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Sports Injury in the Context of FMS Functional Movement Examination in Players Youth Football

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ABSTRACT

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In the introduction, the researcher touched on the importance of this research in identifying areas of dysfunction in the body by testing the FMS in football players as a direct indicator in knowing the damage that may occur in the future in the players, which contributes to preventing or reducing the injury that occurs in players, especially young football players, because sometimes the injured player does not provide accurate or correct information about his injury by the method of interrogation only for fear of exclusion from the formation of the team. This has negative effects on the team in general and on the player in particular, and this is reflected in the method of treatment and the exacerbation of the severity of the injury, as for the research problem, football is one of the team games that is characterized by the element of speed and strength at the same time , and despite the progress made in the field of sports medicine and methods of diagnosis and treatment, the problems of multiple injuries in athletes in general and football players in particular still constitute a very large percentage, and this is what The researcher found it in some youth clubs in Dhi Qar Governorate, and through the researcher's observation of the frequency of injuries in young football players and different areas of the body, in addition to the lack of interest of researchers in the aspects of prevention, she decided to study them in order to prevent and reduce their occurrence in the future using the functional movement test (FMS) for the early detection of areas of dysfunction in some areas of the body. Identifying the areas of dysfunction using FMS among young football players from the areas of dyslexia, where the researcher used the descriptive method to suit it for the study, as for the research sample for the players of Dhi Qar clubs for the youth football players category for the sports season 2025-2026, the research population was (64) players and its sample was (18) players, the researcher reached the possibility of identifying sports injury through the FMS device.

Keywords: ***Educational Curriculum , Planning Approach Style , Basic Skills , Handball***

1. Introducing the research

1.1 Introduction and Importance of the Research

Sports-developed societies have been studying the nature of sports injuries, in order to take measures to prevent and reduce sudden injuries during the various stages of preparation, as the player's departure from the top of the performance level as a result of sports injuries means a decrease in the level, and sports injury is the main factor in excluding the best sports heroes and practitioners of various sports activities with high levels from their different performances, and therefore the interest in injury prevention has a great role in the progress of the skill and physical level of these players and champions. Football is one of the games that depends on moving all muscle groups in the body and the joints are of special importance as well, that a good test helps in identifying the places of weakness and strength in programs and individuals, so the importance of this research came in identifying the areas of dysfunction in the body by testing the FMS in football players because of its importance as a direct indicator in knowing the damage that may occur in the future in the players.

1-2 Research Problem :

Due to the peculiarity of the game of football being one of the games that is characterized by speed and strength of performance, which depends on the movement of all joints of the body, through thedirect friction between the players, which is also characterized by physical strength, which requires the immediate diagnosis of the injury through high-precision medical techniques, the researcher decided to use an important means through which the assistant coaches can diagnose and evaluate the areas of functional motor dysfunction for some basic patterns of movement of the players using a test FMS, hence the research problem by asking whether it is possible to identify the areas of the body's most dysfunctional and most susceptible to sports injuries through the use of the FMS test? The researcher hopes that studying this problem will help coaches and players identify the areas of functional motor deficits and impairments in young soccer players.

1-3 Research Objectives

Identify the areas most prone to injury by FMS and areas of body dysfunction in young soccer players.

1.4 Research Areas

1.4.1 Human Field: Players of the first division youth football clubs in Dhi Qar Governorate (Nasiriyah, Shatra, Al-Nasr, Al-Qala, Al-Fajr) for the 2025-2026 sports season.

1.4.2 Temporal Domain: 4/9/2025 – 21/10/2025

1.4.3 Spatial Domain: Halls and Stadiums of the Clubs Research Sample, Al-Sabah Laboratory.

1.5 Defining the Terms

Functional Motor Examination is a battery of tests that includes seven individual tests to evaluate the functional performance of some basic patterns of movement of players, as well as to evaluate the dysfunction of some basic patterns of movement of players, as well as to evaluate dysfunction in the following areas: spine, shoulder joints, pelvic joints, knee joints, and ankle joints, and the test scores range from (21) degrees.to zero score, as it predicts the risk of injury in players and its scores range from (0) to (3) scores.

