

The Effect of Physiological Activity on the Arbitral Decisions of the Referees during the Futsal Match

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Abstract

The purpose of the study was to identify the effect of physiological activity on refereeing decisions the referees during the futsal match were identified football referees futsal employees in the Iraqi Premier League and registered with the Iraqi Football Federation - Committee halls for the sports season (2020-2021) totaling (73) effective referee (who passed the physical and theoretical tests), and the research sample was chosen by intentional method because the research needs official approvals by the Iraqi Football Association, which number (18) referees (referees of the Middle Euphrates region), who represent (24.6%) from the whole community .The researchers concluded that there is a preference for the first half of the futsal referees in the physiological activity, except for the concentration of lactic acid in the blood as a result of the accumulation of effort in the second half and their inability to recover and the vitality of the body compared to the first half and that the preference was for the first half of the referees of futsal football in the arbitration variables except for controversial decisions, because referee decisions are closely and fundamentally linked to the physical and physiological activity accompanying the referee's performance during matches, and therefore the greater the burden and effort on the referee negatively affects the decisions taken.

Keywords: physiological activity, refereeing decisions, futsal referees

Introduction:

The development and scientific progress taking place in various fields, including the sports field, led to a significant change in the level of sports achievement in many sports events, including the game of futsal football, as it requires high physical effort so that the referee can follow the match well and take good positions with an angle and vision. It is clear, that this game is one of the fast team games whose players enjoy fast and strong movements and therefore their fitness is very high. To perform the movements on the field for a long period of time depending on the nature and strength of the match and the participating teams, as many changes occur in the physical and physiological performance of the referees, and these changes require the referee to be at the highest level of physical and physiological performance to keep pace with the game, so the national federations took into account that effort By the referees, where she took on the task of setting special and appropriate tests similar to the atmosphere of the match in

terms of the special movements of the referees before the start of the tournaments As part of the selection of the referee, the Central Iraqi Federation is one of the committees responsible for selecting referees before the start of the league to ensure the effectiveness of the referee, and as a result of the development in all events, including futsal, the International Federation of Futsal Football has designed new tests to assess the fitness of referees.

Hence the importance of the study in analyzing the physiological activity of the referees in order to indicate the strengths and weaknesses that negatively or positively affect the management of the match and without a drop in the level, which in turn is reflected in making the right decision.

Research objective:

- To identify the effect of physiological activity on refereeing decisions during the match for futsal football referees.

Research methodology and field procedures:

Research Methodology:

The problem, its nature, and the objectives of the research are what determine the type of approach used, so the researcher used the descriptive approach because it is the appropriate approach to solving the research problem and achieving its objectives.

Community and sample research:

Futsal referees working in the Iraqi Premier League and registered with the Iraqi Football Federation - Committee halls for the sports season (2020-2021) totaling (73) effective referee (who passed the physical and theoretical tests), and the research sample was chosen by intentional method because the research needs official approvals by the Iraqi Football Association, which number (18) referees (referees of the Middle Euphrates region), who represent (24.6%) from the whole community.

Studied variables:

The two researchers worked through scientific sources and some experts and specialists to identify the variables that suit the study greatly and the field treatments related to them and study them to solve the research problem and they were as follows:

- **Physiological activity:**
 - Heart rate HR
 - Oxygen deficiency
 - Oxygen debt
 - VO2 max
 - Lactic acid concentration
- **Arbitral decisions:**
 - Right decisions
 - Wrong decisions
 - Swinging Decisions
 - Controversial decisions

Main experience:**Lactic acid measurement:**

The researcher measured the concentration of lactic acid in the blood using a device (Lactate Pr2) before exertion, by taking an amount between (2.5 - 3) microliters, which is approximately a drop of blood and taken from the index finger of the hand by pricking before exertion so that the judge is in a state of complete rest and without exercise, Any physical effort, as well as the concentration of lactic acid is measured immediately after the effort (after the referee has finished the match) and in the same way

Physiological Activity:

The researcher analyzed the physiological activity, in which the physiological variables were measured using the (K5) device, which the researcher used to detect the physiological variables (physiological activity) that are related to the physical characteristics chosen by the researcher, all during the match conducted by the researcher, which is similar to The level of performance of the Iraqi Premier League matches in futsal football, and the researcher deliberately created a similar atmosphere to that, and immediately after the end of the match, the researcher measured the percentage of lactic acid through a special device.

Arbitral decisions:

The researcher videotaped the matches in their actual form and presented them to experts and specialists in the game of futsal, from international lecturers and international referees to the elite of Asia for the purpose of evaluating the decisions of the referees (right decision - wrong decision - swing decision - controversial decision) during playing cases through A data dump form prepared by the researcher.

