

An Enquiry of Physical and Mental Skills between Indian and Foreign Soccer Players

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Abstract

Objective: The aim of this study is to compare the physical and mental abilities between Indian and foreign soccer players. **Methods:** As for the study methodology, 90 male soccer players were recruited for this study, 30 of them were from India and 60 were from foreign countries. Only defensive and attacking positional Soccer players were selected for this study. All Indian soccer players who have participated only for the national soccer team and who have their own FIFA (Federation International Football Association) rankings were only selected for the study. Foreign soccer players who were selected for the study were from different countries and who also have their own FIFA (Federation International Football Association) rankings. **Results:** Two soccer performance factors namely physical and mental Skills were considered for this study. Mental skills were measured with the help of aggression response; assist position, interception, vision and composer skills whereas Physical skills were measured with the help of acceleration, stamina, strength, balance, sprint speed, agility and jumping skills. Secondary data has been used for this study. The Student's 't' test statistics was applied to check the existence of significant differences between Indian and Foreign male soccer players. **Conclusion:** In conclusion, significant differences were observed across all physical and mental abilities in favour of foreign soccer players.

Keywords: Physical abilities, mental abilities, Soccer players.

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INTRODUCTION

According to FIFA ((Federation International Football Association)), soccer is a global sport, and it mainly involves kicking the ball to score goals. Running, running, jumping and changes in direction are important performance factors that require maximal strength and anaerobic power of the neuromuscular system (Klok *et al.*, 2016). Sports scientists put a great deal of effort into finding effective ways to identify physical characteristics that influence sports performance. Some of the objectives of soccer agility training include increased strength, balance, speed and coordination. Physical ability tests are one of the common methods of assessing athletic prowess (Chu and Vermeal, 1983). Soccer coaches and conditioning specialists use agility tests to diagnose specific weaknesses, screen for potential health risks that can arise from strenuous exercise, provide data for outlining individual exercise prescriptions, and training duration. (Altug *et al.* 1987).

Sports and exercise scientists involved in soccer research are investigating the many factors that contribute to a player's performance (Ray *et al.*, 2012). A soccer player must develop muscular strength, stamina (Greco *et al.*, 2012), speed, speed endurance, agility (Polman *et al.*, 2004) and flexibility. However a much cited global indicator of the physical demands of football has been suggested to be the total distance covered by a player during a match.

Reilly *et al.* (1990) proposed that body composition played an important role in the fitness of soccer players. Soccer is characterized by intermittent activity ranging from running to running, thus it is essential to understand the physical demands of the sport. Football is a fitness demanding sport. Soccer specific fitness training is essential in addition to soccer skills training to prepare young football players to become professional players in the future. Agility, speed and lower limb muscle strength relative to body weight are important physical abilities for soccer players

to compete in the sport. Specific training that improves agility, speed and muscular strength is beneficial to them. However, some fitness elements will be of high priority for the youth.

Speed and agility represent complex psychomotor skills in team sports. They involve moving the body as quickly as possible, but agility has the added dimension of changing direction. Momentum is classically defined as the shortest time required for an object to move along a certain distance, which is the same as velocity, but without specifying a direction. (Harman & Garhammer, 2008).

Soccer is a game of speed, skills, and endurance. Receivers and running backs need the ability to accelerate quickly for success in their positions. Working to increase speed is important, but they also need to learn to accelerate using proper form, technique, and mechanics. Acceleration is not something that soccer players only work on occasionally, but is something that should be a part of their everyday workout and training routine. Making acceleration an instilled action will immediately improve a player's performance (<https://myosource.com/acceleration/>.23.08.21).

With this view in mind, the present researcher was of the opinion that not only physical factors but also mental factors are equally important for elite soccer players. Hence the researcher has undertaken this study entitled "*An Enquiry of Physical and Mental Skills between Indian and Foreign male Soccer Players*".

MATERIAL AND METHODS

Subjects

The study was descriptive survey type. Thirty Indian male soccer players (N=30) and Sixty foreign male soccer players (N=60, from different countries) were selected for this study, whose age ranged from 22 to 32 years. Indian soccer players who performed only for the Indian national soccer team and foreign soccer players who also performed only for their own national soccer team as well as participated in different Soccer League were only selected for the study.

TEST/TOOLS

Mental skills: Mental skills were measured with the help of Aggression Reaction, Assist Position, Interception, Vision and Composure skill.

