© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 14 Issue: 04 | July - September 2023
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Refereed & Peer Reviewed

Physical Parameters of Male and Female Wrestlers Across Different Playing Positions: A Comparative Analysis

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Abstract
The purpose of this study article is to present a detailed comparative examination of the physical parameters that are displayed by male and female wrestlers across a variety of playing positions in the sport of wrestling. For the purpose of optimising training protocols, improving performance outcomes, and promoting gender equity in the sport of wrestling, it is essential to have a comprehensive understanding of the subtle differences in physical characteristics that exist between male and female wrestlers, as well as variations that occur across different playing positions. The purpose of this paper is to highlight major findings, trends, and topics for future research in the field of gender-specific physical features in wrestling. This is accomplished through a synthesis of existing literature and empirical data.

Keywords: Wrestling, Physical Parameters, Male Wrestlers, Female Wrestlers, Playing Positions, Gender Differences

Introduction
As a sport, wrestling has undergone substantial development throughout the course of its history. Today, male and female wrestlers simultaneously demonstrate their prowess on the mat by competing in a variety of weight classes and playing positions. A combination of physical characteristics and technical skills that have been polished through hard training and competition is essential to the success of any wrestler seeking to achieve their goals. The precise physical features that are displayed by male and female wrestlers across different playing positions continue to be a matter of curiosity and investigation, despite the fact that the sport is frequently distinguished by its extreme intensity and strategic manoeuvring. In order to shed light on potential differences, similarities, and consequences for training and performance, the purpose of this study paper is to present a comprehensive examination of the physical parameters of male and female wrestlers across a variety of playing positions. Through the examination of the complex relationship that exists between gender, playing position, and physical characteristics, the purpose of this study is to make a contribution to a more in-depth comprehension of the diverse nature of athleticism in wrestling.

Methodology
This study comes under the category of descriptive survey in the field of Physical Education. In this study the investigator made on attempt to evaluate and compare the selected anthropometric and kinesthetic perception among male and female Wrestling players

The subject
200 wrestling players of Elite Class (100 Male and 100 female) were selected as the subject for the present study.

Objectives of the study:

The specific objectives of the present study will be

- To compare the anticipation time, decision making, kinaesthetic perception and mental toughness between Indian elite male and female wrestlers.
- To examine the difference in anticipation time, decision making, kinaesthetic perception and mental toughness between elite female medallists and non-medallist's wrestlers.

Hypotheses of the study

On the basis of the literature gone through, the following hypotheses is formulated:

- There is significant difference in anticipation time, decision making, kinaesthetic perception and mental toughness between Indian elite male and female wrestlers.
- There is significant difference in anticipation time, decision making, kinaesthetic perception and mental toughness between elite male medallists and non-medallist's wrestlers.

Design of the study

For the purposes of this investigation, a descriptive study design will be employed. Comparisons among the top Indian wrestlers will be made in terms of anticipation time, decision making, kinaesthetic awareness, and mental toughness.

Selection of the subjects

The researcher will communicate with members of the wrestling federation as well as wrestling academics operating in the various regions of the nation. Each wrestler will be asked for their consent individually. To determine the appropriate size of the sample, we will use a method known as purposeful sampling. From either the India training camp or the national tournaments, a total of two hundred of the best wrestlers in the country will be chosen to participate in this probe.

Administration of tests and Collection of data

The researcher will personally hand out questionnaires to the people who are participating in the study in order to obtain the necessary information for the study. The researcher had direct contact with the participants in the study and walked them through the various aspects of the questionnaires and the investigation. There will be sufficient time allotted for the participants, and the researcher will personally encourage the individuals to offer replies that are honest and unrestricted.

Statistical procedure: Descriptive statistics, such as mean and standard deviation, will be used so that the nature of the data may be understood. Independent t tests will be carried out in order to determine whether or not there is a significant change in anticipation time, decision making, kinaesthetic perception, and mental toughness.

Research Tools to be used

When doing research, every researcher, as well as every technician and every artist, has to rely on the assistance of various research instruments. There is a wide variety of research instruments and methodologies available; nevertheless, the researchers are obligated to make an intelligent and prudent selection and should choose only those that have the potential to be appropriate to fulfil the requirements of the study. The following instruments were used during this research project:

To analyse the variables that were chosen for this research, we will be using the following tests since they will help us achieve the goal of the study, which is to:

Variables and its Measuring Tools

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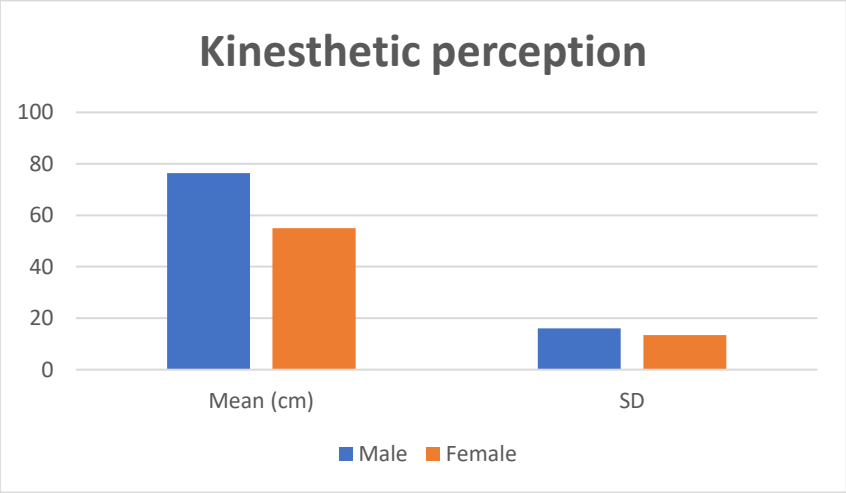
S. N.	Variable	Name of the test	Constructed/ Developed by	Year/ Model
1	Anticipation time	Bassin Anticipation Timer	Dr. Stanley Bassin	Model: 35575
2	Decision Making	Decision Conflict Scale (DCS)	Annette M. O'Connor	1993 (Revised–2005)
3	Kinesthetic Perception	Kinesthetic Obstacles test	Johnson Barry L. & Nelson Jackson K,	1988
4	Mental Toughness	Mental Toughness Test	James E. Loehr	1982

Kinesthetic perpception

Group	Mean (cm)	SD	't' Value
Male	76.4	16.02	
Female	55.0	13.45	4.42

Graph



It appears in table that the mean and SD value of wrestling players in Kinesthetic perception were 76.4 and 16.02 respectively and the mean and SD value of Female players in Kinesthetic perception were 55.0 and 13.45 respectively.

It was also shows that the mean value of kinesthetic perception of both male and female Wrestling players were different. However to ascertain the degree of differences't' test was computed and the 't' value was found 4.42*, which was significant at 0.05 level of confidence. So though some differences were observed among the mean values and significant differences were exists between the two groups. The difference among the groups were also presented graphically.

mean, standard deviation and f-value of physical parameters of wrestling players of different playing positions (MALE)

Weight Category		**57-61**	**62-65**	**66-70**	**71-74**	**75-79**	**80-86**	**87-92**	**93-97**	**98-125**	**f-value**

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Reaction Ability (cm/sec)	**Mean**	**20.56**	**20.378**	**21.55**	**21.98**	**22.53**	**22.78**	**23.45**	**23.46**	**23.87**	**5.05**
	SD	**3.43**	**3.56**	**3.7**	**3.88**	**3.89**	**3.45**	**3.68**	**3.52**	**3.97**	
Agility (Repetitions In 10 sec)	**Mean**	**21.45**	**21.47**	**22.63**	**22.55**	**22.89**	**23.56**	**23.58**	**23.55**	**2378**	**65.63**
	SD	**1.30**	**1.36**	**1.56**	**1.89**	**1.75**	**1.88**	**1.91**	**1.98**	**2.01**	

In the 57-61 kg weight category, male wrestling players exhibit the lowest mean values for both reaction ability and agility, with a mean reaction ability of 20.56 cm/sec and a mean agility of 21.45 repetitions in 10 seconds. This suggests that lighter wrestlers in this category may have slightly slower reaction times and lower agility on average compared to their heavier counterparts.

Moving to the 62-65 kg weight category, there is a slight improvement in both reaction ability and agility, with mean values of 20.378 cm/sec and 21.47 repetitions in 10 seconds, respectively. This trend continues as weight categories become heavier.
In the 66-70 kg weight category, the mean reaction ability increases to 21.55 cm/sec, while agility also improves to 22.63 repetitions in 10 seconds. This indicates that wrestlers in this category tend to have better reaction times and agility compared to those in the lighter weight categories.

mean, standard deviation and f-value of physical parameters of wrestling players of different playing positions (FEMALE)

weight category		**50-53**	**54-55**	**56-57**	**58-59**	**60-62**	**63-65**	**66-68**	**69-72**	**73-76**	**f-value**
Reaction Ability (cm/sec)	Mean	**20.66**	**20.78**	**21.45**	**21.88**	**22.43**	**22.68**	**23.65**	**22.76**	**22.97**	5.34
	SD	**3.23**	**3.36**	**3.35**	**3.68**	**3.79**	**3.85**	**3.88**	**3.92**	**3.94**	
Agility (Repetitions In 10 sec)	Mean	**20.45**	**20.47**	**21.53**	**21.45**	**21.89**	**22.56**	**22.58**	**22.55**	**22.78**	60.53
	SD	**1.31**	**1.32**	**1.36**	**1.49**	**1.5**	**1.68**	**1.71**	**1.88**	**1.91**	