Presentation, analysis and discussion of the results:**Presentation and analysis of the results of the differences in the physiological activity between the first and second half of the futsal referees:**

Table (1) shows the arithmetic mean, standard deviation and (t) value of the physiological activity between the first and second half of the futsal referees.

Table (1) shows that there are significant differences between the first and second

Physical activity	first half		second half		T value	level Sig	Type Sig
	Mean	standard deviation	Mean	standard deviation			
Heart rate HR	169.85	2.19	174.38	1.33	6.72	0.00	Sig
Oxygen deficiency	0.81	0.02	0.90	0.06	5.68	0.00	Sig
Oxygen debt	26.08	1.93	29.46	1.27	5.54	0.00	Sig
VO2 max	17.77	1.30	20.31	1.49	4.84	0.00	Sig
Lactic acid concentration	2.52	0.33	2.87	0.57	2.00	0.06	Non Sig

halves of soccer referees for futsal in the physiological activity, except for the variable concentration of lactic acid in the blood. As for the HR variable, the calculated t value was (6.72) and below the significance level (0.000), which is a significant value, which indicates the existence of a difference in favor of the second half. As for the oxygen deficit variable, the calculated (t) value reached (5.68) and below the significance level (0.000), which is a significant value, which indicates the presence between the first and second half and in favor of the second half. As for the oxygen debt variable, the calculated value of (t) amounted to (5.54) and is below the level of significance (0.000), which is a significant value, which indicates the existence of moral differences between the first and second half in favor of the second half. As for the variable VO₂max, the calculated value (t) amounted to (4.84) and is below the level of significance (0.000), which is a significant value, which indicates the existence of differences between the first and second half in favor of the second half. As for the lactic acid concentration variable, the calculated t value was (2.00) and below the significance level (0.06), which is an insignificant value, which indicates that there are no differences between the first and second periods.

Presentation and analysis of the results of the differences in the Arbitral decisions between the first and second half of the futsal referees:

Table (2) shows the arithmetic mean, standard deviation and (t) value of Arbitral decisions between the first and second half of the futsal referees.

Arbitral decisions	first half		second half		T value	level Sig	Type Sig
	Mean	standard deviation	Mean	standard deviation			
Right decisions	10.23	1.79	7.46	1.27	4.78	0.00	Sig
Wrong decisions	6.54	1.85	7.85	1.21	2.22	0.04	Sig
Swinging Decisions	2.15	0.99	4.54	0.97	6.55	0.00	Sig
Controversial decisions	0.77	0.73	0.85	0.55	0.32	0.75	Non Sig

Table (2) shows that there are significant differences between the first and second halves of the futsal referees in the refereeing variables, except for the controversial decisions.

As for the correct decisions variable, as the calculated value (t) reached (4.78) and is below the significance level (0.000), which is a significant value, which indicates the existence of a difference in favor of the first half. As for the wrong decisions variable, the calculated value (t) amounted to (2.22) and below the level of significance (0.04), which is a significant value, which indicates the presence between the first and second half and in favor of the second half. As for the variable oscillating decisions, the calculated value of (t) amounted to (6.55) and below the level of significance (0.000), which is a significant value, which indicates the existence of significant differences

between the first and second half and in favor of the second half. As for the controversial decisions variable, the calculated t value was (0.32) and below the significance level (0.32), which is an insignificant value, which indicates that there are no differences between the first and second half.

Discuss the results:

Discussing the results of the differences in physiology and arbitration variables between the first and second half of the futsal football referees:

Discussing the results of the differences in the physiological activity between the first and second half of the futsal football referees:

Through table (1), it is clear that there are significant differences between the first and second halves of the futsal referees in the physiological activity, except for the variable of the concentration of lactic acid in the blood, the researchers believe that the physiological activity of futsal referees is closely related to the physical activity and effort exerted on the referee's body during the course of the match for the first and second halves and the increase in the burden reaches high levels in the second half as a result of the accumulation of energy waste and energy consumption compared to the first half.

as for the heart rate variable, HR The researchers believe that the reason for the differences is that the referee in the second half and as a result of the continuous effort and movement during the matches feels tired compared to the first half and therefore their pulse rate increases because of this accumulated effort and their inability to recover and the vitality of the body compared to the first half, knowing that the total distance traveled in the first half is greater compared to the half The first, but the vitality and the referee's ability to move freely and his ability to work the muscle that accompanies the physiological work remains at lower levels in relation to the pulse rate in the first half as a result of the referee's high functional ability as a result of not feeling tired and tired compared to the second half, so increasing the heart rate during the physical effort of the hall referees will lead to this This results in a change in many cardiac muscle indicators, as the increase in cardiac output (cardiac output) per minute depends on the velocity of venous return, in contrast to the resting time, which depends on the amount of blood pushed into and out of the ventricle during one impulse. The physical effort is too short because of the intensity of the physical effort, which does not allow to be filled with an adequate amount of food For blood while during the rest time or during the recovery period, the filling time is longer, because there is a slow heart rate during the minute, which leads to a second period of time for fullness and thus a larger pumping during one batch or minute, and this is clearly observed in the first half Thus, the referee's ability to move more freely than the second half, and confirms (Abu Ela Abdel-Fattah, 2003) that the cardiac thrust can increase based on either an increase in the heart rate or an increase in the volume of blood paid in one stroke and during rest the differences in cardiac thrust between Trained and untrained are very few, as the cardiac thrust ranges from 5-6 liters per minute, but during training the muscle need to consume oxygen increases, so the cardiac thrust rises and can reach the maximum cardiac thrust for athletes 30 liters of

