

ORIGINAL

## From cognition to competition: enhancing Indonesian football development through sports psychology

### De la cognición a la competición: potenciando el desarrollo del fútbol indonesio mediante la psicología del deporte

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#### ABSTRACT

Cognitive aspects play a crucial role in football development, integration of cognitive training is an important strategy for coaches in developing players who can reach a professional level and stay at that level for a long time, so that young players can optimize their physical and mental potential in their development path. This study aims to analyze the role of cognitive training in football player development based on coach experience using the Evolved Grounded Theory (EGT) approach. This study focuses on developing a data-based theory obtained through semi-structured interviews, observations, and document analysis that allows for in-depth exploration of coaches' experiences in implementing cognitive training. A total of 10 coaches from Indonesia participated in this study with the criteria of a minimum of five years of experience and ownership of a coaching license. Ownership of a license is considered one of the important things in improving the quality of coaching and the welfare of football players in the development path. The data collected were then analyzed using a code through the Nvivo12 application. The results of this study found that intelligence, decision-making ability, willingness, goal setting, focus are cognitive aspects that must be possessed by football players in the development path in order to reach a professional level. The results of this study are expected to provide insight and recommendations for coaches in integrating cognitive training as a strategy for developing soccer players. Thus, this study contributes to building more effective coaching to produce young players who are ready to face the challenges of modern soccer.

**Keywords:** Intelligence; Decision Making; Ability; Goal Setting; Focus; Sports Psychology.

#### RESUMEN

Los aspectos cognitivos desempeñan un papel crucial en el desarrollo del fútbol. La integración del entrenamiento cognitivo es una estrategia importante para los entrenadores en el desarrollo de jugadores que puedan alcanzar un nivel profesional y mantenerse en ese nivel durante mucho tiempo, de modo que los jóvenes jugadores puedan optimizar su potencial físico y mental en su trayectoria de desarrollo. Este estudio tiene como objetivo analizar el papel del entrenamiento cognitivo en el desarrollo de jugadores de fútbol basándose en la experiencia del entrenador utilizando el enfoque de la Teoría Fundamentada Evolucionada (EGT). Este estudio se centra en el desarrollo de una teoría basada en datos obtenidos a través de entrevistas

semiestructuradas, observaciones y análisis de documentos que permite una exploración en profundidad de las experiencias de los entrenadores en la implementación del entrenamiento cognitivo. Un total de 10 entrenadores de Indonesia participaron en este estudio con los criterios de un mínimo de cinco años de experiencia y la posesión de una licencia de entrenador. La posesión de una licencia se considera uno de los aspectos importantes para mejorar la calidad del entrenamiento y el bienestar de los jugadores de fútbol en la trayectoria de desarrollo. Los datos recopilados se analizaron posteriormente mediante un código a través de la aplicación Nvivo12. Los resultados de este estudio revelaron que la inteligencia, la capacidad de decisión, la disposición, la fijación de objetivos y la concentración son aspectos cognitivos que los futbolistas deben poseer durante su desarrollo para alcanzar el nivel profesional. Se espera que los resultados de este estudio brinden perspectivas y recomendaciones a los entrenadores para integrar el entrenamiento cognitivo como estrategia en el desarrollo de futbolistas. De esta manera, este estudio contribuye a desarrollar un entrenamiento más efectivo para formar jóvenes jugadores preparados para afrontar los retos del fútbol moderno

**Palabras clave:** Inteligencia; Toma de Decisiones; Capacidad; Establecimiento de Objetivos; Concentración; Psicología del Deporte.

## INTRODUCTION

Cognitive function and sports are inseparable, this is because thinking ability can affect a person's perception of motion.<sup>(1,2)</sup> This means that sports activities are an effective medium in training cognitive abilities, especially for young children. Cognitive aspects are related to temporal-spatial orientation, auditory attention, concentration, visual perception, memory, logical skills, language, and executive functions.<sup>(3,4,5)</sup> In sports that are game-like or individual, cognitive function is included in the psychological characteristics of athletes in determining the position or strategy of the match.<sup>(6,7)</sup> In addition, the context of the relationship between cognitive abilities and social-emotional abilities of young athletes is a reference in strengthening communication skills, understanding of playing strategies and problem-solving abilities. Therefore, creating a fun learning environment can help encourage children's intellectual and emotional growth.<sup>(9)</sup> This means that sports coaching centers need to focus on the cognitive domain as a strategy to improve the performance of soccer players.

