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Relationship of Attention, Concentration, Decision Making Speed and Passing Accuracy in Futsal among Youth Players of Al-Diwaniyah Sports Club

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ABSTRACT

In this study, an attempt has been made to find out the relationship of selected cognitive processes, such as attention, concentration, and decision-making speed, and passing accuracy among youth futsal players of Al-Diwaniyah Sports Club. Descriptive correlational research methodology was used in this study to explore the relationship of cognitive processes with technical skills performance. The sample size of 32 youth futsal players ranging in age between 17 and 24 comprised the whole population of this study. All data in this study were collected during the period from March 20 to April 20, 2026, in Al-Diwaniyah Futsal Club Hall. To assess the cognitive processes, selected tests for attention, concentration, and decision-making speed and passing accuracy test for futsal were used. The findings showed significant and positive correlations between attention, concentration, decision making speed and passing accuracy of the participants. It can be seen that the youth players who have better cognitive ability showed more accurate pass during playing which proves the importance of cognitive ability for executing technical skills in futsal. The findings show that there is a relationship of passing accuracy of the youth futsal players with the selected cognitive processes. Thus, it may be recommended to train youth players regarding cognitive processes in order to improve their technical skills performance. Future research on large sample sizes of youth players from other clubs is recommended.

Keywords: Cognitive Process, Attention, Concentration, Decision Making Speed, Passing Accuracy, Futsal.

Introduction:

Futsal is a complex and highly dynamic team sport involving rapid transitions, confined spaces, constant interaction among players, and rapid responses in terms of both technical and tactical decisions. Thus, cognitive processes have gained considerable recognition in recent years as vital determinants of successful football and futsal performance. The following section summarizes the current knowledge concerning the relationship between attention, concentration, decision-making speed, and passing accuracy in football and futsal sports.

Firstly, attention is regarded as an important cognitive skill determining athletic success since it helps athletes to select salient stimuli while avoiding distracting stimuli. In a study by Zheng and Wang (2020), adolescents engaged in soccer demonstrated significantly different levels of technical performance according to their attentional focus strategies, which indicated the importance of this cognitive aspect for skillful play. Secondly, decision-making is an equally

crucial cognitive process that plays an important role in determining the level of success in football sports. According to Murr et al. (2021), high-level youth soccer players possessed better decision-making skills than low-level players. In turn, Vansteenkiste et al. (2022) revealed that youth soccer players who employed better visual search strategies showed better passing performance than less skillful athletes, proving the importance of perceptual-cognitive skills in technical performance.

The value of cognitive processes and skills for sports performance is becoming widely recognized nowadays. Kelly et al. (2023) highlights the importance of using technical and cognitive performance indicators as key criteria for talent identification and performance evaluation in sports. Furthermore, Gioldasis et al. (2024) conducted a study devoted to testing the reliability of a video-based passing decision-making test and confirmed its efficiency when assessing the level of skills among soccer and futsal players. In particular, elite players showed significantly better results than less experienced athletes. Finally, it should be noted that visual perception and decision-making under conditions of stress are other critical predictors of successful football sports performance. For example, Bohloul et al. (2025) established the existence of significant correlations between visual perception, decision-making skills, and the overall level of competitive success among soccer players. According to these researchers, athletes who have better perceptual skills will be better able to choose appropriate actions in rapidly changing game situations.

Recent intervention studies have shown that cognitive skills and abilities can be trained and developed. According to Ramírez Lucas et al. (2025), the implementation of dual cognitive-motor training led to a considerable improvement in attention, reaction time, working memory, and technical performance among youth football players. Similarly, in a study by Abdyasir (2026), participants in mental focus training demonstrated significant improvements in concentration, decision-making speed, and passing accuracy among young football players.

Apart from technical aspects, some studies have shown the importance of cognitive and psychological variables for athlete development and resilience. In particular, Siyahtaş et al. (2025) reveal the contribution of psychological skills, self-efficacy, and social support to resilience among academy football players. In recent years, evidence has further underlined the importance of cognitive development for athletes participating in football sports. Specifically, Machado et al. (2026) argue that decision-making is one of the main determinants of football performance. At the same time, Price et al. (2025) emphasize a broad range of positive impacts

resulting from the participation in this sport (e.g., increased cognitive engagement and behavioral adaptability).

Thus, the available literature demonstrates that attention, concentration, visual perception, and decision-making speed constitute key elements of successful performance among football and futsal players. On the other hand, although there is a significant number of studies devoted to the relationship between cognitive variables and sports performance, there are not enough studies examining the association between attention, concentration, decision-making speed, and passing accuracy among youth futsal players in Iraq.

