

Sports Type and Gender Influence on Mental Skills Among Elite Players

Vivek Kumar Mishra^{1*}, Sandeep Tiwari², Sandhya Tiwari³, Neha kumari⁴

^{1,2,3,4}Indira Gandhi Institute of Physical Education & Sports Sciences, University of Delhi, India

Email: Vivek76971@gmail.com

*Corresponding Author

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Abstract

This study, titled Sports Type & Gender Influence on Mental Skills Among Elite Players, examines the effectiveness of the Ottawa Mental Skills Assessment Tool (OMSAT-3) in assessing Indian athletes. The research focused on how sport type (golf vs. cycling) and gender influence mental skills among elite golfers and cyclists at the 37th National Games in Goa, India. A two-way ANOVA analyzed the effects on foundational (goal setting, commitment, confidence), psychosomatic (stress and fear control, relaxation, energizing), and cognitive skills (focusing, imagery, refocusing). Key findings indicate that golfers showed higher confidence ($p < 0.01$), better stress ($p = 0.01$) and fear control ($p < 0.001$), while cyclists excelled in relaxation ($p = 0.01$), energizing ($p < 0.001$), imagery ($p < 0.01$), and mental practice ($p = 0.02$). Minimal gender differences were observed, emphasizing the importance of sport-specific psychological training.

keywords: foundational skills, psychosomatic skills, cognitive skills mental training, omsat-3, sport psychology, gender differences, athletic performance.

INTRODUCTION

In competitive sports, where athletes often have similar physical abilities, mental skills are increasingly recognized as key differentiators among elite performers. Psychosomatic skills—those integrating the mind and body—are crucial for athletes striving to achieve peak performance. These skills, including stress control, relaxation, fear control, and energizing, significantly impact an athlete's capacity to perform under pressure. Research has consistently demonstrated the importance of these mental skills in enhancing sports performance, particularly in high-pressure environments (Durand-Bush, Salmela, & Green-Demers, 2001; Andrew, Grobbelaar, & Potgieter, 2007).

For instance, stress control involves the regulation of both physiological and psychological responses to stressors, enabling athletes to maintain composure and perform consistently under competitive pressure (Morris, Koehn, & Morris, 2004). Relaxation techniques help reduce tension and anxiety, fostering a state of calmness that is essential for both mental and physical readiness (Harris & Harris, 1984; Nideffer, 1985). Fear control, or the ability to manage fear without avoiding perceived threats, is critical for addressing performance anxiety and maintaining focus during crucial moments (Orlick & Partington, 1988; Macnamara & Collins, 2013). Additionally, energizing strategies, which involve activating and sustaining physical and mental energy, are vital for maintaining optimal arousal levels during competition (Durand-Bush & Salmela, 1995; Gould, Dieffenbach, & Moffett, 2002).

The Ottawa Mental Skills Assessment Tool (OMSAT-3), developed by Durand-Bush and colleagues (2001), has been widely used to assess psychosomatic and other mental skills among athletes. The tool categorizes mental skills into Foundation Skills, Psychosomatic Skills, and Cognitive Skills, providing a comprehensive evaluation of an athlete's mental competencies. The OMSAT-3 has been validated in various cultural contexts, including research conducted on athletes in Iran (Salmela et al., 2009) and Romania (Craciun, Dobosi, Loan, & Prodea, 2008). This instrument has proven reliable and effective in identifying areas for mental skills training, making it an invaluable resource for coaches and sport psychologists alike.

The significance of mental skills in sports is further supported by numerous studies examining the psychological characteristics of successful athletes. For instance, Gould and colleagues (1993a, 1993b) identified coping strategies and stress management as critical factors in the success of national champion figure skaters. Similarly, research by Mahoney, Gabriel, and Perkins (1987) highlighted the role of psychological skills in achieving exceptional athletic performance, suggesting that mental preparation is as crucial as physical training. The development of these skills is often facilitated through structured

mental skills training programs, which have been shown to enhance both individual and team performance across a range of sports (Calmels et al., 2003; McCaffrey & Orlick, 1989).

This research aims to delve deeper into the role of psychosomatic skills in sports performance, employing the OMSAT-3 as the primary assessment tool. By exploring the relationship between these skills and athletic success, this study seeks to provide further insights into the psychological factors contributing to elite performance, with the goal of enhancing mental skills training practices in competitive sports.

