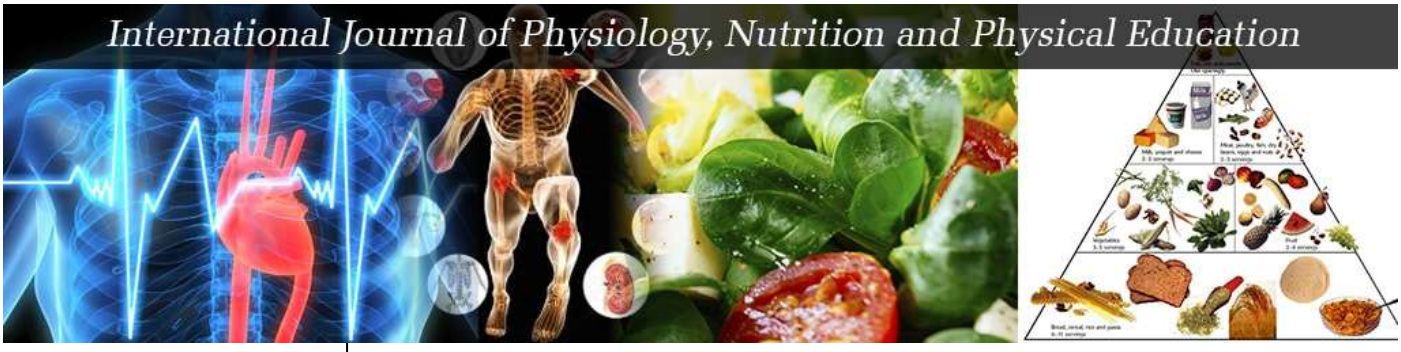

ISSN: 2456-0057
IJPNPE 2021; 6(1): 107-111

www.journalofsports.com
Received: 26-11-2020
Accepted: 03-01-2021

B Rameshpandian
Research Scholar, Department of Physical Education, Bharathiar University, Coimbatore, Tamil Nadu, India

STN Rajeswaran
Professor, Department of Physical Education, Bharathiar University, Coimbatore, Tamil Nadu, India

Corresponding Author:
B Rameshpandian
Research Scholar, Department of Physical Education, Bharathiar University, Coimbatore, Tamil Nadu, India

Effect of visual skills with imagery training and visual skills training on select coordinative abilities among the badminton players at school level

B Rameshpandian and STN Rajeswaran

Abstract
The purpose of the present study was to study the efficacy of imagery training added with visual skills training on select coordinative abilities of Badminton players at school level. Visual skills in sport invariably needed to beginners and advanced learners in sport. In the game of Badminton the visual skills is serving as the basic requirements since a player has to eye focusing in learning skills, judging the speed of the ball, judging the height of the flight of the ball during serving and playing conditions and also to evaluate the spatial awareness. In addition to this, earlier studies proved that learning the physical skills along with imagery enhance the efficiency of the learner in concerned sports. To achieve this, as samples (N=129), students studying in schools were selected as samples in the age group of 12 to 14. As variables select coordinative abilities such as eye hand coordination and visual reaction time were selected. Selected variables were measured using standardizes tests. The present study is an experimental in nature pre-post random experiment group design was employed. Using the performance on overall playing ability samples (N=129), were further screened (N=64) and assigned randomly to experimental groups namely Visual Skills with Imagery Training group and Visual Skills alone consisting of 15 subjects each. Subjects of each group were treated with respective training program for about twelve weeks in alternate days. On completion of training program subjects of both groups were tested as such in the pre –test which was considered as post test score. Collected data were tested with paired t-test and analysis of covariance. The obtained results were tested at 0.05 level of significance. Visual skills training with imagery and visual skills training alone found to be significant in the performance of coordinative abilities. Visual skills with imagery training found to be efficiency in coordinative abilities compared to Visual skill training alone.

