International Journal of Physical Education, Sports and Health 2023; 10(6): 262-265

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (RJIF): 5.38
IJPESH 2023; 10(6): 262-265

www.kheljournal.com
Received: 01-09-2023
Accepted: 09-10-2023

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Impacts of specific drills with vision training on selected motor fitness components among table tennis players

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Abstract
The purpose of the study was to investigate the impacts of specific drills with vision training on selected motor fitness components among table tennis players. For this study, forty table tennis players were selected from Coimbatore Table Tennis Foundation & Academy and Paddlerz Table Tennis Academy in Coimbatore district, Tamil Nadu. They were divided into two equal groups of twenty subjects each, namely the experimental group and the control group. The selected subjects were under 14 to17 years of age school boys. The experimental group (Group-I) underwent specific drills with vision training three days per week for 8 weeks. The control group (Group-II) did not underwent any special training apart from their regular activities. The following dependent variables were selected for this study: agility, endurance, and core muscle strength. Data on these selected dependent variables were collected both prior to and immediately after the 8-weeks of experimental period as pre-test and post-test, respectively. The data were analyzed using the dependent 't-test to determine the significant differences among the groups. A confidence level of 0.05 was fixed to test the level of significance, which was considered appropriate. The results of the study showed that the specific drills combined with vision training program led to significant improvement in the selected motor fitness components.

Keywords: Specific drills, vision training, agility, endurance, and core muscle strength, table tennis players

Introduction
Sports action requires much more than the ability to see. The apparent paradox of having to see, yet perform competently without being able to see well, has brought about a division of emphasis in research into the role of vision in sporting action. Baseball, tennis, table tennis, badminton and ice hockey are some of the ball games that provide rich examples of such action. Not surprisingly, sports experts refer to players having a "great eye," "superb vision," and "excellent peripheral vision." Such statements imply superior visual hardware and probably provided the impetus for sports vision research, which has a fairly lengthy history (Maman, *et al*, 2011) [4]. Sports Vision as such includes specific visual determinants which precisely coordinates a player's activity during the game. It has been seen that successful athletes generally have better skill, accuracy and spatio-temporal constraints on visual information acquisition. As such if two similar athletes meet in competition and one has a better trained visual system, the athlete with enhanced visual system will perform better (Loran & Griffiths, 2001) [16]. Sports-specific training refers to a training regimen designed to enhance an athlete's performance in a particular sport. This type of training is tailored to the specific demands, skills, and physical attributes required for success in a given sport. It aims to improve an athlete's strength, speed, agility, endurance, and other relevant attributes in a way that directly translates to better performance in their chosen sport.

Methods and Materials
The purpose of this study was to examine impacts of specific drills with vision training on selected motor fitness Components among table tennis players. For this study, forty Boys table tennis players were selected from Coimbatore Table Tennis Foundation & Academy and Paddlerz Table Tennis Academy in Coimbatore district, Tamil Nadu, were selected as

subjects. Among them, 20 subjects were chosen for the experimental group. The subjects were informed about the objectives of the study and the tasks they would be performing. Their table tennis coaches were requested to motivate and advise them to fully cooperate during the research study. The experimental group participated in the training programme, while the remaining 20 subjects were taken as the control group, and they did not underwent any training. The selected variables were tested using Illinois Agility Test for agility, Cooper 9 minutes Test for endurance and Plank (Standard) Test for core muscle strength. The training programme for the experimental group lasted for 8 weeks, with 60-minute sessions held on three alternative days each week. Each training session started with 10 minutes of strength exercises, followed by 15 minutes of warm-up, 25 minutes of training workout with rest intervals of 30 seconds between sets, and finally, a 10-minute cool-down. The repetitions were gradually increased according to the training schedule, which included Up-Hill Running, Sand Training, Plank and sit-ups.

Statistical Analysis

The collected data before and after the 8-week training period on the aforementioned variables, under the influence of specific drills combined with vision training, were statistically analyzed using the dependent 't' test to determine the significant improvements between the pre-test and post-test. The derived results are discussed in the following tables.

Table 1: Computation of 't' ratio on Motor fitness components of table tennis players.

