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COMPARATIVE STUDY OF SELECTED PERCEPTUO- MOTOR SKILL TEST ON YOUNG MALE AND FEMALE TABLE TENNIS PLAYERS

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Abstract:

The study aimed to compare the Dutch Perceptuo-Motor Skill Test scores of young male and female table tennis players. A random sample of two hundred highly skilled national table tennis players—one hundred male and one hundred female—from various Delhi-area table tennis academies served as the study's subjects. The subjects' ages ranged from 12 to 18. Irene R. Faber et al. (2014) developed the Perceptuo-Motor Skill Test, which was used to collect the data. TThe hypothesis was tested at the 0.05 level of significance, and the data were computed using the mean, standard deviation, and "t" test. Our results indicate that the following variables are significant: Ball skill (t=0.640), agility (t=0.000), speed while dribbling (t=0.003), ball throwing (t=0.000), aiming at target (t=0.906), sprint (t=0.000), vertical jump (t=.007), and eye-hand coordination (t= 0.001). Conclusion: With the exception of ball skill and aiming at target, which were not statistically significant, male and female performance on all test battery items—agility, speed while dribbling, throwing a ball, sprinting, vertical jump, and eye-hand coordination—was significantly different.

Key Words: Percptuo, Motor skill, Table Tennis

Indroduction

Many people consider table tennis to be one of the fastest sports, and it's a challenging game. It is an open-ended, intricate motor task that must be completed under intense time pressure in a constantly shifting environment. A wide range of movements that enable quick and responsive adaptation to the constantly changing conditions are necessary for high performance in table tennis Excellent technical skills, the ability to quickly switch between stroke techniques, variable, flexible, and quick footwork, a strong sense of anticipation and reaction, correct placement, and balance control are all necessary for players to develop. To succeed in this sport, one must also possess highly developed tactical skills, decision-making ability, inventiveness, focus, competitiveness, apprehension, self-regulation, and willpower. Table tennis greatly benefits from a player's coordination or motor skills, though this is not the only factor.

Motor skill is defined as "The present acquired and innate ability to perform motor skills of a general or fundamental nature, exclusive of highly specialised sports or gymnastic techniques" (Barrow, 1964). The components of motor fitness that Henry Franklin (1960) identified were power, speed, agility, balance, and coordination. The ability of an athlete to compete successfully in their sport is referred to as motor fitness. These are the components of motor fitness:

The player's perceptuomotor talents are crucial in table tennis, as the game mostly consists of open complicated perceptuomotor skills and tasks (Limoochi, 2006; Schmidt & Lee, 2011; Toriola, Toriola, & Igbokwe, 2004; van Rossum & Gagné, 1994).

According to the German Table Tennis Association (2008), perceptuomotor abilities are essential for mastering table tennis's particular technical skills and their combinations (i.e., mixing strokes under various conditions). The player's ability to execute tactical strategies and come up with unexpected solutions will also be influenced by their proficiency with the technical strokes and their variations (Kannekens, Elferink- Gemser, & Visscher, 2011; Munivrana, Furjan-Mandić, & Kondrič, 2015a; Munivrana, Petrinović, & Kondrič, 2015).
Given that the challenging technical skills are best learned at a young age—roughly 5 to the pubertal growth spurt (12–14 years)—table tennis is viewed as a sport for beginners (Stang & Story, 2005). This is because this is the most sensitive time to learn perceptuomotor skills (Knudsen, 2004; Watanabe, Savion-Lemieux, & Penhune, 2007).

Methodology

Data was collected from 200 national table tennis players (100 male and 100 female) who were selected at random from various sports academies in the Delhi region. Every sample consists of athletes competing at the national level (100 men and 100 women). Each of the chosen subjects competed national in various age divisions. The age range of the subject is 12 to 18. The selected subjects were those who had participated at least nationally. The sample was drawn from a variety of table tennis academies and clubs, without regard to the socioeconomic status or upbringing of the participants. We collected the data from each of these subjects.
The perceptuo-motor skills tested for this study included throwing a ball, ball skills, speed while dribbling, agility, vertical jump, eye-hand coordination, and speed. Irene R. Faber et al. (2014) developed the Perceptuo-motor skill test, which was used for data collection. For Indian-origin athletes, the test was chosen to validate an Indian version of Perceptuo-Motor Skill.