2. Research Methodology and Field Procedures

2-1 Research Methodology

The researcher used the descriptive method by designing one group, which is the most suitable for the research objectives and hypotheses, using the method of survey and relational relationships to suit the problem and nature of the research, as the descriptive method is "the accurate perception of the mutual relations between society, trends, tendencies, desires, and development, so that it gives the research a picture of the reality of life, setting indicators and building (Nouri Ibrahim Al-Shawk and Rafi Al-Kubaisi, 2004: 59).

2.2 Research Community

The researcher identified the research community of youth football players for the sports season 2025-2026, as the number of (64) players representing (5) clubs in Dhi Qar Governorate, namely (Nasiriyah, Shatra, Al-Nasr, Al-Qala, Al-Fajr) as they were accurately identified through the use of club lists as shown in Table (1), while the research sample was selected by the deliberate method, which are (18) youth football players in Dhi Qar Governorate, as they represent 21% of the origin population (3) Details Distribution and sample of the research population.

2.3 Homogeneity of the research sample

In order to reach one level equal to the research sample and to avoid indicators that may affect the results of the research in terms of the differences in the players, the researcher performed homogeneity on the research sample by taking the variables (height, weight, chronological age, training age) and then used statistical means for the purpose of statistical treatments to investigate the homogeneity of the sample by using the torsion coefficient, as the values were limited between (+_1) This indicates their homogeneity and Table (1) shows that

Table (1)

Shows the homogeneity of the sample in the variables (height, weight, age, training age) and the arithmetic mean and

for the standard deviation and torsion coefficient of these variables

Torsion coefficient	Standard deviation	Arithmetic mean	Unit of Measurement	Variables
0,451	5,15638	172,333	Poison	Length
0,265	3,69110	69,2778	kg	Weight
-0,593	0,82644	20,2778	Year	Chronological age
0,616	0,3078	3,2778	Year	Training Age

The above table shows that the value of the torsion coefficient ranges between (0.265-0.616) and is limited to (+_1) and this indicates that the sample is naturally distributed, which indicates its homogeneity.

2.4 Tools and devices used in the research:

1-Lenovo Calculator (1)

2. Canon Camera (1)

3. Chinese-made electronic device for measuring height and weight

4. Functional motor dysfunction tester

5-Tape Measure

2.5 Description of motor dysfunction tests

Dyslexia tests consist of seven tests that aim to evaluate the functional motor performance of some of the basic movement patterns of players and to divide the areas of dysfunction in order to predict the occurrence of sports injuries that may occur in the future. ™ One score is given if the player is relatively unable to complete the move. Two grades are given if the player is able to complete the movement but there is a defect in performance, and three scores are given if the person performs the movement correctly, which is the best score given to the tested player, (Hossam Amr and Helmy: 2016).

The important thing is that the points of both sides should be scored, as the lowest score is calculated, and this indicates the presence of a motor dysfunction in this part, as the device consists of FMS tools) a stick of 110 cm, 2 slightly smaller sticks, a 2 x 6 board with a length of 120 cm, and a rubber rope and two agencies:

First: -Test Name (Deep Squat)

Objective of the test: to detect areas of motor dysfunction in the knees, hips, and spine.

Test Description: The starting mode is through the

The heel of the player is placed on the FMS board so that the metatarsal is aligned with the outside of the shoulders. A dowel is held on top of the head with the position of the hand adjusted at an angle of 90 degrees. The play then presses the upper peg with the shoulders bent and snatched with the arms fully extended, after which the heel is slowly descended to the deepest possible squat position, the heel on the floor, the head and chest facing forward and the stake is pressed to the maximum position the player takes as the FMS scores are recorded ™ From four probabilities starting from zero to three scores where the player gets a score of zero if he suffers from pain anywhere in the body in any part of the test, while one score is given if the player is unable to complete the movement completely. Two scores are given if the player is able to complete the move, but there is a defect in performance, and three scores are given if the person performs the move correctly, which is the best score given to the tested player.

The important thing is that the points of both sides should be scored, as the lowest score is calculated, and this indicates the presence of a dysfunctional motor disorder in this part.

How to score a degree:

First: The examinee shall obtain a grade (3) if the following is achieved:

1- The upper part of the trunk is parallel to a leg on the sagittal surface and can be observed from the side.

