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The Effect of Competitive Exercises Using Physical Performance Tracking Technology (GPS Player Tek Plus and Polar H9) on Developing Speed in Iraqi Premier League Football Players

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Abstract

Football is one of the most important team sports, played by men and women, young and old, across all age groups. The physical development in this sport is attributed to athletic training and modern technology, which have greatly contributed to the advancement of sports in general. The competitive nature of football requires precise and rapid physical skills to achieve outstanding performance. Speed is a fundamental element in football, making the use of devices such as heart rate monitors and GPS tracking systems essential during training and matches.

The aim of this research is to enhance the performance of Al-Talaba Sports Club players in Baghdad by scientifically improving their speed. The significance of the study lies in creating competitive exercises based on scientific data using global tracking technologies to improve performance during training.

According to the research study, there is a physical weakness in the players' speed, which makes the use of the GPS Playertek Plus tracking device necessary to develop their speed. The research contributes to data analysis, designing competitive exercises, and improving match performance. The study highlights that players' speed development is significantly influenced by competitive drills that utilize GPS tracking device readings, emphasizing the importance of integrating this technology into sports training. GPS tracking devices help improve team speed both collectively and individually.

Keywords: Speed, fitness, Polar H9, Playertek Plus.

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Introduction

Training objectives and game requirements are frequently the basis for the development of training techniques. Football is a competitive team sport, and as such, physical training must be tailored to the speed and precision needed to perform in a real match with the ball present and competitive components, whether the performance is individual or team-based. The researcher noticed physical weakness in the players' movements during specific parts of the game and in their ability to finish assaults with goals, based on the first author's expertise as a coach at Al-Student Club in Baghdad and as a former player in clubs and national teams. The most significant factor contributing to this deficiency is the disregard for high-speed training surpassing 25.5 km/h. The GPS monitoring gadget, which tracks speed during physical exercise, may be used to determine this speed. Utilising Catapult's direct tracking device, the GPS Playertek Plus, which is compatible with the developments in communication networks like 4G and 5G networks, the researcher offers a methodical answer to this issue.(Maab Fathi, et al., 2022) This gadget allows for real-time monitoring and measurement of the high speeds required in football by tracking players' performance throughout practices and games. Coaches may boost players' speed through customised competitive training programs according to this scientific method, which also improves the quality of accessible data, speeds up performance analysis, and improves team performance in games.

The Research's importance:

The development of competitive activities to improve the pace of players at Al-Talaba Sports Club in the Iraqi Premier League in Baghdad is the significance of this research. Using worldwide monitoring technologies like Catapult's Playertek Plus devices, this development will be conducted in a methodical and scientific way. These technologies are intended to enhance players' speed capabilities during practice and competition. They are necessary for precise performance analysis and the development of training plans grounded in empirical evidence. Players' physical prowess and training efficacy will both be enhanced by this strategy, which will boost their performance in games and assist their team win.

Research Objectives

In order to improve football players' speed, the Al-Talaba Sports Club in Baghdad will use the GPS Playertek Plus monitoring gadget to create competitive activities for the 2022–2023 season.

To find out how these particular activities, which use the GPS Playertek Plus monitoring device, affect the football players of the Iraqi Premier League's Al-Talaba Sports Club in Baghdad's ability to improve speed.

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Research Scope:

Human Scope: Players of Al-Talaba Sports Club for the 2022-2023 season in the Iraqi Premier League in Baghdad.

Time Scope: The period from October 16, 2022, to December 31, 2023.

Spatial Scope: The training field of Al-Talaba Sports Club at the University of Baghdad, Jadriyah.

Terms:

GPS Playertek Plus: An advanced sports performance tracking device used in various sports, including team sports like football. The device records physical data related to player movements during training sessions and matches using Global Positioning System (GPS) technology. It allows coaches to monitor physical performance accurately, such as distance covered, speed, acceleration, deceleration, and other important metrics. The device provides real-time and detailed data that aids in performance improvement and training strategy development. By analyzing this data, coaches can identify strengths and weaknesses and create customized training programs to enhance the athletic performance of teams or individuals, as shown in Appendix (1).

Polar H9: A fitness tracker that measures physical activity and heart rate, used in various sports and fitness activities. It is known for its high accuracy in monitoring heart rate, providing precise data about physical performance, training intensity, and calories burned during exercises and daily activities. It operates using Bluetooth technology, connecting with compatible smartphones or tablets. By utilizing the heart rate data provided by the Polar H9, coaches can analyze physical performance and adjust training sessions to improve speed, helping athletes enhance their fitness level and achieve their athletic goals, as shown in Appendix (1).

