ORIGINAL RESEARCH PAPER

THE RELATIONSHIP BETWEEN IMAGERY AND PHYSICAL SELF-EFFICACY IN ATHLETES

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Abstract

The world's greatest athletes have very well-developed imagery skills. They use imagery every day to improve skills during training, to prepare for competitions, to adjust in technical performance and to image success, thereby strengthening their confidence and beliefs for higher achievements. Previous research has shown that the use of imagery for athletes has helped to achieve the desired goals. Physical self-efficacy has received a lot of attention in sports, and it is associated with the use of imagery. High physical self-efficiency means that athlete enjoys sports-related activities and has a constant desire for improvement and development. The aim of this study is to examine the relationship between athlete's imagery abilities and physical self-efficacy. It was assumed that athletes who have a higher physical self-efficacy level would have higher imagery abilities than those who have lower physical self-efficacy level. The study included 69 athletes from various kinds of sports (female and male). The following research methods were used: research and analysis of literature sources, Sport Imagery Ability Questionnaire (SIAQ), Self-Efficacy to Regulate Exercise scale (SERES), mathematical statistical methods. Study findings suggest that athletes who have higher physical self-efficacy use imagery more and have better imagery abilities than athletes who have lower physical self-efficacy level.

Key words: *imagery, self-efficacy, athletes*

Introduction

Imagery is one of the most important psychological skills in sport. Imagery in sport is the ability to create an image or series of images related to the sport. Imagery includes the use of all senses to create or recreate an experience from an event and use this mental feeling to better prepare oneself for a competition (Cumming, & Ramsey, 2009; Slimani, et al., 2016). Imagery is a useful tool for improving the performance of athletes in a variety of sport settings. Imagery is mainly used in the training process to improve the quality of athletes' movements, increase concentration, reduce competitive anxiety, and promote athlete's self-confidence and physical self-efficacy (Broeck, et al., 2010, Mousavi, & Meshkini, 2011). Imagery is widely studied and many studies in sport psychology have been conducted to explore the use of imagery among athletes. By using imagery athletes can create and experience situations that are like real life. By repetition, an athlete can develop sensory reflexes that will help to boost performance in trainings and competitions (Filgueiras, & Hall, 2017).

Physical self-efficacy has been the focus of research in sport psychology for many years. It is very often associated with increased effort, perseverance and improved athletic performance by athletes of all ages and levels of competition (Beauchamp, et al., 2012; Sitzmann, & Ely, 2011). Physical self-efficacy refers to confidence in the ability to learn or perform physical activities (Feltz, 2007). An athlete's level of physical self-efficacy greatly influences his or her performance and determines motivation. Athletes with higher physical self-efficacy will set more difficult goals to achieve than those with a lower level of physical self-efficacy. The level of physical self-efficacy will affect an athlete's effort. There are several psychological strategies, such as imagery, that lead to positive changes in athlete's physical self-efficacy (Williams, & Cumming, 2012). High self-efficacy means that the athlete enjoys sports-related activities and has a constant desire for improvement and development. In addition, high self-efficacy leads to positive changes, such as working with greater returns, being able to assess one's skills more objectively, finding a willingness to overcome difficulties, and emphasizing the ability to solve problems that arise on the path to success (Yilmaz, et al., 2010; Carter, 2013; Beauchamp, et al., 2012).

Imagery can increase athletes' self-confidence and physical self-efficacy. Many researchers argue that imagery experience is a source of self-efficacy. Seeing other people's successful actions or visualizing them in imagery can boost physical self-efficacy (Majlesi, et al., 2013). Athletes can create their effectiveness by imagining themselves being successful. If all the senses and emotions are included in the process of imagery, then this

type of imagery will be an even stronger source of physical self-efficacy. Physical self-efficacy can help to explain and describe the imagery associated with sports performance. Imagery leads to success in terms of performance and increases an athlete's expectations of success in terms of his or her performance. By imagining yourself successfully completing a task, an athlete's physical self-efficacy and hope for success are promoted. Every athlete has a desire to feel effective and to show their abilities (Broeck, et al., 2010).

