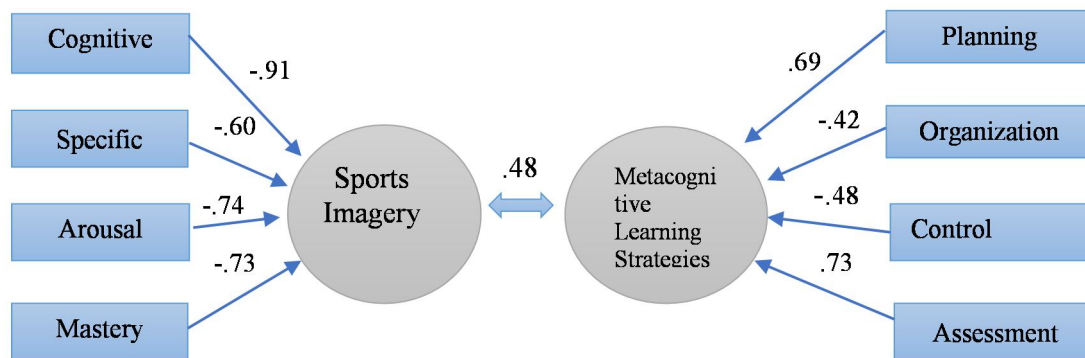
Figure 2. Canonical structure on first function.
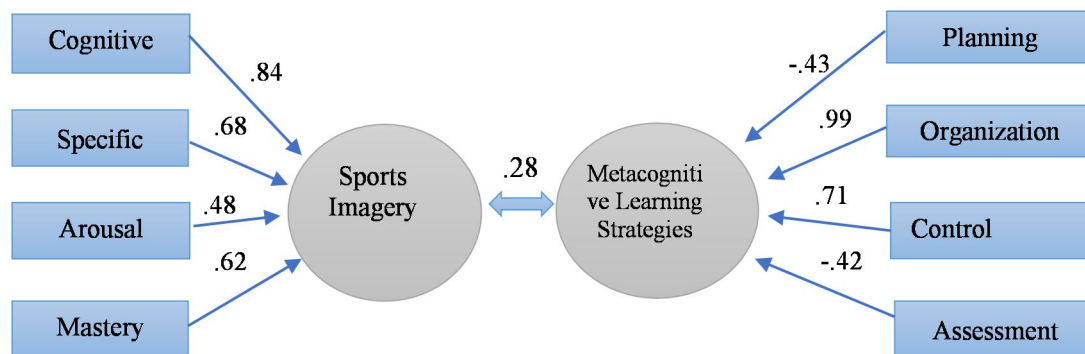
Figure 3. Canonical structure on second function.

In this case, it can be stated that cognitive imagery is the variance that has the most impact on sports imagery. All the variances related sports imagery is positive values. These variances share same directions with organization and control variances under the scope of metacognitive learning strategies. Both functions have produced similar information. According to the second canonical function, organization and control variances are the two variances that have the most impact on metacognitive learning strategies. The common variance shared by sports imagery and metacognitive learning strategies has been calculated as 28.5%.

RESULTS, DISCUSSION AND RECOMMENDATIONS

Within the framework of the findings obtained from this study, it has been observed that there are no significant

relation oriented age, class level, and grade point average and doing sports status. In line with the scope of the study, there is 28.5 % relationship between metacognitive learning strategies and sports imagery levels. It has been thought that ratio between metacognitive strategies and sports imagery has a great effect on the concepts such as education styles, upbringing, cultural status, sports skills etc.

In the study, there is a significant difference in favour of female athletes in the sub-dimensions of "sports imagery, motivational specific, motivational general-arousal and motivational general-mastery" according to gender variance (p < .05). In parallel with the sense of lifelong learning, it can be deduced that thought difference, structural differences and the place of women in social life are the factors which affect this higher average in favour of women.