Previous Studies Study by Karrar Ali Karim (2023): A Master's thesis titled "An Analytical Study to Evaluate Physical Condition Using Information Technology for Players of Al-Talaba Club in the Iraqi Premier League." The aim of the thesis was to evaluate the physical condition of Al-Talaba players using information technology in the Iraqi Premier League. The research used a descriptive survey method and employed the (PLAYERTEKTEAM) device. The researcher found that the readings from the GPS device were positively or negatively dependent on the playing style of Al-Talaba Club compared to other teams, depending on the levels of those teams. The researcher recommended emphasizing the use of the (PLAYERTEKTEAM) device for measuring the physical condition of football players, as was done in this study, and suggested that it be used by other teams in the Iraqi league that have not yet adopted it. The researcher also recommended incorporating lectures on how to use this device into the courses of the Asian Football Confederation's coaching programs.

Study by Amir Haider Hussein (2018): A study titled "Using GPS Recorder and Polar H10 Devices to Analyze Some Physiological and Physical Indicators and Compare Them Between Playing Positions for Players in the Iraqi Premier League." The goal of the study was to examine the specificities of each

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playing position in football using electronic devices that measure various physical variables and heart rates. The research employed a descriptive approach and found varying results in heart rate, distance covered, speed, and other physical variables measured by the (GPS Recorder) and (Polar H10) devices. The researcher recommended the use of modern electronic devices in regulating training load and assessing the physical and physiological capabilities of players in the Iraqi Premier League.

Study by John R. Evans, Michael J. Smith, et al. (2021): A study titled "Impact of GPS Technology on Sprinting Performance in Youth Soccer Players." The purpose of this study was to investigate whether GPS technology could help youth football players improve their sprinting performance. The results showed that the use of GPS monitoring devices significantly contributed to increasing maximum speed and the distance covered at high speeds, thereby improving the performance of young players in both training and competition (John R, et al., 2021). Study by Lucas A. Johnson, Emily K. Rogers, et al. (2020):

Titled "The Effectiveness of GPS-Based Training Interventions on Speed and Endurance in Young Soccer Players." This study explores how GPS-based training can enhance the speed and endurance of youth football players. The research indicates that using GPS technology in training systems significantly improves athletes' speed and endurance during both training sessions and competitions. (Johnson , et al., 2020) Study by Sarah L. Thompson, Mark D. Wilson, et al. (2019):Titled "Enhancing Sprint Performance in Youth Football: The Role of GPS Monitoring." This study discusses how GPS monitoring can improve sprinting performance in youth football players. The results show that GPS technology helps determine the appropriate training intensity, leading to improved maximum speed and overall physical performance in young players (Thompson, et al., 2019)Study by Rachel M. Davis, Christopher P. Lee, et al. (2022):Titled "GPS Technology and Sprint Speed Development in Adolescent Soccer Players." The purpose of this study was to examine how GPS technology impacts the development of sprint speed in adolescent football players. The findings indicate that using GPS to track training improves maximum speed and the distance covered at high speeds, benefiting the physical performance of young athletes (Davis R.M., et al., 2022)Study by Rampinini et al. (2015):This study discusses the accuracy of GPS devices in measuring high-intensity running in team sports players, such as football, and proves their effectiveness in analyzing physical performance and accurately measuring distances covered during sports activities (Rampinini E., et al., 2015)Study by Scott et al. (2016):This study provides a review of the accuracy and reliability of GPS systems in team sports, focusing specifically on analyzing speed and distances covered. It emphasizes the importance of this technology in enhancing athletic performance. (M.T., et al., 2016)Study by Carling et al. (2008): This study explores the use of movement analysis technologies, such as GPS, to analyze physical work in football. It demonstrates how these technologies contribute to performance improvement by measuring players' work rates and physical effort (Carling C., et al., 2008)

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Method and tools

First: Research methodology, research community and sample:

The researcher used the experimental method, and the research population was defined as the players of Al-Talaba Sports Club, with a total of 30 players. After excluding goalkeepers and injured players, who numbered 5, the sample size became 25 players. Additionally, 5 players were selected for a pilot study from the original population of 410 players, representing 4.9% of the total population. The players were randomly divided into two groups: the experimental group and the control group, using a random draw method based on odd and even numbers. The experimental group consisted of 10 players, and the control group also included 10 players. The two groups were balanced, as shown in Table 1.

