

Visual Intelligence and its Relationship to Scoring Accuracy After Receiving a Pass Among Youth Futsal Players

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Abstract

The present study was conducted to investigate the relationship between visual intelligence and shooting accuracy of youth futsal players when receiving a pass. The hypothesis for this research was that there is a correlation of the players' visual intelligence and their ability to shoot accurately after receiving the ball that is statistically significant. The relationship was studied because of the importance of visual perception, spatial awareness, and the quick interpretation of game situations in the evaluation of the technical performance of futsal. The researcher used the descriptive approach with correlational method because it was deemed suitable for the goal of the study to determine the nature and strength of the relationship between the variables studied. The research population included 30 youth players of Al-Minaa Club in Basra Governorate of which 20 players were selected using purposive sampling. The study procedures were application of a visual intelligence measure, a special futsal shooting accuracy test after receiving a pass, implementation of the main experiment and the use of appropriate statistics to analyze the data and determine the relationship between the variables. The results revealed that a statistically significant positive correlation existed between the youth futsal players' visual intelligence and shooting accuracy after receiving a pass. This discovery indicates that players with a higher level of visual intelligence can more easily process relevant visual information, understand the player position and movements, find shooting opportunities and react more efficiently and correctly during an attack. The researcher found that visual intelligence is an important cognitive component that is related to the ability of a youth futsal player to successfully shoot. It might also have implications for football and other sports where speed of visual perception, spatial analysis, anticipation and decision making are crucial. Thus, the study suggested that greater attention should be paid to development of visual intelligence within trainings, since this variable is directly related with shooting accuracy after a pass and can play an important role in developing overall technical level of young players.

Keywords: Visual Intelligence, Scoring Accuracy, Futsal.

INTRODUCTION

Futsal may be among the sports that involves a lot of speed, fast changes of pace, small playing area, constant pressure from opponent, and lots of scenarios which have to be acted upon within very short time. Those attributes make for an added amount of physical, technical, and cognitive challenge for players and demand a high level of physical fitness, mental state, perceptual awareness and quick motor response (Spyrou et al., 2020). Shooting is one of the most important skills in futsal, and is one of the most

basic ones a player must have, especially a youth player, since it is the most important technical skill for scoring goals and a key part of the success in competitive games.

Futsal is a modern game and thus, in addition to physical and technical skills, the players must display high level cognitive skills to be able to operate in rapidly changing situations. With the tactical and technical complexity of the game, it is more and more essential to be able to make rapid and accurate decisions during the shooting situation. So physical fitness and/or technical skill can no longer be the sole markers of superiority in futsal. Cognitive skills now have a major role to play in analysing a situation, choosing a response and then taking action to perform a task within a short time frame (Pizarro et al., 2021). This can be interpreted as one of the cognitive skills that can have a great impact on successful execution in futsal, specifically when it comes to shooting after receiving the ball. In this skill, the player must simultaneously process multiple visual and spatial stimuli in order to perform the skill. The player must be aware of the position and movement of other players before and during reception of the ball, estimate distance and direction of incoming pass, locate spaces to play the pass into, know the position of the goalkeeper, and predict the pressure or opposition that may be placed on them after receiving the ball. This rapid and accurate processing of all this information helps the player develop an appropriate mental model of the playing situation and choose the right shooting direction and timing (Oliveira et al., 2023).

The visual intelligence thus closely relates to the player's capacity to understand, interpret and organize visual information from the environment that surrounds him. It aids the player to convert peripheral visual information into the internal representation of meaningful images in the mind that can be used for motor responses. A player with good visual intelligence might be better able to estimate distance, look for the best shot angle, find clear space in the goal, anticipate the movements of the goalkeeper, and see the locations of the defenders when they run at them. The cognitive processes can help to make quicker and more accurate decisions and may improve the probability of making a good shot on goal (Klatt & Smeeton, 2022; Oliveira et al., 2023). The importance of the present study lies in studying the relationship between visual intelligence and shooting accuracy after receiving a pass in youth futsal players at Al-Minaa sports club in the governorate of Basra. The knowledge of this relationship can contribute to coaches, specialists, and researchers who are interested in football and futsal. It can also support

the creation of training sessions that combine the cognitive and perceptual skills with the technical skills of training, instead of the purely physical and motor aspects of training.