Purpose and Objectives of the Study

The primary objective of this study was to analyze Foundational Skills, Psychosomatic skills, and Cognitive Skills among golfers and cyclists participating in the 37th National Games in Goa, India. Utilizing the OMSAT-3, the study aimed to evaluate and compare the mental profiles of athletes from these distinct sports. Understanding the differences and similarities in mental skills between golfers and cyclists will provide valuable insights into their mental profile needs and strengths. This analysis is intended to aid coaches and sports psychologists in developing targeted mental training programs, enhancing the effectiveness of mental skills training, and ultimately leading to improved performance and competitive success.

MATERIALS & METHODS

The OMSAT-3 was used to assess the Foundational Skills, Psychosomatic skills, and Cognitive Skills. The questionnaire examined 12 mental skills in three categories: 1) Foundation skills, including goal setting, commitment, and confidence, 2) Psychosomatic skills, including fear control, relaxation, energizing, and stress reaction, and 3) Cognitive skills, including focus, refocus, mental practice, imagery, and competition planning (Durand-Bush, 1995). The reliability and validity of the questionnaire were measured in Iran and approved by the researchers

RESULT

To compare groups (Cycling and Golf National players) and genders on Psychosomatic skills scores, a two-way analysis of variance was conducted with gender and group as independent variables and Foundational skills as dependent variable.

Table 1. Comparative Analysis of Foundational Skills Between Male and Female Golfers and Cyclists

Foundational Skills Variables	Groups	Golf (M)	Golf (SD)	Cycling (M)	Cycling (SD)
Goal Setting	Male	24.62	3.07	24.10	3.23
	Female	23.00	3.50	24.20	3.06
Commitment	Male	25.77	2.38	23.10	3.07
	Female	25.07	3.17	23.57	3.66
Confidence	Male	24.38	3.57	23.90	3.11
	Female	23.27	2.60	23.67	3.52

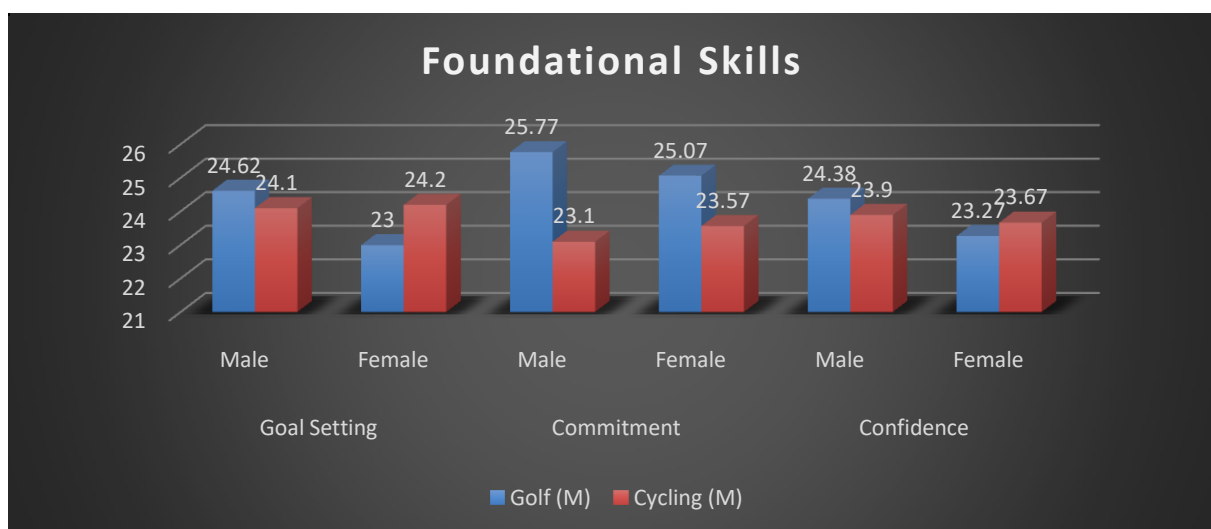


Fig.1 Graphical representation of table 1 Mean and standard deviations for Foundational skills (Cycling and Golf National players)

In Table No. 1, the analysis of foundational skills between national golfers and cyclists reveals notable distinctions. Male golfers generally outperform their cycling counterparts in goal setting, commitment, and confidence. Conversely, female cyclists excel in goal setting and confidence compared to female golfers. These findings indicate that while male golfers exhibit stronger commitment, female cyclists display superior skills in goal setting and confidence, albeit with greater variability in their scores. The data suggest that sport type significantly influences foundational skills, with golfers showing more consistent commitment and cyclists demonstrating higher levels of goal setting and confidence.