Keywords: Visual skills, eye hand coordination, visual reaction time, imagery, spatial awareness

Introduction
Badminton is being a racket sport and a speed game player has to concentrate over the ball and decision to be made on receiving and placing the ball in the opponent court (Seth, 2016). In this game, object used to meet out the ball and its directions though which is less in size of space, for successful execution of an object requires high level physical and cognitive functions (Bankosz *et al*. 2013) [1]. Until, the very micro deviation makes the player to setback in the game. In fact, the game badminton demands movement related fitness such as speed, flexibility, endurance, power and co-ordination abilities to successfully execute the ball with consumption of energy (Himawanto, Wasis, 2010) [8].

Badminton now a day is becoming a professional sport, every player seeking the course of action line to excel in this sport in different manner. Initially the fundamental skills and its movements will be explained to the player using some instructional media. As learning tools related to the game badminton such as knowledge about badminton, witnessing video models, and viewing pictures or posters with sequences of movements employed in teaching. Such type of process cognitively makes the player to imagine the game and its movements. Following this, to be mastery over the fundamental skills badminton players has to taught repeatedly (Putra and Sugiyanto, 2016) [19]. Normally physical training is a very basic for a sport to prepare the player to learn the basic movements. Though the physical training underlies physical movements, the successful learning of fundamental movements depends upon the players need, interest motive and goal over the particular sport.

Having the need, interest, motive and goal intrinsically player's commitment will enhance recollection of his movement mentally during the practice which enables his to fore cost the next course of movement from the knowledge of results derived from the practice.

Regarding quality of practice, player is to be supported with the information over the performance during the practice which will be termed as feedback. In motor learning feedback can be classified into task- intrinsic and task-extrinsic or augmented feedback. In the intrinsic feedback, player can have the information from the inside of the body such as proprioception whereas in the extrinsic feedback player can have the information about the movement of the objects in the environment because of his vision and audition (Schmidt & Lee 1999) [20]. In sport, player can able to achieve a certain skill level with task-intrinsic feedback, but in order to attain a higher level of expertise, augmented feedback is needed (Magill 1994) [13]. In the tasks where the information from intrinsic sources does not provide the feedback needed to determine the appropriateness of the performance, or when the information critical to learning the skill cannot be adequately accessed by the learner, augmented feedback can play an essential role in effective skill acquisition (Magill 1994) [13].

Feedback is also be called as either knowledge of results or knowledge of performance. According to Gentile (1972) [5] Knowledge of results (KR) is a post-response, augmented information about the success of performance in relation to an environmental goal whereas knowledge of performance is extrinsic, post-response kinematic or kinetic information refers to aspects of the movement pattern. Ever changing modification in training and tactics in this game, player is to learn life long as they live with this. Recollecting the previous learning is a kind of feedback provides an opportunity to have insight over the object (Kosslyn, 1994) [10]. Feedback may be either internal or external in some cases form both aspects. During the course of training, trainer will review the skills the player learned which enable the player to recollect their learned skills and realised their strength and weakness (Kaisu Mononen, 2007) [9]. Feedback given by trainer over their player performance on learning the skills helps both player and trainer make them to prepare mentally before they impart themselves in the training. Such type of cognitive process is very essential in sport to learn the movement based learning successfully as the first person imagery (Mahoney and Avener, 1977) [14]. In fact feedback process is a kind of imagery visually what was happened in the earlier course. Visually a player can bring the events he performed. While he visually imagines the movements' what he performed this helps him to find the mean and methods that are needed for the successful completion of learning (Silverman *et al*. 1998) [21]. Thus in sport player has to prepare him both physically and mentally to learn the skills, techniques and tactics. With this perspective the present study has been taken to study the influence of visual imagery along with visual skills over the select coordinative abilities of player in the game of badminton.

