



Effectiveness of Malaysia football DNA application on the performance of players under 16 years

Eficacia de la aplicación de ADN de fútbol de Malasia en el rendimiento de jugadores menores de 16 años

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Abstract

Introduction: Malaysia launched the Malaysian Football DNA (F30) in 2018 to establish a standardized philosophy and playing style across all levels of football. This model, created by the Football Association of Malaysia (FAM), reflects the philosophy, culture, and unique characteristics of Malaysian football, aligning with the demands of modern gameplay.

Methodology: This qualitative study aims to examine the effectiveness of Malaysian football DNA application on the performance of Kedah Malaysian School Sports Council (MSSM) male under-16 players. A total of eight coaches from among teachers were involved as study participants and were interviewed to obtain data.

Result: Based on the research conducted, it was found that the level of effectiveness of football DNA application among coaches consisting of teachers emerged into three themes, namely coach competence, coach management and coach leadership.

Discussion: The integration of physical, tactical, and psychological training, as highlighted in the Malaysian Football DNA, corresponds with contemporary approaches in football development globally. This study underlines the importance of equipping coaches with comprehensive knowledge and resources to successfully implement the Malaysian Football DNA.

Conclusion: Researcher found that the effectiveness of the Malaysian Football DNA application among coaches, who are teachers, could significantly affect the performance of football players and contribute to the improvement of the quality of football players in line with the Malaysian Football DNA. With the combination of themes in this model, the effectiveness of the coaches can have a profound impact on the players' performance in applying the Malaysian Football DNA.

Keywords

Coaching, effectiveness, football DNA, performance, football player.

Resumen

Introducción: Malasia lanzó el ADN del fútbol de Malasia (F30) en 2018 para establecer una filosofía y un estilo de juego estandarizados en todos los niveles del fútbol. Este modelo, creado por la Asociación de Fútbol de Malasia (FAM), refleja la filosofía, la cultura y las características únicas del fútbol de Malasia, alineándose con las demandas del juego moderno.

Metodología: Este estudio cualitativo tiene como objetivo examinar la efectividad de la aplicación del ADN del fútbol de Malasia en el desempeño de los jugadores masculinos sub-16 del Consejo de Deportes Escolares de Malasia (MSSM) de Kedah. Un total de ocho entrenadores de entre los profesores participaron como participantes del estudio y fueron entrevistados para obtener datos.

Resultado: Con base en la investigación realizada, se encontró que el nivel de efectividad de la aplicación del ADN del fútbol entre los entrenadores que consisten en profesores surgió en tres temas, a saber, competencia del entrenador, gestión del entrenador y liderazgo del entrenador.

Discusión: La integración del entrenamiento físico, táctico y psicológico, como se destaca en el ADN del fútbol de Malasia, se corresponde con los enfoques contemporáneos en el desarrollo del fútbol a nivel mundial. Este estudio subraya la importancia de equipar a los entrenadores con conocimientos y recursos integrales para implementar con éxito el ADN del fútbol de Malasia.

Conclusión: Los investigadores descubrieron que la eficacia de la aplicación del ADN del fútbol de Malasia entre los entrenadores, que son profesores, puede tener un impacto significativo en el rendimiento de los jugadores de fútbol y contribuir a la mejora de la calidad de los jugadores de fútbol de acuerdo con el ADN del fútbol de Malasia. Con la combinación de temas en este modelo, la eficacia de los entrenadores puede tener un profundo impacto en el rendimiento de los jugadores al aplicar el ADN del fútbol de Malasia.

Palabras clave

Entrenamiento, eficacia, ADN del fútbol, rendimiento, jugador de fútbol.

Introduction

The development of football is closely linked to the performance of its players. When discussing player performance, it is essential to recognize that the competence of coaches and development programs significantly influences it. Malaysia launched the Malaysian Football DNA (F30) in 2018 to establish a standardized philosophy and playing style across all levels of football. This model, created by the Football Association of Malaysia (FAM), reflects the philosophy, culture, and unique characteristics of Malaysian football, aligning with the demands of modern gameplay. The key components of the Malaysian Football DNA Model are the philosophy of play, style of play, core skills, training structure, national identity, and the role of coaches. This model emphasizes not only ball possession but also integrates elements such as physical fitness, tactical intelligence, and mental resilience. It serves as a guideline to create players who are competitive at the international level. Khalid Said et al. (2020) define coaches as individuals who contribute to personal growth, professional development, and career building for players. Behind every great player stands a coach who acts as a catalyst and motivator. Exceptional coaches continuously seek ways to advance their skills and competency within the coaching field.

The Malaysian Football DNA focuses on teamwork, systematic attacking, and collective defense, creating a distinctive style known as "The Malaysian Way." This initiative is led by Peter de Roo, the Technical Director of the Football Association of Malaysia (FAM), with the aim of ensuring consistent coaching and playing methodologies. According to him, the Malaysian Football DNA is the key to the development of players and coaches. It will provide a consistent approach, making it easier for players and coaches to implement it at all levels. The Malaysian Football DNA is built upon five key principles that form the foundation for its implementation. Firstly, it emphasizes Playing Identity, advocating a style of football that prioritizes control, speed, and adaptability in gameplay. Secondly, it focuses on Player Development, aiming to nurture players who are disciplined, innovative, and mentally resilient to meet the demands of modern football. The third principle, Tactical Flexibility, highlights the importance of adapting formations and strategies to suit different match situations effectively. Additionally, the DNA incorporates a Scientific Training Approach, utilizing data-driven and evidence-based methodologies to ensure continuous improvement in training and performance. Lastly, Performance Assessment is a crucial element, involving regular evaluation processes to monitor and enhance the progress of both players and teams.

According to Baker (2017), the effectiveness of a coach depends on education. In this process, effectiveness is a blend of knowledge and skills, which are then applied to achieve high performance in talented players. Various development programs exist in Malaysia, supported by different stakeholders, such as the National Football Development Program (PPBN) and community-based development initiatives. Week (2020) states that talent is demonstrated by individuals who achieve the highest levels over a long period. Therefore, talent identification can be facilitated through current national football development programs. Graeme Carrick (2017), a Youth Coach Developer in England, highlights that young players are still children and are in the process of developing. Thus, it is crucial for adults, especially coaches, to create a supportive environment that matches their developmental stage. It is essential to assess the impact of football DNA on their game performance. Following the Malaysian Football DNA is critical for fostering competitiveness and producing top players in the future. Therefore, skilled players are guided by competent and well-educated coaches. The Malaysian Football DNA aims to produce high-quality players at advanced levels. The vision and philosophy for Malaysian football have been updated with current trends, similar to other progressive nations that have long embraced and succeeded in this approach. This development is intended to facilitate best practices across various youth levels, adapted to Malaysia's unique culture and strengths.