Research Problem

The accuracy of the pass is one of the most important technical skills in futsal, since it affects the ball possession and organizational skills during attacks on offense. Despite all the physical and technical exercises carried out by athletes, the accuracy of the pass shows different results for athletes with the same physical and technical characteristics, and the reason can be found in cognitive processes such as attention, concentration, and speed of decision making. Recently, cognitive processes have been considered as an integral part of the analysis of sport performance. In particular, in the context of dynamically developed collective sports where information processing and response take place simultaneously, there have been few studies analyzing relationships between cognitive abilities and specific technical indicators. Thus, the present study aims to answer the following research question:

Is there any statistically significant relationship between attention, concentration, decision-making speed, and passing accuracy among youth futsal players of Al-Diwaniyah Sports Club?

Research Objectives

1. To determine the level of attention, concentration, and decision-making speed among youth futsal players of Al-Diwaniyah Sports Club.
2. To determine the level of passing accuracy among the subjects of the study.
3. To establish a relationship between attention and passing accuracy among youth futsal players.
4. To establish a relationship between concentration and passing accuracy among youth futsal players.

5. To establish a relationship between decision-making speed and passing accuracy among youth futsal players.

Research Hypotheses

1. There is a statistically significant positive relationship between attention and passing accuracy among youth futsal players of Al-Diwaniyah Sports Club.
2. There is a statistically significant positive relationship between concentration and passing accuracy among youth futsal players of Al-Diwaniyah Sports Club.
3. There is a statistically significant positive relationship between decision-making speed and passing accuracy among youth futsal players of Al-Diwaniyah Sports Club.

Significance of the Study

The significance of the current study may be associated with attempts to establish the connection between certain cognitive processes and passing accuracy among youth futsal players. Information on the mentioned connection can be useful for the creation of efficient futsal training programs involving cognitive and technical processes. Additionally, the results obtained within the scope of this study can be helpful for sports coaches and practitioners to know about the importance of attention, concentration, and decision-making speed for improving technical performance. The study will also help in contributing to the existing literature on futsal since there have been few studies conducted in the Iraqi sport environment focusing on the mentioned problem.

Delimitations of the Study

Human Delimitation

Youth futsal players of Al-Diwaniyah Sports Club aged 17-24 years.

Spatial Delimitation

Al-Diwaniyah Sports Club Futsal Hall, Al-Diwaniyah, Iraq.

Temporal Delimitation

Conducting the study between March 20, 2026, and April 20, 2026.

Methodology

Research Design

For the accomplishment of the purpose of this study, it was necessary to choose the descriptive correlational research design as an approach to conducting the research. It means that the researcher should find out the associations between certain factors, namely attention, concentration, and decision-making speed and passing accuracy.

Participants

The population of this study included all youth futsal players of Al-Diwaniyah Sports Club. To select the sample, the researcher used the purposive sampling technique and decided to involve all population members in the research process. Therefore, the sample of this study was composed of 32 youth futsal players aged between 17 and 24 years, which made up 100% of the population. All participants actively took part in training sessions and competed during the study period.

Instruments and Data Collection Tools

For the collection of data, the following instruments and tools were chosen:

1. Attention test.
2. Concentration test.
3. Decision-making speed test.
4. Futsal passing accuracy test.
5. Observation.
6. Personal interviews with coaches and players.
7. Data recording forms.

Cognitive Processes Assessment

For this experiment, three standardized tests were applied to measure different cognitive processes. Attention was estimated with the help of the Bourdon Attention Test. This instrument measures selective attention and visual scanning. Concentration was tested with the Harris Grid Concentration Test that evaluates participants' ability to sustain attention and concentration under time pressure. As for the decision-making speed, the corresponding parameter was evaluated through an experiment based on video game actions. In particular, the video-based test measured participants' ability to select the most effective decision from a

variety of options in game situations. The results were further analyzed statistically (Bourdon, 1902; Harris, 1984; Gioldasis et al., 2024).

Validity and Reliability

To prove content validity, the proposed tests and procedures were considered by a panel of experts in sports psychology, measurement and evaluation, and futsal coaching. These experts confirmed the appropriateness of using such instruments to assess attention, concentration, and decision-making speed among athletes. Also, the selected tests have been utilized for decades for the same purpose in sports performance studies with satisfactory levels of validity and reliability of measurements (Zubin, 1975; Gioldasis et al., 2024).