Materials and Methods

The means and methods employed in the present study to study the efficiency of select visual skills with imagery training on select coordinative abilities of badminton players are as follows in selection of subjects the students studying in school in the age group of 12- 14 were selected randomly from the participants who have experienced minimum at inter- school competition (N=129). Since the present study is an experimental in nature, to establish the homogeneity among the examples initially, they were tested on overall playing ability, the performance of over the fundamental skills of serving, smash, clear were considered. In measuring the overall playing ability, the subject's performance on fundamental skills of serving, smashing, and clear were tested with three experts using ten point rating scale and average of the three experts considered as score. From the selection of samples (N =129) samples exists in the range 3.5 to 5 on the performance of overall playing abilities were further screened. Thus the selected samples totally 64 were identified. Among them (N = 64), 45 samples were randomly selected and assigned to two groups equally. Thus each group was consisting 15 subjects. Group-1 named as Visual Skills with Imagery Training (VSIT) and Group -2 named as Visual Skills Training alone. As coordinative abilities, eye hand coordination, and visual reaction time were selected and tested among the samples of two groups using standardized tests. This was considered as pre- test score. Following this, samples of experimental group-I was treated with visual skills and imagery training and experimental group – 2 treated with visual skills training alone for about twelve weeks in an alternative days a week. For employing visual skills the drills related to coordinative abilities and basic fundamental skills were used with duration of 40 minutes. As the present study is to find the complimentary effect of imagery training, every session and at the beginning and ending, samples were inducted in to imagery of recollecting their experience over the drills they had for above 20 minutes. Regarding instructions, warm-up and warm down subjects assigned to 10 minutes. After competition of treatment period, samples of both groups were tested on variables as such in the pre-test and considered as post test score. The collected data were tested with paired t- test and analysis of covariance so as to test the individualized effects and comparative effects of Visual skills with imagery training and visual skills training alone on select coordinative abilities of eye hand coordination and visual reaction time. To test the significance of the results derived, 0.05 level was chosen as level of significance. The results of the study are as follows.

Results

Table 1: Descriptive Statistics on Coordinative Abilities

Coordinative Abilities	Group	Source	Mean	Std. Deviation	Std. Error
Eye hand coordination	Visual Skills with Imagery training	Pre-test	12.47	5.67	1.46
		Post - test	5.13	2.26	0.58
	Visual Skill Training	Pre-test	13.53	5.80	1.50
		Post - test	8.40	4.55	1.17
Visual Reaction time	Visual Skills with Imagery training	Pre-test	0.38	0.05	0.01
		Post - test	0.27	0.07	0.02
	Visual Skill Training	Pre-test	0.37	0.05	0.01
		Post - test	0.23	0.06	0.02

Table -1 explains that the descriptive measures on coordinative abilities such as eye hand coordination and visual reaction time. Thus the Mean and Standard deviation of Visual Skills with Imagery Training on Eye hand coordination and visual reaction time are: 12.47 ± 5.67(Pre-test), 5.13 ± 2.26(Post- test), 0.38 ± 0.05(Pre-test), 0.27 ± 0.07 (Post -test). Besides the Mean and Standard deviation of Visual Skills Training alone on Eye hand coordination and visual reaction time are: 13.53 ± 5.80 (Pre-test), 8.40 ± 4.55(Post- test), 0.37 ± 0.05(Pre-test), 0.27 ± 0.06 (Post -test).

Table 2: Analysis of variance on Pre-test and Post-test Means between Visual Skills with Imagery training (VSIT) and Visual Skills Training (VST)

Coordinative Abilities	Test conditions	Source	Sum of Squares	DF	Mean Square	F-ratio	Sig.
Eye hand coordination	Pre-test	B/W	8.533	1	8.533	.259	.615
		W/S	921.467	28	32.910		
	Post - test	B/W	80.033	1	80.033	6.202	.019
		W/S	361.333	28	12.905		
Visual Reaction time	Pre-test	B/W	.001	1	.001	.435	.515
		W/S	.077	28	.003		
	Post - test	B/W	.011	1	.011	2.490	.126
		W/S	.122	28	.004		

Significant at 0.05 level

From above the table, it was observed that f-ratio obtained on hand eye co-ordination and visual reaction time are: 0.259 for pre-test, 6.20 for post-test, 0.43 for pre- test and 2.49 for post -test. The f-ratio on testing the significance of mean difference before the treatment of visual skills training with imagery and visual skill training alone on coordinative abilities of hand eye coordination and visual reaction time between the player's visual skills training with imagery and visual skill training alone was found to be statistically not significant at 0.05 level of significance. It confirms that the random assignment of subjects for these groups was successful. Following this, the data analysis on coordinative abilities of hand eye coordination and visual reaction time after completion of treatment period of twelve weeks, the observed f-ratio (6.20, $p<0.05$)) was found to be statistically significant on hand eye coordination whereas the f-ratio (2.49) on visual reaction time was statistically not significant at 0.05.