According to Buchheit (2021), coaches must play a crucial role in training decision-making and, even more importantly, possess the skills and knowledge of the sport to offer adaptable strategies based on physical and tactical needs, coaching priorities, timing, and the number of available players. However, it is not only necessary for coaches to use various knowledge; it is also essential that this knowledge is supported by a solid evidence base (Stoszkowski, 2020). Cushion (2021) reinforces this statement by highlighting the need to consider the knowledge coaches acquire. Arda Ozturk and Gokhan Arikan (2020) note cognitive differences across age groups, with grassroots players taking longer to make decisions. Moreover, during matches, some players are uncertain about what to do, such as being slow to decide when receiving the ball. Studies have revealed that well-designed training contributes to athlete

performance under the guidance of coaches (Güllich, 2021). This approach contrasts with the Malaysian Football DNA, which requires players to be proactive and reactive to events during gameplay. The President of the Football Coaches Association of Malaysia (PJB), B. Sathianathan, emphasized in a statement reported by *Berita Harian* on October 12, 2021, that "the training style in grassroots academies and schools must change." According to him, outdated playing styles are no longer applicable, as speed and ball control skills are essential for implementing the Malaysian Football DNA.

Specifically, Dehghansai (2021) identifies major challenges related to the sports environment, including budget constraints, communication, staff management, and personal issues such as social and career/educational responsibilities, along with uncertainties such as accreditation and qualifications that are closely linked to the sports and societal context. Zulakbal and Ali Nadzalan (2018) found that coaches at Regional Training Centers (PLD) face several issues, including part-time coaches overwhelmed by teaching duties, infrastructure limitations, coaching curriculum, and external interference, such as from parents, which are significant challenges to developing quality players. This study aims to achieve the following objectives, to identify the knowledge and knowledge sources used by coaches in the development training of the Under-16 MSSM Kedah football team in implementing the Malaysian Football DNA, to identify the training process approaches and methods used by coaches when training players to apply the Malaysian Football DNA and to identify the issues and challenges faced by coaches and players in development programs that impact player achievement in relation to the Malaysian Football DNA.

Method

This qualitative study employs an ethnographic approach, with the main objective of the researcher being to assess the effectiveness of the Malaysian Football DNA application on the performance of Under-16 MSSM Kedah football players. To address the research questions, a qualitative method is utilized. Qualitative research is a type of research that explores and provides deeper insights into real-world issues (Steven Tenny, 2022). Through the ethnographic approach as suggested by Sand (2002), the researcher actively participates in training sessions while collecting data through interviews, observations, and document analysis. Data collection involved in-depth interviews with eight teacher-coaches, direct observations during training sessions, and document analysis to provide a comprehensive understanding. The study sample includes eight coaches who are teachers serving with the Ministry of Education Malaysia (KPM) in the state of Kedah and are involved in the development of Under-16 football. These participants were selected using purposive sampling, which is highly suitable for this study as they are knowledgeable about the development and process of the phenomenon being studied at the research location (Creswell & Clark, 2018). Each interview session lasts between 40 to 60 minutes and is recorded using an audio recorder. The number of participants was determined based on the "saturation of information," where interviews ceased once no new data emerged from additional participants. The researcher also gathered data through observation and document analysis, aligning with Creswell (1994) and Lebar (2017), who state that researchers act as instruments in qualitative studies. The collected data was then analyzed using thematic analysis as recommended by Patton (2002). The goal of thematic analysis is to identify themes—patterns within the data that are significant or interesting—and use these themes to address the research questions or shed light on specific issues (Clarke & Braun, 2013).

Participants

The study involves eight teacher-coaches from the Ministry of Education Malaysia (KPM) in Kedah, who are responsible for the development of Under-16 football players. These participants were selected using purposive sampling, as they possess extensive knowledge about the football development process. Each participant participated in in-depth interviews lasting 40 to 60 minutes, with the data recorded using an audio recorder.

Procedure

An ethnographic approach was employed in the study, where the researcher actively participated in training sessions to gain firsthand experience. Data was collected through three main methods:



1. Interviews with the eight teacher-coaches,
2. Observations during the football training sessions, and
3. Document analysis of relevant materials.

The interviews were conducted until data saturation was achieved, meaning that no new information emerged from additional interviews.

Data analysis

The data collected from the interviews, observations, and document analysis were analyzed using thematic analysis, a qualitative data analysis method described by Patton (2002) and Clarke & Braun (2013). Thematic analysis involves identifying patterns, or themes, within the data that are significant, meaningful, and relevant to the research questions. Thematic analysis allows the researcher to organize the data into categories or themes, which can then be used to interpret and explain the findings.

Results

Based on the data analyzed using thematic analysis as proposed by Patton (2002), the findings are divided into two phases. In the first phase, data collected from interviews with coach-teachers were transcribed verbatim. Additionally, data from observations and document analysis were also examined using the same method. The second phase of analysis involved creating categories and identifying themes (Braun & Clarke, 2018). Three main themes emerged from the analysis: leadership, competency, and management. Under these main themes, several sub-themes were identified, as presented in Table 1. These themes provide a structured understanding of the factors influencing the effectiveness of the Malaysian Football DNA application on the Under-16 MSSM Kedah football players' performance. The breakdown into sub-themes further illustrates specific aspects within each main theme, offering detailed insights into the key elements affecting the coaches' strategies and the players' development.

Table 1. Selection of Main Themes

Competency			Management			Leadership	
Knowledge	Training Planning	Skill	Self	Relationship	Resources.	Team Culture Development.	Individual Development.
Malaysian Football DNA	Training Program		Reflection Learning				
Sports Science	Training Modules	Technical	and Self-Development	Player	Facilities	Collaboration	Skills
Tactical/Strategy	Log Book	Motivation	Time Management	Parents	Support	Commitment	Physical and Mental
Decision-Making	Assessment/Reflection	Communication	Core	Other Coaches			Building Self-Confidence
Evaluation			Responsibilities				

Competency

Based on the analysis conducted, the branches under the sub-theme of knowledge include DNA Football Malaysia, sports science, tactics and strategy, decision-making, and performance assessment, which help answer the first research question. DNA Football Malaysia refers to the unique identity and playing style established by Malaysian football teams that coaches must master to improve players' performance in accordance with the DNA Football Malaysia framework. It involves the playing style, philosophy, values, and culture upheld and regarded as important by the Malaysian football team. A coach's philosophy can serve as a foundation for performing their duties as a professional coach (Martens, 2004). Coaches can use the philosophy embedded in DNA Football Malaysia as a guide. According to Kijim Kim (2019), sports science knowledge requires more realism and productivity. This means sports science refers to the application of scientific knowledge and methods within sports to develop athletes and understand the sport. In football, sports science is used to enhance athlete performance, identify factors influencing performance, and design appropriate training programs.

