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An Investigation of Imagery, Intrinsic Motivation, Self-efficacy and Performance in Athletes

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ABSTRACT The purpose of this study is to examine the relationship between imagery with intrinsic motivation, self-efficacy and performance, and to determine the effect of imagery on these variables. Determining whether these variables change according to gender and winning a medal is another purpose of the study. 133 kick boxers voluntarily participated in the study. The Sport Imagery Questionnaire, Self-efficacy Scale and Sport Motivation Scale were used as data collection tools. As a result of the findings, significant differences were not obtained for any variables according to gender and winning a medal. Some significant positive relationships were found between imagery, intrinsic motivation and self-efficacy. In addition, it has been found that motivational general mastery imagery explained twelve percent of variance in self-efficacy. Also, motivational general mastery imagery and cognitive imagery explained 31.2 percent of variance in intrinsic motivation. In conclusion, it can be said that imagery is related with intrinsic motivation and self-efficacy, and affects these two variables.

INTRODUCTION

Sports scientists have been trying to determine the factors affecting athletes' performance directly or indirectly and many studies on this issue today aim to ensure the athletes to reach their highest performance. Thus, several studies have been conducted on physiological, biomechanical, nutritional and psychological dimensions of sports. Athletes, coaches and all other team workers utilize the opportunities within the bounds of possibility in order to increase sportive performance or to improve the processes contributing to sportive competences. Psychological states and mental processes of athletes are also non-negligible factors affecting sportive success (Akandere et al. 2009). Because, there is competition forcing even the slightest factors that would contribute to sportive performance to be considered in today's elite sports. Many athletes exert to perform in their training programs that are prepared based on scientific foundations and to train in the best possible way. Yet, the best athletes have different training systems and daily routines. One component that could provide such a difference for successful athletes is imagery. Athletes are not only physiological beings; rather, they have psychological, cognitive and cultural characteristics like all people (Altintas and Akalan 2008). Thus, mental skills and mental training concepts have attained a place in sports sciences literature as important elements of sportive success.

Solso (1991) defined imagery as, "a mental representation of a non-present object or event." According to another definition, imagery is, "using all the senses to recreate or create an experience in the mind" (Vealey and Greenleaf 2001; Vealey and Walter 1993). For Ikizler and Karagozoglu (1997), on the other hand, imagery is, "planned and intense imagination process without any physical activity in order to learn new techniques or master previously learned skills."

Early theories on mental practice were developed to explain the mechanism of imagery. The researchers made attempts to explain how imagery contributes to performance. Early literature generated two major theoretical explanations for mental practice. One of these theories is the Psychoneuromuscular Theory, which suggests that during imagery local muscular activity occurs and this muscular activity is identical in pattern to muscle activation in a physical task (for example Carpenter 1894; Richardson 1967; Start and Richardson 1964). Second major theory, which was put forward by early research, is Symbolic Learning Theory (Sacket 1934), which indicates that imagery helps to rehearse the sequence of

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movements, so the movements' patterns are coded in the central nervous system (Morris et al. 2005). However, these two theories are not enough sufficient to comprehensively explain imagery. Thus, researchers on Cognitive Theories of Imagery tried to explain the features of imagery by cognitive processes (for example, Paivio 1975; Lang 1977). Later, with the development of neurophysiological equipment, researchers started to have a better insight into the relationship between imagery and movement, and researches on Functional Equivalence Theories suggested that imagery and perception of imagery and movement are functionally equivalent (for example, Jeannerod 1994). Another explanation of how imagery can enhance sport performance is made by the studies on Psychological State Explanations, which suggest that imagery could affect athletes' motivation, self-confidence or arousal which in turn affects performance (See Morris et al. 2005 for a more detailed explanation of the imagery theories). The current research was conducted based on Psychological State Explanations. It could be said that imagining oneself successfully performing a task could contribute to expectation for success (or self-efficacy). Imagining successful tasks could also enhance athletes' motivation to practice their sports and to perform their skills. Because, every individual has an inherent desire to feel effective (Broeck et al. 2010) and to show his or her abilities, which are perceived to be enhanced by imagery.