Table 3: Analysis of Variance on Adjusted Post- test means on Coordinative abilities

Coordinative Abilities	Group	Adjusted Post-test Means	Source	Sum of Squares	DF	Mean Square	F	Sig.
Eye hand coordination	VSIT	5.33	B/W	.008	1	.008	1.984	.170
	VST	8.20	W/S	.110	27	.004		
Visual Reaction time	VSIT	0.24	B/W	61.348	1	61.348	7.019	.013
	VST	0.26	W/S	235.980	27	8.740		

Significant at 0.05 level

Table-3 reveal that the f-ratio on adjusted post -test means are: 1.94 (eye hand coordination) and 7.09 (visual reaction time). The obtained f-ratio on hand eye co-ordination (1.94) was found to be statistically not significant at 0.05 level whereas the f-ration on visual reaction time (7.09 $p<0.05$)) was found to be significant at 0.05 level. From the results, it was inferred that samples underwent visual skill with imaginary training were found to be better on visual reaction time as compared to sample practiced with visual skills only other than the eye hand coordination. Further it was confirmed the efficiency of imaginary training on the effect of visual skills over the coordination abilities among the players of badminton on visual reaction time.

Table 4: Individualized effect of Visual Skills with Imagery Training and Visual Skill Training on Coordinative abilities

Coordinative abilities	Group	Mean	Std. Error Mean	t-ratio	df	Sig. (2-tailed)
Visual Reaction time	Visual Skills with Imagery Training	0.11	0.02	5.87	14.00	0.00
	Visual Skill Training	0.14	0.02	7.91	14.00	0.00
Eye hand coordination	Visual Skills with Imagery Training	7.33	1.48	4.97	14.00	0.00
	Visual Skill Training	5.13	0.83	6.16	14.00	0.00

Significant at 0.05 level

Table -4 explained that the obtained -t- values on testing the significance of mean gains or losses from pre-test to post test of visual skills with imaginary training group are: 5.87 ($p<0.05$) for eye hand coordination and 7.91 ($p<0.05$) for visual reaction time. Likewise the obtained t- values on testing the significance of mean gains or losses from pre-test to post test of visual skills training group are: 4.97 ($p<0.05$) for eye hand coordination and 6.16 ($p<0.05$) for visual reaction time. The observed t-values on eye hand coordination and visual reaction time of visual skills with imaginary training and visual skill training are found to be statistically significant at 0.05 level. Thus from the results of paired-test, the obtained t-values on eye hand coordination and visual reaction time confirm the effect of visual skills with imaginary positively on the development of effect coordinative abilities such as depth perception, visual reaction time and hand eye co-ordination.

Discussion on findings

The findings derived from the individualized effect and comparative effect on coordinative abilities such as hand eye coordination and visual reaction time are discussed with theoretical and empirical constructs, in testing the individualized effect of visual skills with imagery training and

visual skills alone, from their base line to post treatment of twelve weeks, on coordinative abilities, both intervening strategies made significant changes individually.

In fact among the human beings, eyes of them guide their body movement based on the perception of events either internally or externally. In human life if a person unable to utilize his visual abilities to their fullest potential, they could not complete their task effectively. Visual abilities refers the individuals preference over the visual activity, eye alignment, eye movement, depth perception, peripheral vision, eye hand coordination, visual concentration and visualization. Performance in sports specifically at high level determined by the players situational decision making and awareness over the movement in space. To excel in skills players are trained with movement related to skills where maximum concentration would be given to the physical activities such as speed, strength, flexibility, endurance and power related components. In the game of badminton exercising the physical abilities in execution of skills, players have to excel in coordinative abilities such as eye hand coordination and eye foot coordination, reaction time a, spatial awareness and so on. Coordination is the right positioning at right moment on court because of tactics, players with sound coordinative abilities helps to make the right flight of the shuttle to the right place.