With the help of imagery, athletes can develop physical and psychological skills. Mental training techniques, such as imagery, are associated with shifting athletes' attitude towards themselves, resulting in increased athletes' self-confidence and physical self-efficacy, as well as their performance (Moraru, et al., 2015). This study aims to examine the relationship between athlete's imagery abilities and physical self-efficacy.

Materials and Methods

Participants. The participants of the study were 69 individual and team sports athletes (female and male) from the Latvian Academy of Sport Education. Participants' ages ranged from 19 to 25 years. All study participants have at least 7 years of experience in their sport, have achieved success in their sport, and experience in Latvian and/or international competitions.

Tools. Sport Imagery Ability Questionnaire (SIAQ) (Williams & Cumming, 2011) in Latvian language (Volgemute et al., 2019) and Self-Efficacy to Regulate Exercise scale (SERES) (Bandura, 2006) in Latvian language were used to determine and analyse the indicators of athletes' imagery abilities and physical self-efficacy.

Imagery abilities were assessed and analysed from the results of the 15-item self-assessment SIAQ. The items are grouped into five scales: skill (training-oriented imagery abilities), strategy (competition-oriented imagery abilities), goal (goal-oriented imagery abilities), affect (emotion-oriented imagery abilities), and mastery (mastery-oriented imagery abilities) imagery abilities. Participants were asked to rate on a 7-point scale (1-rarely and 7-often) each statement.

The physical self-efficacy indicator was determined and analysed by using SERES. SERES is an 18-item questionnaire designed to measure the physical self-efficacy of an athlete. Participants were asked to record the strength of their belief on a 100-point scale, ranging in 10-unit intervals from 0 ("Cannot do") to 100 ("Certain can do").

Procedure. Participants were asked if they would agree to complete questionnaires as a part of a research study. After obtaining their consent,

the athletes were asked to complete the questionnaires by giving an assessment to each subject, as well as, to fill in personal information: age, sport, athletic level, sports experience, and achievements. In the end, the data were collected and analysed using data analyses.

Statistical Analysis. The data obtained were processed using SPSS software. The following mathematical statics were used: descriptive statistics, median split, multivariate analysis of variance (MANOVA).

Results

To determine the relationship between imagery abilities and physical self-efficacy, athletes were categorized as being a high or low level in self-efficacy based on the distribution of SERES results. The mean distribution was determined by the median split. The median value of SERES was set at 59, after which the cumulative percentage was determined – 50.7, which means that 50.7% of the sample of athletes form a group of low self-efficacy level and 49.3% of the sample of athletes form a group of high self-efficacy level. Based on the obtained results, 37 athletes whose SERES results exceeded 59 points (inclusive) were qualified with a high level of physical self-efficacy, while 32 athletes with a score below 59 points were qualified with a low level of physical self-efficacy (Tab. 1.).

Table 1

Means and Standard Deviations for SIAQ Subscale Results for Hight and Low Physical Self-Efficacy Athletes (*n=69*)

Indicators	High self-efficacy (*n=37*)		Low self-efficacy (*n=32*)	
	M	**SD**	**M**	**SD**
Physical self-efficacy	6.93	.92	4.99	.66
Skill imagery abilities	6.32	.12	5.48	.13
Strategy imagery abilities	5.96	.13	4.78	.14
Goal imagery abilities	6.25	.17	5.06	.18
Affect imagery abilities	6.47	.08	5.88	.09
Mastery imagery abilities	5.82	.16	4.78	.17

Table 1 presents the means and standard deviations for SIAQ subscales results for the high and low physical self-efficacy athletes. Physical self-efficacy indicators vary widely between groups of athletes. The arithmetic means value for the group of athletes with high self-efficacy is 6.93 (SD=0.92), while for the group with low self-efficacy this value is 4.99 (SD=0.66). Imagery abilities indicators arithmetic means show a tendency that the group with a high level of physical self-efficacy has higher scores on all SIAQ scales than the group with low physical self-efficacy level. This indicates that athletes with a higher level of physical self-efficacy also have higher imagery abilities.