Both physical and mental skills are developed by imagery. Physical adjustments such as improvement of the learned skills and correction of the mistakes can be ensured by imagery as well as psychological adjustments such as controlling feelings, increasing concentration and self-confidence can be provided. It's crucial to create positive mental images for athletes to become successful and to utilize imagery sufficiently, because positive images influence athletes' actions positively (Kizildag 2007). Certain neural and cognitive changes occur in athletes applying imagery applications. For example, an experimental research showed that imagery use resulted in improvements in the running performance of college students (Yelverton 2014). Positive outcomes can be obtained for athletes through changes obtained as a result of imagery. For example, in a recent research it was found that mental training techniques involve channeling the athlete's attitude towards the self, thus increasing self-awareness, which leads to analyzing personal performance (Moraru et al. 2015). Besides, as noted above, imagining a technique or tactic mentally before the competition, may increase self-confidence. In other words, applying a mental technique successfully can have a positive influence on self-confidence. Moreover, athletes practice what they'll do in the competition by such mental applications and this practice is like a mental warm-up exercise for the forthcoming competition. In addition to these, it is mentioned that imagery is also related with exercise behavior and exercise self-efficacy (Giacobbi et al. 2005).

Early researchers tried to explain whether mental practice works in a sport setting. Therefore, pre- and post-test designs were used in the previous studies. In these studies, the effectiveness of physical practice, no practice and a combination of physical-mental practice were tested. The aim was to discover which application was the best for performance enhancement. Most studies showed that mental practice was more effective than no practice and less effective than physical practice (Morris et al. 2005: 32). As stated above, one of the theories of mental imagery is Psychological State Explanations in which it is stated that imagery could affect motivation and self-efficacy.

Bandura (1978, 1989) derived his Social Cognitive Theory by putting forward that people learn within the environment where they observe the social resources. People obtain information from the sources they watch and then decide to imitate, mutate, or disregard these observed action (Banks and Mhunpiew 2012). Self-efficacy is theorized to be the most important component of the broader framework of Social Cognitive Theory (Bandura 1986).

Self-efficacy is the belief of an individual to conclude any kind of work or task successfully. Furthermore, it can also be expressed as the belief to ability and skills to affect events that take place in the life (Bandura 1977, 1997). Self-efficacy can affect many things related with skills and abilities of individuals. High self-efficacy can provide higher performances and can make individuals more productive and comfortable even in so difficult and stressful tasks. Individuals with low confidence perceive and overrate works that they will do as harder than its reality. Therefore, higher self-efficacy can be said to affect perfor-

mance and provide success for individuals (Yilmaz et al. 2010). For example, high self-confidence, which is similar to high self-efficacy, was also reported to be associated with mental toughness and flow (Carter 2013).

The power of Bandura's theory of perceived self-efficacy is that it integrates the sources of self-efficacy belief, the structure and the function of it in one conceptual framework. In short, the theory clarifies all the complex processes regarding self-efficacy belief (Bandura 1997). Self-efficacy belief develops as a result of the many experiences in life, and social relationships are the main factors, which influence it. There are four different sources of information, which determine the strength of self-efficacy (Bandura 1997). These four types of sources are, (1) "Mastery experiences", which is a direct indicator of one's capabilities, is a most effective component forming self-efficacy. It refers to successful experiences or failure. (2) "Social modeling", which forms self-efficacy belief by observing other individuals around, is the second source of self-efficacy. Seeing people similar to oneself succeed by perseverant effort, results in an increase in the observer's belief in their own abilities. (3) "Social persuasion" refers that people give feedback regarding one's capabilities and it could also alter self-efficacy belief of individuals. It was stated that realistic boosts in efficacy could lead individuals to exert greater effort in their activities. (4) "Physical-Emotional states", is stated to be an indicator of an individual's vulnerability to dysfunction. People rely on their physical and emotional states in judging their efficacy. They perceive their emotional arousal and tension as indicators of personal vulnerability. For example, in practicing physical activities, which involve strength and stamina, people could interpret fatigue, aches, and pains, as indicators of their low physical efficacy (Brouwers and Tomic 2000; Bandura 2011).

When literature is examined, self-efficacy perception is seen to be one of the main determinants of human behavior and in particular behavior changes. In addition to this, Bandura known with his extensive studies expresses that our trust in our capabilities affects our attitudes and motivation and our success directly (Henson et al. 2001). Self-efficacy perception may also contribute to cognitive development and cognitive functioning (Bandura 1993). For example, Schunk and Pajares (2001) state that self-efficacy affects academic motivation, learning and success of individuals in their studies.