Table 2. Two-Way ANOVA for Foundational Skills (Cycling and Golf National Players)

Foundational Skills Variables	Source	Sum of Squares	df	Mean Square	F	Sig.
Goal Setting	Gender	10.12	1	10.12	0.975	0.32
	Sports	2.06	1	2.06	0.199	0.65
	Gender * Sports	12.96	1	12.96	1.250	0.26
Commitment	Gender	8.04	1	8.04	0.751	0.38
	Sports	0.03	1	0.03	0.003	0.95
	Gender * Sports	3.44	1	3.44	0.322	0.57
Confidence	Gender	0.24	1	0.24	0.023	0.87
	Sports	76.60	1	76.60	7.282	0.00**
	Gender * Sports	6.02	1	6.02	0.573	0.45

Analysis Summary

- 1. Goal Setting:** Neither gender ($p = .32$) nor sport type ($p = .65$) significantly affects goal setting. The interaction between gender and sport is also not significant ($p = .26$).
- 2. Commitment:** Gender ($p = .38$) and sport type ($p = .95$) do not significantly influence commitment. The interaction between gender and sport is also not significant ($p = .57$).
- 3. Confidence:** Sport type significantly affects confidence ($p < .01$), while gender ($p = .87$) and the gender-sport interaction ($p = .45$) do not.

Table 3. Means and Standard Deviations for Psychosomatic Skills (Cycling and Golf National Players)

Psychosomatic Skills Variables	Groups	Golf (M)	Golf (SD)	Cycling (M)	Cycling (SD)
Stress Control	Male	16.46	5.66	12.40	4.90
	Female	15.80	5.50	11.23	4.56
Fear Control	Male	18.38	5.76	13.30	6.41
	Female	17.87	5.18	10.73	4.84
Relaxation	Male	20.85	4.24	21.35	3.99
	Female	18.40	4.86	22.93	3.32
Energizing	Male	20.15	3.73	23.05	2.64
	Female	18.87	4.67	21.87	4.07

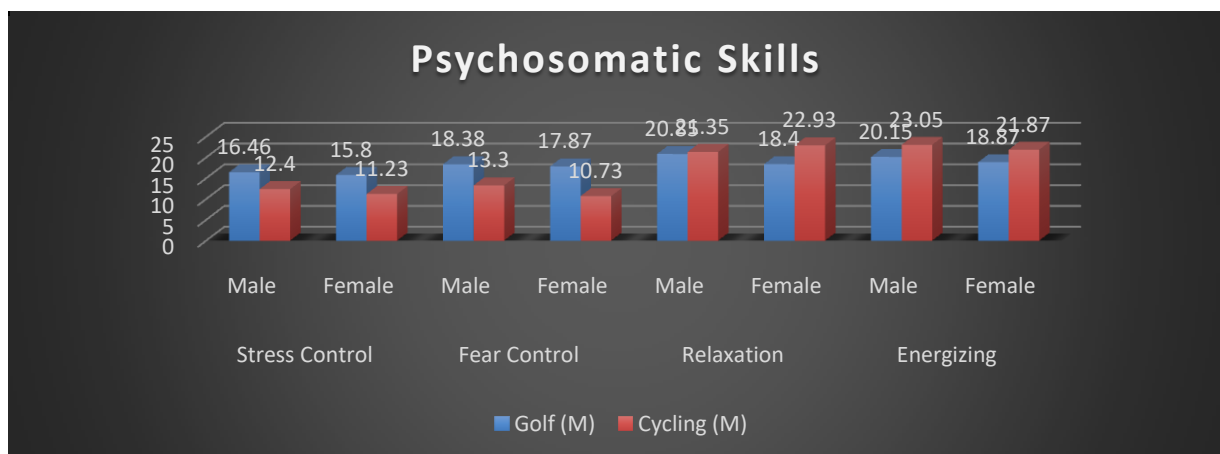


Fig 2. Graphical representation of table 1 Mean and standard deviations for Psychosomatic skills (Cycling and Golf National players)

In table no. 3, the data reveal that male golfers exhibit superior abilities in managing stress and fear compared to their cycling counterparts. Female golfers also demonstrate higher proficiency in these areas than female cyclists. Conversely, cyclists, particularly females, show greater effectiveness in relaxation and energizing. Female cyclists have notably higher relaxation scores than female golfers, while male cyclists surpass male golfers in energizing. These findings indicate that golfers are more adept at controlling stress and fear, whereas cyclists, especially females, excel in relaxation and energizing.