For the group of athletes with high physical self-efficacy, the highest arithmetic means are for affect imagery abilities (M=6.47, SD=0.8). The group of low physical self-efficacy also has the highest arithmetic means of affect imagery abilities (M=5.88, SD=0.9). For both groups, these abilities are the easiest to apply in sport. The rate is significantly higher for the high physical self-efficacy group compared to the low physical self-efficacy group (Fig. 1.).
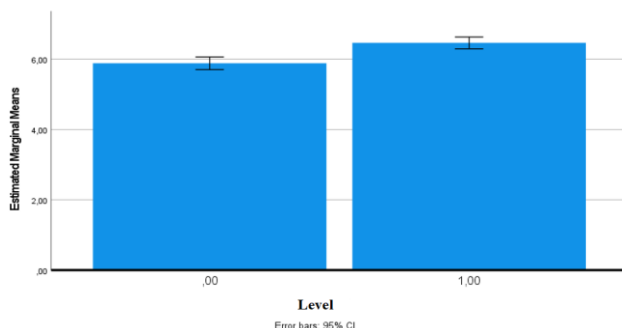

Figure 1. Estimated Marginal Means of Affect Imagery Abilities

For both groups, the second highest arithmetic means are in skill imagery abilities. The arithmetic means for the group with high physical self-efficacy (M=6.32, SD=0.12) is much higher than for the group with low physical self-efficacy (M=5.48, SD=0.13) (Fig. 2.).
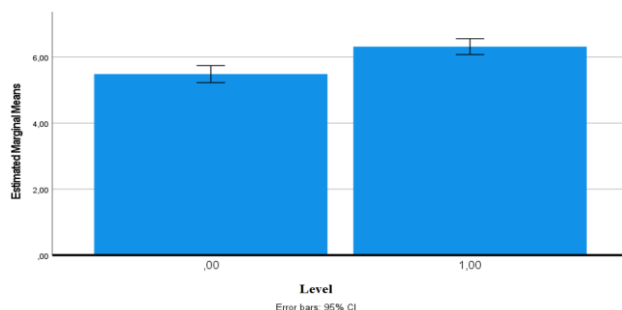

Figure 2. Estimated Marginal Means of Skill Imagery Abilities

The third imagery abilities with the highest arithmetic means are goal imagery abilities for the high physical self-efficacy group (M=6.25, SD=0.17) and the low self-efficacy group (M=5.06, SD=0.18). These imagery abilities are closely related to physical self-efficacy. This scale shows the largest difference in the arithmetic means between the two

groups. For the group of high self-efficacy arithmetic means are significantly higher (Fig. 3.).
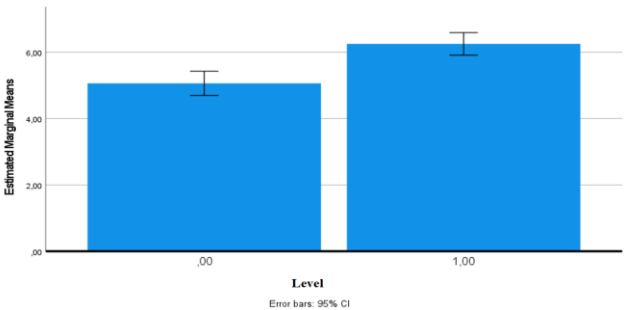

Figure 3. Estimated Marginal Means of Goal Imagery Abilities

Strategy imagery abilities has one of the lowest arithmetic means for the high physical self-efficacy group (M=5.96, SD=0.13) and low self-efficiency group (M=4.78, SD=0.14) (Fig. 4.).
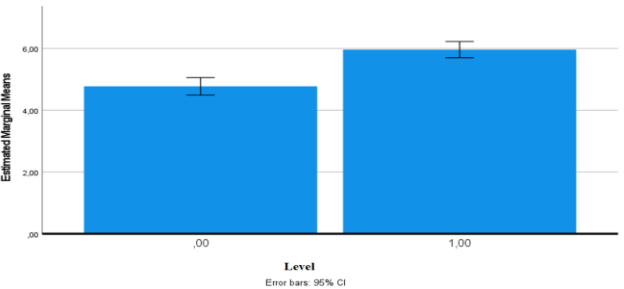