According to Bandura, self-efficacy affects a) the selection of activities of individual, b) the persistence of individual against difficulties, c) the level of efforts of individual and d) the performance of individual and this opinion continues to be subject to many researches. The research results validate Bandura and show that individuals with high self-efficacy about a situation make great efforts to accomplish a task, do not get back out easily when they face negativities and are persistent and patient (Kiremit and Gokler 2010: 42). It was stated and expressed that individuals with low self-efficacy avoid challenging tasks and immediately give up against difficulties. In addition, these people were observed to have more stress when compared to the others with high self-efficacy and become unsuccessful as a result of their low level of efforts (Pajares 2002). Moreover, it was also reported in a current research that self-efficacy dampens the anxiety level of athletes and mediates the effects of fear of injury on anxiety prior to athletes' competition (De Pero et al. 2013). However, although self-efficacy is linked with performance, it has frequently been overlooked within the relevant literature (Moritz et al. 2000; Wright and O'Halloran 2013). Especially, more research is needed to discover the features of self-efficacy in specific sports domains.

Another variable considered in line with the purposes of this study is motivation. Motivation is a process of aiming at a certain objective by means of an inside driving force and of displaying intentional behaviors. It's a force energizing and directing people's actions and behaviors, setting people in motion by using their basic and social needs, regularizing and accelerating people's behaviors, and driving them in a certain direction (Cicek 2005: 8). According to Weinberg and Gould (2003: 52), motivation is the direction and intensity of one's effort. According to another definition, on the other hand, motivation is "for an organism to get ready to roll by means of its urges or needs, to act purposefully and to relax after achieving its goal" (Emir and Kanli 2009: 64). The way of acting is related to the motivation of person. The extent of one's love for his or her daily jobs, the extent of effort he or she makes or the degree of commitment to his or her job, are all related to motivation (Konter 1995: 6). Similarly, the extent of

effort athletes make in trainings, the greatness of their desire to win in competitions and whether they join in sportive activities voluntarily are related to their motivation.

There are many motivation theories in literature analyzing the motives of human behaviors. In other words, explaining the motivation of people. Some of them assert that there are individual targets and needs shaping human behavior (for example, Maslow 1954; Murray 1938; Alderfer 1972; McClelland 1961; Herzberg 1966). Process theories, on the other hand, examine dynamic factors affecting motivation (for example, Hull 1951; Vroom 1964; Porter and Lawler 1968; Porter et al. 1975; Locke 1968; Heider 1958; Adams 1965). All these theories include different explanations to understand the motives behind human behaviors better and to ensure behavioral change required in certain fields such as education, sports, administration and health.

Another theory of motivation is Self-determination Theory (SDT). It is a macro theory of human motivation and addresses some basic issues such as personality development, self-regulation, the basic psychological needs, life goals and aspirations, energy and vitality, non-conscious processes, culture to motivation, and social, the effect of environments on motivation, affect, behavior, and wellbeing in a wide range of domains including sports (Deci and Ryan 2008).

SDT stated that meeting basic psychological needs of individuals is important in achieving the potential upper limits of individuals (Deci and Ryan 1985, 2000). There are three basic psychological needs according to the self-determination theory. These are 'need for autonomy', 'competence' and 'relatedness'. Need for autonomy means individual's behavior to be freely selected by himself or herself rather than imposed from outside. Competence refers to the need of being effective and sufficient in behaviors. Relatedness expresses the needs indicated for all people such as belonging, intimacy and connectedness (Church et al. 2013).

SDT (Deci and Ryan 1985, 2000) explains individuals' motivation, its causes, and consequences (Gillet et al. 2010). Furthermore, it was stated that SDT is the most accepted motivational theory today (Ruiz-Juan and Sancho 2012). Many early theories of motivation have treated motivation primarily as a unitary concept, focusing on the overall amount of motivation that people have for their behaviors. However, SDT examined different types of motivation (Deci and Ryan 2008). Stanley et al. (2012) reported that governing behavior vary along a continuum of self-determination ranging from behaviors that are externally controlled to those which are fully autonomous in nature. Amotivation is placed on the left side of the continuum and it is a state reflecting a lack of intention to engage in behavior; intrinsic motivation is placed on the opposite edge of the continuum and refers to the engagement in behavior for sheer pleasure, satisfaction, and enjoyment (Ryan and Deci 2002). The third motivation type is extrinsic motivation, which is placed between amotivation and intrinsic motivation, representing that the behavior is engaged to derive some kind of rewards that are external to the activity (Vallerand 2004).