Table (1): Shows the Equivalence of the Experimental and Control Groups in the Pre-Test of the Speed Indicator

Variable	Unit of Measurement	Experimental Group		Control Group		Calculated T Value	Error Level	Significance
30m Speed Test	Seconds	Mean	SD	Mean	SD	0.471	0.643	Not Significant
		4.538	0.519	4.662	0.651			

Second: Search test: 30m speed test

- Test Name: 30-Meter Sprint Test from a High Start (Al-Jamili, et al., 2023)
- Objective of the Test: To measure transitional speed.
- Equipment: Stopwatch, whistle, adhesive tape to mark two parallel lines 30 meters apart (with the first line as the starting line and the second line as the finish line), and a results recording sheet.
- Test Procedure: The participant starts behind the starting line in a high starting position. Upon hearing the whistle, the participant sprints at their maximum speed until crossing the finish line.
- Performance Conditions: The test can be performed individually or with multiple players to ensure the presence of a competitive factor.
- Recording Method: The participant is allowed only one attempt. The time taken to cover the distance from the starting line to the finish line is recorded.

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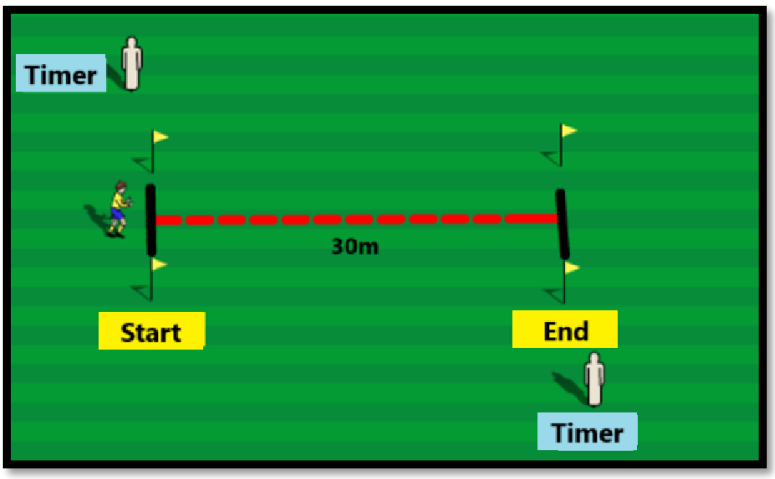

Figure (1): Speed test

Third: The Pilot Study

The research team, under the supervision of the researcher, conducted a pilot study on 16/10/2022 at 10:00 AM with 5 players from the research sample, Al-Talaba Sports Club. The following observations were made:

- The suitability of the transitional speed test and its ease of application to measure the time taken to complete the test.
- The suitability of the competitive exercises and the evaluation of the efficiency of the assistant team or working team.

Fourth: Pre-Test

The pre-tests were conducted on the research sample with the assistance of the support team, under the supervision of the researcher, at 3:00 PM on Sunday, 16/10/2022. The speed test was performed for both the control and experimental groups on the same day at the Jadriya campus of the University of Baghdad.

Fifth: The Main Experiment

The researcher prepared the training units for the main experiment, starting on Sunday, 23/10/2022, and ending on Saturday, 18/12/2022. The training sessions were held on Saturdays, Tuesdays, and Thursdays, with 3 sessions per week, totaling 24 training units over two months during the specific preparation phase.

The researcher focused on the skill and tactical aspects of the main section, and after determining the time for the main section of the physical aspect, the researcher used the interval training method, as it is more suitable for the needs of the players.

The competitive speed exercises were applied to the experimental group during the specific preparation phase.

The researcher relied on the Polar H9 device to determine training intensity. The interval training method was used in the speed training units, with the intensity of the training units being between 98%-100% of the player's maximum intensity.

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- Intensity of the first month: 98%
- Intensity of the second month: 100%
- Overall total intensity: 99.83%

The researcher distributed the training load components by determining the intensity based on the players' maximum capabilities using the Playertek Plus and Polar H9 devices.

Rest periods were calculated based on heart rate data from the Playertek Plus and Polar H9 devices to determine the appropriate recovery times.

The researcher used repetition to determine the volume of the exercises.

Sixth: Post-Test

The post-test was conducted on the research sample with the assistance of the support team at 3:00 PM on Wednesday, 21/12/2022. The speed test was performed for both the control and experimental groups on the same day at the Jadriya campus of the University of Baghdad.

Seventh: Statistical Methods

The researcher used statistical methods from the SPSS software to extract the statistical results.