Pilot Study

A pilot study was carried out on five futsal players. This experiment did not involve the main sample and was conducted to test the feasibility of testing procedures, to estimate the necessary amount of time for taking tests, to make sure that the instructions would be clear, and to determine possible issues in data gathering. The pilot study confirmed the choice of tests and their adequacy for the participants.

Testing Procedures

All data were collected at Al-Diwaniyah Sports Club Futsal Hall. Testing took place in the period from March 20 to April 20, 2026. Cognitive abilities were tested first. Thus, participants were asked to perform the Bourdon Attention Test, the Harris Grid Concentration Test, and a test estimating decision-making speed in video games. Appropriate breaks were organized after each test to provide for participants' rest and to prevent tiredness. After taking the tests, participants had to perform the passing accuracy test, as it was outlined previously. Each player had to make a predetermined number of passes towards the predetermined targets in accordance with the testing protocol. Then, the total score indicating passing accuracy was calculated based on the total amount of successful passes made by each player.

Passing Accuracy Test

In order to evaluate passing accuracy, a special futsal passing test was conducted. According to this test, the task for participants was to make ten passes to specific target zones placed at

the predetermined distance. A player got one point for each success and zero points if a pass failed. Thus, the maximum score a player could earn was ten points.

Statistical Analysis

Collected data was processed via the Statistical Package for the Social Sciences (SPSS), version 27. First, basic descriptive statistics were calculated for all variables, and the normality of data distribution was checked with the Shapiro-Wilk test. Since there was no violation of normality ($p > 0.05$), Pearson's correlation coefficient was used for further analysis of the relationship between the variables under consideration.

Results

Cognitive Process Variables Descriptive Statistics

The table below shows the descriptive statistics for the variables measuring cognitive processes observed in youth futsal players at Al-Diwaniyah Sports Club.

Table 1. Descriptive Statistics of Cognitive Process Variables (N = 32)

Variable	N	Mean	SD
Attention	32	41.82	5.47
Concentration	32	38.94	4.88
Decision-Making Speed	32	36.71	5.12

From the results, it is clear that the subjects exhibited higher attention and concentration levels along with average decision-making speed. The attention test had the highest mean score of 41.82 ± 5.47 followed by the concentration test with a mean score of 38.94 ± 4.88, while the mean decision-making speed was 36.71 ± 5.12.

Performance in Passing Accuracy

Descriptive statistics of passing accuracy performance are illustrated in Table 2 below.

Table 2. Descriptive Statistics for Passing Accuracy Performance (N = 32)

Variable	N	Mean	SD	Maximum Score
Passing Accuracy	32	7.76	1.41	10

The players managed to attain a passing accuracy score average of 7.76 ± 1.41 out of a total of 10 scores, which is a reasonably good performance in passing accuracy by the futsal players.

Attention and Accuracy in Passing

To determine whether there is any association between attention and passing accuracy, Pearson's correlation test was used.

Table 3. Association between Attention and Passing Accuracy (N = 32)

Variables	N	r	p-value
Attention – Passing Accuracy	32	0.68	< 0.01

A significant positive correlation was found between attention and accuracy in passing ($r = 0.68$, $p < 0.01$), which means that the athletes who scored more in attention were also successful in terms of passing accuracy.

Correlation Between Concentration and Passing Accuracy

The correlation between concentration and passing accuracy was measured by using Pearson's correlation coefficient.

Table 4. Correlation Between Concentration and Passing Accuracy (N = 32)

Variables	N	r	p-value
Concentration – Passing Accuracy	32	0.72	< 0.01

There is a significant positive relationship between concentration and passing accuracy ($r = 0.72$, $p < 0.01$). This indicates that it is the highest correlation between the studied cognitive factors.

Correlation Between Decision Making Time and Accuracy of Passing

To determine the relation between decision making time and accuracy of passing, Pearson's coefficient of correlation was calculated.

Table 5. Correlation Between Decision-Making Time and Passing Accuracy (N = 32)

Variables	N	r	p-value
Decision-Making Speed – Passing Accuracy	32	0.65	< 0.01

Results revealed that there was a significant positive correlation between decision-making time and accuracy of passing ($r = 0.65$, $p < 0.01$).