Physical skills: Physical abilities were measured with the help of Acceleration, Stamina, Strength, balance, Sprint speed, agility and jumping skill.

SCORING SYSTEM

The researcher has used secondary data for this study. The data is collected from the official website of FIFA (Federation International Football Association). EA (Electronic Arts Sports Network) Sports employs a team that is responsible for ensuring that all player data is up to date, while a community of over 6,000 FIFA data reviewers or talent scouts from around the world is constantly providing suggestions and changes to the database. They carefully observe what happens on the pitch to assess, assess and evaluate players with more than 30 characteristics that define a football player's skill level. Their assessments come together to form a FIFA rating (<https://www.ea.com/games/fifa/fifa-21/ratings.13.07.21>).

Once this group submits opinions on this or that player, their feedback is obtained through a secure EA (Electronic Arts Sports Network) Sports website. This data is then handled by 300 editors, who organize it into 300 fields and 35 attribute categories. The EA uses this subjective feedback in conjunction with its own statistics (obtained from other agencies) to determine the rating. FIFA Ultimate Team gives players upgrades during Team of the Week following stand-out performances and then refreshes the overall ratings in January and February each year (<https://www.vg247.com/2016/09/27/how-ea-calculates-fifa-17-player-ratings/.13.07.21>).

RATING RANGE

Player Attributes are rated from 0 to 99. The higher value results the better quality for the attribute. Below is the info graphic that shows the quality level for the player attribute ratings. Players with higher physical attributes will perform better on-field, often dominating the course of a match in the game.

	0-39	40-49	50-59	60-69	70-79	80-89	90-99
QUALITY	RATING RANGE						
Excellent		90-99					
Very Good		80-89					
Good		70-79					
Fair		60-69					
Poor		50-59					
Very poor		40-49					

(Source: <https://www.fifplay.com/encyclopedia/player-attributes/.13.07.21>)

RESULTS AND DISCUSSION

Student t' test statistics was applied to investigate the existence of significant difference of

physical and mental abilities between Indian and foreign soccerplayers.

Table-1: Mean, Standard Deviation and 't'ratio of Height, Weight and Age of Indian and Foreign soccer players

Variable	Test	Subject	Mean	Variance	SD	't' value
Height (cm)	Indian Soccer Players	30	178.53	41.58	6.44	2.61*
	Foreign Soccer Players	60	182.26	40.36	6.35	
Weight (kg)	Indian Soccer Players	30	73.36	31.09	5.57	3.02*
	Foreign Soccer Players	60	77.86	50.81	7.12	
Age (years)	Indian Soccer Players	30	31.53	20.44	4.52	2.85*
	Foreign Soccer Players	60	28.91	15.07	3.88	

*Significant at 0.05 level 't' value required to be significant at 0.05 level of confidence with 88 degree of freedom was 1.89

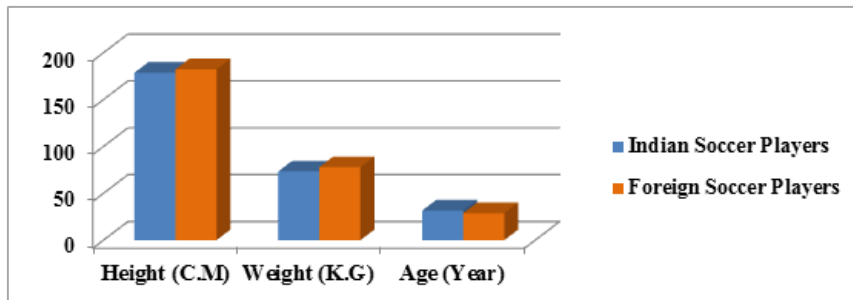


Fig-1: Graphical presentation of Height (cm), Weight (kg) and Age (years) of Indian and Foreign Soccer Players.

