



## Evaluation of Mental Skills among Athletes: Is there a Difference between Males and Females?

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**Abstract:** *The psychological aspects of sports performance have been vigorously discussed in sports literature. Some athletes have often attributed their performance failures to psychological difficulties in competition management. In contrast, other athletes credited their success to their psychological skills in managing their stress and emotions. In addition, mental coaches rely on cognitive skill evaluations to build their relationships with athletes. However, mental training is the same for males or females without considering the specific gender aspect. This study highlights the difference in mental skills levels between male and female athletes. The Arabic version of OMSAT-3 was administered to 300 Tunisian athletes from different sports specialties. The results show a significant difference between males and females concerning mental skills, which calls for different mental training.*

**Keywords:** *Mental skill, gender, athlete, evaluation.*

### 1. INTRODUCTION

Since the beginning of the 20th century, sports performance has continued to evolve, thanks to the efforts of various researchers in the field, especially in the psychological aspect of sports performance. McCullagh (1998) considers that sports performance is based on athletes' physical, technical, tactical, and psychological preparation. In this context, Liew et al. (2019) describe this psychological and mental preparation as an integral part of performance preparation and must be integrated into training. In addition, the authors also claim that mental training aims to optimize performance in respect of the athlete.

Mental skills are essential for sports psychology and mental preparation in this context. Indeed, Vealey (1988) defines psychological skills as the level of proficiency to be attained, and they are acquired through specific mental preparation techniques.

From this point, several classifications of mental skills have been cited. In the first place, Orlick & Partington (1988) structured the different skills into two levels: basic ability and competition management and development skills. At present, mental skills are classified into three categories: first, fundamental skills, used for the enhancement of performance (Hamilton 2020). Second, psychosomatic skills regulate the mental and physiological intensity of sports practice. Last, cognitive skills allow the mind and management of emotions to achieve an optimal mental state in competitions. Researchers suggest that mental skills are necessary to instruct content programming in mental practices (Hamilton 2020, Güleri & Erhan 2017). However, this preparation phase must be planned according to the specific characteristics of each athlete (that is, their mental skills). At this level, the mental coach is called upon to assess each athlete's level of mental skills to construct an individual MP program.

Furthermore, we support developing mental preparation strategies following a particular working methodology. This methodology must start with evaluating mental skills to assess the real mental needs of athletes. On the other hand, differences within and among individuals constitute another field of research in sports psychology, which encourages the mental coach to consider these elements to

allow each athlete to make the best of their potential. At this level, an important question should be asked: can gender be considered an essential element in assessing and developing specific mental skills?

The difference between women and men in physical practice is well established and, by extension, therefore, also in mental skills. Several studies have attempted to highlight this distinction by studying the effect of gender on the acquisition of mental skills, such as Russell (2021) and Nicholls (2009), which focused on similarities and possible differences between females and males concerning mental skills. Results showed a significant relationship between mental toughness and gender. In contrast, the studies conducted by Kruger & Pienaar (2014), based on the ACSI-28 questionnaire, show that there are no differences between males and females. Contrary to this result, the study by Du Plessis et al., (2019) states that males have higher averages than females in the different mental skills measured.

Güleri & Erhan (2017) examine these differences in mental skills according to gender and sports practices experience. The results show that no significant difference exists between females and males in the mental skills measured. Sarikabak (2020) states that boys are stronger mentally than girls in the same context.

This study aims to provide an overview of the mental skills of Tunisian athletes based on gender variables. We hypothesize that there are differences between females and males in mental skills. We want to clarify that the gender variable is not the focus of this study. We are not interested in the effect of gender on mental skills, but rather in presenting the level of mental skills of females compared to males.

## 2. METHODS

### 2.1. Participants

Our sample consists of 300 volunteer athletes (136 girls and 164 boys) with an average age of 17 years ( $M=17$ ,  $ET=0.79$ ). Participants have participated regularly in national competitions, and they practice, on average, five days a week. These subjects have practiced their sports specialty for an average of  $7.05 \pm 2.39$  years, in general.

### 2.2. Instruments Collection Data

We used the Arabic version of the OMSAT-3 questionnaire (Guelmami et al., 2015). This questionnaire evaluates twelve mental skills classified as follows: basic skills (goal setting, self-confidence, engagement), psycho-somatic skills (stress response, fear control, relaxation, activation), cognitive skills (concentration, distraction control, imagery, mental practice, competitive planning). Scores consist of the averages of self-evaluations on a 7-point Likert scale. The score may, therefore, vary from 12 to 84, at most.