2- The thigh is below the level of the knees.

3- The knees are on the feet and may be crossed at the level of the toes at the front level.

4- The arms should be fully straight on the head and feet.

5- The stick is on top of the feet without crossing the level of the toes at the front level.

Second: The examinee shall obtain a grade (2) if the following is achieved:

1- The same as the previous level calibre, but the position of the foot is different, where the examinee places the heel of the foot on a measuring ruler with standard dimensions and the toes and combs of the foot are on the ground.

Third: The examinee shall obtain a grade (1) if the following is achieved:

1. The examinee raises the heel of the feet on the measuring ruler.

2- The examinee loses the parallel of the upper part of the trunk with the leg on the sagittal surface and can be observed from the side.

3- The thigh is higher than the level of the knees.

4- The knees go beyond the level of the toes at the front level.

5- Tilt of the arms, head and arms.

6- The stick goes beyond the level of the toes at the front level.

Fourth: Gets a score of (0) in case of great pain when performing the movement.

Second: Test Name (Barrier Step Movement Pattern)

The aim of the test is to detect areas of motor dysfunction in the muscles of the legs, stability and control in the lower body.

Test Description: The player stands in front of the base of the FMS device , so that the tips of the toes touch the base of the device, placing the stick on the upper shoulders and

below the neck from behind, then the player skips the rope installed between the two verticals of the device while maintaining the erection of the spine, provided that the step of crossing the barrier is carried out slowly without bending the torso, taking into account the necessity of extending the fixed leg and bending the free leg at a 90-degree angle.

How to score a degree:

First: The examinee shall obtain a grade (3) if the following is achieved:

1- The shoulder, pelvis, knee and wrist of the resting foot are all on the same straightness and this can be observed at the sagittal level.

2- No lateral movement in the lumbar area.

3- The leg of the moving limb is parallel to the septum without any lateral deviation of the knee.

Second: The examinee shall obtain a grade (2) if the following is achieved:

1- The pelvis, knee, and wrist of the foot lose their straightness and the torso tilts forward.

2- A slight lateral inclination movement occurs in the trunk that originates from the lumbar area.

3- The deviation or tilt of the knee of the moving limb occurs on two sides.

4. The moving limb leg loses its balance with the barrier viewer.

Third: The examinee shall obtain a grade (1) if the following is achieved:

1- The examinee loses his balance during the walk.

2- The thigh does not reach the appropriate height and the foot stumbles against the barrier.

3- The pelvis, knee and wrist of the foot all lose their straightness and the torso leans forward.

4- A large lateral inclination movement occurs in the trunk that originates from the lumbar area (Bell Al .et ,kiesel:**2007**).

Second: Test Name Pattern (Embedded Defense Movement

Objective of the test: to measure the flexibility of the shoulders, the elasticity of the muscles of the broad and rectus backs, and the neuromuscular control of the body.

Test Description:

The player stands on the FMS equipment with the heel of the front foot placed at the appropriate mark on the device. Then carry the stick in a vertical position behind the back, and the player's hand facing the front foot should be the hand that holds the stick and the other hand from below, then the player lowers the back knee to touch the board behind the heel of the front foot, and then the distance between the two fists of the hand is controlled until reaching the nearest possible point.

How to score a degree:

The tester shall obtain a grade (3) if the following is achieved:

1- The distance between the two fists is the maximum distance of the hand.

The player will receive a score (2) if the following is met:

2- The distance between the two fists is one and a half hands.

The examinee shall obtain a grade (1) if the following is met:

3- The distance between the two fists is greater than the distance of the hand and a half.

4-: Gets a score of (0) in case of great pain when performing the movement.

Fourth: Test Name: Pattern (Shoulder Movement)

Objective of the test: to measure the flexibility of the shoulder joint and the stretching of the arm muscles.

Performance Specifications:

The player stands with two straight feet and then bends the right arm behind the head with one palm and thumb inward and the other behind the back. The laboratory then brings the fists of the hands closer to the nearest possible distance, with the need for simultaneous movement of both arms, and then measures the distance between the two closest points of the fists, and here the chest should be emphasized forward during the movements of the shoulders in the upper extremities of the opposite.

