



# IMPACT OF PERCEPTUAL SKILL TRAINING ON SELECTED SKILL PERFORMANCE VARIABLES AMONG MALE HANDBALL PLAYERS

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## Abstract

Humans' attention is based on perceptual and cognitive skills, including sports. Athletes are often tested on their cognitive abilities. Sport or general training is a kind of cognitive training that helps increase brain connectivity and plasticity. Stimulus-response involves sensory systems. Handball increases problem-solving mental processing. This study's goal is to see how perceptual skills might improve handball players' performance. At random, 30 male intercollegiate handball players from the Coimbatore district were chosen at random. The experimental group received 6 weeks of perceptual skill training, whereas the control group received no treatment. The Zinn handball battery exam was developed to assess passing and shooting skills. The influence of perceptual skill training on the chosen skill performance factors of male handball players was studied using ANCOVA. The research found that the experimental group's specialized skill training affected performance factors. Senior players are quicker, more precise, and better anticipate their opponents' moves. Quality training has a substantial influence on the development of perceptual and cognitive abilities in handballers.

It was concluded that the Current research demonstrates that perceptual skill training has significant impact on passing and shooting in the game of handball.

**Key words:** Handball, skill Performance, Passing, Shooting, and Perceptual

## Introduction

While playing a sport, attention relies on perceptual and cognitive skills in a wide range of events (Bullock & Giesbrect, 2014). Visual potency is measured by the speed with which visual spatial positions are changed, the capacity to distinguish between peripheral and central vision of a moving object, the ability to coordinate between the eyes and hand coordination, and the ability to maintain stability of visual attention. Sports such as handball need the use of visual sensory motor skills for recognizing the speed of the stimulus and training motor response potency in order to compete (Florkiewicz et al., 2016). Athletes

are regularly challenged with cognitive skills that require spontaneous processing of information, as shown by the variety of workouts performed at varying intensities and time intervals (Huttermann&Memmert, 2014). The skill is often acquired by repetition, field practice, and training activities for developing talents outdoors, as well as other skills such as computer projections, silent eye training, and virtual reality (Hadlow et al., 2018). Training during sports or in general is a kind of cognitive training that helps to improve the connectivity and plasticity of the brain network. A 3D-multiple item tracking task known as the neurotracker was developed by Faubert and Sidebottom as a training program focused on perceptual and cognitive skill development (NT). Players' cognitive performance was improved by NT-training, demonstrating that athletes' optimum processing of sports-related visual situations and perceptual-cognitive skills may be honed through NT-training (Legault et al., 2013; Parsons et al., 2014). The sensory systems play a significant role in the stimulus-response process in our environment, as they lead our limbs to move in the appropriate direction (Porac and Coren, 1981). As Guy Azemar et al. (2007) demonstrate in a competitive activity such as handball, cerebral dominance, correct laterality, coordination between the senses and the motor organs, and synchronization between visual movements are formed (Bruhn, 2004).

Movements of the human body are supposed to be controlled by the feedback received, and the disparity between the intended and realized values is calculated and suitably rectified. Per Lisenchuk et al. (2019), handball accelerates thought processing mediated towards the skill of problem solving, which is one of the most important cognitive skills to determine the efficacy of the handball field with sensory coordination with motor organs, perception of the peripheral environment, and major behavioral characteristics to perform the task rapidly and with shifting attention, among other things. It is proposed that peripheral perception is comprised of three functions: 1. speed assessment (high angular velocities occur in the periphery regions of the field of vision); 2. streams of information from adjacent objects; and 3. tracking of the surrounding environment (by detecting events and other objects). The aim of this study is to investigate the relationship between the relevance of perceptual skills in increasing handball players' performance and their abilities. This is preliminary research of this kind in which the perceptual training of athletes, namely handball players, is emphasized as a significant factor in improving their overall performance.

## Methodology

In order to meet the objectives of the current research, 30 male intercollegiate level handball players from different colleges in the Coimbatore area were recruited using a random selection process. The ages of the subjects varied from 18 to 25 years old. The pre-post random group experimental design was employed to meet the goals of this investigation. A total of 15 individuals were assigned to each of the two groups: group I was given perceptual skill training, while group II was given conventional instruction; both groups served as controls. Passing and shooting are the characteristics examined in this research. They were chosen from two different groups of participants and compared against each other using standardized exams. A handball battery exam, such as the Zinn handball battery test, was used to assess the skill performance characteristics of passing and shooting. This was taken into consideration as the pre-test score. The experimental group received 6 weeks of perceptual skill training, whereas the control group did not get

any kind of therapy at all. Table 1 shows the exercises that were chosen for the perceptual skills training group. The drills lasted 45 to 60 minutes, depending on the group. Following the end of the training session, samples from both groups were tested using the same methodology as in the pre-test. The acquired data was subjected to a Paired t-test in order to determine whether or not there were any statistically significant changes from baseline to post treatment. The comparative effects analysis of covariance was employed and evaluated among the players who were treated with perceptual skill and the control group in order to examine the effects of perceptual skill.