The complexity of the game of football involves fast movements, where in the game there are elements of strategy and tactics, so that cognitive ability becomes the main point that can be the key to the success of a football team. The results of a study from <sup>(10)</sup>, stated that football players with higher competition rankings have better cognitive abilities and perceptive abilities than those at lower competition levels. This means that the hours of flight of football players also determine the cognitive level and success of football players in matches. Psychological adaptation and flexibility play an important role in the cognitive and emotional functions of football players. The interaction of elements related to the cognitive-affective process is one of the manifestations of athletes in maximizing daily activities.<sup>(12,13,14,15)</sup> This means that children whose cognitive abilities are trained from an early age have advantages in the decision-making process and self-control and are mentally tough, which is useful in dealing with stressful situations in matches and in daily activities.

The cognitive domain is related to competitive stress and emotions, athletes who perceive stress as a challenge tend to feel more in control of the situation and more resourceful (coping perception), leading to more positive emotional experiences, while athletes who perceive stressors as threats are more prone to experiencing less control and more negative emotions.<sup>(16,17)</sup> According to Pompeo et. al <sup>(17)</sup>, cognitive skills will have an impact on the behavior of football players on the field. Therefore, the integration of cognitive aspects is very much needed in the development of football achievements, especially those at the grassroots football level. Interactions involving the improvement of the cognitive domain are one of the training methods that can improve player performance during the match. In football, the use of tactics and strategies is a combination of various cognitive domains, one of which is problem solving. An athlete who is able to read game opportunities with a fast level of problem solving is an indication that the cognitive domain has worked. Therefore, in an effort to assess the level of cognitive ability in the success of grassroots football, researchers conducted a qualitative analysis as a step in forming a coaching model by focusing on cognitive aspects.

## METHOD

### Design

This study uses the Evolved Grounded Theory (EGT) approach as developed by <sup>(18)</sup>, which emphasizes a gradual and in-depth theory development process. EGT is a methodology that has high cross-disciplinary appeal because of its ability to produce theories that are contextual, sharp, and relevant to field reality. This approach

requires high theoretical sensitivity, as well as openness to move dynamically between empirical data and theory construction. In the context of qualitative research, three main methods are used for data collection, namely interviews, observations, and document analysis.<sup>(19)</sup>

### Procedure

This study employs several open-ended questions to gather information from various sources. All items in the interview protocol used in this study were assessed for face and content validity. There are five experts specialists in football, qualitative research, and psychology, who evaluated this research instrument. All experts' opinions are considered when selecting interview items to determine validity and reliability. The Cohen's Kappa index was used to assess the suitability of the units of analysis in relation to the studied theme. The validity and reliability values of the instrument were obtained using Cohen's Kappa formula.<sup>(20)</sup> The Cohen's Kappa value was 0,894, indicating that the instruments in this study were highly reliable. The researchers followed the established procedures before data collection to secure approval from the primary supervisor. This approval was necessary before seeking permission from the Research Ethics Committee of the UPSI Management and Innovation Center (RMIC) to involve human study participants. The researchers complied with all administrative requirements related to data collection procedures. They obtained a certificate confirming the completion of ethical studies, referenced by the letter number UPSI/PPPI/PYK/ETIKA(M)/Vol. 15(50) - 050-2023.