Statistical analysis

To find out the significant difference between male and female table tennis players on selected variables a paired sample “t-test” was employed on each variable independently and level of significance was set at 0.05 level.

Results:

Table 1: Summary of mean, standard deviation and t-ratio for the data on Ball skill test between the male and female Table Tennis players.

	Player	N	Mean	S.D.	Mean Diff.	S.E.	t sig (2-tailed)
Ball Skill	Male	100	1.19	0.689	0.052	.111	.640
	Female	100	1.25	0.728			

Table 1 shows the results of ball skill test between male and female table tennis players. Since t-sig value is .640 which is higher then .05. So, their is no difference between male and female table tennis players on ball skill.

Table 2: Summary of mean, standard deviation and t-ratio for the data on Agility test between the male and female Table Tennis players.

	Player	N	Mean	S.D.	Mean Diff.	S.E.	t sig (2-tailed)
Agility	Male	100	13.454	1.1530	1.038	.191	.000
	Female	100	14.493	1.502			

Table 2 shows the results of agility test between male and female table tennis players since t-sig value is .000 which is lesser then .05. So, their is difference between male and female table tennis players on agility test.

Table 3: Summary of mean, standard deviation and t-ratio for the data on Speed While Dribble test between the male and female Table Tennis players.

	Player	N	Mean	S.D.	Mean Diff.	S.E.	t sig (2-tailed)
Speed While Dribble	Male	100	16.950	3.252	1.503	.491	.003
	Female	100	18.453	4.273			

Table 3 shows the results of speed while dribble test between male and female table tennis players. Since t-sig value is .003 which is lesser then .05. So, their is difference between male and female table tennis players on speed while dribble test.

Table 4: Summary of mean, standard deviation and t-ratio for the data on Throwing The Ball test between the male and female Table Tennis players.

	Player	N	Mean	S.D.	Mean Diff.	S.E.	t sig (2-tailed)
Throwing a Ball	Male	100	11.166	1.838	2.977	.237	.000
	Female	100	8.189	1.926			

Table 4 shows the results of throwing a ball between male and female table tennis players. Since t-sig value is .000 which is lesser then .05. So, their is difference between male and female table tennis players on throwing a ball test.

Table 5: Summary of mean, standard deviation and t-ratio for the data on Aiming At Target test between the male and female Table Tennis players.

	Player	N	Mean	S.D.	Mean Diff.	S.E.	t sig (2-tailed)
Aiming At Target	Male	100	4.66	1.508	.23	.193	.906
	Female	100	4.68	1.419			

Table 5 shows the results of aim at target test between male and female table tennis players. Since t-sig value is .906 which is higher then .05. So, their is no difference between male and female table tennis players on aiming at target test.

Table 6: Summary of mean, standard deviation and t-ratio for the data on Sprint test between the male and female Table Tennis players.

	Player	N	Mean	S.D.	Mean Diff.	S.E.	t sig (2-tailed)
Sprint	Male	100	29.802	2.675	2.586	.407	.000
	Female	100	32.389	2.550			

Table 6 shows the results of spirint test between male and female table tennis players since t-sig value is .000 which is lesser then .05. So, their is difference between male and female table tennis players on sprint test.

Table 7: Summary of mean, standard deviation and t-ratio for the data on Vertical Jump test between the male and female Table Tennis players.

	Player	N	Mean	S.D.	Mean Diff.	S.E.	t sig (2-tailed)
Vertical Jump	Male	100	2.182	.156	.080	.029	.007
	Female	100	2.102	.250			

Table 7 shows the results of vertical jump test between male and female table tennis players since t-sig value is .007 which is lesser then .05. So, their is difference between male and female table tennis players on vertical jump test.