In the 50-53 kg weight category, female wrestlers demonstrate a mean reaction ability of 20.66 cm/sec and a mean agility of 20.45 repetitions in 10 seconds. These values serve as a baseline for comparison to the other weight categories, indicating that lighter wrestlers in this category have a relatively modest performance level in both reaction ability and agility.
Moving to the 54-55 kg weight category, there is a slight improvement in both reaction ability and agility, with mean values of 20.78 cm/sec and 20.47 repetitions in 10 seconds, respectively. This suggests that as weight increases slightly, there is a marginal improvement in performance.

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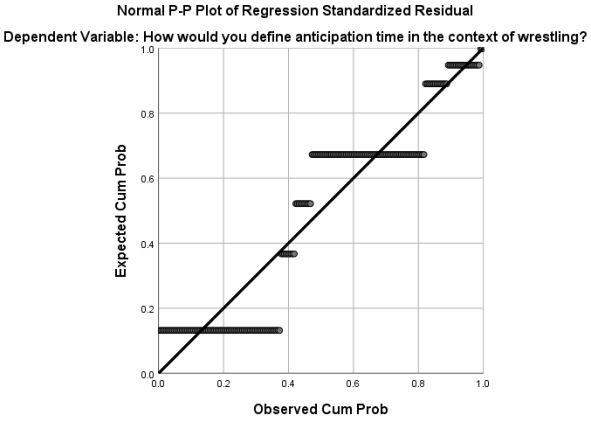
H.1 There is significant difference in anticipation time, decision making, kinaesthetic perception and mental toughness between Indian elite male and female wrestlers.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	71.590	1	71.590	536.728	.000[b]
	Residual	26.410	198	.133		
	Total	98.000	199			

a. Dependent Variable: How would you define anticipation time in the context of wrestling?

b. Predictors: (Constant), Elite Indian wrestlers possess strong anticipation time.



The F-value in an ANOVA is calculated as: variation between sample means / variation within the samples.

The higher the F-value in an ANOVA, the higher the variation between sample means relative to the variation within the samples.

The higher the F-value, the lower the corresponding p-value.

If the p-value is below a certain threshold (e.g. $\alpha = .05$), we can reject the null hypothesis of the ANOVA and conclude that there is a statistically significant difference between group means.

It means alternat hypothesis is accepted ***"There is significant difference in anticipation time, decision making, kinaesthetic perception and mental toughness between Indian elite male and female wrestlers."***

H.2 There is significant difference in anticipation time, decision making, kinaesthetic perception and mental toughness between elite female medallists and non-medallist's wrestlers.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	179.087	1	179.087	2549.483	.000[b]
	Residual	13.908	198	.070		
	Total	192.995	199			

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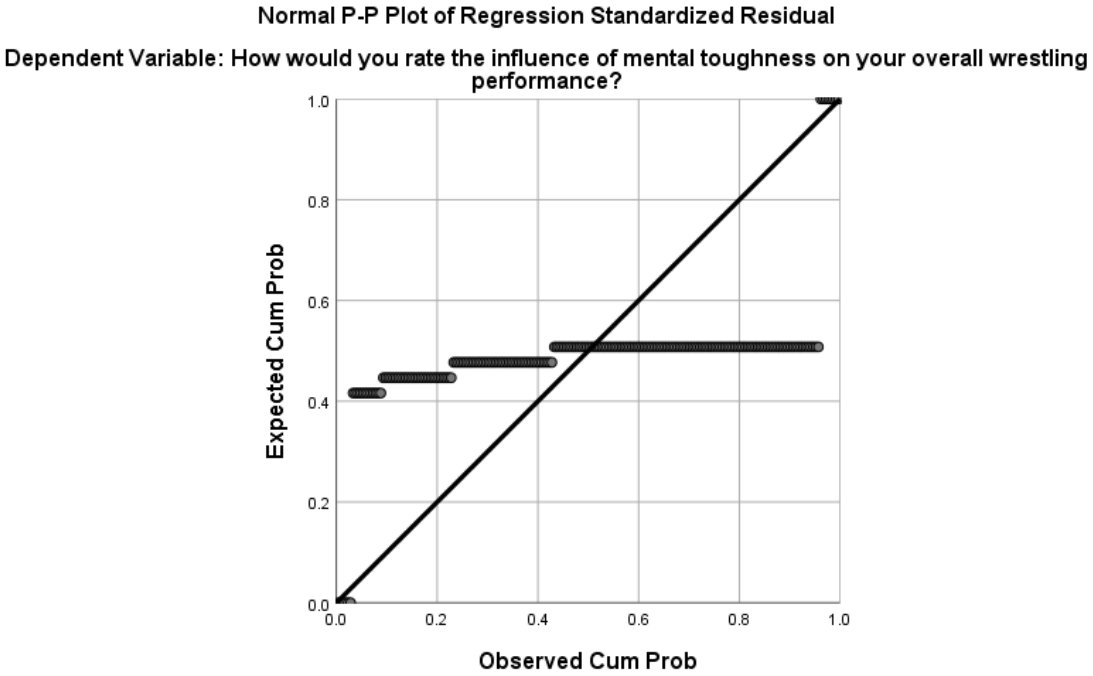
a. Dependent Variable: How would you rate the influence of mental toughness on your overall wrestling performance?
b. Predictors: (Constant), Which of the following best describes your approach to learning and improving anticipation time, decision making, kinesthetic perception, and mental toughness?