### Informants

Participants in this study consisted of 10 Indonesian soccer coaches. The inclusion criteria set included coaches with a minimum of five years of coaching experience, as such experience is considered an important resource that has significant implications for the development of future soccer players.<sup>(21)</sup> In addition, only coaches who have an official coaching license in soccer were included in this study. Formal education through licensing programs also plays an important role in maintaining and improving the quality of coaching.<sup>(22)</sup> The number of participants in qualitative research is not determined at the beginning of the research but is based on information saturation, when no new information is provided by participants.<sup>(23)</sup>

Table 1. Research Informant Information				
No	Age	Licence	Level of Study	Experience
C1	30	C AFC	Degree	10 Years
C2	38	C AFC	Degree	12 Years
C3	31	C AFC	Master	6 Years
C4	43	B AFC	Degree	17 Years
C5	53	B AFC	Degree	16 Years
C6	49	B AFC	Degree	15 Years
C7	42	A AFC	Master	10 Years
C8	45	B AFC	Master	18 Years
C9	36	A AFC	PhD	13 Years
C10	42	A AFC	Senior High School	6 Years

### Data Analysis

This study uses data triangulation, which means it is carried out to compare different methods and data sources and to confirm the findings of researchers, referring to a combination of methods or data sources in a study, which occurs when researchers confirm evidence from different sources to clarify themes or perspectives,<sup>(21)</sup> a combination of discussion, observation, and documentation which is a source of data to obtain related findings.<sup>(23)</sup> Data analysis in this study uses open coding, axial coding, and selective coding strategies.<sup>(18)</sup> Coding is an idea that is often reduced to words to describe data; it is also an analytical technique that analyses facts about events or experiences, line by line or paragraph by paragraph. First, researchers conduct open coding, identifying and labelling data in detail. The labels that appear are grouped into a larger category that helps researchers identify patterns and relationships between concepts. Furthermore, using the continuous comparison process, these categories are refined until the main themes emerge, a process known as selective coding.

## RESULTS

In this research, triangulation was employed to verify the data sources collected by the researcher. The primary purpose of this approach is to ensure that the research findings are not solely based on one source or method, thereby reducing bias and increasing confidence in the results. The researcher gathered data through

interviews with 10 coaches from Indonesia. To strengthen the findings from these interviews, the researcher also analyzed documents provided by the coaches, including books created by the participants and various training programs designed for players, parents, and families.

### Interview

This research uses semi-structured, in-depth interviews. According to Patton<sup>(18)</sup>, in-depth semi-structured interviews are suitable because open-ended questions and answers are recorded in more detail, and questions in semi-open interviews are determined beforehand. However, the answers to open-ended questions can be expanded upon. I provide an overview of the interview results related to this research to facilitate readers' understanding of the information provided by the coach. I provide C1 codes for the coaches who participated in this study for ease of reading.

This study has successfully uncovered an important dimension in the development of football players that has often been overlooked in conventional training schemes, namely the cognitive aspect. Through an in-depth analysis of the performance needs of modern football, it was found that a number of cognitive abilities such as intelligence and the ability to take as conveyed by coach C1:

*I hope when I do that training, he will have a faster way of thinking, I want him to be able to make decisions faster, he can generate ideas, think critically during the game. Football one-two seconds is very valuable (C1).*

The same statement was also conveyed by the C7 coach:

*That's where intelligence comes in. That's what differentiates a good player from an average player. The decisions they make are right and they know when to do it. When and where. We judge that we want someone who is a thinking player. He can think and he can make decisions, change decisions based on the situation (C7).*

In the game of soccer, the feet are only used as a tool, this is said because in the game of soccer, players are required to have intelligence or intellectual abilities, as conveyed by the C2 & C9 coach:

*You understand what the coach teaches, because our players' level of understanding is the same as in class, some say that once he can understand, he listens and understands and can do it, because his IQ is too low, unlike those who are smart, who understand easily (C2).*

This statement was supported by the coach:

*Football is a sport that requires a critical thinking brain, what makes it different is individual skills. Some coaches also take IQ tests to see which players are really ready (C9).*

In addition, a soccer player must have goal setting. By having measurable goals, soccer players can objectively assess their progress and improve their weaknesses more effectively. In addition, goal setting also plays a role in building discipline, work ethic in players, and teaching players to commit to maximum effort in order to achieve the results that have been set at the beginning. As conveyed by coaches C3 and C4:

*If you want to be a good player, that's how it has to be. You have to have a goal first, the important thing is to set the target first, then we can plan what's next (C3).*

The same statement was also conveyed by the coach:

*We have to make sure they have a goal, their ultimate goal is to be able to represent the country or nation (C4)*

In order to achieve the goals set by the players, the willingness to learn and increase training that allows players to continue to improve their abilities and knowledge over time is one of the cognitive aspects needed by players. Of course, the task of a coach is to provide information about the requirements to become a successful soccer player and provide various training methods to the players, but the willingness of the players themselves is important in improving their abilities which will make players more efficient compared to players who only rely on the coach's instructions. Those who have advantages will be selected and can reach the professional level, as conveyed by coaches C6 and C10.