In the overall knowledge sub-theme, which includes DNA Football Malaysia, sports science, tactics and strategy, decision-making, and player performance assessment, these are crucial aspects requiring a

deep understanding of football. A good combination of these factors will help effectively apply DNA Football Malaysia for coaches, especially in the context of teachers, to build successful teams and achieve high performance. J. Mason (2020) notes that knowledge is a key tool for improving performance, building athlete confidence, helping athletes track progress, and enhancing their performance. This finding also highlights areas where future coaching education can better support coaches in providing effective feedback. The next sub-theme is training planning, which includes training programs, training modules, log books, and assessment or reflection. Training planning is an important aspect of improving player performance. According to Fabian W. Otte (2019), a framework or training plan provides valuable conceptual and practical support for coaches, which in turn improves and refines the adaptability of sports skills and manipulates training environments throughout the macro and micro cycles.

The researcher also conducted document analysis on log books to observe their planning. This aims to achieve the best performance level within a set timeframe, as stated by coach participant R1:

"The training sessions are planned according to a one-year schedule in this development program. Periodization is very important to ensure players are always ready mentally and physically. I don't want players to become bored or tired, which would affect their performance. So, planning is something I must do."

The final sub-theme under competency is skill. Skills are divided into technical, motivation, and communication. Technical skills refer to proficiency in executing techniques related to the sport. According to Breanae Williams (2017), there is an art to demonstrating techniques, something that coaches must continuously improve because effective skill demonstrations allow athletes to capture critical movement signals that may be missed in verbal instructions. Good technical skills enable athletes to perform accurately, execute tasks well, and improve the overall quality of the game in alignment with DNA Football Malaysia. In an interview with coach R2, he stated:

"With the experience and abilities I have as a player, I can demonstrate the correct and accurate techniques to the players so that they can perform the right technical skills. For example, DNA football requires good ball control, and this requires quality passing, which I need to demonstrate to the players."

This statement is also echoed by coach R5:

"Yes, I need to show the technical skills to my players so they understand clearly what they need to do."

Good communication skills help athletes understand instructions, strategies, and tactics provided by the coach. It also helps in building good relationships with teammates, expressing ideas or concerns, and collaborating with the team to achieve common goals while applying DNA Football Malaysia. Communication is crucial in team interactions and determines how players collaborate, form strong team bonds, and respond to things related to the sport (Sam Foster, 2021). Effective communication skills are also essential for coaches in giving clear instructions to athletes. This is as expressed by coach R4:

"I try to communicate in the simplest way so my players can understand the instructions I need them to follow, so that the strategy and game plan can be executed by the players."

Therefore, under the competency theme, the findings refer to the knowledge, training planning, and skills required to achieve success in the sporting context. Coaches, especially among teachers, need to involve holistic and comprehensive preparation to apply DNA Football Malaysia and contribute to good performance within the framework of DNA Football Malaysia.

Management

The theme for management includes three sub-themes: self, relationships, and resources. For the sub-theme of self, there are categories such as reflection, learning and personal development, time management, and core duties among coaches. The category of self-reflection is important for coaches to monitor and evaluate their own performance and the team's performance. Reflection has been established as a key part of coaching guidance and education programs (Downham & Cushion, 2020). According to Konoval, Denison, and Mills (2018), reflection can uncover and challenge assumptions made easily in coaching and encourage exploration of alternative practices to generate new ideas and improve performance. By monitoring their performance, coaches can make adjustments and plan appropriate training to enhance the performance of players and the team in applying the Malaysian Football DNA. Reflection aims to receive feedback on what happened, as indicated by Coaches R6 and R7.



"I will reflect on the players because I can discuss what happened during training and the match. This is important for me. Maybe it has become part of my core duties, where I need to write a reflection after teaching (R6)"

"Yes, I will reflect to get feedback from my players so that I can plan better for the next training session (R7)"

However, this is not the case for Coaches R3, R5, and R8. The researcher found that these coaches did not write reflections after analyzing their documents (training plans or logbooks). The category of self-development indicates that effective coaches prioritize continuous learning and self-improvement. Watts (2021) suggests that coaching can be seen as a sub-field of the broader coaching profession. Current findings confirm that coach education is a medium for the development of coach education (Watt, 2020). According to Allanson (2019), this can also enhance understanding and add to previous research on coach frustration, compliance, and practices. Coaches must continuously stay updated on developments in the sports field, research new strategies and techniques, and attend courses and seminars to improve their knowledge and skills in applying the Malaysian Football DNA. Findings from Coaches R5, R6, and R8 indicate that they did not hold coaching licenses, even though they have been coaching players for over five years. This shows that the coaches did not prioritize their personal development in updating their coaching knowledge related to the Malaysian Football DNA.

Furthermore, the category of core duties represents a challenge faced by coaches who are also teachers. Coaches are burdened with core duties such as important school positions, meetings, and extensive teaching responsibilities. This finding aligns with Fakhrul Hazley and Zulakbal (2020), who state that core duties are a challenge for teachers who are also coaches. This is also supported by Keong, Ghani, & Abdullah (2018), who state that the teaching profession faces many pressures because it is a form of challenging social service. Therefore, self-management in sports coaching is a crucial aspect for achieving success in their careers. By mastering these skills, coaches can optimize team performance, set a good example for players, and achieve the goals set, such as those in the Malaysian Football DNA. Below is a finding from Coach R7.