Coordinative abilities are being the combined product of time and place, resulting player can adequately swing, sprint and jump as maintain balance. As the coordinative abilities are being the basic requirements and functioning as enhance the efficiency of skill performance such serving, smash, clear and footwork in badminton players has to train specifically with imagery training while practicing any physical training. In the present study drills used as visual skills mainly focusing on activities involving simultaneously functioning of eye and hand movement in judging the functions related to linear and angular kinematics and related to the object visually. Continuously performing the drills which are underline the skills in badminton and source to develop abilities of span of attention, visual reaction and eye hand coordination for about a period would enable them to mastery over the movement. In the study of Ziegler (1987) [22] he AHS confirmed the effect of imagery training as a significant cause in improving the performance of shooting. Besides, with an aim of inculcating the three of confident, commitment and consistency over the skill learning, along with physical training players inducted into imagery training.

According to Kosslyn, (1994) [10], imagery is an important form as cognition and as the knowledge of mental images entails recollecting the experience on learned subject and enhance the ability of innovates thinking. Imagery is considered as an optimistic perspective (Fisher, 1996) [4] for mental training, that may help the players perform well in skills, imaging the situations during the practice, understand the movement done by him, and concentrate on taste relevant, stimuli, cultivate the feelings of enhanced personal efficiency and increased self confidence in skill performance (Hale, 1982) [6]. In the present study, players were instructed to imagine the drills related to visual skills, soon after completion of visual skills training during this, researcher was explained the drills practiced in the particular day, and instructed them to recollect visually by drill wise for about 10 minutes. According to Fihbune (1986) imaging the skill learned actually is the process of effectively transfer a reinforce the neural structures to strengthen the relationship between the stimuli and response whereby player has to visualize the incorrect techniques. Such type of visual imagery enable the player to bring back the things learned visually. In finding the effect of imagery training on learning fundamental skills, Balamurugan, Rajeswaran and Suresh Kaliraj (2016) [2] concluded that positive energy added to the player's level aspects may be the significant source for the imagery group who were performed better in passing and serving

Psychological skills training of Visual Motor Behavior Rehearsal (VMBR Suinn, 1988) emphasize the need of effect of visual images on identifying the cues and its positive impact over players performance. Hall and Errffemyer (1983) [7] implemented VMBR technique to study the changes on shooting performance in basketball, and found that substantial improvement on the performance of shooting. The sources for the significant effect of imagery with visual skills training is supported conceptual framework of Markus and Ruvolo's (1989) [15]. In his conceptual frame work he explained that imaging one's own actions through the construction of elaborated possible selves facilitate the translation of goals into intentions and instrumented actions. The neural operations associated with motor coordination execution, also play a substantial role in mentally representing those actions in conscious thought, via imagery, without generating the actual movement. In such a way the visual skills combined with imagery training would help the player to perform better in coordinative abilities of eye hand coordination and visual reaction time.

Conclusion

From the results derived, the following conclusions have been made. In the present study in testing the individualized effects, the obtained results confirm the positive changes on coordinative abilities from their baseline to post treatment for both intervening methods of visual skills with imagery training group and visual skill training alone. Visual skills are basically constructs of psychomotor; emphasize the perceptual abilities in the movement learning. In practicing the drills for developing the visual skills with imagery training, every subjects made themselves to imagine their learned objects of visual skills initially visualize the images and imitated to find the cues and made an attempt to rationalize the situations. Thus such a sequential process of learning with understanding the conceptual aspects enable to strengthen the bond between the stimuli and response which in turn helps the learner to free from unwanted cues. Thus the development of neuro sensory motor awareness over the movement due to the complementary effect of imagery with visual skills training might have been the significance cause for the dominance of subjects treated with visual skills with imagery training on hand eye coordination compare to the visual skill training alone. Further in analyzing the results on visual reaction time, it was concluded that the structural aspect of personality exists among the subjects may have the significant source for the lack of difference.