### 2.3. Statistical Analysis

Descriptive statistics were applied to determine the characteristics of participants and were expressed as means, standard deviation, frequency, and percentage (%). An independent sampling t-test was used to compare the level of mental skill between males and females. The significance level ( $p < 0.05$ ) was accepted in the analysis.

## 3. RESULTS

Table 1 presents the descriptive statistic for the study's sample. A total of 300 athletes responded to the OMSAT survey. 164 were males (54.6%), and 136 were females (45.4%). Regarding the age variable, the participant was distributed in three categories: 16-18 years (20.7%), 18-20 years (52%), and over 20 years (27.3%). 71% of the participants practice team sport (volleyball, handball, basketball), and only 32.4% are professional.

**Table 1.** Descriptive statistics

	Variables	n	%
gender	Males	164	54.6%
	Females	136	45.4%
Age	16-18	61	20.7%
	18-20	156	52%

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	>20	83	27.3%
Type of sport	individual	87	29%
	collective	213	71%
Level of sport	amateur	203	67.6%
	professional	97	32.4%

Table 2 summarizes averages of scores in 12 mental skills for females and males. Three abilities were measured concerning fundamental mental skills: goal setting, self-confidence, and commitment. The results of the statistics analysis present contradictory scores. For goal setting, females and males present very close scores, and no significant differences are noted.

**Table 2.** Comparison of the mental skill based on gender variables

Variables		Gender	Mean	S.T	min	max	p
Basic Skills	Goal setting	Male	20.2	5.06	16	22	0.12
		Female	20.5	4.58	15	21	
	Self-confidence	Male	15.30	2.69	11	21	0.00**
		Female	14.3	1.61	12	16	
	commitment	Male	13.30	3.2	11	21	0.01**
		Female	14.7	1.79	13	18	
Psycho-somatic skills	Stress response	Male	15.2	2.98	11	19	0.00**
		Female	20.7	3.22	12	22	
	Relaxation	Male	17.50	3.11	11	22	0.04*
		Female	19	2	16	22	
	Fear Control	Male	13.30	2.57	11	18	0.02*
		Female	14.8	3.19	10	20	
	Activation	Male	15.7	3.68	13	18	0.02*
		Female	19.3	2.31	13	21	
Cognitive Skills	Focusing	Male	19.30	3.85	15	22	0.03*
		Female	18.5	2.58	22	25	
	Imagery	Male	13.60	3.75	6	20	0.01**
		Female	12.40	4.36	6	19	
	Competition plan	Male	21.3	2.83	12	22	0.01**
		Female	18.6	3.26	10	18	
	Mental practice	Male	17.9	3.59	9	19	0.01**
		Female	21	4.14	12	21	
	Re-focusing	Male	13.20	2.36	9	17	0.69
		Female	13.5	3.75	8	18	

Regarding self-confidence, the values show that females ( $14.3 \pm 1.61$ ) present a lower level than boys ( $15.30 \pm 2.69$ ), with significant differences between them in favor of males. In contradiction, females show higher scores (14.7) in commitment than males (13.30); a significant difference was noted ( $P=0.01^{**}$ ).

Second, order, four mental skills were measured for psycho-somatic abilities: stress reactions, relaxation, fear control, and activation. A significant difference was observed between females and males for all three mental skills, favoring females. However, girls have a higher level of stress (20.7) than boys (15.2) with  $P=0.00^{**}$ . In contrast, females maintain a better level of relaxation than males (9 vs. 17.5,  $P=0.04^*$ ); they have better fear control than males (14.8 vs. 13.30,  $P=0.02$ ), and better control of the level of activation (19.3 vs. 15.7,  $P=0.02^*$ ).

Concerning cognitive skills, five mental aptitudes were evaluated: focusing, imagery, competition planning, mental practice, re-focusing. In contrast with their psycho-somatic abilities, males seem stronger mentally. We observe a higher score for boys than girls in focusing (19.30 vs. 18.50,  $P=0.03^*$ ), in imagery (13.60 vs. 12.40,  $P=0.04^*$ ) and finally, in competition planning (21.3 vs. 18.6,  $P=0.01$ ) however, girls exhibit a higher score in mental practice than males in mental practices (21 vs. 17.4,  $P=0.01$ ). For refocusing, females and males have a similar average, and no significant differences were observed.