Results and Discussion

First: Presentation of the Pre-Test and Post-Test Results for the Experimental and Control Groups:

Table (2): Shows the means and standard deviations for the pre-test and post-test speed indicators for both the experimental and control groups.

Variables	Unit of Measurement	Pre-Test		Post-Test	
		Mean	Standard Deviation (SD)	Mean	Standard Deviation (SD)
Control Group	Seconds	4.662	0.6513	4.544	0.5713
Experimental Group	Seconds	4.546	0.5303	4.123	0.0697

Second: Presentation of the Differences Between Pre-Test and Post-Test Results for Speed in the Control Group:

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Table (3): Shows the difference in means, standard deviations, the calculated t-value, and the significance of the differences between the pre-test and post-test results for the speed indicator in the control group.

Variables	Unit of Measurement	Group	Mean	Standard Deviation (S)	Mean difference (F - S)	-Value	Error Level	icance of Differences
Speed	Seconds	Control	0.118	0.1606	0.0508	2.322	0.045	Significant
		xperimental	0.415	0.5182	0.1675	2.524	0.033	Significant

Third: Discussion of Pre-Test and Post-Test Results for Speed in the Experimental and Control Groups:

Using the t-test, a significant effect on speed was observed between the pre-test and post-test results, favoring the post-test in the experimental group, as shown in Table 3. The researcher attributes these results to the effectiveness of the competitive exercises organized based on GPS tracker readings, whether the exercises were with or without a ball. These exercises were carefully structured in terms of intensity, rest, and repetitions. This approach helped achieve a balance between external and internal training loads, which requires a high neuromuscular response in a short period, as confirmed by Qassem et al. (2011), who stated: "The extent of the neural response and its compatibility with the muscular response for performing movements in the shortest possible time is an important and essential factor for motor performance" (Qassem et al., 2011).

By using Polar H9 devices and GPS trackers, information was provided that helped improve speed in a competitive framework. This improvement was achieved through increased rapid movements of the team when transitioning from defense to attack and vice versa. The competitive atmosphere during exercises and the application of defensive duties such as intercepting the ball and monitoring opposing players played a significant role in executing quick counterattacks and scoring goals. These combined factors served as an important motivation for the players, encouraging them to perform exercises correctly and quickly with increasing intensity.

Using GPS tracking devices and adopting a varied approach in training units contributed to improving physical fitness, including increasing speed. The gradual increase in training intensity was emphasized by Fadhil Kamil Midhkor and Amer Fakher, who stated: "In order to progress in a training program, exercises should be made more difficult as the program advances to maintain and challenge the body's adaptation and achieve progress" (Midhkor et al., 2008). This was also confirmed by Basatousi (1999), who highlighted that "training at high intensities is one of the fundamental methods for improving physical abilities by achieving adaptation between work and rest intervals." Additionally, Mohamed Reda Ibrahim and Mahdi Kazem Ali stated, "Introducing diverse exercises in training programs in a precise manner helps maintain athletes' desire to perform hard training requirements and transforms them from boredom into a state of joy and pleasure during training" (Ibrahim et al., 2013).

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The GPS tracker measures the speed at which the player moves during training or matches. Running speeds above 25 km/h, in straight or diagonal runs across the field while performing movements in the shortest time possible, are defined as speed. As confirmed by Adel Turki and Salam Sahib Jabar, "speed in football refers to the player's ability to move and transition with maximum possible speed from one place to another, either in tight spaces with or without an opponent, and moving in straight, lateral, longitudinal, or diagonal directions with short, controlled, and close steps, especially with the ball and its control" (Turki et al., 2016). This is also affirmed by Qassem et al. (2011), who defined speed as "the extent of the neural response and its compatibility with the muscular response for performing movements in the shortest possible time" (Qassem et al., 2011). Additionally, Anderson (2004) defined speed as "the ability to move a player's body mass in the shortest time possible from one point to another" (Marcia K. Anderson, et al., 2004). Haitham Jawad (2019) further emphasized the importance of speed in football, stating: "Speed in football is the transition of the player from one point to another on the field with maximum speed and minimal time, with or without an opponent, the ball, or both" (Haitham Jawad, 2019).

This confirms the importance of speed in modern football, and there is no place for slow players, as Abdullah Hussein Al-Lami emphasized: "There is no place for slow players in any team today in the context of modern playing styles" (Al-Lami, 2012).