In the study by Yarayan and Ayan (2018) on imagery forms of athletes who are in different team sports; while there are significant results in favour of women on cognitive imagery, motivational general arousal, motivational general mastery and sports imagery questionnaire; there is no significant difference in the sub-dimension of motivational general arousal according to gender variance. While this study have some similarities to our study; the sub-dimensions of motivational specific imagery and motivational general arousal are meaningful but the sub-dimension of motivational general mastery do not have significant difference on the study by Aslan (2014) about the effect on depression levels and imagery styles of athletes in different age categories. The reason is that being elite levels of athletes are a factor. The study of Kızıldağ (2007) is this direction. Although the study of Savaş (2019) is similar in terms of averages but it is not significant in the literature. These studies are partially similar to our study.

In the study by Boz (2019) on the relationship between imagery and anxiety in elite karate athletes, there is no significant difference according to gender variance. Boz explained that as such: "Gender variance has no relation with imagery; it differs according to mental skills and sports branches." Kartal, Güvendi, Türksoy and Altıncı (2017); Erdogan (2019); Hocaoğlu (2019); Akman (2019); Tekin (2018) are not similar to our study.

As a result of the research findings, there is a significant difference in the "planning" sub-dimension of the metacognitive learning strategies in favour of men (p <.05). Due to the norms socially attributed to male individuals, social responsibilities and working obligations of men are thought to be factors in this conclusion.

In the study on comparison of metacognitive learning strategies between female and male university students by Ağbuğa (2017), there is a significant difference in the sub-dimensions of planning and control in favour of male students. This difference results from departmental variations and the needs of male students' requirement to planning and control learning strategies with the aim of

being more successful. In the study conducted by Kılıç and Özgü (2014), the following results have been found: the score of metacognitive learning strategies is in favour of men, the structure of physical education and sports school students is different compared to other departments and female students prefer to do more memorization instead of using learning strategies. These studies are in line with our study. There is a significant difference in the all sub-dimensions other than control strategies in the study of Boyacı (2010) on the relationship between secondary education students' basic ability levels and their metacognitive learning strategies. The result of this difference has been expressed as women entering the puberty earlier than men. Since there is a significant difference in favour of women in the sub-dimension of planning strategies, it is similar in terms of significance in our study. However, is does not seem the same according to gender variance. Therefore, it is partially similar to our study.

In their study on metacognitive learning strategies, academic self-efficacy and attitudes towards teacher profession of the pre-service teachers of physical education, Kılıç et al. (2015) stated that scores of the female participants were high in all sub-dimensions compared to the male participants and there is a significant difference in favour of female participants in the sub-dimensions of planning, organization and control according to gender variance. This result has arisen from that women have to be more planned, more active and use the process more effectively due to their social roles. In a study by Baykara (2011) on metacognitive learning strategies teacher efficacy perceptions of teacher candidates, it has been observed that there is a significant difference in favour of women in the sub-dimension of organization. In a study by Çoban (2010), there is significant difference in favour of women in organization and control sub-dimensions according to their level of using metacognitive learning strategies. The studies of Can and Sağır (2017) and Efe et al. (2009) are not similar to our study.

The development of the learning process will benefit the individual's self-expression, strengthening of communication skills and the development of imagination. In line with this result, it has been thought that there will be an increase between the learning and imagery levels thanks to the effectiveness of the learning process of the individuals. This study will shed light on new studies and sports science since there is no similar study on the relationship between the metacognitive learning strategies and sports imagery in this field. It is suggested that new studies should be done on different demographic variances and sample groups considering that the relationship between informatics and imaging can change.

REFERENCES

Ağbuğa, B. (**2017**). Kadın ve erkek üniversite öğrencilerinin bilişötesi

öğrenme stratejilerinin karşılaştırılması. International Journal of Social Sciences and Education Research, 3(3): 783-791.