As is understood from the explanations, being motivated by intrinsic forces is likely to produce more positive results (intrinsic motivation) (Hollembeak and Amorose 2005; Vallerand and Losier 1999; Ryan et al. 1990; Vallerand and Bissonnette 1992; Morris and Summers 1995). Because when individuals are motivated intrinsically, their activities are fully based on intrinsic forces and their desires. Besides, behaviors based on extrinsic forces are not regarded interesting, so they may not be preferred if not providing benefit (Ryan and Deci 2002). According to Hagger and Chatzisarantis (2007), giving depth to the subject with their efficient explanations, when people determine extrinsic objectives such as financial achievement, physical appearance and reputation, they link success to extrinsic focuses. Instead, acting for intrinsic objectives would produce more positive results (Hagger and Chatzisarantis 2007). From this viewpoint, some researchers defined the highest level of intrinsic motivation as "flow." In other words, they described the highest level of intrinsic motivation as "the optimal psychological state and a deeply pleasurable experience" (Karageorghis and Terry 2010). That's why intrinsic motivation is an important psychological element and should be revealed with all aspects.

Today, the importance of comprehending the dynamics of sportive behaviors is understood very well. Although one's motivation is generally determined by his or her beliefs, thoughts and values, it's stated that social context also plays a determinant role (Keegan et al. 2010). For example, the researchers have indicated that coaches' autonomy support (Gillet et al. 2010), per-

ceived support availability from teammates (DeFreese and Smith 2013), perfectionism (Mouratidis and Michou 2011), perceived competence and perceived autonomy (Banack et al. 2011), feedback after a relatively good performance (Badami et al. 2011), coaching behavior (Amorose and Horn 2000; Hollembeak and Amorose 2005), and perceived motivational climate, (Ahmadi et al. 2012) link to motivation. However, potential effect of other determinants such as imagery should also be examined. Determining the relationship between imagery and motivation in specific sport domains could provide an insight into components of imagery applications and how people behave in a certain way.

This research is aimed to determine the relationship between imagery with intrinsic motivation, self-efficacy and performance in kickboxers and to ascertain the impact of imagery on these variables. Mentioning closely related studies when establishing the research hypothesis would clarify the issue better. For example, Bandura's Social Cognitive Theory (Bandura 1977, 1997) asserts that imagery can affect self-efficacy because imagining previous successful experiences has an influence on self-efficacy perception. Similarly, certain studies set forth that imagery can be related with self-confidence (Moritz et al. 1996; Munroe-Chandler et al. 2008; Hall et al. 2009; Williams and Cumming 2012; Mamassis and Doganis 2004; Williams and Cumming 2015), self-efficacy (Munroe-Chandle et al. 2008; Jenny et al. 2014; Parkerson 2015) and performance (Short et al. 2001; MacIntyre and Moran 2007; Weinberg 2008; Kanthack et al. 2014). It was found in a research that mental imagery planned and performed with physical training is more useful that only physical training (Ozdal et al. 2013). However, an athletes' age should be taken into account in imagery application. A recent research showed that an imagery application is not effective for skill development in children aged between 9 and 13. In addition, a current research also showed that imagery is also effective to increase problem-solving skills (Aldemir et al. 2014).

Many studies that aim to describe the imagery process and its consequences in a sport context have been conducted so far. The findings of these studies support the opinion that imagery may affect physical performance and psychological factors, which may be in relation with physical performance (Morris et al. 2005). However, the relationship between imagery and intrinsic motivation has not been revealed and has not been fully set forth due to insufficient number of studies in this area. It was stated in a previous study on this issue that athletes who use imagery, determine higher targets, have more realistic expectations and remain more connected to their training programs (Martin and Hall 1995). It could be said that this research emphasizes the relationship between imagery and intrinsic motivation. Considering the advantages of doing an activity because of the intrinsic reasons (Vallerand and Losier 1999), the necessity of researching the effect of imagery on intrinsic motivation arises. In another study conducted in exercise participants, it was found that imagery is related to motivation, intention to exercise and exercise behavior (Stanley et al. 2012). In addition, despite the fact that the relationship between imagery, self-efficacy and performance has been mentioned in some previous studies, the validity of it in samples with different characteristics (sport history, sportive experience period, type of sports branch, age, gender cultural background and environment) has not been described and revealed extensively.

Objectives of the Research

The purpose of this study is to examine the relationship between imagery with intrinsic motivation, self-efficacy and performance and determine the effect of imagery on these aforementioned variables. The other purposes of this research are to investigate imagery, intrinsic motivation and self-efficacy scores according to gender and winning a medal in the competition.

MATERIAL AND METHODS

Participants

142 kickboxing contestants voluntarily participated to the research. After deleting the data with missing values and incorrect answering, 133 participants whose mean age was 19.70 (SD=4.84) were selected as the research sample. Some other characteristics of the participants can be seen on Table 1.