Table (4): Presentation of Post-Test Results for Speed Index and Discussion

Variable	Unit of Measurement	Experimental Group		Control Group		Calculated T Value	Error Level	Significance
30m Speed Test	Seconds	Mean	SD	Mean	SD	2.313	0.033	Significant
		4.123	0.0697	4.544	0.517			

Fourth: Discussion of the Results Between the Experimental and Control Groups in the Post-Test for Speed Index

Based on the results of the speed test presented in Table (4), a significant effect on speed was observed between the control and experimental groups, favoring the experimental group. There was a notable improvement in speed for the experimental group in both pre-test and post-test, which can be attributed to the use of the GPS device and Polar H9 during the competitive training sessions. The absence of any effect from the variation in competitive drills with the devices during the training session contributed to the improvement in the experimental group's results.

The researcher attributes this improvement to the structured training program, which helped in enhancing speed. The use of the GPS device and Polar H9 during training sessions allowed for a gradual increase in training load by adjusting the difficulty of the drills, starting from easy to hard, as confirmed by Mufte Ibrahim (2009) who stated: "If the difficulty of the drill is increased within the same training session, it should follow a progression from easy to hard, from the known to the unknown."

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Additionally, the researcher believes the progress in speed training is due to the gradual increase in training load, including intensity, volume, rest, and the components of the competitive drills. This progression ensures that athletes perform the required training within their functional capabilities at the beginning of each new training phase to achieve new adaptations and raise their performance to the highest possible level, as noted by Mohammed Reda Ibrahim (2013).

The researcher also attributes the development of the experimental group's performance to the type of competitive drills, which allowed the players to execute tasks such as quick movements for dribbling, passing, and shooting on goal, and transitioning from defense to attack quickly when in possession of the ball. The competitive nature of the training kept the players motivated, reducing boredom and monotony, as noted by Basal Abdul Mahdi (2008), who emphasized the importance of variation in drills to maintain athlete engagement.

The effectiveness of varied competitive drills was also affirmed by Mohammed Reda Ibrahim and Mahdi Kazem Ali (2013), who stated that "introducing diverse drills into training programs is crucial to maintain the athlete's desire to engage in strenuous training, turning frustration into joy and enjoyment during training."

Moreover, the researcher points out that the gradual progression of training loads is essential to keep challenging the athlete's body, leading to improvements in performance, as noted by Fadil Kamil Mazzour and Amer Fakher (2008). Properly structured training, with accurate timing for intensity, rest, and repetitions, ensured that external training loads aligned with the internal load of the athletes, enhancing speed performance in competitive conditions. The absence of competition during drills could lead to a lack of proper repetition execution, as mentioned by Haitham Jawad (2015).

In modern football, players are expected to demonstrate speed across the field, whether it is pressuring opponents, sprinting for support, or escaping defenders to score, as affirmed by Thamer Mohsen and Mufid Majed Mulla (1999), who emphasized that "these important drills develop key principles in football, such as pressing, supporting, escaping from opponents, and intercepting."

The researcher confirms that the athletes reached their maximum speed during official matches and competitive drills, as shown on the GPS device, which demonstrated the development of the players' transition speed. This aligns with the findings of Jmeili and Alawani (2023), who stated that "the athlete's ability to perform various repetitive transitional movements, covering specific distances in the shortest possible time, is crucial" (Jmeili, et al., 2023).

The GPS device measures the total speed covered by a player during a match. Running at speeds over 25 km/h is considered speed, and the higher this speed, the greater the player's fitness level, as confirmed by CatapultSport (2022).

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Conclusions and Recommendations

I. Research Conclusions:

- The competitive exercises based on the GPS tracking device readings used on the experimental group have a significant effect on improving the physical aspect (speed).
- It is essential to use the GPS tracking device to enhance the speed of each player.
- The use of the Polar H9 heart rate monitor is necessary during speed training.

II. Research Recommendations:

- It is recommended that fitness coaches in the Iraqi Premier League use the GPS tracking device to develop other physical aspects.
- It is recommended that fitness coaches in the Iraqi Premier League use the Polar H9 heart rate monitor to develop other physical aspects.
- It is recommended that the readings from the above-mentioned devices be used to create individualized competitive exercises for each player to improve other physical aspects, by fitness coaches in the Iraqi Premier League.