References

1. Bankosz Z, Nawara H, Ociepa M. Assessment of simple reaction time in badminton players. Trends in Sport Sciences 2013;20(1):54-61.
2. Balamurugan R, Dr. Rajeswaran STN, Suresh Kaliraj. Effect of Imagery Training on Selected Skill Performance Variables of Male Volleyball Players. International Journal of Recent Research and Applied Studies 2016;3(4).

3. Driskell JE, Copper C, Moran A. Does mental practice enhance performance? The Journal of Applied Psychology 1994;79:481-492. doi:10.1037/0021-9010.79.4.481
4. Fisher AC. Imagery from a sport psychology perspective. Paper presented at the meeting of the American Alliance for Health, Physical Education, Recreation and Dance, Cincinnati, Ohio, USA 1986.
5. Gentile AM. A working model of skill acquisition with application to teaching. Quest 1972;17:3-23.
6. Hale BD. The effects of internal and external imagery on muscular and ocular concomitants. Journal of Sport Psychology 1982;4:379-387. doi:10.1123/jsp.4.4.379
7. Hall EG, Erffmeyer ES. The effect of visuo-motor behavior rehearsal with videotaped modeling on free throw accuracy of intercollegiate female basketball players. Journal of Sport Psychology 1983;5:343-346. doi:10.1123/jsp.5.3.343
8. Himawanto Wasis. Pengaruh metode pembelajaran dan power lengan terhadap peningkatan kecepatan smash bulutangkis. Unpublished Thesis. Surakarta, Indonesia: Sebelas Maret University 2010.
9. Kaisu Mononen, Niilo Konttinen, Jukka Viitasalo, Pertti Era. Relationships between postural balance, rifle stability and shooting accuracy among novice shooters. Scandinavian Journal of Medicine & Science in Sports (in press) 2007.
10. Kosslyn SM. Image and brain: The resolution of the imagery debate. Cambridge, MA, USA: MIT Press 1994.
11. Kosslyn SM, Cacioppo JT, Davidson RJ, Hugdahl K, Lovallo WR, Spiegel D, *et al*. Bridging psychology and biology: The analysis of individuals in groups. The American Psychologist 2002;57(5):341-351. doi:10.1037/0003-066X.57.5.341
12. Kotsalis GA. What imagination is 2016. Retrieved from http://www.aristotelianphilosophy.com/what-imagination-is/
13. Magill RA. The influence of augmented feedback during skill learning depends on characteristics of the skill and the learner. Quest 1994;46:314-327.
14. Mahoney MJ, Avener M. Psychology of the elite athlete: an exploratory study. Cogn Ther Res 1977;1:135-141.
15. Markus HR, Ruvolo A. Possible selves: Personalized representations of goals. In L. A. Pervin (Ed.), Goal concepts in personality and social psychology. Hillsdale, NJ, USA: Lawrence Erlbaum 1989, 213-214.
16. Martens R. Coaches guide to sport psychology. Champaign, IL, USA: Human Kinetics 1987.
17. Munroe KJ, Giacobbi PR, Hall CR, Weinberg RS. The four Ws of imagery use: Where, when, why and what. The Sport Psychologist 2000;14:119-137. doi:10.1123/tsp.14.2.119
18. Proteau L. On the specificity of learning and the role of visual information for movement control. In L. Proteau & D. Elliot (Eds.) Vision and motor control. Amsterdam: North-Holland 1992, 67-103.
19. Putra G, Sugiyanto FX. Pengembangan pembelajaran teknik dasar bulu tangkis berbasis multimedia pada atlet usia 11 dan 12 tahun. Jurnal Keolahragaan 2016;4:175. DOI: 10.21831/jk.v4i2.10893.
20. Schmidt RA, Lee TD. Motor Control and Learning. A Behavioral Emphasis. Champaign, IL: Human Kinetics 1999.
21. Silverman SS, Woods AM, Subramaniam PR. Task structures, feedback to individual students, and student skill level in physical education. Research Quarterly for Exercise and Sport 1998;69:420-424.
22. Ziegler SG. Comparison of imagery styles and past experience in skills performance. Perceptual and Motor Skills 1987;64:579-586. doi:10.2466/pms.1987.64.2.579