Table 4. Two-Way ANOVA Test for Psychosomatic Skills (Cycling and Golf National Players)

Psychological Variables	Source	Sum of Squares	df	Mean Squares	F	Sig.
Stress Control	Gender	14.72	1	14.72	0.582	0.448
	Sports	328.06	1	328.06	12.970	0.01
	Gender × Sports	1.12	1	1.12	0.044	0.83
Fear Control	Gender	41.93	1	41.93	1.380	0.243
	Sports	657.83	1	657.83	21.762	0.000
	Gender × Sports	18.49	1	18.49	0.612	0.437
Relaxation	Gender	3.28	1	3.28	0.208	0.65
	Sports	111.81	1	111.81	7.074	0.01
	Gender × Sports	71.55	1	71.55	4.527	0.03
Energizing	Gender	26.89	1	26.89	1.830	0.18
	Sports	153.20	1	153.20	10.421	0.00
	Gender × Sports	0.04	1	0.04	0.003	0.95

Analysis Summary

- Stress Control:** Sport type significantly affects stress control ($p=0.01$), while gender does not ($p=0.448$), and the gender-sport interaction is not significant ($p=0.83$)
- Fear Control:** Sport type significantly impacts fear control ($p<0.001$), with no significant effect from gender ($p=0.243$) or the gender-sport interaction ($p=0.437$).
- Relaxation:** Sport type significantly affects relaxation ($p=0.01$), gender does not ($p=0.65$), but there is a significant gender-sport interaction ($p=0.03$).
- Energizing:** Sport type significantly impacts energizing ($p<0.001$), while gender does not ($p=0.18$), and there is no significant gender-sport interaction ($p=0.95$).

Table 5. Mean and Standard Deviations for Cognitive Skills (Cycling and Golf National Players)

Cognitive Variables	Groups	Golf (M)	Golf (SD)	Cycling (M)	Cycling (SD)
Focusing	Male	18.62	4.13	14.05	6.56
	Female	19.00	5.27	12.03	5.75
Competition Planning	Male	22.77	5.41	23.70	2.97
	Female	22.93	4.48	23.23	3.13
Imagery	Male	20.23	4.69	23.05	3.00
	Female	18.67	4.57	21.93	3.84
Mental Practice	Male	22.31	3.77	22.90	2.91
	Female	20.40	5.12	22.97	3.72
Refocusing	Male	13.23	4.81	12.00	4.95
	Female	15.87	5.43	11.53	5.17

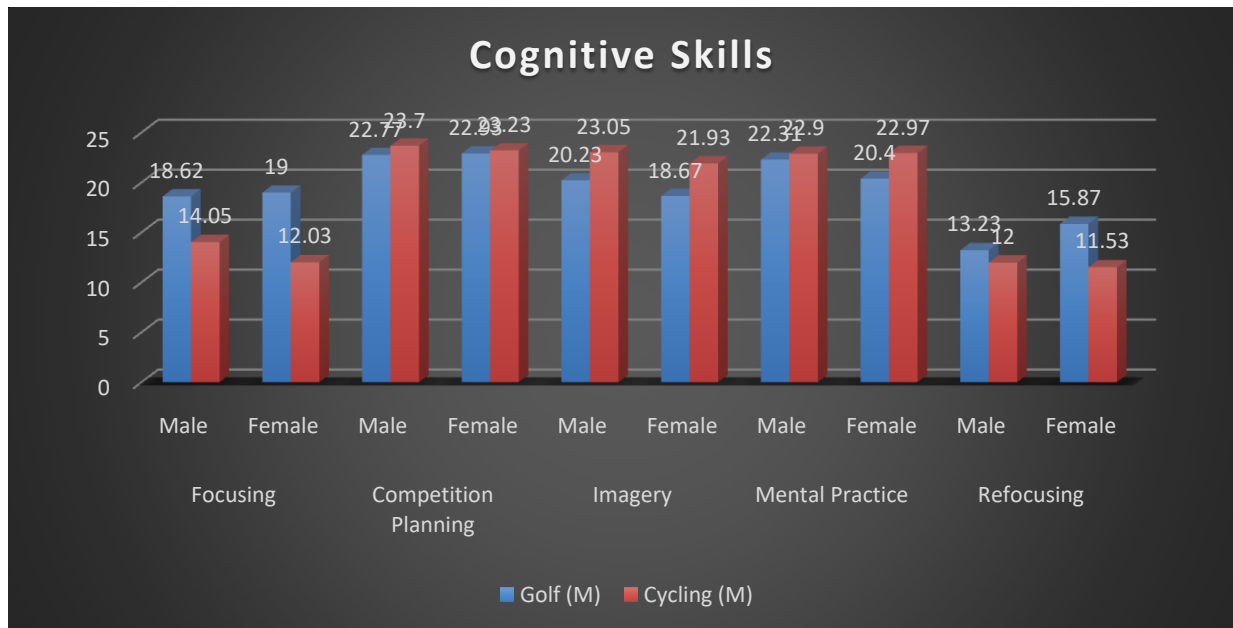


Fig 3. Graphical representation of table 5 Mean and standard deviations for Cognitive skills (Cycling and Golf National players)

