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Special Exercises Using the High-Intensity Interval Training (HIIT) Method to Develop Physical Performance Levels for the Asian Football Referees Academy Test

Mustafa Abdul Karim Mhana

Ministry of Education, General Directorate of Education in Baghdad, Al-Rusafa Third District,
mhanamustafa7@gmail.com

Ahmed Kadhim Katea Khalifa

Ministry of Higher Education, University of Baghdad, College of Physical Education and Sports Science,
akadhim104@gmail.com

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SPECIAL ISSUE ARTICLE

Special Exercises Using the High-Intensity Interval Training (HIIT) Method to Develop Physical Performance Levels for the Asian Football Referees Academy Test

Mustafa Abdul Karim Mhana^{a,*}, Ahmed Kadhim Katea Khalifa^b

^a Ministry of Education, General Directorate of Education in Baghdad, Al-Rusafa Third District

^b Ministry of Higher Education, University of Baghdad, College of Physical Education and Sports Science

Abstract

The physical requirements of football referees are quite obstructive because of sport characteristics, as they are associated with switches of sprints, jogging, and sharp turns. This in turn requires high levels of aerobic and anaerobic endurance, speed and agility. The research problem is since there is no specific physical conditioning program corresponding to the Asian test protocol, which is rather new and has not been adopted by the Iraqi Football Association, yet. Most referees nowadays are trained during the season according to the demands of older assessment. The current research aims at designing a specific training program and assessing its ability to improve physical performance on a case-by-case basis using specific exercises, by using the Asian test standards to track down the progress of second division (field) referees working in the Premier League. The single-group experimental design was chosen, and it was suitable in the context of the research. A population of 15 first-class referees in the Baghdad Governorate was used as the sample, which is 50 percent of the population. The tests were conducted at the stadiums of the Ministry of Youth and Sports in Baghdad. The analysis showed that there was a dramatic increase in scores after the test when compared to the scores before the test, which was based on the implemented methodology. In this regard, the authors suggest that to select referees to the Asian Academy, focus should be placed on the unique physical requirements of referees during a competitive match to prevent physical stress by eliminating classical training and traditional tests.

Keywords: Football referees, Asian Academy for referees

1. Introduction

Modern sports training is based on systematic scientific planning, which is directed at taking athletes to a high level of performance. The ongoing development of contemporary physical assessments in football refereeing requires that the officials are physically ready at a high and constant level. Such preparation is only possible through prolonged and rigorous conditioning activities that are central to enhancing the technical performance of referees. This, on the other hand, enhances their skills in being placed properly and efficiently on the field. Effective

positioning does not just improve physical qualities but has a positive effect on psychological factors like confidence and self-control (Busacca, 2019) and cognitive ones like decision-making speed. It is therefore urgent to apply modern and suitable training techniques that will enhance development of physical abilities and by extension the entire standards of the refereeing profession. High-intensity interval training (HIIT) is one of the modern and effective modalities that most closely resembles the changing intensity and speed of referees on the field (Basati, 2020). The proposed research will design, and test certain exercises based on this standardized method to enhance

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* Corresponding author.

E-mail addresses: mhanamustafa7@gmail.com (M. Abdul Karim Mhana), akadhim104@gmail.com (A. K. K. Khalifa).