Figure 4. Estimated Marginal Means of Strategy Imagery Abilities

The lowest arithmetic means for the high physical self-efficacy group (M=5.82, SD=0.16) and low self-efficacy group (M=4.78, SD=0.17) are in strategy imagery abilities (Fig. 5.).
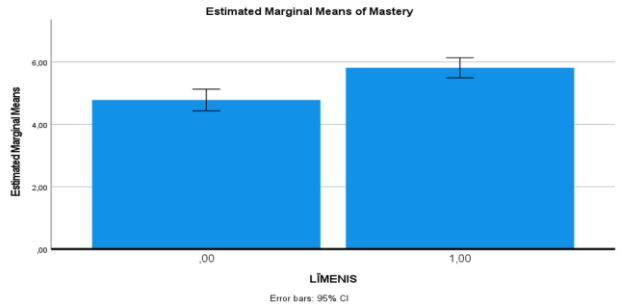

Figure 5. Estimated Marginal Means of Mastery Imagery Abilities

To test the reliability and validity of the results obtained, a two-level (high-level versus low level self-efficacy) MANOVA (multivariate analysis of variance) was performed using SIAQ scales as dependent variables. Based on obtained results from MANOVA, it was concluded that there is a significant multivariate effect between the level of self-efficacy and imagery abilities of athletes. According to ***Hotellings T2*** (0.863) =8.93 (p<0.01), the arithmetic means values of the groups differed significantly and this confirms that the differences between the groups are statistically significant. To determine how a dependent variable differs from independent variables, the Test of Between-Subjects Effect must also be considered. The obtained results show that the level of physical self-efficacy has a statistically significant effect on skill imagery (F (1.67) =22.23; p<0.01), strategy imagery (F (1.67) =37.48; p<0.01), goal imagery (F (1.67) =22.62; p<0.01), affect imagery (F (1.67) =22.05; p<0.01) and mastery imagery (F (1.67) = 19.09; p<0.01) abilities. This means that athletes with higher physical self-efficacy use different imagery abilities to achieve higher results.

Discussion

The results of the present study indicate that athletes who have higher physical self-efficacy use all imagery abilities more than athletes who have lower physical self-efficacy level. These findings are consistent with previous research (Munro-Chandler, Hall, & Fishburne, 2008). There is a statistically significant correlation between physical self-efficacy and imagery abilities (p<0.01). Athletes with a higher level of physical self-efficacy also have higher levels of imagery abilities. The level of physical self-efficacy interacts with skill (F=22.23; p<0.01), strategy (F=36.48; p<0.01), goal (F=22.67; p<0.01), affect (F=22.05; p<0.01) and mastery (F=19.09; p<0.01) imagery abilities. From obtained results shows that athletes with higher physical self-efficacy use different imagery abilities to achieve higher results.

Previous studies have repeatedly confirmed that imagery influences the physical self-efficacy of athletes (Callow, et al., 2017; Williams, Cumming, & Balanos, 2010). There is an obvious and undeniable relationship between imagery and physical self-efficacy in sport. Well-developed imagery can help athletes to promote their physical self-efficacy, and in turn, high physical self-efficacy helps athletes to create effective imagery scenarios. An essential precondition for imagery and physical self-efficacy is self-confidence and confidence in one's ability to perform specific tasks.

Conclusions

The present study confirms that there is a relationship between imagery abilities and physical self-efficacy in sport. This relationship has important implications for athletes, sport psychologists and coaches. Imagery can influence athlete's self-efficacy.

The athletes in the present study reported higher scores in affect, skill and goal imagery abilities and lower scores in strategy and mastery imagery abilities.

From obtained data, it can be concluded that the group of athletes with high physical self-efficiency has much higher scores in all imagery scales than the group of athletes with low physical self-efficiency. Athletes with higher self-efficiency levels use different imagery abilities to achieve higher sports results.

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