Visual intelligence is considered as one of the higher order cognitive variables in cognitive psychology and it can affect the basic technical skills in football in general and shooting accuracy after receiving a pass in futsal in particular. This skill is incredibly important when playing futsal, as there is less time, space and visual input available to see the goal and other players to assist with the task. Thus, youth futsal players must have a proper level of visual intelligence to understand the situation of the game quickly and respond technically properly to the situation (Klatt & Smeeton, 2022; Porto et al., 2021). The researcher observed the players' performance in the games of futsal and observed that the players' shot was not accurate after receiving the ball. In many situations it seemed players focused primarily on the ball and were quick to put it in play with little consideration of the playing area or the important visual information that was required to take in before playing. These visual scanning and perception deficits can make it difficult to determine where the goalkeeper is, what shooting angle or angles are available, how much pressure is on the shooter, or what is open. Research using eye-tracking technology has shown that futsal players visually process information from the ball, goalkeeper, defender and court when making shooting decisions (Corrêa et al., 2020; Oliveira et al., 2023).

Visual intelligence is underutilized in such circumstances and can cause some difficulties in the game, such as inaccurate shooting, too fast to shoot, hesitation in front of the goal, improper shooting angle, or aiming at an area already occupied by the goalkeeper or defending team. Such issues can have a detrimental effect on the performance of the individual player and also the attacking effectiveness and performance of the team. Thus, it is necessary to examine if there is a significant relationship between visual intelligence and shooting accuracy after passing is given to youth futsal players.

Based on the above consideration, a research problem can be stated as follows: Is there statistically significant relationship between visual intelligence and shooting accuracy upon receiving a pass for youth futsal players? The purpose of the study is to determine the relationship between visual intelligence and shooting accuracy when given a pass among youth futsal players. The study assumes that there is a statistically significant relationship between the visual intelligence and shooting accuracy after

passing is given to youth futsal players.

RESEARCH METHODOLOGY

The researcher used descriptive method with correlational studies approach because it was deemed suitable to the nature of the research problem and the purpose of the study. The descriptive approach is frequently used when the researcher wants to study a phenomenon as it exists, describe it, analyze different aspects of it, and delineate the nature of the relationship among the variables of the phenomenon. According to Wajih Mahjoub (1993, p. 181) this approach involves studying a phenomenon or solving a problem in the existing state using objective instruments to collect and analyze data to diagnose the phenomenon, identify aspects of the problem, and determine relationships between its elements. Therefore, the correlational method was chosen which was appropriate for the purpose of the present study to determine the relationship between visual intelligence and shooting accuracy of youth futsal players after passing the ball.

The sample of the study was youth futsal players in Al-Minaa Club, Basra Governorate. Wajih Mahjoub (1993, p.181) said that research sample is the model on which the researcher carries out the main procedures and analysis in the study. A sample of 25 players who made up 83.33% of the original population of 30 players was selected as the research population. The majority of participants were from the youth group (17-18 age group). So the selected sample was said to be representative of the original sample and appropriate for the implementation of the procedures necessary in order to attain the aims of the study.

The study utilized the following tests: The tests used in the study were:

The futsal shooting accuracy test following a pass (Laith Ali Mohammed, 2017, p. 67) was one of the main tests employed in this study. The primary function of this test was to assess the accuracy of the shot following a high trajectory pass and was conducted under controlled conditions. Equipment needed for the test was: Stopwatch, measuring tape, futsal balls and iron target squares of 50 × 50cm. The test was designed for advanced players of soccer and it was applied in the study environment in the governance of Basra.

The starting line for the test is a marked line that is 4m away from the center of the shooting area. The player starts at the beginning of the test standing on the marked line. Shooting area is a square about 1 m² in size and one edge of the square is 7 m from the goal. When the whistle is blown, the player sprints from the starting line towards the

shooting area. Once the player has entered the marked square they are given a pass from the coach who is located in area (A). The player then tries to knock the ball into target No. (1) that will be on the right side of the player. Once the player completes the first attempt, he/she goes back to the starting line and does the same. The second time, though, this shot is aimed at target number (2) which is on the left side of the player. This is continued down, up, left, right, shooting to the right-side target, left-side target, and so on.

The test will be timed for a total of 20 seconds. During this time the player must obtain the ball and make each shot from the inside of the foot. Each right/left shot is alternated until the test time has expired, as shown in Figure (1). The aim of this procedure is to provide an objective assessment of shooting accuracy, following a pass under conditions that replicate some of the technical requirements of futsal performance.

Test requirements :

- 1- The test is conducted in accordance with the legal terms of the game.
- 2 - The test is performed in a time of (20 seconds).
- 3- The scoring attempt is carried out alternately on both sides.
- 4- The shooting is done directly in the shooting accuracy test after receiving the pass.
- 5- The player who does not have a successful attempt is excluded.