"Yes, it is quite stressful because of my core duties as a teacher, dormitory warden, and coach for the school in the afternoons. I also have to manage my family. It is quite 'rushing' for me to manage my time and work, but I try to manage my time well so that planning runs smoothly (R7)"

The next sub-theme is relationships. In this sub-theme, relationships with players, parents, and other coaches are discussed. Shanmuganathan (2022) outlines four key components of a relationship with players: closeness, commitment, complementarity, and alignment. The relationship between coaches and parents involves more than just victories, losses, or playing time, and this relationship should be a partnership for the sake of the child (Joshua, 2023). Therefore, relationships in the context of sports coaching refer to the interactions and connections between coaches and the parties involved in the sports arena. These relationships play an important role in shaping team atmosphere, motivation, and overall success in applying the Malaysian Football DNA. Below are findings from Coaches R2 and R4.

"Another challenge is with the parents. Some parents want to make sure their children play in the starting lineup. This hinders and disrupts my ability to plan strategies (R2)"

"Alhamdulillah, some parents help me train the players. It is welcomed because it helps me with manpower. Some parents also support the team financially, but they want their children to play in the starting lineup. That's what confuses me (R4)"

The last sub-theme is resources, which includes facilities and support. Thomas Okyere (2019) suggests that sports facilities contribute significantly to students' lives in terms of experiences, and these facilities must be recognized and appreciated by the institution's administration. It is recommended that if students are provided with proper sports facilities and guidelines, it will have a significant impact on their physical development and academic achievement (Majid Khan, 2021). The availability of good playing fields is crucial to ensuring that the Malaysian Football DNA can be applied effectively, particularly its emphasis on ball possession, as indicated by Coach R5.

"Look at my school field. How can I train well to apply the Malaysian Football DNA? However, I maximize the facilities available to ensure my players play well (R5)"

Norris L. A. (2020) found that the coach's social network structure includes peers (other coaches), friends, family, information, and social instrumental support for organizational issues. In conclusion, in sports coaching, several important resources, including facilities and support, must be considered as they impact player performance based on the Malaysian Football DNA.

Leadership

The theme of leadership includes two emerging sub-themes: team culture development and individual development. In the sub-theme of sports culture development, there are categories such as cooperation, dedication, and discipline. Research shows that there are individuals within each group who favor group cooperation, such as sportsmanship, moral competence, or emotional intelligence, which reveal that cooperation is influenced by emotional factors (Perry & Clough, 2017). The development of group cooperation is a fundamental aspect of teamwork in team sports (McEwan, 2018). In team culture, a spirit of cooperation is crucial. Team members must learn to collaborate, help each other, and understand their respective roles. Therefore, good coaching leadership can foster team cooperation by valuing the contributions of individuals and the team in applying the Malaysian Football DNA. The following is a finding from Coach R3:

"I always make sure my players cooperate, whether off the field or on the field, so that it becomes a strength for my team. I assign roles according to the schedule set so that activities run smoothly, for example, the role of carrying the ball, lifting slaloms, and others (R3)"

The next category is dedication. Sergio Jimenez (2009) confirmed that competition, success, and the satisfaction of coaching players, both specifically and for the community in general, make coaching a highly valued profession. This helps players identify factors that encourage their commitment to the coach and maintaining their position. As a coach, leadership through dedication has an important impact in ensuring players remain competitive and improve their performance based on the Malaysian Football DNA. The second sub-theme is individual development. Categories of individual development that emerged in this study include skills, physical and mental development, and self-confidence. Every sport requires specific technical skills. Individual development involves training and building both basic and advanced skills in the sport. Coaches play a crucial role in providing guidance, feedback, and appropriate training to improve athletes' technical skills while applying the Malaysian Football DNA. Abrahams and Collins (2011) argue that innovative coaches are like great chefs; they have a wide range of knowledge and can be creative when faced with difficult situations. Based on the reference by Abrahams and Collins, skilled athletes can benefit from having a broad knowledge base, which certainly involves adapting their actions with good skills.

According to Zhang (2020), competitive sports contribute to the enhancement of physical, mental, and personal qualities in school students and athletes, including motor skills, practical skills, willpower, moral values, patriotism, and aesthetics in their lives and future professional activities. Physical and mental capabilities play a critical role in sports performance. Individual development in sports involves building physical and mental strength, such as recovery efficiency, focus, self-confidence, motivation, and stress management. Coaches need to provide emotional support and mental and physical training to help athletes overcome challenges and enhance their physical and mental abilities in applying the Malaysian Football DNA. Both personal and social factors, such as age, level, and coaching behavior, play a role in influencing self-confidence (Owen Thomas & Sam N. Thrower, 2022). The development of self-confidence is a process aimed at improving athletes' belief and confidence in their ability to achieve high performance in sports. High self-confidence is an essential factor affecting athletic performance as it provides the drive, perseverance, and motivation needed to face challenges and achieve the goals set, ensuring the effectiveness of the Malaysian Football DNA. Below is a finding from Coach R2:

"My players sometimes lose their self-confidence due to factors such as defeats or showing poor performance, but I try to motivate them to regain their confidence. Sometimes experience teaches me, and the players become more confident (R2)"

Discussion

The findings presented above provide a comprehensive overview of the themes analyzed, namely competence, management, and leadership in the context of sports coaching within the application of the Malaysian Football DNA. This study will discuss each theme in more detail. In the context of competence, key aspects include a deep understanding of the Malaysian Football DNA, mastery of sports science knowledge, the use of appropriate tactical strategies, accurate decision-making, and player performance evaluation. According to Ujang Rohman & Hari Setijono (2017), the core of competence includes three key aspects: attitude (behavior), knowledge, and skills. Coaches need to understand and apply the philosophy and values within the Malaysian Football DNA to build a successful team. Furthermore, it is also crucial to plan appropriate training and possess good communication skills to interact with players and the team. Rayvin Domingo's study (2021) indicates that effective coaching behaviors involve physical training and planning, technical skills, mental preparation, competition strategies, personal relationships, and interpersonal communication.

In management, the focus is on self-management, relationships, and resources. Coaches need to manage themselves well, including effectively managing time, engaging in continuous reflection, and learning. Good relationships with players, parents, and other coaches are also vital for building a positive team atmosphere. Additionally, resources such as training facilities and organizational support play an essential role in ensuring the coach's effectiveness and the team's performance. In leadership, the focus is on the development of team culture and individual development. Coaches need to be effective leaders in fostering teamwork, dedication, and discipline within the team. Individual development involves building technical skills, physical and mental strength, and athletes' self-confidence. Coaches must also possess leadership skills to motivate and influence players in achieving high performance.