Group	Variables		Mean	SD	SE	t- radio
Experimental group	Agility	Pre-test	11.69	0.98	0.51	8.10*
		Post-test	10.77	1.07		
	Endurance	Pre-test	1876.35	1.59	0.30	17.74*
		Post-test	1881.70	1.89		
	Core muscle strength	Pre-test	1.08	0.44	0.06	3.90*
		Post-test	1.32	0.38		
Control group	Agility	Pre-test	11.85	0.47	0.02	1.27
		Post-test	11.84	0.47		
	Endurance	Pre-test	1876.40	1.56	0.05	1.00
		Post-test	1876.35	1.63		
	Core muscle strength	Pre-test	1.05	0.50	0.02	1.00
		Post-test	1.05	0.50		

* Level of Significance 0.05, Degree of freedom (2.09, 1 and 19)

Table 1 shows the computation of mean, standard deviation and 't' ratio on the selected variables, namely Agility, Endurance, and Core muscle strength, for the experimental group. The obtained 't' ratios for Agility, Endurance, and Core muscle strength were 8.10, 17.74, and 3.90, respectively. The required table value for the degrees of freedom 1 and 19 at the 0.05 level of significance was 2.09. Since the obtained 't' values were greater than the required table value, they were found to be statistically significant for the experimental group. Furthermore, the computation of mean, standard deviation, and 't' ratio on the selected variables, namely Agility, Endurance, and Core muscle strength was conducted for the control group. The obtained 't' ratios were 1.27, 1.00, and 1.00, respectively. The required table value for the degrees of freedom 1 and 19 at the 0.05 level of significance was 2.09. Since the obtained 't' values were less than the required table value, they were found to be statistically insignificant for the control group.

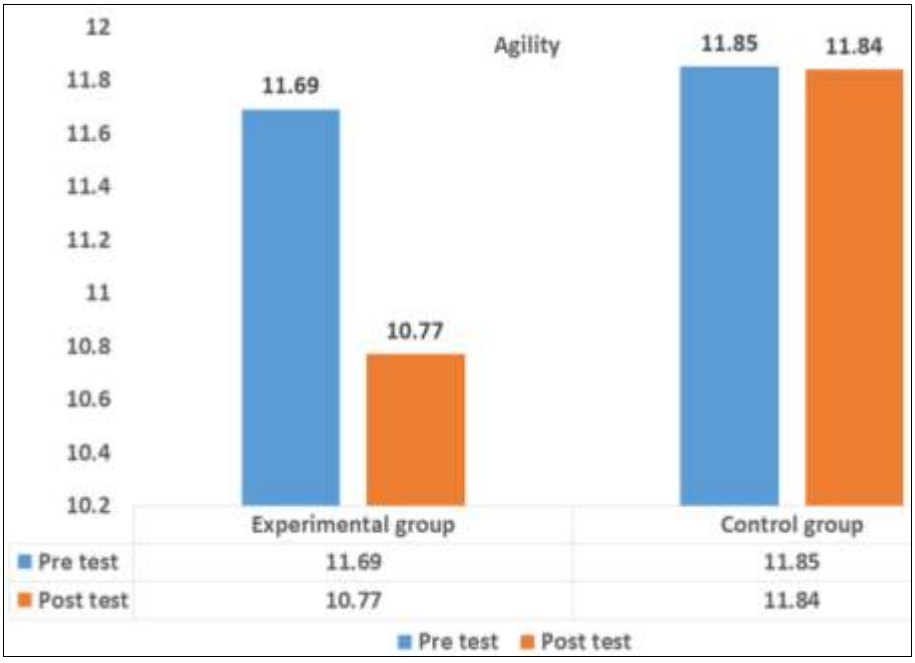

Fig 1: Bar Diagram Showing the Mean Value on Agility of Table Tennis Players on Experimental Group and Control Group