In table no. 5, the data reveal that golfers generally exhibit higher focusing and refocusing abilities compared to cyclists, with both male and female golfers outperforming their cycling counterparts in these areas. Conversely, cyclists, especially males, show superior imagery skills, with female cyclists also scoring higher than female golfers. For competition planning and mental practice, scores are relatively consistent across both sports and genders. These findings suggest that golfers are more adept at focusing and refocusing, while cyclists excel in imagery, with similar performance levels in competition planning and mental practice.

Table 6. Two-Way ANOVA Test for Cognitive Skills (Cycling and Golf National Players)

Cognitive Skills Variables	Source	Sum of Squares	df	Mean Squares	F	Sig.
Focusing	Gender	11.73	1	11.73	0.366	0.54
	Sports	586.05	1	586.05	18.27	0.00
	Gender + Sports	25.41	1	25.41	0.792	0.38
Competition Planning	Gender	0.40	1	0.40	0.027	0.86
	Sports	6.67	1	6.67	0.455	0.50
	Gender + Sports	1.75	1	1.75	0.119	0.73
Imagery	Gender	31.66	1	31.66	2.026	0.15
	Sports	163.21	1	163.21	10.444	0.00
	Gender + Sports	0.88	1	0.88	0.056	0.81
Mental Practice	Gender	14.93	1	14.93	1.002	0.32
	Sports	43.97	1	43.97	2.950	0.09
	Gender + Sports	17.17	1	17.17	1.152	0.28
Refocusing	Gender	20.73	1	20.73	0.793	0.37
	Sports	136.43	1	136.43	5.216	0.02
	Gender + Sports	42.41	1	42.41	1.622	0.20

Analysis Summary

- 1. Focusing:** Sport type significantly affects focusing skills ($p < 0.01$). Gender and the interaction between gender and sport do not have significant effects ($p > 0.05$).
- 2. Competition Planning:** Neither sport type, gender, nor their interaction significantly impacts competition planning ($p > 0.05$).
- 3. Imagery:** Sport type significantly influences imagery skills ($p < 0.01$). Gender and the gender-sport interaction is not significant ($p > 0.05$).

4. **Mental Practice:** Sport type shows a trend towards affecting mental practice ($p = 0.09$), but this is not statistically significant. Gender and the interaction between gender and sport are not significant ($p > 0.05$).
5. **Refocusing:** Sport type significantly impacts refocusing skills ($p < 0.05$). Gender and the gender-sport interaction do not significantly affect refocusing ($p > 0.05$).

DISCUSSION

This study offers valuable insights into the impact of sport type and gender on foundational, psychosomatic, and cognitive skills among national cyclists and golfers. Goal setting and commitment scores show consistency across genders and sports, suggesting that these fundamental traits are influenced more by personal experience and individual characteristics than by sport-specific or gender-related factors (Locke & Latham, 2002). In contrast, confidence is significantly affected by sport type, with golfers generally displaying higher levels compared to cyclists. This indicates that the unique demands and experiences of each sport play a crucial role in shaping athletes' self-perception and confidence (Vealey, 2007).

Regarding psychosomatic skills, the type of sport significantly impacts stress control, fear control, relaxation, and energizing. Golfers outperform cyclists in stress and fear control, whereas cyclists, particularly females, show better relaxation and energizing abilities. The notable interaction between gender and sport in relaxation suggests that males and females may use different strategies for managing relaxation, emphasizing the need for gender-tailored psychological training interventions (Birrer & Morgan, 2010). These findings highlight the diverse psychological needs of athletes across different sports and suggest that training programs should be customized to address sport-specific demands and individual differences.

For cognitive skills such as focusing, imagery, and refocusing, sport type also plays a significant role. Golfers exhibit superior focusing and refocusing abilities, while cyclists excel in imagery. This supports the view that cognitive skills are closely aligned with the specific requirements and experiences of each sport rather than gender differences (Schempp et al., 2006). The minimal impact of gender on cognitive skills reinforces the notion that sport-specific factors have a more substantial influence on cognitive development.

Overall, this study underscores the importance of considering sport type when designing psychological and cognitive training programs for athletes. While gender differences are minimal, the distinct needs and characteristics associated with each sport should guide the development of targeted psychological interventions. Future research should continue to explore these dynamics to enhance the effectiveness of psychological training across various athletic contexts.

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