Research identifying concepts retrospectively by comparing effective practices determined by leadership, athlete and coach experience, and skills acquisition studies (Gilbert & Côté, 2009) supports this notion. Leadership styles, as stated by Gilbert and Côté (2009), are further supported by Keatholetswe and Malete (2019), who identified the effectiveness of coaching through players' perceptions of their coaches' leadership styles, team atmosphere, and team performance. In conclusion, to be an effective coach in sports such as football, it is important to possess all the necessary aspects of competence, management, and leadership. A coach needs to have a deep knowledge of the game and the team's philosophy, self-management and interpersonal relationship skills, as well as effective leadership abilities to build a successful team and achieve high performance based on the Malaysian Football DNA. The integration of physical, tactical, and psychological training, as highlighted in the Malaysian Football DNA, corresponds with contemporary approaches in football development globally. This study underlines the importance of equipping coaches with comprehensive knowledge and resources to successfully implement the Malaysian Football DNA.

Implications

Based on the findings and discussion above, several important implications can be identified, particularly emphasizing skill development. The findings highlight the importance of developing technical skills, communication, and strategies in the context of sports coaching. This underscores the need for coaches to prioritize the development of these skills in their training sessions. Self-management and training planning are critical factors in achieving success in sports coaching. The implication is that coaches need to be equipped with excellent self-management skills and the ability to plan effective training sessions. The importance of interpersonal relationships, including good relationships with players, parents, and other coaches, plays a significant role in building a positive team atmosphere. This emphasizes the importance of communication skills and social leadership in sports coaching. Furthermore, the relationship between stakeholders in football under the Ministry of Education Malaysia and football associations is crucial in developing effective coaches across all aspects. Awareness of the individual development of players, in terms of physical, mental, and emotional aspects, is essential for achieving high performance.



The implication here is that coaches need to focus their efforts on helping each player reach their maximum potential. Reflection and continuous learning are vital tools for monitoring performance and obtaining valuable feedback from players. Coaches should integrate reflection into their practice as a way to enhance continuous learning. Additionally, the importance of support and resources, including training facilities and organizational support, is essential in achieving success in sports coaching. This highlights the need for adequate resources to allow coaches to function effectively. These implications emphasize the need for a holistic approach to sports coaching. Specifically, they can contribute to the knowledge base in coaching, football, sports science, and education. The Ministry of Education (KPM), the Football Association of Malaysia (FAM), the Football Coaches Association of Malaysia (PJBM), and the Asian Football Confederation (AFC) can use the findings of this study to assist school-level football coaches in training their football teams. Furthermore, the findings can assist coaches in understanding the aspects needed to improve their ability as a coach to enhance player performance, as identified in the study. Lastly, it provides information and knowledge about the football system framework based on the Malaysian Football DNA, enabling the country to compete with football giants in the future.

Conclusions

This study was conducted to assess the effectiveness of coaches in applying the Malaysian Football DNA on the performance of Under-16 players in the MSSM Kedah football team, comprising of teachers as coaches. The effectiveness of coaches on player performance is a critical factor in sports coaching. Coaches play a vital role in guiding, developing, and maximizing the potential of each player in applying the Malaysian Football DNA. Based on the qualitative study conducted, the researcher found that the effectiveness of the Malaysian Football DNA application among coaches, who are teachers, can significantly impact the performance of football players and contribute to the improvement of the quality of football players in line with the Malaysian Football DNA. With the combination of themes in this model, the effectiveness of the coaches can have a profound impact on the players' performance in applying the Malaysian Football DNA.

References

- Abraham, A., & Collins, D. (2011a). Effective skill development - How should athletes' skills be developed. In D. Collins, A. Button, & H. Richards (Eds.), *Performance Psychology: A Practitioner's Guide* (pp. 207-230). Oxford: Elsevier.
- Al Hilali, K.S., Al Mughairi, B.M., Kian, M.W., Karim, A.M. (2020). Coaching and Mentoring Concepts and Practices in Development of Competencies: A Theoretical Perspective. *International Journal of Academic Research in Accounting, Finance and Management Sciences* 10 (1): 41-54. doi: 10.6007/IJARAFMS/v10-i1/6991
- Allanson, A., Potrac, P., & Nelson, L. (2019). The career experiences of football association coach educators: Lessons in micropolitical literacy and action. *Qualitative Research in Sport, Exercise and Health*, 13(2), 360-374. <https://doi.org/10.1080/2159676X.2019.1690563>
- Andrew, B. & O'Connor, D. (2011). An Effective Coaching Model: The Perceptions and Strategies of Professional Team Sport Coaches and Players in Australia. *International Journal of Sport and Health Science* 9:98-104 doi:10.5432/ijshs.201108
- Baker, C. & Loughen, EA. (2017). Sports graduate capabilities and competencies: a comparison of graduate and employer perceptions in six EU countries. *European Journal for Sport and Society* 14(2): 95-116
- Baumgartner, T. A., Jackson, A. S., Mahar, M. T., & Rowe, D. A. (2007). *Measurement for Evaluation in Physical Education & Exercise Science* (8th Ed). New York: McGraw Hill.
- Bolter, N.D., Petranek, L.J., & Dorsch, T.E. (2017). Coach, Parent, and Administrator Perspective on Required Coaching Education in Organized Youth Sport. *International Journal of Sports Science and Coaching*. Vol 13 (3) 362-372. Sage Publication. <https://doi.org/10.1177/174795415718>
- Bolarinwa, O. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *Nigerian Postgraduate Medical Journal*, 22(4), 195. <https://doi.org/10.4103/1117-1936.173959>