Table-2: Mean, Standard Deviation and 't'ratio of Physical abilities of Indian and Foreign soccer players

Physical abilities	Test	Subject	Mean	Variance	SD	't' value
Acceleration	Indian Soccer Players	30	64.93	174.39	13.20	4.12*
	Foreign Soccer Players	60	76.18	136.08	11.66	
Stamina	Indian Soccer Players	30	64.06	106.26	10.30	8.08*
	Foreign Soccer Players	60	81.05	79.24	8.90	
Strength	Indian Soccer Players	30	60.86	206.91	14.38	5.57*
	Foreign Soccer Players	60	75.51	104.28	10.21	
Balance	Indian Soccer Players	30	64.40	174.44	13.20	2.48*
	Foreign Soccer Players	60	71.98	192.51	13.87	
Sprint speed	Indian Soccer Players	30	64.033	162.36	12.74	5.34*
	Foreign Soccer Players	60	77.06	97.86	9.89	
Agility	Indian Soccer Players	30	63.13	193.98	13.92	3.98*
	Foreign Soccer Players	60	74.63	152.86	12.36	
Jumping	Indian Soccer Players	30	66.50	74.05	8.60	4.05*
	Foreign Soccer Players	60	75.63	114.66	10.70	

*Significant at 0.05 level 't' value required to be significant at 0.05 level of confidence with 88 degree of freedom was 1.89

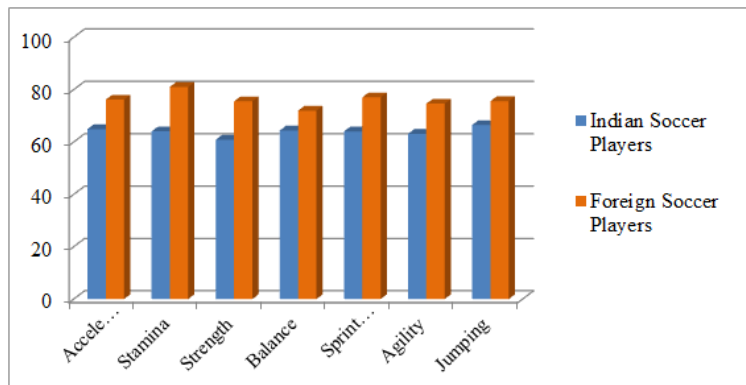
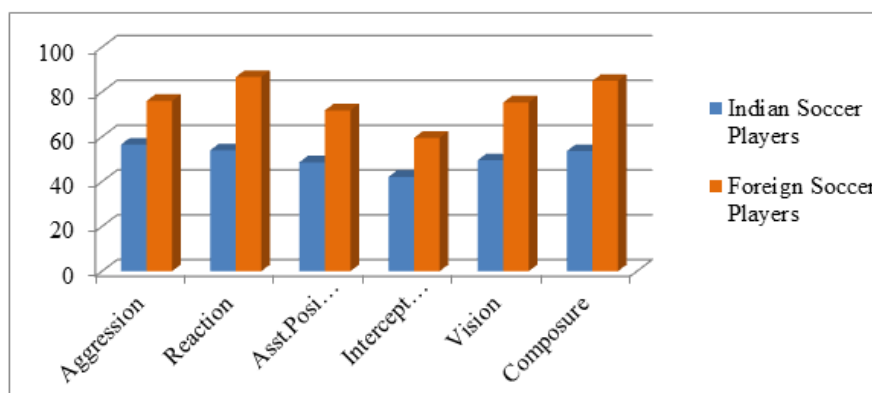


Fig-2: Graphical presentation of Physical abilities Skills of Indian and Foreign Soccer Players.

Table-3: Mean, Standard Deviation and 't'ratio of Mental skills of Indian and Foreign soccer players

Mental skills	Test	Subject	Mean	Variance	SD	T' value
Aggression	Indian Soccer Players	30	56.56	239.91	15.48	6.55*
	Foreign Soccer Players	60	75.98	144.01	12.00	
Reaction	Indian Soccer Players	30	53.96	28.16	5.30	30.24*
	Foreign Soccer Players	60	86.66	21.02	4.58	
Assist Position	Indian Soccer Players	30	48.63	171.03	13.07	5.60*
	Foreign Soccer Players	60	71.76	423.87	20.58	
Interception	Indian Soccer Players	30	42.13	239.04	15.46	6.32*
	Foreign Soccer Players	60	59.51	422.01	21.02	
Vision	Indian Soccer Players	30	49.56	153.11	12.37	8.86*
	Foreign Soccer Players	60	75.30	175.97	13.26	
Composure	Indian Soccer Players	30	53.63	109.89	10.48	19.93*
	Foreign Soccer Players	60	84.91	19.44	4.40	

*Significant at 0.05 level 't' value required to be significant at 0.05 level of confidence with 88 degree of freedom was 1.89

**Fig-3: Graphical presentation of Mental Skills of Indian and Foreign Soccer Players.**

CONCLUSIONS

From the above statistical calculation (table no-1) it was found that average height (cm) and weight (kg) of the Indian players are less than foreign players and difference were statistically significant. Height and weight take a significant role when soccer performance is concern.

