

# The relationship between performance strategies and mental toughness in team and individual sports of young adult athletes

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## ABSTRACT

**Objectives** The aim of this research is to examine the relationship between performance strategies and mental toughness in team and individual sports of young adult athletes.

**Methods** This research was conducted with a sample of athletes active in various teams and clubs in Antalya. In this study, 249 athletes participated ( $\bar{x}_{Age}$ : 23.62 + 4.466), 44.6% (n = 111) of them were female and 55.4% (n = 138) were male athletes. The data collection tools included "Sports Mental Toughness Questionnaire-SMTQ-14", "The Test of Performance Strategies Questionnaire (TOPS)", and "Personal Information Form" prepared for the purpose of the research. Furthermore, Independent sample T-test, One-way ANOVA and Pearson correlation analysis were used in this study. The analyzes were made in the IBM Statistical Package for the Social Sciences (SPSS), and the significance level in the research was  $p < 0.05$ .

**Results** A significant difference was found in imagery and activation sub-scales in terms of team and individual sports variables. In addition, in terms of the branch, gender, and experience variables, it was found that the scores of goal setting, imagery, activation, self-talk, attentional control, relaxation, emotional control, automaticity, confidence, control, and constancy did not differ significantly.

**Conclusions** As a result, it was found that both mental toughness and performance strategies did not differ in terms of branch, gender, and experience variables. The results of the study related to psychological performance strategies and differentiation of mental toughness contradict with the relevant literature. However, there is a low positive correlation between mental toughness and psychological performance strategies. The skill of self-talk positively affects constancy, confidence, and control of mental toughness.

**Keywords:** Mental toughness, psychological performance strategies, team, individual sport

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## INTRODUCTION

Today, studies in the field of exercise and sports psychology in sports sciences remain up-to-date and arouse curiosity. The concept of mental toughness (Crust & Azadi, 2010), which is one of the psychological performance factors, attracts the researchers who try to understand the importance of psychological performance strategies in sports and among athletes (Kristjánsdóttir et al., 2018).

Kristjánsdóttir et al. (2018) stated that a large number of psychological and affective skills (confidence, concentration, emotional control, and automaticity), cognitive and behavioral skills (self-talk, imagery, and goal setting) might be related to the personal approaches (optimism) in the successful performances of top-ranking (Olympic) athletes. Accordingly, the concept of mental toughness and psychological skills is considered to be multidimensional (cognitive, affective, and behavioral) and to have dynamics associated with psychological performance strategies in terms of successful sports performance (Bull et al., 2005; Clough et al., 2002; ; Connaughton et al., 2008; Crust & Clough, 2005; Jones et al., 2007). Psychological performance strategies that have many different scales are considered to have a relation to mental toughness. Cox (2012) stated that the concept of mental toughness is one of the psychological performance skills that performance athletes should have. In this context, mental toughness can be considered a cognitive

structure of athletes that show the ability to struggle against difficulties as an intrinsic skill, maintain performance, act in line with goals, and take responsibility for high-level performance in matches or training. According to this definition, it can be stated that if one plans to develop mental toughness, the environment created by a coach and practices with increased difficulty can be as effective as a long-term psychological performance strategy and mental training planning (Yazıcı, 2019). Yazıcı and Güçlü (2019) also reported that the psychological skills, which are especially required in basketball as a performance sport, differ significantly among cross-cultural participants such as Turkish and American players.

While some reviewed literature suggested that mental toughness can explain how physically skilled athletes become great athletes (Gucciardi et al., 2008; Beswick, 2010; Syed, 2010), other researchers warned against overemphasizing the importance of psychological structures claiming that success in sports is likely to be dependant on systematic and high difficulty training (Ericsson, 1996; Sheard, 2013) and the athletes having an appropriate mix of physiological, anatomical and psychological characteristics (Crust, 2008).