**Table 1: Showing the perceptual skill Training Exercises**

S.no	Exercises	Repetition		
		I to IV Weeks	V to VIII Weeks	IX to XII Weeks
1	Orientation	3 Min	3 Min	3 Min
2	Warm Up	7 Min	7 Min	7 Min
3	Wall pass	3Min	4 Min	4.5 Min
4	SSWB	3Min	4 Min	4.5 Min
5	7M Target Shoot	3Min	4 Min	4.5 Min
6	9M Target Shoot	3Min	4 Min	4.5 Min
7	SSB	3Min	4 Min	4.5 Min
8	Hit the ball	3Min	4 Min	4.5 Min
9	1vs1 Feinting	3Min	4 Min	4.5 Min
10	Full Court Game	3Min	4 Min	7 Min
11	Review	2 Min	2 Min	2 Min
12	Warm Down	7 Min	7 Min	7 Min

## Results and Discussion

**Table2.1 Computation of mean and analysis passing among handball players**

	Experimental	Control	Source of variance	Some of square	df	Mean square	F ratio
Pre-test mean	24.13	25.87	BG	22.53	1.00	22.53	2.03
			WG	311.47	28.00	11.12	
Post-test mean	29.07	25.80	BG	80.03	1.00	80.03	10.12*
			WG	221.33	28.00	7.90	
Adjusted post test mean	29.56	25.30	BG	126.92	1.00	126.92	28.78*
			WG	119.07	27.00	4.41	

\*Significant at 0.05 level

Table 2.1 shows that the adjusted mean value on passing of the perceptual skill and control groups was 29.56 and 25.30, respectively, for the perceptual skill and control groups. With the degrees of freedom 1 and 27, the derived F-ratio for passing was 28.78, which was greater than the table value of 4.21, which was necessary for significance at the 0.05 level of confidence. Handball players have been shown to use cognitive thinking skills. Several brain centers in the players' brains collaborate in a variety of ways in order to translate visual perception into the actions recorded by motor activation and vice versa. The findings of the research revealed that the particular skill training provided to the experimental group had a substantial impact on the skill performance characteristics measured in the study. When compared to the other conventionally taught groups, it was shown that the skill-trained groups showed much greater progress. These findings confirmed the earlier findings and were consistent with the literature, which indicated that the effects of a conventional training program, a vision coaching program, and a sports vision dynamics program all improved the fundamental skills of handball players' performance in fundamental skills (Krzepota et al., 2015).

Instantaneous changes in handball imply rapid and complex context changes. Therefore, players are faced with the challenge of gathering information about the ball's location as well as the positions of opponents and teammates in order to provide an adequate response within a short period of time under severe time and space constraints. In such scenarios, the capacity to predict future occurrences based on indications from the surrounding environment seems to be one of the most important features of expert performance to consider. Elite players have taken certain measures as a consequence of their ability to "read the game" in a number of different situations (Helsen and Starkes, 1999; Williams, 2000).

**Table 2.2 Computation of mean and analysis of covariance on shooting among handball players**

	Experimental	Control	Source of variance	Some of square	df	Mean square	F ratio
<b>Pre-test mean</b>	27.60	27.40	BG	0.30	1.00	0.30	0.02
			WG	437.20	28.00	15.61	
<b>Post test mean</b>	31.27	26.73	BG	154.13	1.00	154.13	12.77*
			WG	337.87	28.00	12.07	
<b>Adjusted post test mean</b>	31.21	26.79	BG	146.32	1.00	146.32	20.41*
			WG	193.54	27.00	7.17	

\*Significant at 0.05 level

According to the findings of the research, there was a statistically significant difference between the perceptual skill and control groups on passing. The data in the preceding table also demonstrates that the means of perceptual skill and control groups were statistically significant on passing among handball players both before and after the tests. According to a similar study, when an experienced player sees a teammate with the ball making a path into the space of the specific zone to receive a back pass from central-lateral crossing, the experienced player immediately responds with a movement along the cross trajectory without any prior warning. As shown in Table 2.2, the adjusted mean value on shooting for the



perceptual skill and control groups was 31.21 and 26.79 respectively, when compared to each other. Using shooting as an example, the resultant F-ratio of 20.41 was greater than the needed table value of 4.21 for the degrees of freedom 1 and 27 required for statistical significance at the 0.05 level of confidence. According to the findings of the research, there was a statistically significant difference between the perceptual skill and control groups when it came to shooting.

The data in the preceding table also revealed that the means of perceptual skill and control groups were statistically significant for shooting among handball players both before and after the tests. Senior players use more effective information-gathering tactics, are quicker and more precise, and are better at anticipating the moves of their opponents, resulting in a more accurate "reading" of the game than younger players. By using more efficient information collection tactics, they are able to lower the quantity of information that must be processed, thereby decreasing the complexity of the information. These findings are consistent with the findings of previous research, which found that this collection of events facilitates information processing in long-term memory, resulting in a more effective response choice as a consequence (Alves, 2004). Players in several other sports, such as football, have been observed to be better at using their perceptual and cognitive skills than their non-player counterparts (Alves, Figueiredo, and Brando, 1985; Ward and Williams, 2003), despite the fact that they do not compete in the sport.

Furthermore, these authors point out that restricted but high-quality training has a considerable influence on the acquisition and enhancement of perceptual and cognitive abilities in children and adolescents while they are younger. The combination of motor ability with memory-stored information results in the capacity to foresee a future occurrence and knowledge of the game play, both of which are particularly beneficial in specific competitive settings. As a result, these characteristics constitute the core characteristics of expert performance (Biscaia et al., 2021). As a result of the current research, it was discovered that improving handball passing and shooting abilities allows or enhances the player's prediction ability and talents, and, as a result, prepares him to face the competitive phases of the game.

## Conclusions

The research found that the experimental group's specialized skill training affected performance factors. Senior players are quicker, more precise, and better anticipate their opponents' moves. perceptual training has a substantial influence on the development skill performance of handballers. It was concluded that the Current research demonstrates that perceptual skill training has significant impact on passing and shooting in the game of handball. On the other hand, it was suggested that when attempting to identify a talented player, the variables identified in the current study, combined with those previously mentioned in the literature, such as anthropometric, physical, psychological, and technical-tactical factors, should be taken into consideration.

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