Instruments

Sport Imagery Questionnaire (SIQ): It was used in order to measure mental imagery. It can measure imagery utilization. The scale was orig-

inally developed by Hall et al. (1998). Language adaptation of this scale into Turkish was done by Kizildag (2007). The scale has 21 items, which were scored on a 7-point Likert scale. Test-retest reliability coefficients for the entire scale and the subscales were reported to be between 0.74 and 0.80, which are over the accepted level. Sport Imagery Questionnaire has 4 subscales, Cognitive Imagery, Motivational Specific Imagery, Motivational General Arousal Imagery, and Motivational General Mastery Imagery. Cronbach's alpha of the overall scale was found to be 0.82.

Cognitive Imagery: This imagery was used in order to mentally train specific sport skills, some general athletic skills, match strategies and plans. This type of imagery refers to mentally rehearsing some match routines. It also includes mentally mastering athletic skills, correcting mistakes and developing match tactics (Kizildag 2007). Cronbach's alpha of this subscale appeared to be 0.72.

Motivational Specific Imagery: Items of this subscale show that it covers some specific performance aims. Athletes imagine themselves winning, being congratulated for their good performance or feeling pride for their achievement and these types of imageries are categorized under this subscale (Kizildag 2007). Cronbach's alpha of this subscale was determined to be 0.72.

Motivational General Arousal Imagery: Items of this subscale measure the athletes' level of arousal. Using this type of imagery helps athlete control their emotions. This imagery regulates all emotions for athletes' benefit and contributes to athletes' emotional and physiological readiness for upcoming matches (Kizildag 2007). Cronbach's alpha of this subscale was 0.70.

Motivational General Mastery Imagery: This subscale measures the type of imagery that helps athletes overcome technical and tactical problems that they face. Athletes imagine what they will do in case of technical and tactical problems. This type of imagery prepares athletes for the matches, increases their self-confidence and helps them handle the problems easily. This imagery also covers higher level of motivational abilities and helps athletes become mentally stronger (Kizildag 2007). Cronbach's alpha of this subscale was 0.74.

Self-efficacy was measured by Self-efficacy Scale, which is a 5-point Likert scale and has 17 items. The original scale was developed by Sherer et al. 1982). The language adaptation of the Self-efficacy Scale into Turkish was done by Yildirim and Ilhan (2010). Cronbach's alpha of Self-efficacy Scale was 0.78.

Intrinsic Motivation: It was assessed by Sport Motivation Scale (SMS), which was developed by Pelletier et al. (1995). The scale measures the motivation level of athletes. A language adaptation of the Sport Motivation Scale into Turkish was done by Kazak (2004). Li and Harmer (1996) reported support to combine intrinsic motivation items as one scale. Cronbach's alpha for 12 items intrinsic motivation scale was 0.92. This scale has two subscales, which are "intrinsic motivation to know and accomplish things" and "intrinsic motivation to experience stimulation."

Intrinsic Motivation to Know and Accomplish Things: Items of this subscale cover the process of learning new skills and accomplishing them. Knowing the certain skills and successfully performing them increases athletes' motivation towards their sports. Cronbach's alpha of this subscale for the current study appeared to be 0.90.

Intrinsic Motivation to Experience Stimulation: This sub-scale has 12 items that measure the extent to which athletes engage in an activity to experience stimulating sensations such as sensory pleasure, pride fun and excitement. Higher scores on this scale represent being intrinsically motivated for a certain sport to live exciting experiences. Cronbach's alpha of this subscale was determined to be 0.69.

Performance: Kickboxing contestants' performance was measured according to their rankings in the competitions. The official ranking document was obtained from the referee board of the competition.

Data Collection

Athletes were approached in the national kickboxing championship of 2011. Necessary permissions were obtained before the data collection process. Then, athletes were informed that participation was voluntary and all information gathered would only be used for scientific purposes. The data was collected in face-to-face interactions.

Data Analysis

The data obtained from the athletes was analyzed by SPSS 17.0 package program. Descrip-

tive statistics technique and frequency analysis were used to describe the demographic characteristics of the participants and the basic features of the data. The differences according to gender and obtaining a medal from the competition were evaluated by independent samples t-test. Pearson's correlation analysis was used to examine whether there is a linear relationship between the variables. The contribution of mental imagery to intrinsic motivation and self-efficacy was assessed by stepwise regression analysis. The level of significance was determined to be .05.

RESULTS

The results of frequency analysis showing the features of the kickboxing contestants regarding their gender, age and status of obtaining a medal can be seen on Table 1.