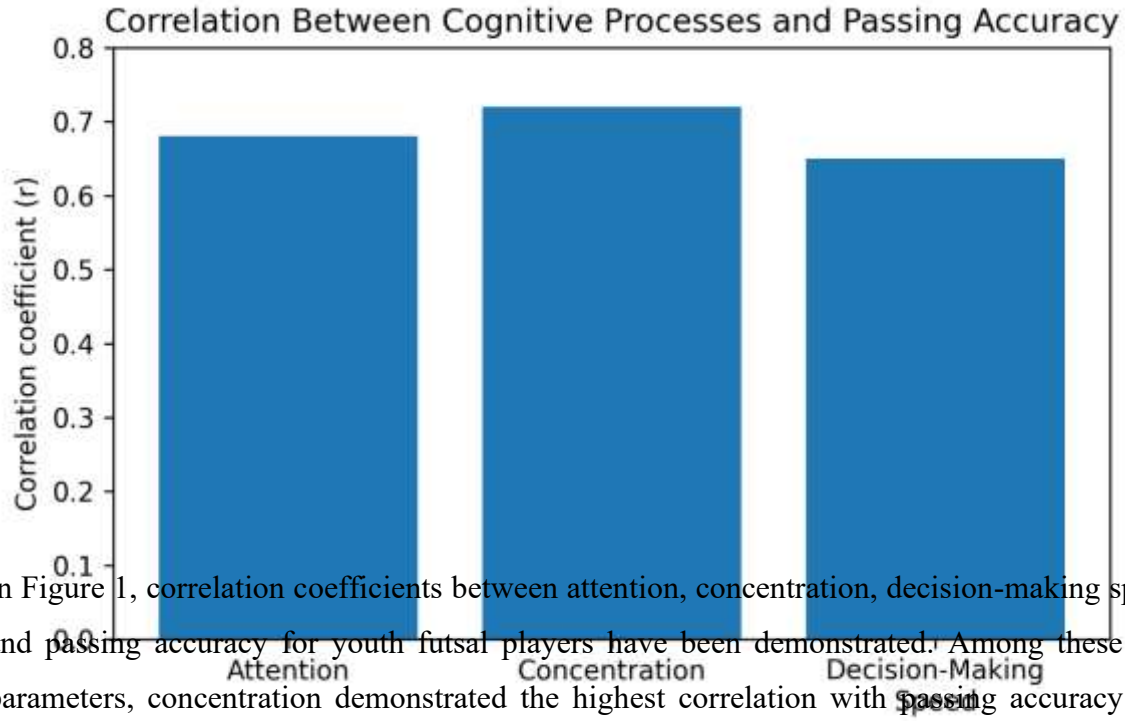
Results of Correlations Analysis

The interrelationships between the cognitive processes variables and passing accuracy are provided in Table 6.

Table 6. Interrelationship Between Cognitive Processes and Passing Accuracy (N = 32)

Variable	N	r	Strength of Relationship
Attention	32	0.68	Strong Positive
Concentration	32	0.72	Strong Positive
Decision-Making Speed	32	0.65	Strong Positive

Among the investigated variables, concentration exhibited the strongest relationship with passing accuracy, followed by attention and decision-making speed. All relationships were positive and statistically significant.



In Figure 1, correlation coefficients between attention, concentration, decision-making speed, and passing accuracy for youth futsal players have been demonstrated. Among these four parameters, concentration demonstrated the highest correlation with passing accuracy (r = 0.72), followed by attention (r = 0.68) and decision-making speed (r = 0.65).

Discussion

In this study, several significant positive correlations were observed between the analyzed cognitive factors (attention, concentration, and decision-making speed) and passing accuracy in youth futsal players of Al-Diwaniyah Sports Club. As such, the obtained data provide clear evidence regarding the essential role played by cognitive processes in the efficient execution of technical skills in futsal. In particular, passing accuracy in futsal is regarded as one of the most critical factors in determining the successful technical and tactical performance in this sport.

In this context, the presence of a significant positive correlation between attention and passing accuracy can be interpreted as indicating the importance of attention for the identification of

relevant environmental information and the selection of optimal passing alternatives. Given the dynamics of game processes in futsal, the execution of passing actions requires constant attention and visual monitoring of opponents and teammates' positions. According to the findings of Triggs et al. (2025), who emphasized the role of perceptual-cognitive skills in soccer performance, athletes with high attention and perceptual abilities perform better compared to their less skillful competitors.

Concentration seems to be the most influential factor in passing performance, as evidenced by the highest coefficient value between these two variables ($r = 0.72$). This finding suggests that cognitive processes of concentration allow players to focus on task-relevant cues and minimize the distractive impact of external stimuli, including those produced by opponents and supporters, thereby contributing to higher passing accuracy. This explanation is confirmed by the findings of Heilmann et al. (2024), who emphasized the significance of executive functioning and cognitive control for successful sports performance. Even though the intervention carried out by the researchers yielded moderate effects after domain-specific cognitive training, they still emphasized the importance of cognitive abilities in sports performance.