- Borge, S. (2019). The philosophy of football. Diperoleh daripada <https://books.google.com.my/books>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101
- Buchheit, M. (2021). Loading patterns and programming practices in elite football: insights from 100 elite practitioners. *Science Performance and Science Reports* are distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>)
- Campolini, V., Milstedt, M., Rynne, S.B., Brasil, V.Z., & Do Nascimento J.V. (2019). Research Review on Coaches Perceptions Regarding the Teaching Strategies Experienced in Coach Education Programs. *International Journal of Sports Science and Coaching* .0(0) 1-13. Sage Publication <https://doi.org/10.1177/1747954119833597>
- Cecilia K. Y. & Nai Chi Jonathan Yeung. (2019). Students' 'approach to develop' in holistic competency: an adaptation of the 3P model. *Educational Psychology*, doi:10.1080/01443410.2019.1648767
- Chiu L.K., Mahat N.D., Hua K.P., & Radzuwan R.B. (2013). Student Athletes' Perceptions of Coaches' Coaching Competency at the Malaysian Public Institution of Higher Learning. *World Journal of Education*, 2013; 3(1):13-2
- Cushion, C.J., & Partington, M. (2014). A critical analysis of the conceptualisation of 'coaching philosophy'. *Sport, Education and Society*
- Clemente, F.M. Owen, A., Sierra-Olivares, J., Correia, A., Sequeiros, J.B., GM Silva, F., & Martins, F.M.L. (2017) The Effects of Large-Sided Soccer Training Games and Pitch Size Manipulation on Time-Motion Profile, Spatial Exploration and Surface Area: Tactical Opportunities. *Journal of Sports Engineering and Technology* 1-6, Sage Publication. <https://doi.org/10.1177/1754337117722658>
- Cohen, A.J., Bovberg & Wegis, H. (2020). Does Coaching Experience and Coaching Efficacy of Untrained Volunteer Youth Sport Coaches Influence Children's Moderate-to-Vigorous Activity? *International Journal of Sports Science and Coaching*.0(0)1-11. Sage Publication. <https://doi.org/10.1177/1747954120906675>
- Costa, G.C., Castro, H.O., Alonso, J., Lage, G.M., Ugrinowitsch, G.M., & Greco, P.J. (2018). Tactical Knowledge, Decision Making, and Brain Activation Among Volleyball Coaches of Varied Experience. *Perceptual Motor Skills*.0(0). Sage Publication. <https://doi.org/10.1177/0031512518789582>
- Côté, J., Salmela, J., Trudel, P., Baria, A. & Russell, S. (1995). The Coaching Model: A Grounded Assessment of Expert Gymnastic Coaches' Knowledge. *Journal of Sport and Exercise Psychology*, 1995, 17, 1-17
- Cote, J., & Gilbert, W. (2009). An integrative definition of coaching effectiveness and expertise. *International Journal of Sports Science and Coaching*, 4, 307-322. doi:10.1260/174795409789623892
- Creswell, J. W., & Clark, V. L. P. (2018). *Designing and Conducting Mixed Methods Research* (3rd Ed). California: SAGE Publication, Inc.
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* (5th Ed). California: SAGE Publication, Inc.
- Emanuele Isidoria, Mascia Migliorata, Claudia Maulinia & Rafael Ramos Echazarreta. (2015). Educational Paradigms and Philosophy of Football Coaching: a Theoretical and Practical Perspective. doi: 10.1016/j.sbspro.2015.07.203
- Dehghansai, N., Pinder, R.A., Baker, J., Renshaw, I. (2021) Challenges and stresses experienced by athletes and coaches leading up to the Paralympic Games. *PLoS ONE* 16(5):e0251171. DOI: 10.1371/journal.pone.0251171
- Domingo, R.P. (2021). Sports-Teachers' Coaching Style, Behavior, Competency and Student-Athletes Performance In Sports. *Kinestetik: Jurnal Ilmiah Pendidikan Jasmani*. doi: 10.33369/jk.v5i1.14619
- Downham, L., & Cushion, C.J. (2021). Reflection and reflective practice in high-performance sport coaching: a heuristic device. <https://doi.org/10.1080/17408989.2022.2136369>
- Fabian, W.O. (2019) Skill Training Periodization in "Specialist" Sports Coaching—An Introduction of the "Po ST" Framework for Skill Development. *Sec. Movement Science and Sport Psychology*. <https://doi.org/10.3389/fspor.2019.00061>
- Fakhrul Hazley, & Zulakbal Abd Karim. (2020). Kompetensi guru sebagai jurulatih bola sepak dan kesannya terhadap prestasi pemain bola sepak Pusat Latihan Daerah Kuala Lumpur. *Jurnal Sains Sukan & Pendidikan Jasmani*, 9(1), 47-61. <https://doi.org/10.37134/jsspj.vol9.1.6.2020>



- Ghazali, D., & Sufean, H. (2016). *Metodologi Penyelidikan dalam Pendidikan*. Kuala Lumpur: Penerbit Universiti Malaya.
- Gonzalez-Rivera, M.D., Campos-Izquierdo, A., Villaba, A.I., & Hall, N.D. (2017). Sources Knowledge Used By Spanish Coaches: A Study According to Competition Level, Gender and Professional Experience. *International Journal of Sports Science and Coaching*. Vol 12 (2) 162-174. Sage Publication. <https://doi.org/10.1177/1747954117694733>
- Figgins, S.G., Smith, M.J., Knight, C.J., & Greenlees, I.A. (2019). A grounded theory of inspirational coach leadership. doi:10.1111/sms.13513
- Foster, S. (2021) The importance of Communication in Sports. <https://www.linkedin.com/pulse/importance-communication-sports-truestudy-ba-hons-tefl>
- Güllich, A. (2019). "Macro-structure" of developmental participation histories and "micro-structure" of practice of German female world-class and national-class football players. *J. Sports Sci.* 37, 1347–1355. doi: 10.1080/02640414.2018.1558744
- Güllich, A., MacNamara, B.N., and Hambrick, D.Z. (2021). What makes a champion? Early multidisciplinary practice, not early specialization, predicts world-class performance. *Perspect. Psychol. Sci.* 17, 6–29. doi: 10.1177/1745691620974772
- Hardman, A. & Jones, C. (2013). Philosophy for coaches. In R. L. Jones & K. Kingston (eds.). *An introduction to sports coaching: Connecting theory to practice* (pp. 99-111) (2nd Ed.). NY: Routledge.
- Harrocks, D.E., McKenna, J., Whitehead, A.E., Taylor, P.J., Morley, A.M., & Larence, I. (2016). Preparation, Structured Deliberate Practice and Decision Making in Elite Level Football: The Case Study of Gary Neville (Manchester United and England). *International Journal of Sports Science and Coaching*. Vol 11(5), 673-682. Sage Publication . <https://doi.org/10.1177/1747954116667105>
- Horino H. (2020). Conceptualization studies of the coaching process. *Science in Olympic Sport*. 2:57-63. DOI:10.32652/olympic2020.2_6
- Kementerian Belia dan Sukan. (2014). *Pelan Pembangunan Bola Sepak Malaysia Fasa 1: 2014-2020*. Wilayah Persekutuan Putrajaya: Kementerian Belia dan Sukan (KBS) Malaysia.
- Kim K. (2014) Perspective and role of sport science. *J Physical Education*, 2014; 10(1):1-10
- Kim K. (2019) Role and Perspective of Sport Science in Health Promotion and Elite Sport. *Asian J Kinesiol* 2019; 21(2): 31-39 · DOI: <https://doi.org/10.15758/ajk.2019.21.2.31>
- Keatleholetswe, L., & Malete, L. (2019). Coaching Efficacy, Player Perceptions of Coaches' Leadership Styles, and Team Performance in Premier League Soccer. *Res Q Exerc Sport*. 90(1):71-79. doi: 10.1080/02701367.2018.1563277
- Keong, C.C., Ghani, M.F.A., & Abdullah, Z. (2018). Cabaran amalan komuniti pembelajaran dalam kalangan guru Sekolah Rendah Berprestasi Tinggi Malaysia. *JuKu: Jurnal Kurikulum & Pengajaran Asia Pasifik*, 6(3), 1-14
- Koh, K.T., Lee, T.P., & Lim, S.H. (2017) The Internet As A Source of Learning For Youth Soccer Coaches. *International Journal of Sports Science and Coaching* .0(0), 1- 12. Sage Publication. <https://doi.org/10.1177/174795411724980>
- Konoval, T., Denison, J., & Mills, J. (2018). The Cyclical Relationship between Physiology and Discipline: One Endurance Running Coach's Experiences Problematising Disciplinary Practices. *Sports Coaching Review* 8 (2): 124–148. doi:10.1080/21640629.2018.1487632.
- La Fountaine, J., & Kamphoff, C. (2016) Coaching boys' high school teams: Female coaches' experiences and perceptions *International Journal of Sports Science and Coaching*. Vol 11(1) 27-38. Sage Publication. <https://doi.org/10.1177/1747954115624815>
- Leavy, P. (2017). *Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based and Community-Based Participatory Research Approaches*. Society. New York: The Guilford Press.
- Luke, A.N., Faye F.D. (2020). Understanding social networks and social support resources with sports coaches. <https://doi.org/10.1016/j.psychsport.2020.101665>
- Majid, K., (2021). Sports Facilities and Utilities: A Perceptual Analysis of Secondary School Students. [https://doi.org/10.36902/rjsser-vol2-iss1-2021\(292-302\)](https://doi.org/10.36902/rjsser-vol2-iss1-2021(292-302))
- Manson, R.J. (2020) Sports Coaches' Knowledge and Beliefs About the Provision, Reception, and Evaluation of Verbal Feedback. *Sec. Movement Science and Sport Psychology*. <https://doi.org/10.3389/fpsyg.2020.571552>
- Martens, R. (2004). *Successful coaching*. Human Kinetics, Champaign, IL.