Registration:

- 1- Calculate the total distance traveled for the test.
- 2- Calculates the total number of attempts to score.
- 3-Y according to the number of successful scoring attempts.
- 4- Successful shooting attempts are evaluated as follows: (Zero) If the ball is outside the goal and the lower half of the goal. In the lists and crossbar (except for the rating limits) and the center line of the goal. (2) In the area marked (in gray) and the boundaries of the evaluation display. (3) In the event that the ball enters the evaluation of M1 or M2 .
- 5 - Accuracy is calculated according to the following equation :

Accuracy combined with speed of performance = Total number of scoring attempts

$\times \frac{\text{Distance}}{\text{Time}}$ + the accuracy value of successful attempts.

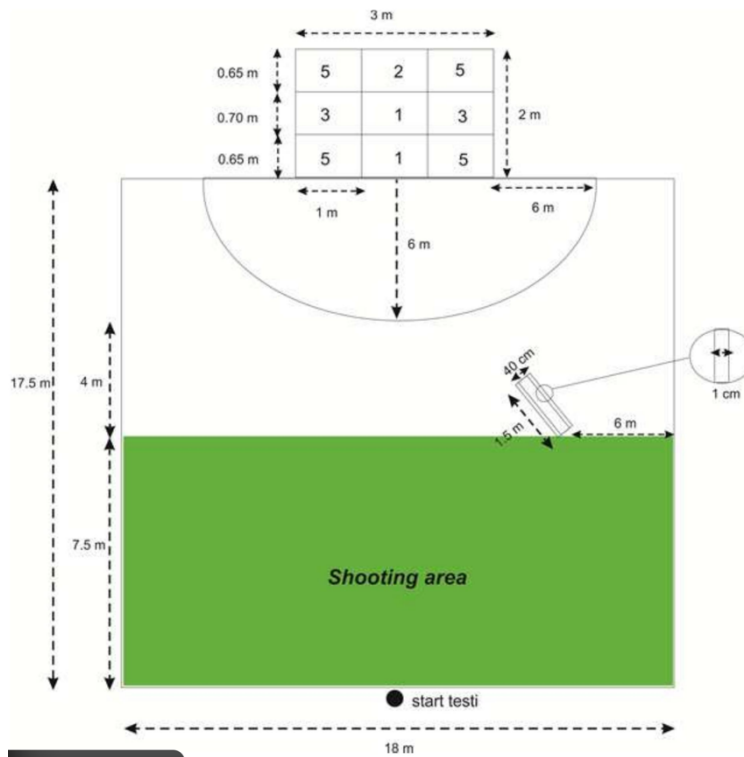


Figure 1. Testing shooting accuracy after receiving a pass in futsal

Main Experiment

The main experiment was the application of the tests that were adopted in this study, especially the shooting accuracy test following a pass by the youth futsal players. The experiment was performed with a research sample of 30 youth players of Al-Minaa Club, aged 17-18 years in Basra Governorate. The skill test was given following the procedures that had been determined during the exploratory experiment. The testing process started on 1st April 2026 and ended on 1st May 2026. For the main experiment, the researcher held the same organization and procedure as in the exploratory study, so that the experiment could be carried out consistently and accurately, in terms of the implementation of the tests. Special effort was made on setting the testing environment and putting all the necessary equipments, instruments and materials on hand, which are needed for the implementation of the research procedures. All participants were tested using the same test instructions, testing conditions and organization in order to minimize the impact of external factors and to get reliable and comparable results.

To organize, process and analyze the collected data, the researcher used the Statistical Package for Social Sciences (SPSS) version 16.0 after the data collection process. The statistical methods used to generate the results needed to answer the research

questions and test the relationship between the variables studied in the research were used.

RESULTS AND DISCUSSION

Presentation, analysis, and discussion of the results of the relationship between perceptual speed and shooting accuracy from a stationary position in a sample of young players.

Table 1. Relationship between visual intelligence and shooting accuracy after receiving a pass among young football players

Variables	Mean	Standard deviation	Calculated (t) value	Tabular (f) value	Sig.
Visual intelligence	2.7	6.32	6.124	2.069	Sig.
Accuracy of scoring after receiving a pass in futsal	7.9	1.6			

Degrees of freedom = $(n - 2)$ ($25 - 2 = 23$) and at level $(0.05) = (2.069)$

Table (1) shows the descriptive and statistical data of visual intelligence and shooting accuracy when receiving a pass among youth futsal players. Results show differences between the arithmetic mean of the two variables: The arithmetic mean of the Variable: Visual intelligence is (2.7) and the arithmetic mean of the Variable: Shooting accuracy after getting a pass is (7.9). There were also differences between the SDs, which ranged from (6.32) for visual intelligence and (1.6) for shooting accuracy after a pass was made. The findings of this study showed that visual intelligence in terms of passing and shooting accuracy among the youth futsal players is important. This skill cannot only be executed with technical and physical skills. Instead, it also demands a high level of cognition that allows the player to see, understand and interpret the playing field, as well as to decipher what opponents are doing and quickly evaluate the tactical possibilities before they make the shot.