blood per minute, which means an increase of 5-6 times the thrust. In general, the highest level in the maximum oxygen consumption is the highest level in the cardiac thrust ⁽¹⁾.

As for the variables of disability and oxygen debt, we note that there are differences in favor of the second half, and this difference is negative because the efficiency and physiological ability of the judgment are better when the level of disability and oxygen debt is reduced, and this indicates that the judgment in the second half is the rate of effort compared to hospitalization is less and therefore a lack of oxygen during effort and rest as a result of an increase. The burden on the referee's body and fatigue, effort and fatigue, and this resulted from the anaerobic effort that the ruling of the halls goes through, especially in the second half as a result of the high intensity of the performance, which leads to a state of shortage of oxygen necessary for energy production, and this is called the phenomenon of oxygen deficit and the reason is due to extreme and semi-physical loads. The extremes that the referee repeatedly goes through during matches, That is, the oxygen deficit expresses the oxygen that the muscles need and is not available during the first seconds of performance, and therefore the performance of the hall rulers of the effort on a continuous and regular basis helps the development and functional adaptations of the respiratory circulatory system, which helps to reduce the percentage of the oxygen-oxygen deficit by increasing the efficiency of the muscles to produce. The energy required to perform high-intensity physical exertion, and this is what must be focused on during the training of hall referees in proportion to the nature of the effort of the game and the absence of a defect, and this is what (Abu Ela Abdel-Fattah) indicated that "organized training leads to functional changes in the body's organs, including the heart." and blood circulation, as well-trained individuals can adapt to the functional changes that occur in the body's organs as a result of muscular effort and continue with this effort ⁽¹⁾.

The researchers also believe that the physical effort of the referees during the matches, especially the second half, was going towards anaerobic work, i.e. work (with a lack of oxygen) for a certain period of time, which does not enter the external oxygen obtained by the body through breathing in the process of energy production because it needs many reactions. In order to release energy, muscle cells are forced to have a state of chemical imprinting, as the basic principle of this method is to work in a state of physiological imbalance in the process of providing (O₂) necessary to complete muscle work, which causes a high oxygen deficit, in the beginning, This (Jason Rook 2014)⁽²⁾ confirms that the physiological imbalance in the process of providing (O₂) the necessary is based on specific exercises and exercises aimed at improving specific energy systems, in the first place, and the goal is to provide adaptation and efficiency in the glycolic energy system ⁽²⁾. This is what should be available to football referees for futsal to reduce the negative effects of the lack of disability and oxygen debt so that the referees are in the best physiological and physical condition.

While the VO₂MAX variable, we note that the maximum rate of oxygen consumption is greater for the second half, and the researcher attributed the main reason for this to the referee's attempt to return to an appropriate state that enables him to continue physical work during the match, especially the second half as a result of exhaustion, fatigue and accompanying physical and physiological work, which

constitutes a high burden suggesting the need for oxygen to compensate and attempt Continuing to work and making the right decisions while moving in the game, and the maximum oxygen consumption (VO₂MAX) is closely related to both the circulatory and respiratory systems as well as the muscular system. The amount of oxygen delivered and the increase in the efficiency of the hall rulers as a result of the correct training improves the ability of the respiratory system by increasing the speed of oxygen delivery to the muscles⁽³⁾.

In addition to the above, the volume of breathing air increases per minute during physical exertion, which means an increase in oxygen consumption, as the process of pulmonary ventilation increases in order to get rid of carbon dioxide more than to obtain oxygen, at least under the influence of the maximum physical load. In fact, pulmonary ventilation increases to a greater degree Too much oxygen consumption, and this assures us that the volume of breathable air per minute or pulmonary ventilation is not an obstacle to the maximum oxygen limit. It is also noted that the trained person uses less pulmonary ventilation than the untrained when performing the same physical load and at the same level of carbon dioxide productivity, meaning that his performance is physiologically economical and the maximum limit of pulmonary ventilation can reach high amounts⁽³⁾.