Table 1: Characteristic of participants

Characteristics	*N*	*%*
Gender		
Male	91	68.4
Female	42	31.6
Total	133	100
Medal in the Tournament		
Got medal	71	53.4
No medal	62	46.6
Total	133	100
Age		
16-18	73	54.9
19-20	20	15
21-22	16	12
23-24	6	4.5
25-33	18	13.5
Total	133	100

Participants consisted of 91 males (68.4%) and 42 females (31.6%). 71 of the participants (53.4%) got a medal (1st, 2nd, 3rd or 4th place) and 62 of them (46.6%) were not in the first 4 positions of their weight category. There were 73 athletes (54.9 percent) in the age group of 16 to 18years of age, 20 athletes (15%) in the age group of 19 to 20, 16 athletes (12%) in the age group of 21 to 22, 6 athletes (4.5%) in the age group of 23 to 24 and 18 athletes (13.5%) in the age group of 25 to 33. The descriptive statistics of age, mental imagery, self-efficacy, IM and Cronbach's alpha values can be seen in Table 2.

Independent samples t-test results between males and females according to their mental imagery, self-efficacy and IM are presented in Table 3.

There was not any significant difference of cognitive imagery, motivational specific imagery, self-efficacy, motivational general arousal imagery, motivational general mastery imagery, intrinsic motivation to know and accomplish things, intrinsic motivation to experience stimulation and intrinsic motivation scores between males and females ($p>.05$).

Independent samples t-test results for mental imagery, self-efficacy and IM according to obtaining a medal in the competition can be seen in Table 4.

There was not any significant difference of cognitive imagery, motivational specific imagery, self-efficacy, motivational general arousal imagery, motivational general mastery imagery, intrinsic motivation to know and accomplish things, intrinsic motivation to experience stimulation and

Table 2: Minimum, maximum, mean and standard deviation values of variables and Cronbach's alphas of the scales

	N	*Min*	*Max*	*Mean*	*SD*	*Cronbach's alpha*
Age	133	15	42	19.70	4.84	-
Cognitive imagery	133	3	7	5.21	0.88	0.72
Motivational specific imagery	133	1	7	5.14	1.19	0.72
Motivational general arousal imagery	133	1	7	4.41	1.41	0.70
Motivational general mastery imagery	133	1	7	5.46	1.27	0.74
Self-efficacy	133	4	83	57.71	10.85	0.78
IM to know and accomplish things	133	23	56	44.54	9.54	0.90
Intrinsic motivation to experience stimulation	133	11	28	21.79	4.68	0.69
IM*	133	34	84	66.33	13.64	0.92

*IM = Intrinsic motivation

Table 3: Gender differences of variables

	Gender	*N*	*Mean*	*Std. deviation*	*p*
Cognitive imagery	Male	91	5.16	0.87	0.35
	Female	42	5.31	0.92	
Motivational specific imagery	Male	91	5.00	1.24	0.53
	Female	42	5.43	1.04	
Motivational general arousal imagery	Male	91	4.28	1.44	0.13
	Female	42	4.69	1.32	
Motivational general mastery imagery	Male	91	5.48	1.30	0.78
	Female	42	5.41	1.22	
Self-efficacy	Male	91	57.90	10.83	0.77
	Female	42	57.30	11.00	
IM* to know and accomplish things	Male	91	45.00	9.23	0.42
	Female	42	43.55	10.22	
IM to experience stimulation	Male	91	21.79	4.47	0.99
	Female	42	21.79	5.18	
IM	Male	91	66.80	13.00	0.57
	Female	42	65.33	15.06	

*IM =Intrinsic motivation

Table 4: The difference of variables according to having a medal

	Place	*N*	*Mean*	*Std. deviation*	*p*
Cognitive imagery	Got a medal	71	5.19	.91	.83
	No medal	62	5.23	.85	
Motivational specific imagery	Got a medal	71	5.21	1.21	.45
	No medal	62	5.06	1.18	
Motivational general arousal imagery	Got a medal	71	4.31	1.38	.40
	No medal	62	4.52	1.45	
Motivational general mastery imagery	Got a medal	71	5.44	1.13	.89
	No medal	62	5.47	1.42	
Self-efficacy	Got a medal	71	56.54	9.09	.18
	No medal	62	59.06	12.50	
IM* to know and accomplish things	Got a medal	71	44.10	9.80	.56
	No medal	62	45.05	9.29	
IM to experience stimulation	Got a medal	71	22.08	4.70	.45
	No medal	62	21.46	4.68	
IM	Got a medal	71	66.18	14.03	.89
	No medal	62	66.51	13.30	

*IM = Intrinsic motivation

intrinsic motivation scores according to having a medal (p>.05).