A positive relationship between decision-making speed and passing accuracy was also detected in this study ($r = 0.65$). This result is associated with the tactics of futsal, according to which athletes need to select one of available passing alternatives quickly. In this way, faster decision-making allows players to make use of available opportunities even before defensive pressures change the planned action. Similarly, in their comparison of decision-making performance in high-level and low-level youth soccer players, Murr et al. (2021) showed that decision-making performance could be used as a marker of player expertise and future development potential.

In addition to these findings, it should be noted that this conclusion was supported by Machado et al. (2026) in the course of their scoping review of literature on soccer decision-making. They concluded that decision-making is one of the critical factors in achieving success in this sport. At the same time, developmental activities and cognitive interventions contribute greatly to the improvement of decision-making ability. As reported by Paucar Uribe et al. (2025), decision-making is also recognized as one of the most rapidly developing research areas in football science due to its significant contribution to sports performance.

The role of decision-making in passing performance can also be attributed to the specificity of futsal. In their investigation of cognitive and motor determinants of futsal performance, Peña Tovar et al. (2022) discovered a significant correlation between decision-making and the level

of contextual intelligence in futsal players. In this way, the higher level of cognitive skills can be associated with higher game performance in this sport because players with good cognitive abilities tend to adapt successfully to changes in game situation and choose optimal actions.

Another possible explanation of the obtained results may lie in visual searching and perceptual abilities. In their study examining the visual search of futsal players, Oliveira et al. (2026) discovered that successful players exhibit better gaze behavior patterns and perceptual skills during decision-making and subsequent pass execution. In this regard, it can be assumed that good visual perception also contributes to higher passing accuracy in futsal by means of decision-making.

Another explanation of the obtained correlations may include cognitive load. Oliveira et al. (2025) found that cognitive load negatively affects passing accuracy in football training because players possessing weaker cognitive skills tend to experience difficulties when performing technical tasks in conditions of mental stress. Thus, similar to passing accuracy, cognitive load was shown to have a negative effect on passing performance in the present study.

Recently, the results of cognitive training intervention studies have also been obtained showing the benefits of using cognitive training in soccer athletes. In this way, it can be assumed that cognitive training is beneficial to futsal performance. For instance, Staiano et al. (2025) discovered that brain endurance training not only improves cognitive performance but also increases the quality of performance of soccer-specific skills.

Additional support for the obtained results was provided by studies involving Iraqi national futsal players. Ibrahim et al. (2024) found a significant difference in decision-making performance among male and female futsal players from Iraq and proved that the ability to decide is a critical determinant of competitive sports performance in this sport.

Conclusions

From the results of the current study, the following conclusions could be made:

1. There was a significant positive correlation between attention, concentration, decision-making speed, and passing accuracy in youth futsal players of Al-Diwaniyah Sports Club.
2. Concentration was more correlated with passing accuracy than other cognitive abilities.
3. Youth futsal players whose cognitive functions showed better results managed to achieve high results in terms of passing accuracy due to the impact of cognitive processes on the execution of techniques.

4. Attention significantly contributes to achieving success in passing since it helps players to recognize important environmental stimuli and keep focused during games.
5. Decision-making speed is vital in the case of passing accuracy because this technique involves making decisions at a rapid pace.
6. Cognitive processes play an important role in determining technical performance and should be considered along with physical training.

Recommendations

On the basis of the results obtained in the course of the research, the following recommendations could be put forward:
1. Coaches should develop special cognitive training exercises aimed at improving the level of players' attention, concentration, and decision-making ability.
2. Training should include game situations requiring quick reactions and accurate passing decisions.
3. Coaches and sports psychologists should cooperate in designing cognitive programs for youth futsal players.
4. More attention should be paid to the analysis of players' cognitive skills when evaluating their performance and identifying talents.
5. Further research should involve the investigation of other cognitive skills such as visual perception, reaction time, working memory, and tactical intelligence.
6. Larger samples and various sports clubs should be used in future studies to improve the generalizability of results.
7. Experimental studies are needed to examine the effects of cognitive exercises on technical and tactical performance.

Research Gap

Although there have been many studies investigating the contribution of cognitive processes in football games, few researchers have focused on the analysis of attention, concentration, decision-making speed, and passing accuracy among youth futsal players. Moreover, almost no studies have been conducted in the sports environment of Iraq. This gap is attempted to be addressed in the current research by focusing on the contribution of cognitive processes to passing accuracy among youth futsal players of Al-Diwaniyah Sports Club.

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