*It is the child's own will that makes them and sometimes the best thing that can make them become professional players is the will itself and that goes back to the player himself, motivating them to always feel lacking so that they learn more, practice more (C6).*

In line with what was conveyed by the coach;

*When you start listening, you start learning, when you start learning you will improve yourself, when you improve yourself, your heart will say I will go further (C10)"*

In addition to the players' desire to achieve their set goals, U-17 players need to have the ability to stay

focused on the task at hand during their development. The players' persistence in staying focused on their development path helps them maintain a balance between their football commitments and other aspects of their lives. In this way, players who stay focused on their development path can not only build solid football skills, but also develop character and mentality that help them overcome challenges and achieve success in the ever-changing world of football. As coaches C5 and C7 said:

*Focus bro, that's why I said many potential players are not professional, I think it's because they are not focused. The first is that the desire is clear, the foundation must be strong first (C5)*

Also stated by other coaches, such as:

*I think focus/concentration will come from commitment, personality, goal setting, at the same time we need to focus on our goals, we need to use your intellectual aspect (C7)*

These findings suggest that the development of grassroots football players is not solely determined by physical capacity and technical skills, but also by the quality of mental processes that support decision-making on the field. Tactical intelligence allows players to read the game dynamically, while the ability to make quick decisions under pressure is crucial in competitive situations. Strong willpower plays a role in maintaining consistent training and fighting spirit, while targeted goal setting can form a result-oriented training pattern. Focus, as the ability to manage attention in the midst of complex and rapidly changing game situations, is a determining element of success.

### Observation

Researchers made observations at five football academies in Indonesia. The activities carried out aimed to examine the dynamics of training on the football field and how coaches delivered and carried out training instructions. In this observation, researchers found that the coach gave directions to greet or shake hands with researchers who showed good respect and attitude, similar to those of a soccer player. During training sessions, the researcher observed that the coach consistently instructed players to help their teammates and shake hands after physical contact. This strengthens the information generated from the interviews conducted by the coach.

### Document Analysis

During the research process, researchers collected documents to support their investigation. These documents included several training programs provided by each coach, reference books for players, and documents outlining appropriate forms of parental support for players. The documents obtained support the purpose of this research, as evidenced by the documents provided by the coach. The researcher also found a program that discussed respecting one another and provided examples of attitudes that football players should exhibit. Analysis of these documents was not conducted as a separate part of the research process. However, it serves as validation that strengthens the results of this research, confirming that the information obtained through interviews and observations is also reflected in the documents collected from the research participants.

## DISCUSSION

Cognitive performance can be defined as mental performance related to perception, memory, intelligence, and action,<sup>(24)</sup> making it easier for athletes to receive, define, and process environmental information to choose and take action appropriately. Another definition shows that an athlete is required not only to be strong on the field but also to display intelligent performance.<sup>(25)</sup> Therefore, coaches need to design training programs that aim to improve athletes' cognitive abilities such as the Perceptual-Cognitive skills program.<sup>(26,27,28)</sup> The orientation of the cognitive domain tends to lead to the level of knowledge and intelligence of athletes, where this domain talks about understanding that will have an impact on the psychomotor domain.<sup>(29,30,31)</sup> Therefore, the results of this study recommend the use of training programs that are directed at the pedagogical and tactical realms that have proven effective in honing cognitive abilities and the level of intelligence in playing athletes.