As for the variable of the concentration of lactic acid in the blood, the researcher and through the results are due to the reason that the effort exerted by the judge, even if it is a high effort, but the frequent breaks do not help to raise the concentration of lactic acid, which needs a continuous anaerobic and lactic effort until the accumulation occurs and this is not available as a result of the aforementioned reason and the nature of anaerobic Glycogenesis did not show differences between the first and second half .

That the increase in the concentration of lactic acid in the blood in the second half is due to the large number of repetitions and the system of lactic work contributed to the increase in the concentration of lactic acid in the blood than the measurement in the first half, and therefore the referees of the halls must have a high ability to withstand the increase in the concentration of lactic acid until It does not affect the results of their decisions during matches, and this was confirmed by (Phil Bennett , 2015)⁽⁴⁾ (“Training should improve the storage capacity of energy production and that is by improving the efficiency of the various metabolic pathways, and that it is better for the body to use exercises that create the greatest From (confusion) to metabolic rate⁽¹⁾, and (Abu Ela Abdel-Fattah) states that “training improves the efficiency of the athlete to continue despite the increase in lactic acid, and despite the feeling of fatigue for a longer period”⁽²⁾.

Discussing the results of the differences in the arbitration variables between the first and second half of the futsal referees:

Through the results in Table (2), it was found that there were significant differences between the first and second halves of the futsal referees in the refereeing variables, except for the controversial decisions.

The researchers believes that the decisions of the referee are closely and fundamentally related to the physical and physiological activity that accompanies the performance of the referee during the matches, and therefore the greater the burden and effort on the referee negatively affects the decisions taken, and this is what we notice through the results that have been reached.

As for the correct decisions variable, we note that the referee's decisions for the first half are better compared to the second half, and as we mentioned earlier, the researcher attributes the reasons for that because the referee's decision is related to the extent of his physical and physiological efficiency, and therefore the process of moving the referee at the appropriate speed and at the right time as a result of efficiency and vitality during the movement and the delay of fatigue in the first half made the decisions. The correct first half is more distinct and more compared to the second half, and the same reasons can also be attributed to the variable of wrong decisions, where the process of fatigue and lack of movement for the football referee in the halls in the appropriate manner and in the exact timing made the referees take more wrong decisions for the second half compared to the first half

While we note the variable of swinging decisions for the second half is greater than the first half, and the researcher believes that in addition to the previous reasons for taking correct and wrong decisions, the swing decisions are also related to the effort and physical and physiological work of the football referees for the futsal and here and because of the incorrect and appropriate move and in the ideal timing makes the referees fall into the pitfall of decisions oscillating between right And the error and thus affecting the referee and his performance during the matches.

As for the variable of controversial decisions, its differences appeared randomly and insignificantly. The reason is that such decisions are rare, and despite the stress and high concentration of football referees for the futsal during matches, but such decisions are few or rare, so the differences did not appear.

The decision-making stage for futsal referees is the critical stage through which the appropriate response to the stimulus is chosen, and the accuracy and speed of the response depends on it. The decision, that is, the quality of decision-making depends on the correctness of the previous cognitive processes, as "the success of referees in making decisions during the game depends on basic factors such as: speed, accuracy and completeness of information" ⁽⁵⁾.

This is related to the nature of the effort exerted during the demonstrations in the form of an act and the judge's ability to make the right decision and to stay away as much as possible from the wrong decision and the swinging and controversial decision, and therefore decision-making is known as "the process of selecting the response and choosing the correct movement that corresponds to the current conditions" ⁽⁶⁾, and decision-making It is done in the light of determining the strength of the stimulus, evaluating its intensity and speed, and the information that is stored in memory, "a stock kinetic program is selected that the individual believes is appropriate to respond to that stimulus."⁽⁷⁾ As well as the multiplicity of alternative responses to each stimulus, in addition to the fact that the time available for the referee to make a decision is limited,

which requires the referee of futsal to have the ability to accurately and quickly make a decision during the match, as “the speed and accuracy of decision-making is affected by the number of available and appropriate alternative responses to the stimulus.” and stored in memory, in addition to being affected by the total time available for decision-making.⁽⁸⁾“The speed of the reaction depends on the speed of decision-making, and as a result of the speed and efficiency of decision-making, there is an accurate and quick response.”⁽⁹⁾.

Conclusions:

After processing the data statistically, presenting, analyzing and discussing the results reached by the researcher, he concluded the following:

- There was preference for the first half of the futsal football referees in the physiological activity, except for the concentration of lactic acid in the blood as a result of the accumulation of effort in the second half and their inability to recover and the vitality of the body compared to the first half.
- The preference was for the first half of the football referees for the futsal in the arbitration variables, except for the controversial decisions because the decisions of the referee are closely and intrinsically linked to the physical and physiological activity associated with the referee's performance during matches, and therefore the greater the burden and effort on the referee negatively affects the decisions taken.

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