Akman, D. (2019). Yetişkin sporcuların imgeleme, içsel konuşma ve stresle başa çıkmabiçimlerinin zihinsel dayanıklılık ile ilişkisinin incelenmesi. Master Thesis, Marmara University Institute of Health Sciences, İstanbul.

Aslan, V. (2014). Farklı yaş kategorilerindeki atletlerin depresyon düzeyleri ve imgeleme biçimlerine etkisinin araştırılması. Master Thesis, Ondokuz Mayıs University Institute of Health Sciences, Samsun.

Aytaç, D., Dursun, S., and Bağdoğan, S. Y. (2018). Psikolojiye Giriş. Bursa: Dora Yayıncılık.

Baykara, K. (2011). Öğretmen adaylarının bilişötesi öğrenme stratejileri ile öğretmen yeterlik algıları üzerine bir çalışma. Hacettepe University Journal of Education. 40: 80-92.

Baymur, F. (1972). Genel Psikoloji. İstanbul: İnkılap Kitabevi.

Berthold, K., Nuckles, M. and Renkl, A. (2007). Do learning protocols support learning strategies and outcomes? The role of cognitive and metacognitive prompts. Learning and Instruction, 17: 564-577.

Boyacı, M. (2010). Ortaöğretim öğrencilerinin temel yetenek düzeyleri ile bilişötesi öğrenme stratejileri arasındaki ilişki. Master Thesis, Gaziosmanpaşa University Institute of Social Sciences, Tokat.

Boz, E. (2019). Elit karate sporcularında imgeleme ve kaygı ilişkisinin incelenmesi. Master Thesis, Bartın University Graduate School of Educational Sciences, Bartın.

Can, K., and Sağır, S. U. (2017). Sınıf öğretmenlerinin bilişötesi öğrenme stratejileri, özyeterlik algısı ve problem çözme becerileri arasındaki ilişkinin incelenmesi. International Journal of Social Sciences and Education Research, 4(1): 81-95.

Cooper, M. J. (2009). Imagery and the Threatened Self. (Imagery and the negative self in eating disorders, Edi: Stopa Lusia). USA: Routledge.

Çoban, H. (2010). Öğretmen adaylarının matematiksel muhakeme becerileri ile bilişötesi öğrenme stratejilerini kullanma düzeyleri arasındaki ilişki. Master Thesis, Gaziosmanpaşa University Institute of Social Sciences, Tokat.

Efe, N., Özturan, S. M., Ünlü, I. and Kaşkaya, A. (2009). Öğrenme stratejilerinin çeşitli değişkenlere göre incelenmesi. Erzincan University Journal of Education Faculty, 11(2): 227-238.

Erdogan, N. G. (2019). Kış sporları ile ilgilenen sporcuların sporda imgeleme ile sportif güven arasındaki ilişkinin incelenmesi. Master Thesis, Atatürk Üniversitesi Graduate School of Winter Sports and Sport Sciences, Erzurum.

Erkuş, A. (2013). Davranış Bilimleri İçin Bilimsel Araştırma Süreci. Ankara: Seçkin Yayıncılık.

Fraenkel, J. R., and Wallen, N. E. (2006). How to Design and Evaluate Research in Education (6th ed.) New York, NY: McGraw-Hill.

Gilbert, L. C. (1986). Inducement of metacognitive learning strategies: task knowledge instruction and training. American Educational Research Association, San Francisco, CA: ERIC Number, 271486.

Goldstein, E. B. (2013). Bilişsel Psikoloji. (Translation to Turkish, Orhan Gündüz). İstanbul: Kaktüs Yayınları.

Hall, C. R., Mack, D., Paivio, A., and Hausenblas, H. (1998). Imagery use by athletes: development of the sport imagery questionnaire. International Journal of Sport Psychology, 29: 73-89.

Hocaoğlu, G. S. (2019). Sporcuların algılanan sportif yeterlik ve hedef yönelimlerinin içsel konuşma ve imgeleme biçimlerini belirlemedeki rolü. Master Thesis, Marmara University Institute of Health Sciences, İstanbul.