Scoring :

The player will receive a grade (3) if the following is achieved:

1. The distance between the two fists is the maximum distance of the fist of one hand.

The player will receive a score (2) if the following is met:

1- The distance between the two fists is one and a half fists.

The examinee shall obtain a grade (1) if the following is met:

1- The distance between the two fists is greater than the distance between a hand and a half of a hand.

Fourth: Gets a score of (0) in case of great pain when performing the movement.

Fifth Test: Pattern of Internal Appeal Motion

The objective of the test: - Stabilization of the torso and pelvis at its various levels, and the shoulder strap during the stabbing movement.

Test Description: -The player takes the stabbing motion position on the FMS board by placing the hand extended on the floor with the knee of the foot parallel and the toes on the ground, as it should be parallel to the spine, and the shoulders and hips should be 90 degrees in proportion, then the player flexed between the shoulder and tightened the hip and knee from the same side, and then the player stretched the opposite arm and foot fully and with one straightness (parchmann, c.j.and mcbride:2011).

Scoring Scores: -

First: The tester obtains a grade (3) if the following is achieved:

1- The stick is lost in contact with the head of the examiner and the spine at the dorsal and sacral region, and this can be observed on the sagittal surface.

2- No movement of the trunk on the sagittal and anterior surface.

3. Placing the front heel of the projector without leaving it during the test.

4. Reach the back leg knee to the front heel of the man.

Second: The tester shall obtain a grade (2) if the following is achieved:

1. The stick is in contact with the back of the lab for the head and back area or the sacrum when observed on the sagittal surface.

2. There is a tilt in the stick to the side and it is shown on the sagittal surface.

3. The presence of a forward inclination of the trunk can be observed on the sagittal surface.

4. Touching the front heel of the leg to the viewer without leaving it during the test.

5. Reach the back of the man's knee to the man's heel to the front foot

Third: The tester shall obtain a grade (1) if the following is achieved:

1. The inability of the tester to maintain his balance during the movement of the test.

2. The inability of the tester to reach the back knee of the leg by touching the heel of the front foot.

3. The stick is in contact with the back of the laboratory in the head, back, or sacrum area when observed on the sagittal surface.

4. Having a tilt in the stick to the side and this is shown on the sagittal surface.

5. The presence of a forward tilt of the trunk can be observed on the sagittal surface.

Fourth: Gets a score of (0) in case of great pain when performing the movement.

Sixth: Test Name: Positive Straight Leg Lift Pattern

Objective of the test: Evaluation of leg movement

and quadriceps and hip extension .

Test Description:

The player lies straight on the back with the arms extended to the side of the body. The FMS board is placed under the knees and the player raises one leg straight up, and then the tester places the stick perpendicular to the floor while keeping the opposite knee in contact with the machine plate.

Scoring Scores:

The examinee shall obtain a grade of (3) if the following is achieved:

1. The vertical line of the heel reaches the center of the thigh, which is the point that rises in the middle of the distance between the upper iliac anterior fork and the knee joint line.

2- The pelvis and the other end remain stationary without moving.

The examinee shall obtain a grade (2) if the following is met:

1. The vertical line of the heel reaches between the stick and does not reach the midpoint of the thigh.

2- The pelvis and the other end remain stationary without moving.

The examinee shall obtain a grade (1) if the following is met:

1. The height of the vertical line of the heel is below the level of the vertical line of the knee.

2- The pelvis and the other end remain stationary without moving.

Fourth: Gets a score of (0) in case of great pain when performing the movement.

Seventh: Test Name Trunk Stability Movement Pattern

Objective of the test: to measure the strength and stability of the trunk and arms and to stabilize the spine.

Test Description:

The player takes a prone position with the arms extended on the floor with the knees fully extended and the feet perpendicular to the floor and then the player raises the body as a unit so that there should be no impact on the spine while applying this test.

Method of scoring grades: -

The tester shall obtain a grade (3) if the following is achieved:

1- The laboratory raises its body as a single unit, and this is shown by the absence of a time difference between the movement of body parts such as the chest, abdomen, pelvis, and legs.