- McEwan, D., Zumbo, B.D., Eys, M.A., Beauchamp, M.R., (2018). The Development and Psychometric Properties of the Multidimensional Assessment of Teamwork in Sport. *J Sport Exerc Psychol*, 2018; 20: 1-13
- McKim, C. A. (2017). The Value of Mixed Methods Research: A Mixed Methods Study. *Journal of Mixed Methods Research*, 11(2), 202–222. <https://doi.org/10.1177/1558689815607096>
- McQuade, S., Davis, L., & Nash, C. (2015). Positioning Mentoring as a Coach Development Tool: Recommendations for Future Practice and Research, *Quest*, 67:3, 317-329, doi: 10.1080/00336297.2015.1048810
- Memmert, D., & Harvey, S. (2008). The Game Performance Assessment Instrument (GPAI): Some concerns and solutions for further development. *Journal of Teaching in Physical Education*, 27(2), 220–240. <https://doi.org/10.1123/jtpe.27.2.220>
- Merriam, S.B., & Tisdell, E.J. (2016). Review of Qualitative Research: A Guide to Design and Implementation. *Educational Psychology Papers and Publications*. 214.
- Mesquita, I., Graça, A., & Rosado, A. (2010). Coaches' Perceptions of Competence and Acknowledgement of Training Needs Related to Professional Competences. *Sports Coaching Review*. doi: 10.1080/21640629.2017.1361168
- Mesquita, I., & Ribeiro, J. (2014). Coach learning and coach education: A Portuguese expert coaches perspective. *The Sport Psychologist*, 28, 124–136. <https://doi.org/10.1123/tsp.2011-0117>
- Mills, J., & Clements, K. (2021). Effective sports coaching: A systematic integrative review. doi:10.31236/osf.io/yhj9g
- Mitchell, S. A., Oslin, J. L., & Griffin, L. (2013). *Teaching Sport Concepts and Skills: A Tactical Games Approach for Ages 7 to 18 (Third Ed)*. United States of America: Human Kinetics. Mike Voight & Pete Carroll. (2015). *Applying Sport Psychology Philosophies, Principles, and Practices Onto the Gridiron: An Interview With USC Football Coach Pete Carroll*. DOI: 10.1260/174795406779367800
- Moen, F., & Fikse, C. (2011). Elite Coaches Perceptions of Needed Coach Competencies in Elite Sport. www.jdrottsforum.org/articles/moen_fikse/moen_fikse_2011.110921.html
- Moen, F., Federici, R.A., & Klemetsen, H. (2014). Coaches Competencies -
- Nazrul Fadzli Khairulhalimi, & Zulakbal Abd Karim. (2020). Applied Pattern of School Football Coaches' Coaching Process in Kuala Lumpur. *International Journal of Academic Research in Business and Social Sciences*, 10(5), 179–190. *Nordic Skiing. Journal of Excellence*. 2014; 3(16):62-73
- Norfishah Mat Rabi. (2020). *Penulisan Proposal Penyelidikan Ilmiah*. Tanjung Malim: Universiti Pendidikan Sultan Idris.
- Okyere, T. (2019). *An Assessment Of Sport Facilities In Senior High Schools And Their Effects On Sports Development In The Tano North And South Districts Of Ghana*. European Centre for Research Training and Development UK (www.eajournals.org)
- Othman Lebar. (2018). *Penyelidikan Kualitatif: Pengenalan Kepada Teori dan Metode*. Tanjung Malim: Universiti Pendidikan Sultan Idris.
- Othman Lebar. (2007). *Penyelidikan Kualitatif: Pengenalan Kepada Teori dan Metod*. Tanjung Malim: Universiti Pendidikan Sultan Idris.
- Ozturk, A. & Arikan, G. (2020). Decision-Making Styles and Cognitive Flexibility Levels of the Football Players. *Ambient Science*, 2020: Vol. 07(Sp1); 97-101
- Patton, M. Q. (2002). *Qualitative Research & Evaluation Methods*. Qualitative Inquiry. Thousand Oaks: SAGE Publication, Inc. Retrieved from http://books.google.com/books/about/Qualitative_research_and_evaluation_meth.htm?id=FjBw2oi8El4C
- Patton, M. Q. (2015). *Qualitative Research & Evaluation Methods*. The British Journal of Psychiatry (4th Ed). California: SAGE Publication, Inc. <https://doi.org/10.1192/bjp.112.483.211-a>
- Perry, J.L., & Clough, P.J. (2017). Predicting cooperation in competitive conditions: The role of sports-personship, moral competence, and emotional intelligence. *Psychol Sport Exerc*, 2017; 31: 88-92
- Persatuan Bola Sepak Malaysia. (2018). *FAM Roadmap: 2019-2030*. Petaling Jaya. <https://doi.org/10.1360/zd-2013-43-6-1064>
- Robinson, J. (2016). How an Elite Coach's Philosophy Drives His Coaching to Facilitate Psychological Skills Development of Young Athletes: A Case Study. 10.1123/iscj.2016-0052
- Rui Gome, A., Araujo, V., Resende, R., & Ramalho, V. (2018). Leadership of elite coaches: The relationship among philosophy, practice, and effectiveness criteria. *International Journal of Sports Science & Coaching*. doi.org/10.1177/1747954118796362