Tall players are always the ones who can use header play, whether on defense or offense. Their high legs and arm length can be of great use in marking and tackling opponents. It also creates a large shot blocking area. Often with height comes strength, so it can be useful in a position fight. However, the only disadvantage of tall players' physical characteristics is a higher center of gravity which makes their balance more unstable. Weight can also predict greater success for soccer athletes in specific positions, as goalkeepers and defenders are usually heavier than midfielders and forwards (<https://fieldinsider.com/height-in-football/.13.07.21>).

It was also found from the statistical calculations (Table No.-2 and Table No.-3) that significant differences were observed in all the physical and mental skills. Physical and mental skills indicated by scoring values emphasised that foreign soccer

players are better than Indian players as all skills are closely related to soccer performance.

The peak force and power output of a muscle depends upon numerous factors to include: muscle and fiber size and length: architecture, such as the angle and physical properties of the fiber-tendon attachment, and the fiber to muscle length ratio: fiber type: number of cross-bridges in parallel: force per cross-bridge: peak: force-velocity relationship: fiber V_{max} : force- pCa^{2+} relationship: and) the force-frequency (action potential Hz) relationship. Slow- and fast-twitch fibers have similar capacities to generate specific tension ($kg\ cm^{-2}$). However, fast fibers show a considerably higher peak, V_{max} , and power output. The high V_{max} of the fast-twitch fiber is likely due to the high myofibrillar ATPase activity of the fast myosin isozyme. Both hind limb suspension and regular endurance exercise have been shown to induce fiber type specific changes in single fiber function (<https://www.sciencedirect.com/science/article/abs/pii/S02192909190382W>.23.08.21).

There are many different factors that can contribute to why some people are more resilient than others. Genetics, gender, exercise history, and other factors contribute to a person's flexibility, but the three

main factors that affect flexibility are joint structure, soft tissue, and nervous system activity (<https://alexanderorthopaedics.com/blog/why-are-some-individuals-more-flexible-than-others/>.12.07.21).

Not only is endurance an important factor in many sports, but endurance-related variables are also associated with good health and lower mortality. One research study suggests that many of the traits associated with endurance are 50% inherited (<https://www.sciencedirect.com/topics/medicine-and-dentistry/endurance>.12.07.21).

The two factors that determine walking speed are stride cadence and stride length. Because athletes propel themselves only when their feet are in contact with the ground, the stance phase of the running stride should be the focus of speed increase programs. Metabolic factors are important determinants of sprint performance and maximal anaerobic performance. It is believed that genetic factors contribute to approximately 50% of the variance in the short-term anaerobic performance phenotype (Newton *et al.*, 1994).

Soccer players' ability to produce various high-speed actions is known to affect soccer match performance. Although high-speed actions only contribute 11% of the total distance covered, they actually constitute the more important moments of the game and contribute directly to ball capture and scoring or conceding goals. It was found that running speed and agility were distinct motor characteristics in professional male soccer players. However, an investigation conducted with young athletes found that the speed of running in a straight line may be one of the important contributors to agility results (Lloyd *et al.*, 2013).

Soccer requires balance when approaching the ball on one foot, coming down from top opportunity, or avoiding an opponent. The process of balance is complex and requires specific coordination of the core and limbs. To maintain balance, the brain receives feedback from a variety of systems, including the visual, vestibular, and somato-sensory (Hyrosomallis, 2011).

There are two important motor areas in the brain, located in the cortex. One is the motor area located in the frontal lobe and the other is the sensory area located in the cerebellum. Both these areas control the legs, feet, thighs, arms, hands, neck, etc. along with many other muscles. The motor area and sensory area use a process called servomechanism that acts as a correction factor once the muscle starts to move. This system continuously sends information to the brain so that correction and adjustment can be achieved throughout the movement (Fox *et al.*, 1993).

Limitations of the present study include the fact that the number of study subjects was small and the subjects' ages ranged from 22 to 32 years and that secondary data were also used to meet the purpose of the present study. Furthermore, their environmental factors, socio-economic background and their lifestyle habits are not considered, so that the results of the present study cannot be easily generalized. Therefore, in the future, studies should be conducted in which such limitations are complemented by studies.

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