2. The laboratory adjusts the position of his hand in case of inability to perform properly and does not give this grade.

The tester shall obtain a grade (2) if the following is achieved:

1. In case the laboratory is unable to function properly and the thumb is at the level of the forehead, the position of the palm of the hand is changed to knee level.

The tester shall receive a grade (1) if the following is met:

1. The inability of the laboratory to perform one correct repetition and palm of the hand at neck level.

Fourth: Receives a score of (0) in case of significant pain when performing the movement (Brent Matif: 2012).

2.5.1Exploratory experiment

The researcher conducted the survey experiment on (17/9/2025) on Saturday on (18) players, representing 5% of the research community from the original community, during which the reality of the circumstances was identified to identify the facts and overcome the difficulties that may occur in order to prepare for the application of the main and prepare the assistant staff.

1. Ensure the validity of the manufactured FMS device and its suitability for the test movements.

2. Preparing the auxiliary staff and their number.

3. Identify the appropriate time period to perform the Functional Motor Vinegar Test.

2.5.1.1First main experiment:

After completing the numbers of the measurement tool for detecting areas of dysfunction and preparing all logistical matters related to the performance of comprehensive movements for the specific areas of the body, the researcher conducted the main experiment of the research on the date/ on the research sample of (18) players representing the clubs of the league 23/9/2025 first division of football.Al-Qadam (Al-Nasiriyah Club, Al-Shatra Club, Al-Nasr Club, Al-Qalaa Club, Al-Fajr Club).

The main experiment was conducted according to two phases, namely:

2.5.1.2Second major experience:

The first main experiment was conducted on 26/9/2025, where it included the application of the Function Movements screen, which included a series of 7 movements that are diverse and comprehensive for the areas most prone to injury, according to the opinion of experts and specialists, and then the players performed movements and tests, where the researcher took into account her keenness and emphasis on performing the movements accurately and according to the set test conditions and according to the body areas, and

the motor series included (Deep squats, barrier step, inline defense, shoulder movement, straight leg raises, squeeze exercises to stabilize the torso, rotational stability) These movements require precise neuromuscular compatibility with the ability to have high balance through the player's performance on the device prepared for this purpose, which facilitates the identification of the areas of dysfunction of the targeted parts of the body, through which it is possible to predict the occurrence of a future injury that may force the player to stay away from training and competition.

3.5.6Statistical means

The researcher performed the statistical treatments using the statistical package **(spss.24)**

Using the following statistical methods:

Mean of Arithmetic, Standard Deviation, Twisting Coefficient, Simple Correlation Coefficient, Median, Percentage.

4. Discuss the results

4.1 Presentation, analysis and discussion of the results

In order to complete the achievement of the research objectives, the researcher presented the obtained data, then analyzed and discussed these data, extracted correlation relationships, and the prediction equation between these variables, and it is in the form of tables as follows:

Table (3)

The results of the FMS test and the percentages of each of the test movements

The test scores of the players were calculated according to the classification of sports injuries, which was determined in three levels, where the test represented three grades from (zero) to (3), and the test score was compared according to the above classification, and the score of zero was for the severe level, the grade (1) was moderate, and the score (2) was simple, and according to the table (1).

Indications of severe incidence	Indications of moderate incidence	Indicators of a weak incidence	Tests

Percentage	Total Player Score	Number of Players	Percentage	Total Test Scores	Number of Players	Percentage	Total Test Scores	Number of Players	
16%	3	3	66%	12	6	77%	14	9	Deep Squat Test
22%	4	4	66%	12	6	94%	17	8	Barrier Step Test
27%	5	5	88%	16	8	61%	11	5	Embedded Defense Test
33%	6	6	66%	12	6	66%	12	6	Shoulder Motion Test
38%	7	7	55%	10	5	83%	15	6	Straight Leg Lift Test
33%	6	6	77%	14	7	66%	12	5	Internal Appeal Motion Test
11%	2	2	77%	14	7	88%	16	8	Trunk stability test