- Samento, H., Pereira, A., & Anguera, M.T. (2013). The Coaching Process in Football – A qualitative perspective. UDC 796.332.015.15
- Sands, R. (2002). Sport Ethnography. Illinois: Human Kinetics.
- Seng, G.H., Dahlia Janan, & Rohaizah Ab Karim.(2019). Menulis Petikan dan Rujukan Gaya. Universiti Pendidikan Sultan Idris
- Shanmugam, V. (2022). It Takes Two: The Importance of the Coach-Athlete Relationship. <https://kids.frontiersin.org/articles/10.3389/frym.2022.676115>
- Steven, T. (2022). Qualitative Study. <https://www.ncbi.nlm.nih.gov/books/NBK470395/>
- Stoszkowski, J., & Collins, D. (2021), 'A realist evaluation of the use of Flipgrid to facilitate collaborative online learning and reflection in sport coaching', Sport, Education and Society. <https://doi.org/10.1080/13573322.2021.1952180>
- Sullivan, P. J., & Kent, A. (2003). Coaching efficacy as a predictor of leadership style in intercollegiate athletics. Journal of Applied Sport Psychology, 15(1), 1-11.
- Thomas, O., & Thrower, S. (2022) Developing and Maintaining Sport-Confidence: Learning From Elite Athletes. Front. Young Minds. 10:675054. doi: 10.3389/frym.2022.675054
- Trauch, U.G., Wäsche, H., & Jekauc, D. (2019). Coach Competences to Induce Positive Affective Reactions in Sport and Exercise—A Qualitative Study. doi:10.3390/sports7010016
- Ujang Rohman & Hari Setijono (2017). Evaluation of Football Coach Competence of Early Age in Football Schools. Advances in Social Science, Education and Humanities Research, volume 134
- Voight, M. & Carroll, P. (2006) Applying Sport psychology philosophies, principles and practices onto the gridiron: USC football coach Pete Carroll. International Journal of Sports Science & Coaching, 1, 321-331
- Van Maarseveen, M.J.J., Oudejans R.R.D., & Savelsbergh, G.J.P. (2017)International Journal of Sports Science and Coaching. 0(0) 1-13. Sage Publication <https://doi.org/10.1177/1747954117694922>
- Walker, G. J., & Hawkins, R. (2018). Structuring a program in elite professional soccer.Strength and Conditioning Journal, 40(3), 1–11. H <https://doi.org/10.1519/SSC.0000000000000345>
- Walker, L.F., Thomas, R., & Driska A.P.(2018).Informal and Non Formal Learning For Sport Coaches: A Systematic Review. International Journal of Sports Science and Coaching .0(0),1-14. Sage Publication. <https://doi.org/10.1177/1747954118791523>
- Watts, D.W., & Cushion, C. J. (2017). Coaching journeys: Longitudinal experiences from professional football in Great Britain. Sports Coaching Review, 6(1), 76–93. <https://doi.org/10.1080/21640629.2016.1238135>
- Watts, D. W., Cushion, C. J., & Cale, L. (2021). Exploring professional coach educators' journeys and perceptions and understandings of learning. Sport, Education and Society, <https://doi.org/10.1080/13573322.2021.1887115>
- Weller, S.C., Vickers, B., Russell Bernard, H., Blackburn, A.M., Borgatti, S., Gravlee, C. C., & Johnson, J. C. (2018). Open-ended interview questions and saturation. PLoS ONE, 13(6), 1–18. <https://doi.org/10.1371/journal.pone.0198606>
- Zhang, H. (2022). Analysis on Promotion of Sports and Ideological and Political Education to Students' Physical and Mental Health. Vol. 31 No. 4 (2022): Journal of Sport Psychology
- Zulfaizan Mansor. (2021, Oktober 12). 'Corak latihan akar umbi di akademi, sekolah perlu diubah'. Berita Harian Online. Diperoleh daripada <https://www.bharian.com.my>
- Zulakbal Abd Karim, & Najib Razak. (2018). Lesson Learned from Coaches of Malaysia National Football Development Programme (NFDP): Preferred Career Development Pathway and Accredited Coaching Course. International Journal of Academic Research in Business and Social Sciences, 8(6), 1069–1082. <https://doi.org/10.6007/ijarbss/v8-i6/4302>
- Zulakbal Abd Karim, Arif Hanis Abd Ghani, & Ali Md Nadzalan (2018). Exploring Effective Training Methods to Improve Football Performance: Effects of Small Sided Games on Cardiovascular Endurance. International Journal of Engineering & Technology, 7(2), 158–160.
- Zulakbal Abd Karim, Najib Razak & Ali Md Nadzalan. (2018). Designing model of career path development for National Football Development Program (NFDP): Directions, issues, challenges and sources of Knowledge that influence and develop coaching expertise level.International Journal of Academic Research in Business and Social Sciences, 8(3), 542–550. <https://doi.org/10.1109/IGARSS.2003.1294134>
- Zulakbal Abd Karim & Ali Md Nadzalan. (2017). Malaysia Football Coaches: Development Characteristics. doi: 10.6007/IJARBSS/v7-i9/332



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