Johnson, R. A., and Wichern, D. W. (2007). Applied Multivariate Statistical Analysis (6th ed.) Upper Saddle River, NJ: Pearson.

Kartal, Z., Güvendi, B., Türksoy, A., and Altıncı, E. E. (2017). Takım sporcularının imgeleme kullanımları ile başarı motivasyonları arasındaki ilişki. Istanbul University Journal of Sport Science, 7(1): 41-53.

Kılıç, S. K., and Oncu, E. (2014). Beden eğitimi ve spor yüksekokulu öğrencilerinin bilişötesi öğrenme stratejileri ve akademik öz-yeterlikleri. Journal of Sports and Performance Researches, 5(2): 13-22.

Kılıç, S. K., Cihan, H., and Oncu, E. (2015). Beden eğitimi öğretmen adaylarının bilişötesi öğrenme stratejileri, akademik öz-yeterlikleri ve öğretmenlik mesleğine yönelik tutumları. Hacettepe Journal of Sport Sciences. 26(3): 77–89.

Kızıldağ, E., and Tiryaki, M. S. (2012). Sporda imgeleme envanterinin Türk sporcular için uyarlanması. Hacettepe Journal of Sport Sciences, 23(1): 13-23.

Kızıldağ, E. (2007). Farklı spor branşlarındaki sporcuların imgeleme biçimleri. Master Thesis, Mersin University Institute of Health Sciences, Mersin.

Namlu, A. G. (2004). Biliötesi öğrenme stratejileri ölçme aracının geliştirilmesi: geçerlilik ve güvenirlik çalması. Anadolu University Journal of Social Sciences, 4(2): 123-136.

Oxford, R. L. (1990). Language Learning Strategies: What Every Teacher Should Know. Boston, Massachusetts: Heinle & Heinle Publishers.

Savaş, M. (2019). Okul sporlarına katılan ortaöğretim öğrencilerinin imgeleme becerileri kullanımı ile sportif güven düzeyleri arasındaki ilişkinin incelenmesi. Master Thesis, Erzincan Binali Yıldırım University Institute of Health Sciences, Erzincan.

Smith, E. E. and Kosslyn, S. M. (2014). Cognitive Psychology (Translation to Turkish Edi, Muzaffer Şahin). Ankara: Nobel Akademik Yayıncılık.

Solso, R. L., Maclin, M. K. and Maclin, O. H. (2007). Bilişsel Psikoloji (Translation to Turkish, Ayşe Ayçiçeği Dinn). İstanbul: Kitabevi.

Tabachnick, B. G. and Fidell, L. S. (2007). Using Multivariate Statistics. (5th ed.) Boston: Allynand Bacon.

Tekin, M. (2018). Okçuların imgeleme becerileri ile dikkat ve performans düzeyleri arasındaki ilişkinin incelenmesi. Master Thesis, Aydın Adnan Menderes University Institute of Health Sciences, Aydın.

Terry, W. S. (2011). Öğrenme & Bellek. (Translation to Turkish, Banu Cangöz). Ankara: Anı Yayıncılık.

Tiryaki, S. (2000). Spor Psikolojisi: Kavramlar, Kuramlar ve Uygulama. Ankara: Eylül Kitap ve Yayınevi.

Weinberg, R., and Gould, D. (2015). Spor ve Egzersiz Psikolojisinin Temelleri. (Translation to Turkish edi, Mustafa Şahin and Ziya Koruç). Ankara: Nobel Akademik Yayıncılık.

Wells, A. (2009). Metacognitive Therapy For Anxiety and Depression. USA: Guilford Press.

Yarayan, Y. E. and Ayan, S. (2018). Farklı takım sporlarında olan sporcuların imgeleme biçimlerinin incelenmesi. The Journal of International Social Research, 11 (60): 1415-1422.