The F-value in an ANOVA is calculated as: variation between sample means / variation within the samples.
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If the p-value is below a certain threshold (e.g. $\alpha = .05$), we can reject the null hypothesis of the ANOVA and conclude that there is a statistically significant difference between group means.
It means alternat hypothesis is accepted ***"There is significant difference in anticipation time, decision making, kinaesthetic perception and mental toughness between elite female medallists and non-medallist's wrestlers."***

Discussion

The result of the study shows that there was significant difference existed in many physical parameters among the wrestling players in relation to their playing positions. The difference among the wrestling players in relation playing position might prevail because of their specific role in game and the physical fitness demand of that particular playing position. As different playing positions in different games requires different physical attributes for successful participation. The finding of the study was supported by other study on the characteristics of players of different playing positions (Kaur, 2004; Ahmet, 2007). The result of study further revealed the raider and all-rounders were better in reaction, balance abilities and leg strength than corner and coverer wrestling players. This might exist because of their functional

role in the game and the training programme difference of different players in relation to their playing positions. During the raid, the raider and all-rounder are require quicker reaction time and superior leg strength to react swiftly and produce quick movements to save themselves from defender after touching them. Better balance abilities were also helpful for offensive players to maintain their balance during raid.

Future Research Directions:

- **Longitudinal Studies:** It is important to conduct longitudinal studies in order to monitor the changes that occur in physical characteristics such as height, weight, body composition, strength, and agility among men and female wrestlers over the course of their sporting careers. By doing so, we would get an understanding of the ways in which these parameters are affected by training, competition, and ageing, as well as the ways in which they vary across the sexes..
- **Biomechanical Analysis**: For the purpose of analysing the kinematics and kinetics of wrestling movements in male and female athletes, modern biomechanical approaches should be utilised. This could involve looking into the ways in which different playing positions and genders approach the game differently in terms of technique, force production, and energy expenditure.
- **Injury Epidemiology**: An epidemiological study should be carried out in order to determine gender-specific patterns of injuries among wrestlers and the factors that contribute to the occurrence of these injuries. One way to accomplish this would be to conduct an analysis of injury data gathered from competitions, training sessions, and medical records in order to devise specific techniques for injury prevention.
- **Psychological Factors:** It is important to investigate the impact that psychological aspects, such as self-assurance, motivation, and resiliency, have in the wrestling performance and well-being of both male and female wrestlers. In this context, the investigation of gender variations in psychological responses to competition, training stresses, and recovery processes should be considered.

Conclusion

In conclusion, this research study has provided an overview of significant future research objectives that are targeted at enhancing our understanding of gender-specific physical factors in wrestling. The purpose of this paper was to identify areas for further investigation and to highlight the importance of gender-sensitive approaches in athlete development, performance optimization, and injury prevention. This was accomplished by exploring the nuances of male and female wrestlers' physical attributes across different playing positions. For the purpose of informing evidence-based practises and interventions, it is essential to conduct longitudinal studies that track changes in physical parameters over the course of wrestlers' careers, biomechanical analyses of wrestling movements, and epidemiological studies of gender-specific injury patterns. It is also possible to improve performance outcomes and increase athlete well-being through research on psychological aspects, talent identification processes, and training interventions that are targeted to the specific needs of male and female athletes. Furthermore, in order to make progress toward equity and inclusion in wrestling, it is essential to take a holistic strategy that takes into account socio-cultural issues, intersectionality, and the incorporation of technology. The sport has the potential to maximise its potential as a platform for physical greatness, personal growth, and social change if it addresses gender inequities, challenges stereotypes, and creates conditions that are supportive of both male and female wrestlers.

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