If academic studies conducted in Turkey are analyzed (Council of Higher Education Thesis Center, Ulakbim), the ones on psychological performance strategies in sports and mental toughness seem insufficient. However, research on mental toughness is still up-to-date, and in 2020, 8

research articles and 22 thesis studies related to the topic were published (Güven, Yazıcı, 2020). The insufficiency of studies in the literature in terms of psychological performance variables in sports and mental toughness is one of the data showing the importance of this study.

In the psychological performance intervention program of Golby and Wood (2016) on student-athlete rowers, an increase was identified in mental toughness test scores performed during the mid and post-intervention. Moreover, the study of Sheard and Golby (2006) revealed a similar effect of mental skill training on mental toughness development. These researchers stated that a 7-week mental skill training (goal settings, visualization, relaxation, concentration) led to a significant increase in both performance and mental toughness of high-performance adolescent swimmers. As a matter of fact, the results of both mental skills training (Sheard & Golby, 2006) and psychological performance intervention program (Golby & Wood, 2016) led to positive improvements in psychological performance strategies and mental toughness skills. However, it is considered that there is still a need for further studies to be carried out in different athlete and sample groups in the literature.

This study aims to determine the relationship between improving psychological skills and mental toughness level. Other aims of the study are to examine the relationship between psychological performance skills and mental toughness skills in terms of such variables as gender, performing in team and individual branches, and experience.

## METHODS

**Study Model:** Correlational survey models were used in the research. The correlational survey model is considered to be suitable for this type of research as it is used for research models aimed at determining the presence or degree of co-exchange between two and more variables (Karasar, 2007). Furthermore, with regard to the research design, an easily accessible sampling method was preferred among purposeful sampling methods in determining the research group in this study (Yıldırım & Şimşek, 2006). Accordingly, the research sample was limited to athletes actively doing sports in various teams and clubs in Antalya.

**Participants:** This research was conducted on a sample of athletes doing sports in various institutions and organizations in Antalya. The athletes participating in the study ( $Age_{av}: 23,62 \pm 4,466$ ) consist of 44.6% ( $n=111$ ) female and 55.4% ( $n=138$ ) male athletes. Although, in terms of experience variable, 30.5% of the participants ( $n=76$ ) have 1-5 years of sports experience, 43.4% of them ( $n=108$ ) are a team and individual athletes with 5-10 years of experience, and 26.1% of them ( $n = 65$ ) have ten or more years of sports experience.

**Data Collection Tools:** In accordance with the aim of the study, "Mental Toughness Scale in Sports," "Psychological Performance Strategies Scale" and "Personal Information Form" prepared by the researcher in compliance with the research design were determined as data collection tools.

**Sports Mental Toughness Questionnaire-SMTQ-14:** The Sport Mental Toughness Questionnaire-SMTQ-14 developed by Sheard et al. (2009) to determine the level of mental toughness in sports environment consists of 14 items. In addition to general mental toughness, the scale consisting of three sub-scales (Confidence, Constancy, and Control) is a 4-point Likert type. The Mental Toughness Inventory in Sports was adapted into Turkish by Altıntaş and Kuruç (2016).

**The Test of Performance Strategies Questionnaire (TOPS):** The original form of the Performance Strategies Scale developed by Thomas et al. (1999) consists of 64 items. The scale of the performance strategies scale, which has 8 sub-scales of performance strategies regarding the moment of competition, has 7 sub-scales regarding the performance strategies for training. Performance strategies for the competition were evaluated within the scope of our study. Turkish adaptation of the scale, which has a 5-point rating system, was made by Miçoğulları (2017).

**Personal Information Form:** In order to achieve the aim of the study, the personal information form was developed to obtain demographic information about the athletes and acquire specific information such as gender, age, and the type of sport the athletes are doing.

**Data Collection:** The evaluation tools used in the study and the personal information form were applied face-to-face under the supervision of the researcher after the participants were invited to participate on a voluntary basis.

**Data Analysis:** During the analysis process of the data, considering statistical assumptions (Alpar, 2010), descriptive and correlational statistical methods were used in accordance with the research design to identify whether they show a normal range or not. Data was analysed in IBM Statistical Package for the Social Sciences (SPSS®) program, and the level of significance in the study will be determined as  $p < 0.05$ .