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the physical performance of second-division referees who want to study at the Asian Football Academy. It is aimed at offering them a scientifically-based training aid that would guarantee them passing the necessary tests and, most importantly, allow them to excel and effectively on-field refereeing (Bannai, 2023). Various research in football has been conducted to analyze important issues and training strategies that are relevant to the development of physical abilities, and some of the most important contributions are mentioned below. Ahmed and Kazem explored the need to revise tests and the invention of the Yo-Yo test with the focus on the relevance of the test to international and Asian federations. The reason behind their research was the unavailability of a test-based conditioning program, which is more modern and more demanding compared to the earlier tests. They randomly selected 15 second-division referees (60% of the total) and applied a single-group experimental design, as they determined that a structured training intervention positively influences the speed-endurance outcomes and success in passing the test (Shahtoul, 2016). Mustafa and Sabah aimed at modifying the transitional speed test among football referees, developing special exercises to enhance speed, and evaluating the effectiveness of the exercises to improve transitional velocity through a modified test conducted on a sample of referees in the Iraqi Premier League. Their research design was deemed to be appropriate to the research objectives. They chose 38 first-division referees who worked in the 2018/19 seasons in the Premier League, 15 of whom were selected purposely in Baghdad Governorate (39.47% of the population). The primary sample was then subjected to the modified test and results obtained helped them make their conclusions (Mhana, 2019). Mohammed and Abdul-Razzaq used an experimental design where 20 second-division referees were selected into control and experimental groups. The statistical methods were applied to analyze the data, constituting a correlation between physical elements of the training program and the level of refereeing performance. The authors support the importance of focusing on the physical aspect of the officiating because it is directly related to the ability to pass physical fitness tests during the sporting season (Kazim, 2016). After this examination of earlier research, the reason behind the incorporation of such studies is clear. The former emphasized the need to train in the current examinations and the relevance of the test scores to the referees. The second emphasized the effect of physical conditioning on the performance during the game and on the overall referee effectiveness. The third highlighted the importance of physical training to achieve success in passing the contemporary speed-endurance tests.

2. Procedures

The researchers have used a single-group experimental design (Kadhemi, 2012). The sample consisted of second-division referees in the Iraqi Premier League, who were selected purposely. The sample was 50 percent of the population, which is 15 referees accredited by the Iraqi Football Association to work in the 2025/2026 seasons. The pilot study was carried out in Baghdad on the sample on Tuesday, 7 October 2025, in the ministry of youth and sports stadiums in Baghdad. The goals of the pilot consisted of the following:

- (1) to determine the time necessary to conduct the tests described.
- (2) to test the appropriateness of the equipment and tools
- (3) to allocate the work among the support team.

The primary experiment was to be carried out on Friday, 10 October 2025, at the same location. The sample was given the following test:

The AFC Academy Test (Rozali, 2025). Measurement was aimed at assessing endurance power. The equipment involved was a football field, registration forms, a loudspeaker, cones and a laptop, which contained the test protocol.

- Description of the performance: The cones were to be placed according to the test diagram, a distance between starting and finishing cones of 20 meters, and a recovery area of 5 meters. Referees also started at the marked starting cone, ran to the finishing cone that had a length of 20 meters, returned and did it again with rests in between. Referees had to obey the audio signals of both the performance and rest period; the audio file determined the pace of the run and the length of the recovery.
- Recording: The test supervisor observed the running performance of each referee and noted the number of repetitions each referee had. The inability to step on the finish cone in time was enough to receive a verbal notification on the part of the test leader; the second violation meant the cancellation of the test as shown in Fig. 1.

3. Table 1 shows

The extent of improvement in the research variables is evident through a comparison of the pre-test and post-test. A significant difference was found in favor of the post-test. The researchers attribute this to the effectiveness of the training program they developed, which had a significant impact on the sample's progress in the post-test.



Fig. 1. Illustrates the Asian Academy of referees test.

Table 1. Comparison of the pre-test and post-test.

Variables	Unit of Measurement	Group	Mean	Standard Deviation	F	F (Critical)	Calculated T-value	Significance Value	Result
AFC Test	Level	Pre-test	33.533	4.050	30.466	4.072	7.480	0.000	Significant
		Post-test	64.000	15.950					

4. Discussion

The researchers believe that applying exercises at varying distances and times, in accordance with the test requirements, contributed significantly to improving the total distance covered by the research sample. This aligns with what Tariq (2016) stated: "When a coach selects exercises in general, they progress from simple to complex and from easy to difficult." The researchers used the interval training method, which plays a role in developing the endurance of football referees, especially since the training method must be similar to the physical performance requirements of referees during matches.

One of the reasons for the high rates of improvement is the regularity of the targeted group in performing the exercises used, and their awareness of the importance of this ability in raising the level of referee readiness during the Asian refereeing exams.

5. Conclusions and applications

- 1- The exercises used had a fundamental and clear impact on developing the referees' physical level and closely mimic the physical requirements of the Asian refereeing exam format and style.