The training program is in the form of small side games, providing a real picture that coaches need to care about the concept of training that involves complex thinking skills. Intelligence is related to a person's ability to make decisions,<sup>(32)</sup> an athlete who has a high level of intelligence will present greater accuracy and executive to the game, which can be adjusted to more complex match situations.<sup>(33)</sup> The ability to make decisions actively over time can facilitate the acquisition of skills and learning during play.<sup>(34)</sup> Therefore, coaches need to be aware of strategies that can increase decision-making opportunities for players such as the use of questions, problem-related pedagogy and applying them in the form of games.

Coaches have a responsibility for the sustainability of athlete achievement, where the coaching style creates interest and motivation to continue to progress. Positive stimulation such as direction, feedback, and



reflection are mandatory for coaches to provide as part of maintaining the athlete's willingness to grow and develop in sports achievement. This concept is the result of research that is certainly related to the cognitive component where this aspect is a configuration of psychological aspects in fostering a mindset of growth and survival in competitive activities.<sup>(35)</sup> According to <sup>(36)</sup>, the complex of individual typological features is related to the components of motivation, value orientation, willingness and expectations regarding success in sports games. Therefore, the coach's communication skills in facilitating the mental needs of athletes are things that need to be improved.

The relationship between coach and athlete is an important aspect in directing the player's attention to the training task, and focusing on the training process.<sup>(37,38)</sup> Thus, training athletes to focus on performance on the field is the right way to integrate the cognitive domain in grassroots football coaching. The concept of goal setting reflects that successful individuals are formed through social construction, and is influenced by the understanding of psychology as a science that changes the way humans think and behave.<sup>(39)</sup> Goal setting is not always about motivational technique, but rather an understanding of the meaning in the process. Therefore, several studies argue that goal setting needs to be examined in a broader context than goal setting theory, as provided by social cognitive motivation theory.<sup>(40,41,42)</sup> Coach awareness to emphasize training programs related to psychological skills can significantly increase athletes' passion, goal setting, image and self-awareness.<sup>(43)</sup>

The importance of the role of coaches in fostering a team culture that supports mental health,<sup>(44,45,46,47)</sup> as a concept of positive thinking, which not only focuses on physical problems but also focuses on the mental/mental aspect. Another point that is the key to athlete success is focus in this case associated with the aspect of concentration which requires the capacity to focus attention on the task at hand. This means that to be successful in competitive situations, athletes must be able to learn how to focus attention and control their thoughts.<sup>(48)</sup> In football matches, athletes are required not to be easily distracted either internally or externally, this will result in decreased game performance.<sup>(49,50)</sup>

Training involving the cognitive domain can increase athlete concentration. Increased concentration can certainly help maintain athletes to stay focused on the surrounding situation, making it easier to achieve match points. Creative and innovative training can help improve cognitive aspects in athletes as a step to facilitate motor skill performance.<sup>(51)</sup> The important role of regulating cognition and emotions as a way to achieve maximum physical and mental abilities.<sup>(52)</sup> Therefore, ongoing collaboration between parents and coaches is essential to bring about positive changes in the development and long-term success of young players,<sup>(53)</sup> particularly in the grassroots football arena.

## CONCLUSIONS

The results of the study identified that effective soccer player development requires a holistic approach, namely an approach that not only emphasizes physical and technical aspects, but also substantially includes cognitive aspects. Intelligence, decision-making ability, motivation, goal setting, and focus are not only supporting attributes, but are the main pillars that determine the quality of a player's performance on the field. The implication of this conclusion is the need for a paradigm transformation in the soccer coaching system, especially at the grassroots level. Coaches and soccer academy managers are expected to not only focus on mastering basic skills and physical strength, but also actively build the cognitive capacity of players from an early age. In this context, the coach acts as a facilitator of the thinking process, goal director, and mental character educator through reflective, participatory, and integrated training methods. Through the application of a training approach that includes cognitive dimensions, it is hoped that a new coaching model will be formed that is more adaptive to the challenges of modern soccer that demands speed of thinking, tactical creativity, and mental toughness. Therefore, this study makes a significant contribution to enriching coaching insights and providing theoretical and practical foundations for the development of a more comprehensive, progressive, and long-term oriented soccer training curriculum.

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## CONFLICT OF INTEREST

The authors mention that there is no Conflict of Interest in this study.

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