Futsal features short-sided and fast-paced games with frequent attacking and defending scenarios. So the player has to be able to integrate visual information in a very short time. When shooting, the player must be able to see where the goalkeeper is, keep

an eye on the defenders' movements, estimate distances before shooting, see spaces and closed angles, and decide on the direction and timing of the shot. These processes are closely linked to visual intelligence, which allows the player to process the information they observe around them and use that to make good decisions. If a player has good technical, physical and skill performance, but lacks in visual and cognitive awareness, this may have a negative impact on the outcome of the shooting action. Visual intelligence is a crucial mental part, which enables the player to identify the problem during a game, consider the options of solution and choose the right one within seconds. This skill could help them to move the ball to the right part of the goal and therefore their scoring chances may improve and they can positively contribute to the team's performance.

The results of the statistics also confirm the fact that there is a significant relationship between the variables. The calculated T-value obtained (6.32) while the tabulated T-value was (2.069). Since the calculated value was greater than the tabulated value, the difference was statistically significant. This result also shows the significance of visual intelligence as one of mental variables that are needed by futsal players. Visual intelligence at a higher level will help the player to quickly discover distances, open and closed areas and make the right decisions in shooting situations. The player should then be able to shoot to a better location and will be able to control the necessary action to get the ball into the basket. The results also showed that most of the skills studied were developed in the majority of the respondents as well as some statistically significant differences in the majority of the skills except passing. The results of the study show that the expected educational curriculum using the integration of random practice and variable practice method is effective in improving the performance and skill level of the research sample.

The researcher believes the improvement is due to the nature of the suggested educational curriculum and the range of practice situations that it can offer to learners. There was an overall improvement in the players' technical performance which mirrored progress made in the skills that had been studied. This indicates that using a combination of practices might create more opportunities for learners to adjust their motor responses to varying performance conditions and may also help to develop basic skills. This is in line with Schmidt's belief that random and variable practice may be mixed to yield more lasting learning results. A motor-program parameter is considered to be a parameter of

the motor program that must be varied and/or adapted prior to each repetition when the learner is practicing multiple variations of a movement in a randomized practice structure. These repetitions of such changes can aid the learner to develop a more robust skill set for choosing the correct movement parameters for the specific situation. Thus, learners in such a schedule can learn more effectively and acquire a wider range of experiences than if they were to practice the same technique over and over again in the same context.

Likewise, Dhafer Hashem highlighted the benefit of using various teaching methods and approaches to enhance the learner's experience and to satisfy both the lesson requirements and individual learning needs, and to expand the learner's perception of performance as well as his/her capacity for controlling and adjusting motor execution. This interpretation is also in line with the one given by Wing Arnoff as quoted by Mustafa who suggested that one of the major advantages of the scheduling of practice is to keep the acquired information active while learning motor skills. For the passing skill, no post-test / pre-test difference was found statistically. However, an improvement was noted in the arithmetic means, and in the rate of improvement calculated. The researcher suggests that this is due to the nature of the passing skill and the continuum of open/closed skills.

Efficacy of a given practice procedure may depend on the nature of the skill to be learned in motor learning. The skill is opened up and relies on ever changing environmental factors, so random practice might be more suitable as it provides the learner with a range of and unpredictable performance scenarios. Sequential practice may be more appropriate, however, as a skill becomes more closed and the variation of the conditions when it is executed becomes more predictable and stable. The relative characteristics of the passing skill towards a closed skill may have caused the random practice method to have a relatively smaller impact and this may explain why the difference between the pre- and post-test scores may not have been statistically significant. But, the observed improvement suggests that the players still gained from the training even though it was not statistically significant.

This interpretation is in line with the results shown by the study conducted by Muntadhar Hussein Sabit in which he found that the experimental group provided with a random practice showed greater improvement in open skills such as shooting, than the experimental group provided with a sequential practice. The group that trained using the sequential approach had higher performance in relatively closed skills such as passing,

however. In addition, Ya'rub Khayoun noted that these sports like volleyball, football and basketball have constantly changing performance conditions. This is especially true for skills that are required in changing environments, therefore random practice could be especially effective. The learner learns the skill as well as how to transfer attention, redirect concentration and quickly organize motor programs to meet the continuous varying demands of competitive play.

CONCLUSIONS

There is a significant correlation between visual intelligence and shooting accuracy after receiving a pass among futsal players. The visual intelligence variable of young football players has a significant effect on the accuracy of receiving the pass and shooting.

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