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Appendices

Sample of Training Units and Exercises:

Training Unit 1

- **Location:** Baghdad University Campus, Jadriya
- **Week:** First
- **Training Date:** Tuesday, 25/10/2022
- **Month: First**
- **Goal: Speed Development**

Main Section of the Training Unit during Special Preparation Phase

Exercise Name	Intensity	Performance Time	Rest Between Repetitions	Repetitions	Sets	Rest Between Sets	Total Time	Total
Speed (3)	100%	7 sec	42 sec	6	3	120 sec	14.5 min	31.7 min
Speed (1)	100%	8 sec	64 sec	4	3	120 sec	17.2 min	

Training Unit 5

- **Location:** Baghdad University Campus, Jadriya
- **Week:** Second
- **Training Date:** Thursday, 3/11/2022
- **Month:** First
- **Goal:** Speed Development

Main Section of the Training Unit during Special Preparation Phase

Exercise Name	Intensity	Performance Time	Rest Between Repetitions	Repetitions	Sets	Rest Between Sets	Total Time	Total
Speed (2)	98%	7 sec	49 sec	4	3	150 sec	13.75 min	29.55 min
Speed (4)	98%	7 sec	56 sec	4	3	180 sec	15.8 min	

Training Unit 9

- **Location:** Baghdad University Campus, Jadriya
- **Week:** Second
- **Training Date:** Saturday, 12/11/2022
- **Month:** Second
- **Goal:** Speed Development

Main Section of the Training Unit during Special Preparation Phase

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Exercise Name	Intensity	Performance Time	Rest Between Repetitions	Repetitions	Sets	Rest Between Sets	Total Time	Total
Speed (4)	100%	7sec	56 sec	4	3	180 sec	15.8 min	28.45 min
Speed (5)	100%	7 sec	56 sec	3	3	180 sec	12.65 min	

Training Unit 10

- **Location:** Baghdad University Campus, Jadriya
- **Week: Second**
- **Training Date:** Tuesday, 15/11/2022
- **Month:** Second
- **Goal:** Speed Development

Main Section of the Training Unit during Special Preparation Phase

Exercise Name	Intensity	Performance Time	Rest Between Repetitions	Repetitions	Sets	Rest Between Sets	Total Time	Total
Speed (1)	98%	8 sec	64 sec	4	3	180 sec	17.2 min	34.4 min
Speed (6)	98%	8 sec	64 sec	4	3	180 sec	17.2min	

Second: Exercises

Speed Exercise (1)

- **Objective of the Exercise:** Sprint at high speed and change direction without the ball**.**
- **Equipment:** Footballs, cones, number of players: 10
- **Field Dimensions:** Half-field
- **Description of the Performance:**

  The exercise is performed in a square shape with each side measuring 15 meters. The players are divided into two groups, each consisting of 5 players with a ball. Upon hearing the whistle, the first player passes the ball diagonally to the opposing player and then sprints at high speed in an L-shape (15 meters) and another 15 meters to reach the end of the opposite group.

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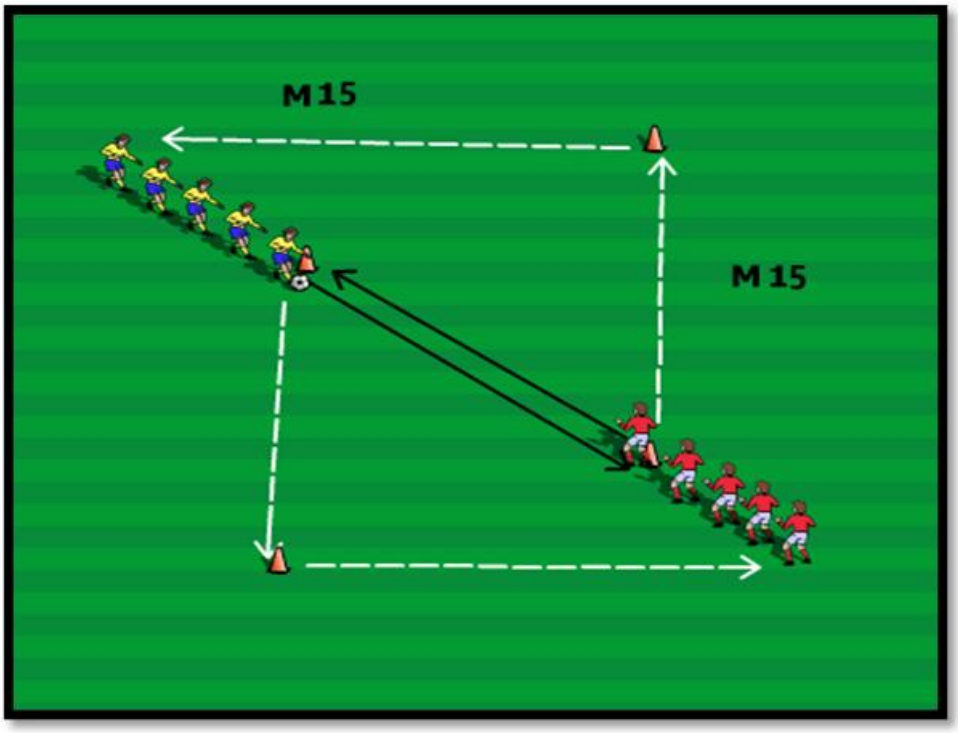