## 4. DISCUSSION

The main objective of this study was to assess mental skills by gender in Tunisian athletes to identify the differences between the two genders. This assessment will certainly help to better plan of mental

training to meet the needs of each athlete. Given the physical and psychological differences in the practice of different sports specialties, we assumed that there is a difference between girls and boys in the mental skills assessed. We use the Mental Skills Assessment Questionnaire (OMSAT-3) to examine the study's hypothesis. This survey measures mental skills according to a specific classification: fundamental mental skills, psycho-somatic mental skills, and cognitive skills. This classification has allowed us to compare the skill levels of females and males. Studies have agreed that males are more ferocious, courageous, and physically stronger than females in sports psychology literature (Du Plessis et al., 2019, Güleri & Erhan, 2017, Sarikabak 2020). Naturally, they are more confident, more rigorous, and, above all, control their emotions much better than girls.

However, the results obtained in this study contradict these findings and show that women athletes have a higher level than men in five mental skills (commitment, relaxation, fear control, activation, mental practice), out of 12 skills measured. Such results should be explained by reference to cultural aspects and gender stereotypes, knowing that gender stereotypes are present in the appreciation of the physical appearance of men and women. According to the stereotype, women are weaker and therefore need to train harder for competitive sport. She must use bodybuilding exercises to have a toned muscular body. Of course, Comparisons with the opposite gender often cause women to feel like they need to prove themselves as athletes.

However, these results contradict Du Plessis and al. (2019), which indicates that, although females and males compete in the same kind of competition with the same level of difficulty, the male's mental skill level is higher than the female's. The author explains this by the emotional and psychological emotional fragility of females. Still, some studies indicate no differences between males and females in mental skills (Güleri, & Erhan, 2017, Güleri, & Erhan 2017). These studies explain that athletic performance requires the same level of mental engagement, regardless of gender.

On the other hand, this study highlights the divergence in levels of mental ability between males and females. For example, females are more stressed than males, but they can control this stress. Sarikabak (2020) confirms this result and indicates that females are much more concerned than males about athletic performance, and, therefore, are much more stressed. In his opinion, Du Plessis et al., (2019) assert that the stress level relates to the athlete's personality and level of practice. In the case of this study, we justify these claims with the fact that sport in Tunisia is male-dominated, and that male athletes are treated with greater respect than women. A woman has to double her effort to be on par with her male colleagues, which means a higher stress level. Despite this high stress level, female athletes control their reactions much more than men, even having higher relaxation capacities. To this is added a better ability for mental practice. Nicholls (2009) explains that females appear to be more stressed than males. However, they have a very high capacity for self-control, much better in several situations than men, and they can use this to enter a calmer state of mind more quickly.

However, males seem more confident than females. They also plan competition and focus on athletic performance better than females. This result was certified by Sarikabak (2020), who explained that girls, generally, are more emotional than boys. Moreover, boys tend to be more physically suited to sport and are quicker to master skills associated with sports, which gives them much confidence in their physical and technical potential and, therefore, a lot more confidence in themselves.

Considering the results in this study and the previous research cited, it is evident female athletes are more capable, concerning mental skills. Females are more practiced at setting goals, have the best capacity for mental practice and have better control of stress. Males are more focused on performance and prepare better than females their competition.

## 5. CONCLUSION AND RECOMMENDATION

Psychological and mental support personalized to the individual, as opposed to general conditioning exercises, is also beneficial to the athlete's autonomy and self-control. This action prevents the athlete from analyzing, anticipating, and even adjusting his actions, according to the course of events. The results of this study, in the context of Tunisian sport, give coaches a scientific method that would let them improve the performance of amateur and professional athletes. We call for a questioning of training methods, where the coach has complete authority over the athlete. Mental preparation is a critical element in athletic performance.

Moreover, the content of this action must not be the same for all. This study showed that there are differences between females and males. Assessing each athlete's psychological needs and mental skills to build a mental intervention adapted to their potential will be interesting. We should explore how different factors, athletic, psychological, and mental, can affect performance. Finally, mental coaches must give particular attention to the differences in mental skills between males and females in their psychological and mental support.

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