## RESULTS

According to Table 1, a significant difference was found between the team and individual sports variable and the visualization and activation scores ( $p < 0.05$ ). According to the table, there was no significant difference between team and individual sports variables and goal setting, self-talk, attention control, relaxation, emotion control, automaticity, confidence, control, constancy scores. ( $p > 0.05$ ).

According to Table 2, no significant difference was found between gender variable and goal setting, visualization, activation, self-talk, attention control, relaxation, emotion control, automaticity, confidence, control, constancy scores. ( $p > 0.05$ ).

According to Table 3, no significant difference was found between the experience variable and goal setting, visualization, activation, self-talk, attention control, relaxation, emotion control, automaticity, confidence, control, constancy scores. ( $p > 0.05$ ).

Table 1. T-test results according to branch variable

Sub-scales	Branch	N	$\bar{x}$	SD	t	p
Goal Setting	Individual	162	3.32	.551	-1.65	0.10
	Team	87	3.45	.589		
Self Talk	Individual	162	3.35	.505	-1.11	0.27
	Team	87	3.43	.578		
Imagery	Individual	162	3.30	.517	-2.06	0.04*
	Team	87	3.44	.530		
Attentional Control	Individual	162	3.32	.638	0.10	0.92
	Team	87	3.31	.643		
Relaxation	Individual	162	3.19	.666	-0.74	0.46
	Team	87	3.26	.597		
Emotional Control	Individual	162	3.28	.424	-1.48	0.14
	Team	87	3.37	.444		
Automaticity	Individual	162	3.30	.594	0.71	0.48
	Team	87	3.24	.538		
Activation	Individual	162	3.24	.482	-2.14	0.03*
	Team	87	3.38	.503		
Confidence	Individual	162	2.65	.530	-1.80	0.07
	Team	87	2.79	.558		
Control	Individual	162	2.65	.625	1.86	0.07
	Team	87	2.48	.673		
Constancy	Individual	162	2.61	.561	-1.41	0.16
	Team	87	2.71	.524		

\* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$

Table 2. T-test results according to gender variable

Sub-scales	Gender	N	$\bar{x}$	SD	t	p
Goal Setting	Female	111	3.43	.558	1.65	0.10
	Male	138	3.31	.570		
Self Talk	Female	111	3.36	.531	-0.61	0.54
	Male	138	3.40	.533		
Imagery	Female	111	3.36	.486	0.12	0.91
	Male	138	3.35	.556		
Attentional Control	Female	111	3.33	.599	0.34	0.73
	Male	138	3.31	.671		
Relaxation	Female	111	3.14	.561	-1.77	0.08
	Male	138	3.28	.696		
Emotional Control	Female	111	3.30	.397	-0.50	0.62
	Male	138	3.32	.460		
Automaticity	Female	111	3.23	.555	-1.04	0.30
	Male	138	3.31	.589		
Activation	Female	111	3.31	.452	0.77	0.44
	Male	138	3.27	.524		
Confidence	Female	111	2.70	.568	-0.06	0.95
	Male	138	2.70	.524		
Control	Female	111	2.62	.626	0.68	0.50
	Male	138	2.56	.662		
Constancy	Female	111	2.65	.582	0.29	0.77
	Male	138	2.63	.524		

\* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$

Table 3. The One-way Anova results according to experience variable

Sub-scales		Sum of Squares	df	Mean Square	F	$\bar{x}$
Goal Settings	Between Groups	.268	2	.134	.415	.661
	Within Groups	79.3	246	.323		
	Total	79.6	248			
Self Talk	Between Groups	.393	2	.197	.695	.500
	Within Groups	69.7	246	.283		
	Total	70.0	248			
Imagery	Between Groups	.233	2	.117	.422	.656
	Within Groups	68.1	246	.277		
	Total	68.3	248			
Attentional Control	Between Groups	1.75	2	.877	2.17	.116
	Within Groups	99.5	246	.404		