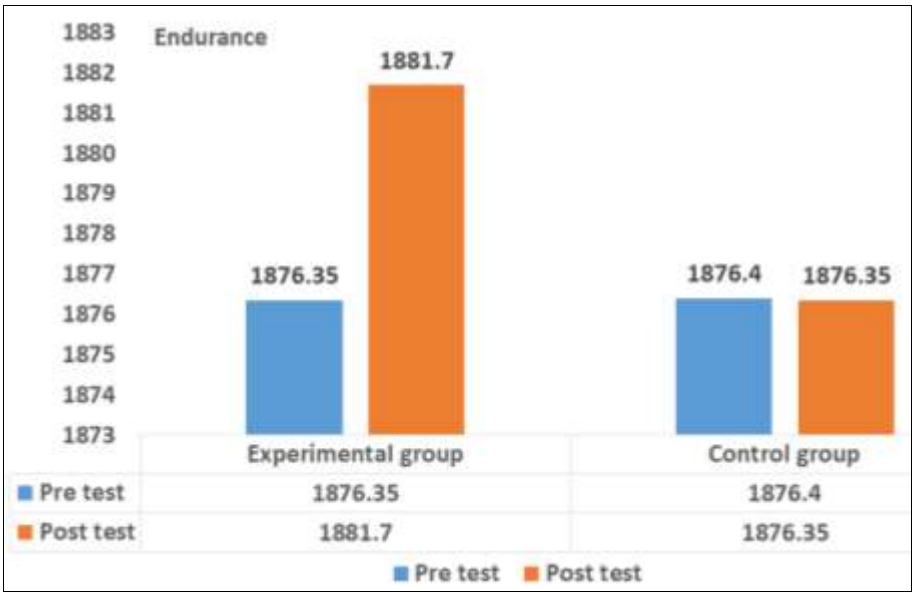

Fig 2: Bar Diagram Showing the Mean Value on Endurance of Table Tennis Players on Experimental Group and Control Group

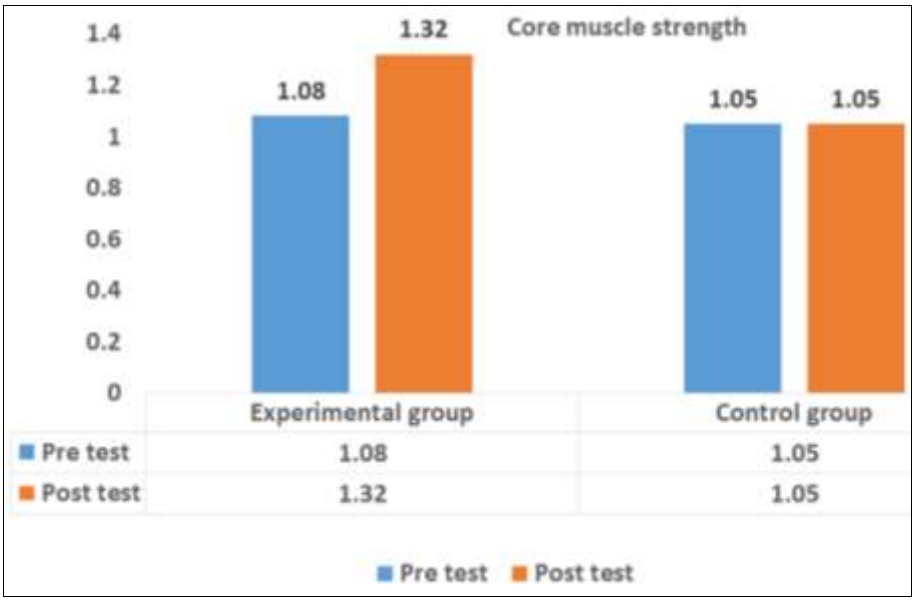

Fig 3: Bar Diagram Showing the Mean Value on Core muscle strength of Table Tennis Players on Experimental Group and Control Group

Discussion on Finding

Many studies have suggested that specific drills with vision training may be valuable in improving motor fitness components such as agility, endurance, and Core muscle strength. It has been pointed out that effective strength training can lead to improvements in selected motor fitness variables of Table tennis players, especially with a training duration of 8 weeks, three days per week. Such improvements in physical fitness are beneficial for table tennis players who require quick movements during their sports, and these results are supported by findings from other studies. In a study of table tennis players, the authors used tests to determine agility **(**Mondal, S., 2015, Basiri 2020) [13, 5], endurance (Sarma, B. J. (2015) [14] and Mondal, S. (2016) [15] core muscle strength. Modern table tennis is a sports game that demands great speed, strength, power, endurance, flexibility, agility and good reflexes. Hence it recommended that systematic designed specific drills combined with vision training such as 8 week of a training programme helped to improve motor fitness components which is absolutely needed for better performance in almost all games.

Conclusion

This study shows that both groups (Experimental and control group) were individually effective in improving agility, endurance, and core muscle strength of Table tennis players. However, the experimental group showed greater improvements in all three motor fitness components (Agility, endurance, and core muscle strength). Hence, we conclude that specific drills combined with vision training in the experimental group is more effective in improving motor fitness in Table tennis players.

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