Passing Accuracy Exercise (2)

- **Objective of the Exercise**: Sprint at high speed, change direction, and pass accurately.
- **Equipment**: Footballs, cones
- **Number of Players**: 10
- **Field Dimensions**: Half-field
- **Description of the Performance**:

  The exercise is performed with players standing in two groups, each with a ball. In front of each group, there are two cones placed 1 meter apart, and another cone is placed 20 meters away from the group. A final cone is placed 15 meters away from the previous cone, making the total distance between the player and the cones 35 meters. Upon hearing the whistle, the first player sprints diagonally from each group toward the cone, then performs an accurate pass to one of the cones.

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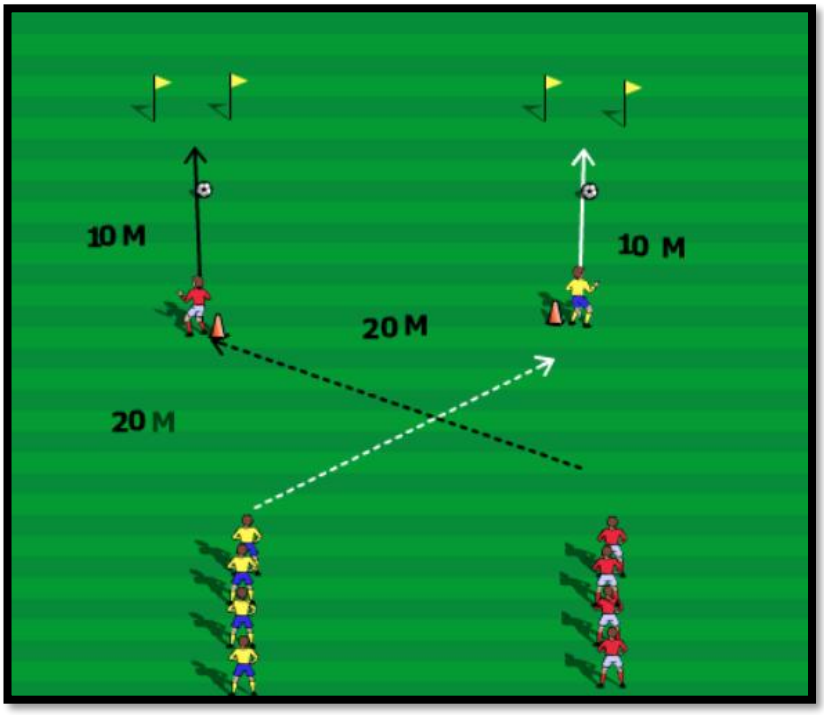

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Appendix 1: Images of GPS Playertek Plus and Polar H9 Devices

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TOTAL PLAYERS	AVERAGE [%]	MAXIMUM [%]	CALORIES [KCAL]
- ٢ بن طرشه .	69 AVERAGE [%]	88 MAXIMUM [%]	1068 CALORIES [KCAL]
- ٣ شليو .	65 AVERAGE [%]	94 MAXIMUM [%]	949 CALORIES [KCAL]
- ٧ حسن عاشور .	69 AVERAGE [%]	85 MAXIMUM [%]	839 CALORIES [KCAL]
- ٦ حسين عمار .	66 AVERAGE [%]	95 MAXIMUM [%]	855 CALORIES [KCAL]
- ٥ خضر .	70 AVERAGE [%]	95 MAXIMUM [%]	1023 CALORIES [KCAL]
- ١ دنس .	63 AVERAGE [%]	92 MAXIMUM [%]	758 CALORIES [KCAL]
- ١٣ عباس ماجد .	76 AVERAGE [%]	99 MAXIMUM [%]	916 CALORIES [KCAL]
- ١٠ علي مهدي .	56 AVERAGE [%]	81 MAXIMUM [%]	557 CALORIES [KCAL]
- ١٤ محمد جواد .	58 AVERAGE [%]	78 MAXIMUM [%]	650 CALORIES [KCAL]
- ٨ مرتضى علي .	58 AVERAGE [%]	88 MAXIMUM [%]	676 CALORIES [KCAL]

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References

Al-Jamili Atheer Mohammad and Al-Alwani Ahmed Abdul Amir, Modern Sports Training Science: Methods, Approaches, and Applications, Dar Al-Wifaq for Publishing and Distribution, 2023.