	Total	101.2	248			
Relaxation	Between Groups	.760	2	.380	.920	.400
	Within Groups	101.5	246	.413		
	Total	102.3	248			
Emotional Control	Between Groups	.026	2	.013	.069	.933
	Within Groups	46.2	245	.188		
	Total	46.3	247			
Automaticity	Between Groups	.330	2	.165	.498	.609
	Within Groups	81.5	246	.331		
	Total	81.8	248			
Activation	Between Groups	1.20	2	.602	2.51	.083
	Within Groups	59.0	246	.240		
	Total	60.2	248			
Confidence	Between Groups	.044	2	.022	.073	.929
	Within Groups	73.0	246	.297		
	Total	73.0	248			
Control	Between Groups	.358	2	.179	.427	.653
	Within Groups	102.9	246	.418		
	Total	103.3	248			
Constancy	Between Groups	.482	2	.241	.795	.453
	Within Groups	74.5	246	.303		
	Total	75.0	248			

\* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$

Table 4: The Relationship between Psychological Performance Strategies and Mental Toughness

	Self Talk	Emotional Control	Automaticity	Goal Setting	Imagery	Activation	Attentional Control	Relaxation
Confidence	.199**	-.030	-.036	.216**	.050	.192**	-.092	.152*
	.002	.637	.573	.001	.433	.002	.148	.016
Constancy	.134*	-.022	-.071	.148*	.055	.232**	-.064	.126*
	.034	.730	.262	.020	.389	.000	.311	.048
Control	.175**	-.009	-.002	.096	.034	.122	.026	.016
	.006	.888	.975	.131	.590	.055	.678	.798

\* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$

The examining of Table 4 demonstrate that the confidence, which is one of the mental toughness sub-scales, has a positive and significant relationship with the sub-scales of the psychological performance strategies scale including self-talk, goal setting, activation and relaxation. At the same time, the relationship between emotional control, automaticity, imagery, and attentional control and confidence is not statistically significant. It can be seen that the constancy, one of the mental toughness sub-scales, has a positive and significant relationship with the sub-scales of the psychological performance strategies scale including self-talk, goal setting, activation and relaxation. Besides, the relationship between emotional control, automaticity, imagery, and attentional control and confidence is not statistically significant. The other sub-scales control of mental toughness is only related to self-talk, which is among the sub-scales of the psychological performance strategies scale.

## DISCUSSION AND CONCLUSION

After examining the findings, a significant difference was found between the team and individual sports variables and the visualization and activation scores. It can be seen that this significance is in favor of the athletes doing team sports. No significant difference was found between team and individual sports variables and goal setting, self-talk, attention control, relaxation, emotion control, automaticity, confidence, control, and constancy scores.

No significant difference was found between goal setting, imagining, activation, self-talk, attention control,

relaxation, emotion control, automaticity, confidence, control, and constancy scores according to gender variable. According to the results of the research into self-talk conducted by Engür (2011), regarding the condition of the sportsmen talking to themselves, there is a significant and high difference in the self-talk levels of female athletes compared to male athletes, which is contrary to our research findings. In the study conducted by Bayköse (2018), contrary to our research findings, it was stated that the levels of self-talk also differ according to the gender variable. Although it was stated by Hall (2001) that there is no evidence that one gender uses imagery in sports better than another, according to the literature on imagery, one of the psychological skill variables, it can be said that minor differences between the use of imagery by males and females exist. However, gender appears to be a determining factor in the use of imagery in training conditions. Gammage et al. (2000) emphasized that women mostly use imagery for their appearances, while men mostly use imagery for technical use.

There was no significant difference between the experience variable and goal setting, imagery, activation, self-talk, attention control, relaxation, emotion control, automaticity, confidence, control, and constancy scores. When the literature was examined, it was stated that the psychological performance strategies of athletes do not differ according to the experience variable in the study conducted by Güvendi et al. (2019) within a sample of American football players. In general, it might be useful to consider the research done on psychological skills. In

terms of self-talk, Hardy et al. (2005), Gammage et al. (2001) stated that there is no relationship between experience and self-talk. Therefore, both research results support our research results.