- 2- We recommend that this type of training be included in the referees' approved programs in the future.
- 3- Future studies comparing the interval training system with the Emom training method are necessary.

Author's declaration

Conflicts of interest

None.

We confirm that all tables and figures in this article are ours and written by the researchers themselves.

Ethical-clearance

This manuscript approved by Mustafa Abdul Kareem Mhana.

Author's contributions

All contributions of this study were done by the researcher (Mustafa Abdul Kareem Mhana) who get the main idea and work on writing and concluding also with number of experts,

Dr. Haydar Radi Raheem in Statistics, Dr. Ahmed Kadhimi Katea in revision,

Asst. Ali Abdul Kareem- Uruk University in translating.

Facilitate the task

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Roles of each researcher in the research

1. Mustafa Abdul Kareem Mhana was responsible for the conceptualization, design, data collection, interpretation of results and drafting.
2. Ahmed Kadhim Katea Khalifa was responsible for the literature review and final revision of the manuscript.

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Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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تمرينات خاصة بأسلوب التدريب المتقطع عالي الكثافة لتطوير مستوى الأداء البدني لاختبارات الأكاديمية الاسبوية لحكام كرة القدم

م.د. مصطفى عبد الكريم مهنه¹، م.د. أحمد كاظم كاظم خليفة²

¹/وزارة التربية /المديرية العامة للتربية في بغداد/ الرصافة الثالثة

² /وزارة التربية /المديرية العامة للتربية في بغداد/ الرصافة الثالثة

مستخلص البحث

بالرغم من استمرار حكام الدرجة الثانية في العراق في السعي الى تطوير الجانب البدني الا أن هنالك العديد من الحكام يواجه تحديات في اختبارات اللياقة البدنية التي تعتمد على الاتحادات القارية، لا سيما في الاختبارات المعتمدة للترشح السنوي في الأكاديمية الاسبوية للتحكيم. وتبرز أهمية البحث من خلال اعداد تمرينات خاصة بأسلوب التدريب المتقطع لتطوير مستوى الأداء البدني لحكام الدرجة الثانية (حكام الساحة) المرشحين مستقبلا للدخول في الأكاديمية الاسبوية للتحكيم. وتمحورت المشكلة للدراسة في عدم وجود منهج للإعداد البدني الخاص للاختبارات الاسبوية كونها اختبارات حديثة وغير مستخدمة، وأغلب الحكام يتدربون طوال الموسم الكروي وفق متطلبات الاختبارات القديمة التي تختلف بشكل واضح من حيث المسافة وطريقة الأداء. وهدف البحث إلى اعداد منهج تدريبي والتعرف على تأثيره في تطوير مستوى الأداء البدني من خلال اعداد تمرينات خاصة وكذلك الاعتماد على الاختبارات الاسبوية لغرض قياس مدى التطور الحاصل للفئة المستهدفة من حكام كرة القدم الدرجة الثانية (حكام الساحة) المعتمدين في الدوري الممتاز ودوري الدرجة الاولى. واستخدم الباحثان المنهج التجريبي ذو المجموعة الواحدة لملاءمته طبيعة مشكلة الدراسة واختار عينة البحث من حكام الساحة الدرجة الاولى في محافظة بغداد وعددهم (15) حكم مثلوا 50% من مجتمع البحث، وأجريت الاختبارات الخاصة عليهم في ملاعب وزارة الشباب والرياضة / بغداد، وبعد تحليل ومناقشة النتائج توصل الباحثان الى وجود فروق معنوية بين الاختبارات القبلية والبعدي ولصالح الاختبارات البعيدة لمجموعة البحث بسبب المنهج المستخدم وفي ضوء ذلك يوصي الباحثان ضرورة التركيز على المتطلبات البدنية الخاصة التي يحتاجها الحكم خلال فترة المنافسات للترشيح للأكاديمية الاسبوية والابتعاد عن التدريب الكلاسيكي والاختبارات التقليدية لتقليل الضغوطات البدنية التي تقع على عاتق الحكام.

الكلمات المفتاحية: حكام كرة القدم، الأكاديمية الاسبوية للحكام.