Through our observation of Table (1), it is shown in the (deep squat) test, the results of the dysfunction test for functional motor dysfunction indicate that (77%) of the sample members may be exposed to minor injuries in this test and in the joints and muscles that participate in its performance, and (66%) of the sample members may be exposed to moderate injuries in this test and in the joints and muscles that participate in its performance, and (As we can see through Table (1) in the (Barrier Step) test, the results

of the DysfunctionTest for Functional Mobility indicate that **(94%)** of the sample members may be exposed to minor injuries in this test and in the joints and muscles that participate in its performance, and that (66%) of the sample members may be exposed to moderate injuries in this test and in the joints and muscles that participate in its performance. **We** note through Table (1) in the (Included Defense Test) that the results of the dysfunctiontest for motor dysfunction indicate that (61**%)** of the sample members may be exposed to minor injuries in this test and in the joints and muscles that participate in its performance, and that (88%) of the sample members may be exposed to moderate injuries in this test. As we can see through Table (1) in the (Shoulder Movement Test) test, the results of the Functional Mobility Impairment Test indicate that (66%)66% of the sample members may be exposed to moderate injuries in this test and in the joints and muscles that participate in its performance, and (33%) of the sample members may be exposed to moderate injuries in this test and in the joints and muscles that participate in its performance. Functional motor that (83**%)** of the sample members may be exposed to minor injuries in this test and in the joints and muscles that participate in its performance, and (55%) of the sample members may be exposed to moderate injuries in this test and in the areas that participate in its performance, and (38%) of the sample members may be exposed to moderate injuries in this test and in the joints and muscles that participate in its performance.The results of the Functional Motor Impairment Test indicate that (83**%)** of the sample members may be exposed to minor injuries in this test and in the joints and muscles that participate in its performance, and (55%) of the sample members may be exposed to moderate injuries in this test and in the joints and muscles that participate in its performance, and (38%) of the sample members may be exposed to moderate injuries in this test and in the joints and muscles that participate in its performance.Trunk Stability Motion Test) The results of the Functional Motor Impairment Test indicate that (88**%)** of the sample members may be exposed to minor injuries in this test and in the joints and muscles that participate in its performance, and (77%) of the sample members may be exposed to moderate injuries in this test and in the joints and muscles that participate in its performance, and (11%) of the sample members may be exposed to moderate injuries in this test and in the areas that participate in its performance.Through the researcher's observation of the results of Table (1), the percentages of each test are to know the incidence of motor dysfunction that the members of the research sample may be exposed to according to the data and results obtained by the researcher through conducting the

tests, and the researcher confirms that these percentages are consistent with the sources and research that football players are more likely to be injured in certain areas of the body, such as the shoulder joint, ankle, and upper limb muscles, all of which are very important for the football player. In the movement of the player inside the playing field and the presence of such a percentage of players who are prone to injury, whether to a slight, medium or large degree, it is a great danger to the player and the team, which hinders his career in the competition and may lead to depriving the team of the efforts of these players for a long time, and conducting physical tests before the beginning of the season is very necessary for the early detection of areas of dysfunction and the possibility of predicting the injury. It is the detection of functional impairment, which in turn can lead to a proactive approach to the prevention of sports injuries.

Perhaps one of the most feasible topics that needs to be studied is the causes that lead to the early detection of injuries from the point of view of trainers, which affect the various types of body tissues (muscle-bone ligaments) and lead to the occurrence of a disability that prevents the best performance of the required lack of competence.

5.1Conclusions

Within the limits of the research objectives, hypotheses, procedures, and presentation and discussion of the results, the researcher reached several conclusions.

1. The possibility of identifying the level of the percentage of motor dysfunction in the body areas in terms of the FMS device in young football players, and that the device is suitable for research.

2. The ability to identify sports injury through the FMS device.

3. It is possible to evaluate and technicalize the exercises used through the FMS test in young football players.

5.2 Recommendations

The researcher recommends the following:

1. Relying on the device used to identify areas of motor dysfunction in football players.

2- Using the FMS test to periodically detect the areas of motor dysfunction of the players in order to evaluate the motor performance and identify areas of weakness and motor impairment.

3. Conducting similar studies on other activities that use the lower extremity of the body to indicate areas of motor dysfunction.

4- Functional motor impairment examination tests do not replace the personal interview with the players, but are considered complementary and proof of the player's honesty or not.

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