The result of the Pearson's correlation analysis among age, category (kg), performance, mental imagery, self-efficacy and IM is presented in Table 5.

Pearson's correlation analysis showed that self-efficacy was positively correlated with cognitive imagery (r=.272), motivational general mastery imagery (r= .356), intrinsic motivation to know and accomplish things (r= .307), intrinsic motivation to experience stimulation (r= .270) and intrinsic motivation (r= .307), (p<.05).

Intrinsic motivation appeared to be correlating with cognitive imagery (r= .529), motivational specific imagery (r= .357), motivational general mastery imagery (r= 451), self-efficacy (r= 307), intrinsic motivation to know and accomplish things (r= 980) and intrinsic motivation to experience stimulation (r= .916), (p<.05).Other significant correlations can be seen as bold in Table 5.

The result of the regression analysis regarding contribution of mental imagery to self-efficacy can be seen on Table 6. Using stepwise method, a significant model emerged: F (1.131) = 18.986, p<.001. The model explains twelve per-

Table 5: Pearson's correlation among variables

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1) Age	-									
2) Category (Kg)	.360**	-								
3) Performance	.012	-.036	-							
4) CI	.172*	-.011	-.012	-						
5) MSI	.079	.024	-.011	.562**	-					
6) MGAI	-.052	-.146	-.152	.177*	.215*	-				
7) MGMI	.103	-.099	-.031	.518**	.324**	.121	-			
8) Self-efficacy	.104	.035	.049	.272**	.063	-.091	.356**	-		
9) IMtoKAT	.154	.186*	.146	.523**	.321**	.012	.458**	.307**	-	
10) IMtoES	.116	.038	-.003	.476**	.386**	.009	.383**	.270**	.819**	-
11) IM	.147	.143	.101	.529**	.357**	.011	.451**	.307**	.980**	.916**

**p<0.001
*p<0.05
CI =Cognitive Imagery, MSI = Motivational Specific Imagery, MGAI = Motivational General Arousal Imagery, MGMI = Motivational General Mastery Imagery, IMtoKAT = IM* to Know and Accomplish Things, IMtoES = IM to Experience Stimulation, IM = Intrinsic motivation

cent of the variance in self-efficacy (adjusted R^2 = .120).

Table 6: Regression analysis predicting self-efficacy

	B	*SE B*	*â*	*p*
Motivational general mastery imagery	3.04	0.7	0.36	**.000***

Dependent variable: Self-efficacy.

The contribution of mental imagery to intrinsic motivation was analyzed by the regression analysis the result of which is presented in Table 7. Stepwise regression analysis revealed a significant model: F (2.130) = 30.984, p<.001. The model explains 31.2 percent of the variance in intrinsic motivation (Adjusted R^2 = .312).β values showed that cognitive imagery made a more important contribution to the model (β: .403) than motivational general mastery imagery (β: .243).

Table 7: Regression analysis predicting intrinsic motivation

	B	*SE B*	*â*	*p*
Cognitive imagery	6.236	1.305	.403	**.000***
Motivational general mastery imagery	2.608	.906	.243	**.005**

Dependent variable: Intrinsic motivation

DISCUSSION

According to the t-test results, the scores of imagery, intrinsic motivation and self-efficacy have no difference between the female and male. Many sports environments have intense masculine characteristics and thus, women are underrepresented especially in certain sports. Moreover, a macho sports culture may encourage sexist, misogynistic, and homophobic behaviors and cause women to have a lower level of self-efficacy perception (Leaper and Friedman 2007). In parallel with this view, Lirgg (1991) mentioned that the females had a lower score of physical activity self-efficacy compared to the males. Yet, the findings of this research are not similar with the findings of the studies of Leaper and Friedman (2007) and Lirgg (1991).

Considering imagery, intrinsic motivation and self-efficacy depending on whether to win a medal in the competition, no significant difference was found. There are findings in relevant literature that high scores of imagery, intrinsic motivation and self-efficacy have positive results (for example Bar-Eli et al. 2001; Jones and Viamontes 2010; Nyberg et al. 2006; Harrison et al. 1997; Canpolat and Cetinkalp 2011). Moreover, relevant research also showed that imagery and mental training applications are useful for positive outcomes in a sports context (Williams and Cumming 2015; Ozdal et al. 2013; Aldemir et al. 2014; Parkerson 2015; Yijing et al. 2015). Thus, finding no difference in terms of winning medal can be regarded as an unexpected result in this study because the construction phase of this research was based on the idea that the scores of imagery, intrinsic motivation and self-efficacy

of the athletes who have obtained a medal might be higher than the others' scores. The reason for winning a medal need not have an impact on the variables may be due the fact that this is not an experimental study. Athletes participating in the research answered in the questionnaire how frequently they apply imagery. Thus, it's possible to determine by experimental studies on this issue to what extent imagery, intrinsic motivation and self-efficacy influence sportive performance in similar sport context. It's also possible to obtain the programs that would produce the most efficient result in terms of sample group characteristics by means of different imagery applications and mental trainings.