Table 8: Summary of mean, standard deviation and t-ratio for the data on Eye-Hand Cordination test between the male and female Table Tennis players.

	Player	N	Mean	S.D.	Mean Diff.	S.E.	t sig (2-tailed)
Eye-hand Co-ordination	Male	100	25.01	3.930	2.346	.675	.001
	Female	100	22.67	4.098			

Table 8 shows the results of eye-hand coordination test between male and female table tennis players. since t-sig value is .001 which is lesser then .05. So, their is difference between male and female table tennis players on eye-hand coordination test.

Discussion of Findings

This study aimed to compare the perceptuo-motor skill test performance between male and female table tennis players aged 12-18 years. The participants included 200 national-level players from various Table Tennis academies in Delhi, with an equal number of male and female players. The selected tests encompassed a variety of perceptuo-motor skills: Sprint, Agility, Vertical Jump, Speed While Dribbling, Aiming at Target, Ball Skills, Throwing a Ball, and Eye-Hand Coordination. The statistical analysis involved a paired sample t-test.

Ball Skills: No significant difference was found between male and female players (t-sig = 0.640), indicating similar proficiency in ball handling.

Agility: Male players demonstrated significantly better agility compared to females (t-sig = 0.000), suggesting superior ability to navigate through complex movements quickly and efficiently.

Speed While Dribbling: Female players exhibited slower speed while dribbling compared to males (t-sig = 0.003), indicating differences in dribbling capabilities between genders.

Throwing A Ball: Male players showed significantly greater throwing distance than females (t-sig = 0.000), indicating higher upper body strength and throwing power in males.
Aiming At Target: No significant difference was observed between male and female players (t-sig = 0.906), suggesting similar accuracy in targeting tasks.
Sprint: Male players demonstrated faster sprinting times than females (t-sig = 0.000), highlighting differences in speed and explosive power between genders.
Vertical Jump: Male players demonstrated higher vertical distance than female (t-sig = .007) indicating higher lower body strength.
Eye-Hand Co-ordination: Female players shows inferior performance in eye-hand co-ordination than males (t-sig = 0.001) highlighting differences in eye-hand co-ordination between genders.

Discussion of Hypothesis

The hypothesis pointed that there would be significant differences in perceptuo-motor skill test performance between male and female table tennis players.
The results revealed significant differences between male and female players in several tests. Specifically, male players demonstrated superior performance in Agility, Speed While Dribbling, Sprint, Throwing The Ball, Vertical Jump, and Eye-Hand Coordination tests compared to their female counterparts. These findings suggest that male players possess advantages in terms of agility, speed, power, coordination, and throwing ability, which are crucial for success in table tennis .

However, no significant differences were observed between male and female players in the Ball Skill and Aiming At Target tests, indicating comparable levels of fine motor skills and precision in both genders. These results suggest that certain perceptuo-motor skills may not exhibit gender-based differences among young table tennis players.

Implications and Conclusion:The findings of this study contribute to our understanding of the perceptuo-motor abilities of young male and female table tennis players. While gender differences were evident in some aspects of performance, particularly those related to physical attributes and coordination, other skills such as fine motor control and precision appeared to be gender-neutral.

These findings have practical implications for coaches, trainers, and sports educators involved in the development of young table tennis players. Tailoring training programs to address gender-specific performance variations can help optimize player development and enhance competitive performance. For male players, emphasis may be placed on agility, speed, and power training, while female players may benefit from programs focusing on coordination and technique refinement.

In conclusion, while gender differences exist in certain perceptuo-motor skills among young table tennis players, it is essential to recognize and leverage individual strengths and areas for improvement to support the holistic development of players, regardless of gender. Further research

exploring the underlying factors contributing to these gender differences could provide valuable insights for optimizing training strategies and fostering talent development in table tennis.

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