Al-Lami Abdullah Hussein, Football (Learning and Training – Plans and Planning), Baghdad: Matba'a Iraq, 2012.

Basal Abdul Mahdi, Selected Concepts and Topics in Sports Training and Auxiliary Sciences, Al-Adala for Printing and Publishing, 2nd Edition, 2008, p. 42.

Bastowisi Ahmed, Foundations of Sports Training, Dar Al-Fikr Al-Arabi, 1999.

Carling C. [et al.], The Role of Motion Analysis in Elite Soccer: Contemporary Performance Measurement Techniques and Work Rate Data, Sport Medicine, 2008, Vol. 38(10), 839-862.

CatapultSport, Volume Metrics, [Report], 2022, Retrieved from: https://support.catapultsports.com/hc/en-us/articles/360000648316-Volume-Metrics.

Davis R.M. and Lee, C.P., GPS Technology and Sprint Speed Development in Adolescent Soccer Players, Sports Medicine and Physical Fitness Journal, 2022.

Fadel Kamel Makhzur and Amer, Recent Trends in Endurance, Strength, Stretching, and Recovery Training, Al-Nur Office, 2008.

Haitham Jawad, The Effect of Compound Exercises in Developing Movement Speed, Basic Skills, and Tactical Performance for Football Players in Training Centers, Youth Category, University of Baghdad, Faculty of Physical Education and Sports Science, 2019.

Haitham Jawad, The Effect of Individual and Team Competitive Exercises on Developing Special Endurance, Speed, and Tactical Performance for Football Players Aged 15 in Baghdad Governorate, University of Baghdad, Faculty of Physical Education and Sports Science, 2015, p. 88.

Ibrahim Mohammad Reda and Ali Mehdi Kazem, Foundations of Sports Training for Different Age Groups, Dar Diaa for Printing, 2013, p. 39.

Ibrahim Mufti, Sports Training for Adolescents and the Successful Coach, Dar Al-Kitab Al-Hadith, 2009.

John R and Michael J Smith, Impact of GPS Technology on Sprinting Performance in Youth Soccer Players, Journal of Sports Science and Medicine, 2021.

Johnson [et al.], The Effectiveness of GPS-Based Training Interventions on Speed and Endurance in Young Soccer Players, European Journal of Sport Science, 2020.

M.T. Scott and G. Kelly V., The Validity and Reliability of Global Positioning Systems in Team Sports: A Brief Review, Journal of Strength and Conditioning Research, 2016, Vol. 30(5), 1470-1490.

Maab Fathi and O. Ali, A Review of TCP Congestion Control Using Artificial Intelligence in 4G and 5G Networks, American Academic Scientific Research Journal for Engineering, Technology, and Sciences, 2022, Vol. 88.

Makhzur Fadel Kamel and Faek Amer, Recent Trends in Endurance, Strength, Stretching, and Recovery Training, Al-Nur Office, 2008.

Makhzur Fadel Kamel, Faek Amer, and Amer Faek Shaghati, Recent Trends in Endurance, Strength, Stretching, and Recovery Training, Al-Nur Office, 2008.

Marcia K. Anderson, Susan J. Hall, and Malissa Martin, Foundations of Athletic Training:

Journal of Physical Education

Volume 36 – Issue (4) – 2024 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

Prevention, Assessment, and Management, Lippincott Williams and Wilkins, 2004.

Qassem Jamil and Khamees Ahmed, Encyclopedia of Handball, Al-Safa Encyclopedia for Publications, 2011.

Rampinini E. [et al.], Accuracy of GPS Devices for Measuring High-Intensity Running in Field-based Team Sports, International Journal of Sports Medicine, 2015, Vol. 36(1), 49-53.

Saad Hamed Al-Jamili, Field Training in Strength and Flexibility, Dar Dijla, 2014, p. 18.

Thamer Mohsen and Muwafaq Majid Mulla, Developmental Exercises in Football, Dar Al-Fikr for Printing, Publishing, and Distribution, 1999.

Thompson [et al.], Enhancing Sprint Performance in Youth Football: The Role of GPS Monitoring, Journal of Strength and Conditioning Research, 2019.

Turki Adel and Jabar Salam Sahib, Football: Teaching and Training, Basra: Al-Nakhil Printing, 2016.