According to the results of correlation analysis in order to determine the relationship between imagery and its sub-dimensions with the other variables that have been examined in the research, some sub-dimensions of imagery are found to show significant correlation with intrinsic motivation and self-efficacy. According to the results of regression analysis aimed at determining the imagery type(s) affecting the intrinsic motivation, self-efficacy and performance, motivational general mastery imagery describes twelve percent of the self-efficacy score. So, imaging what required to be done in technical and tactical problems, rethinking of competition strategies, techniques and plans to be applied contributes to self-efficacy. Considering the positive effects of high self-efficacy (Caliskan et al. 2010; Bouffard-Bouchard 1989; Bong 2001; Zajacova et al. 2005; Hepler and Chase 2008; Lane et al. 2003; Lane et al. 2004; Beauchamp et al. 2002; Logan et al. 2011; Dysvik and Kuvaas 2011), the imagery in kick boxers should be considered to affect self-efficacy.

According to results of second regression analysis, cognitive imagery and motivational general mastery imagery described 31.2 percent of variance in intrinsic motivation. So, rethinking of skills specific to the sports branch, some general sports skills and imagery of solutions to be applied in a case of potential and possible various problems and practicing competition strategies or techniques in mind contribute to intrinsic motivation. The reason of the effect of imagery on intrinsic motivation can be a desire of demonstrating skills as a result of imagery. In short, this finding obtained may be interpreted as direction and orientation of individuals to their sports because of intrinsic reasons as a result of imagery. Because of this mentioned contribution of imagery, an effect over the ratio of thirty one percent was found for intrinsic motivation.

When studies that have been conducted in the literature are examined, it has been stated that being motivated by intrinsic reasons against some activities may have more positive results when compared to not being motivated and/or extrinsic motivation (Hollembeak and Amorose 2005; Vallerand and Losier 1999; Ryan et al. 1990; Vallerand and Bissonnette 1992; Morris and Summers 1995). Because, high intrinsic motivation means that the behavior is engaged because of some reasons such as desire to learn, being concerned, developing skills and abilities and enjoying and making fun. For this reason, it may be expressed that activities made as a result of intrinsic reasons can lead to more positive results (Ingledew et al. 1998; Afzal et al. 2010; Moreno et al. 2010). In short, imagery affects the intrinsic motivation which is a relatively more positive motivation type as mentioned in the literature and this relationship that have been mentioned should be taken into consideration.

When the relationship between imagery and performance is examined, it is observed that there is not any significant relationship between them. This finding may be due to the characteristics specific to the branch. Therefore, studies that may be conducted in combat sports in future may clarify the issue more.

CONCLUSION

Considering the overall research findings, it's seen that imagery has a significant relationship with intrinsic motivation and self-efficacy. Also, according to the regression analysis results, imagery has an impact on intrinsic motivation and self-efficacy that are factors, which may have a positive effect on the performance. Coaches can utilize the findings of this research. For example, they can use imagery applications as a supportive element for their normal training sessions. Some of the applications that would lead sports teams to succeed are informing athletes about imagery, encouraging them to use it actively, and including a sport psychologist in teams who would support imagery use.

High intrinsic motivation means an individual is enjoying the performed activity; s/he is carrying it out willingly and based on intrinsic motives such as curiosity and personal develop-

ment. In addition, high self-efficacy can ensure positive changes such as expending more energy, skill development, putting more effort, believing in own skills, wanting to overcome difficulties and perceiving the ability to solve the faced problems. Therefore, in addition to physiological and neurological changes resulted from imagery trainings, positive changes in intrinsic motivation and self-efficacy, as a great advantage, would also contribute to multifaceted development in athletes.

RECOMMENDATIONS

Studies to be conducted on this issue in the future may determine the other psychological factors, which play the role of intermediary between imagery and performance. Also, the relationship between imagery, performance and other psychological variables could be expressed more thoroughly as a result of future studies.

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