Having examined the relationship between psychological performance and mental toughness, a low level of positive correlation was found between mental toughness and confidence, self-talk, goal setting, relaxation, and finally between control and self-talk constancy, goal setting, activation, relaxation. Therefore, it is possible to talk about the relationship between mental toughness components and psychological skills. Improving mental toughness skills may be effective in the development of components of psychological performance strategies in athletes. In addition, researchers suggest that it can be effective in the development of psychological skills from theory to practice through various models such as the self-regulation model, the resonance performance model, the athlete-centered sports performance model, and the mindfulness-acceptance-commitment approach (Sheard, 2013).

In their meta-analysis study about self-talk, Tod et al. (2011) concluded that the self-talk technique improves performance. Similarly, Sheard and Golby (2006) found that after a 7-week psychological skill training program they carried out with male swimmers, an increase in the concentration skills of athletes was observed. At the same time, Noh et al. (2007) determined that after a 12-week psychological skill training program with dancers, their concentration levels increased significantly. In conclusion, when the results of our research and the literature are taken into consideration, it can be said that the practicing psychological performance strategies applied to athletes enable them to show positive improvements in their psychological performance skills. Using psychological skills is as important as physical performance to achieve maximum performance.

It can be said that cognitive and behavioral intervention programs applied to athletes and the implementation of strategies developed on coping can be effective for the psychological performance of athletes (Sheard, 2013). In the psychological performance strategies training program applied in the study, the athletes were first informed about the subject, and then they applied and included these strategies in their own lives. Most athletes unconsciously use these skills, whose names they do not even know when they face a negative situation, or they try to apply them to become more competent in activities. In this regard, providing various trainings, increasing their awareness about psychological performance strategies, and teaching the correct use of techniques can contribute to the high performance of athletes against all kinds of negative situations.

In the relevant literature, it was stated that mental toughness is associated with many of the psychological skills (Crust, 2008; Jones et al., 2007; Nicholls et al., 2008). When the data were examined according to the application contexts, the study which was added to the relevant literature by Crust and Azadi (2010) stated that there was a significant positive correlation between mental toughness, automaticity, use of relaxation strategies, self-talk, and emotional control. More importantly, both qualitative and

quantitative studies highlighted the importance of self-talk and relaxation strategies in terms of mental toughness. Elite athletes use self-talk, goal setting, and imagery as important strategies to prepare for competitions (Connaughton et al., 2008). In the studies apart from the sports contexts, psychologists found that the use of relaxation strategies is associated with psychological toughness (Wolin & Wolin, 1993). Also, Nicholls et al. (2008) previously reported that there is an important relationship between mental toughness and relaxation, thought control, and use of imagery.

There are some restrictions or limitations in our study. One of the most important limitations is that the TOPS questionnaire only evaluates how frequently participants use psychological performance strategies. Although the relevant literature emphasized the relationship between mental toughness and the use of similar strategies, it is still unclear how effectively athletes use these strategies. As suggested by Crust and Azadi (2010), it is possible that qualitative research using in-depth interviews with those who show mentally demanding performance can help produce a more "in-depth" understanding.

This study was conducted on a relatively small sample of athletes. In this context, extreme care should be taken while interpreting correlational studies. When the literature was examined, the weak relationships found between the use of performance strategies and mental toughness appeared to be consistent with the previous relevant study (Nicholls et al., 2008).

**Suggestions:** As a result, it can be said that there is a weak relationship between mental toughness and psychological performance strategies. It is possible for athletes to acquire and develop this relationship as a result of their experience or training. One of the most striking findings belongs to the experience variable. The fact that we obtained results contrary to expectations led us to the idea that this issue needs to be examined thoroughly. In this context, it can be seen that more detailed research and examinations are required. It is considered that experimental research that will be designed, especially within the framework of this subject, will clarify this area of study.

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