

## The effect of the menstrual cycle on the speed of female soccer players.

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### Abstract:

In this research, we dealt with the study of the effect of the menstrual cycle on the speed of female soccer players, following the descriptive approach (case study), where we used the speed test: the 30m running test as a tool for data collection. The critical importance of this research is to know: the biology of women during menstruation, the different stages and phases of the menstrual cycle, what is the effect of the menstrual cycle on the speed characteristic, as well as its effect on the woman's body during her practice of soccer. Through the results obtained and after statistical treatment, we concluded that the speed of the players was not affected by the menstrual cycle.

**Keywords:** Females Soccer - Speed Characteristic - Menstrual Cycle.

### Introduction:

Soccer is one of the ancient games with a long history. Throughout history, it has maintained its vitality and ability to attract the masses. It has gained the people's interest and passion for this game. It has been included in the military training curricula of many peoples due to the spirit of competition and struggle.

The practice of this sport was not limited to men only, but women also have a wide scope to practice soccer through the various tournaments in which they participate at the local as well as international levels. However, the biology of men differs from that of women, which makes the practice of this sport the subject of study and investigation.

With the emergence of the signs of early adolescence and later stages of growth, the occurrence of the menstrual cycle or its absence is the greatest feature in the life of any woman, from the first menstrual bleeding (what is known as the beginning of the menstrual cycle) to the time of the last menstrual cycle (menopause) this physiological phenomenon is repeated when The woman periodically every month, which makes it a monthly habit that she must accept and live according to its symptoms, as it is an inherent characteristic of the woman. It is from this standpoint that the following question was formed.

### The problem:

Are there statistically significant differences for the effect of the menstrual cycle on the speed of female soccer players?

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\* The sender author.

**Hypothesis:**

Yes, there are statistically significant differences for the effect of the menstrual cycle on the speed of female soccer players.

**Research aims:**

- Knowing the different phases and stages of the menstrual cycle.
- Knowing the effect of the menstrual cycle on the woman's body during her practice of soccer.
- Knowing the nature of the effect of the menstrual cycle on the speed characteristic.
- Knowing the biological changes that occur in women's bodies during the menstrual cycle.

**Research importance:**

This study is of great importance, given that women's soccer has become more practiced in the world at the local and international levels, and every player is subject - every month - to biological and psychological changes, which can affect her performance and physical return, which represents the basis of various other types of preparation.

From this point of view, this study is a basis for realizing the nature of the effect of the menstrual cycle on speed as one of the basic physical attributes, in order to avoid everything that would hinder the progress of the level of female athletes during the menstrual cycle.

**Define terms:****- Menstrual Cycle:**

It is a cycle of natural changes that occur in the uterus and ovaries in order to enable the reproduction process. During this process, eggs are produced and the uterus is prepared for pregnancy, and the cycle occurs in human females during their fertile period, and its time is controlled according to the vital clock, and it is repeated in them between the start of menstruation, the age at which it occurs for the first time, and menopause, the age at which it occurs the last time. (Jones and Bartlett, 2011)

**- Speed characteristic:**

- According to (Fredo Garel, 1977, p10) "Speed is an attribute that exists in nature and the individual, and it can be developed through training, and by it we mean the athlete's ability to move a certain distance in the least possible time."

**- Soccer:**

Justa Sippy says in 1969 that Soccer is a sport played between two teams, each team consisting of eleven players using an inflated ball on a rectangular court floor.

(Romy Jamil, Soccer, pg. 50) says that football is a team sport practiced by all people. It is above all a team sport with which all types of society adapt.

## - Females Soccer:

Females Soccer is one of the most widespread women's team sports and one of the women's sports that is practiced in a regular annual league. Women have played football for a long time, with some reports indicating that it was played in 1790. The first recorded match was under the supervision of the Scottish Football Association in 1892 in Glasgow, Scotland. In England the first documented women's match was in 1895 but was rejected by the British Football Association, although matches continued after this rejection. Some justified this refusal by the union's keenness on the "manliness" of this popular game.

## 1/Menstrual Cycle:

### 1-1 Definition of the menstrual cycle:

There are many definitions given to the menstrual cycle, and perhaps the most important and easiest are the following definitions:

- They are natural changes that occur at the level of the uterus and ovaries periodically in order to enable the reproduction process by producing eggs and preparing the uterus for pregnancy. (THORN, 2013, p250)
- It is a phenomenon specific to females during their fertile period that is repeated monthly and its time is vital. This phenomenon extends from its first occurrence to menopause (the last period). (Jones and Bartlett, 2011, p94)
- He says (Al-Turki translation of Jar-Allah, 2006 AD) The menstrual period is a periodic event related to a woman's life accompanied by psychological and physical behavioral changes, which contribute to bringing about a woman's physical and psychological balance.

**1-2 phases of the Menstrual Cycle:** There are several classifications and points of view, some divide it into five stages, others into four stages, and others into three stages, and our division dealt with three stages as the most common (Korkes, 2009, p4).

**1-2-1 Follicular phase:** It is the first stage, starting from menstruation to the fourteenth day, in which it is:

The growth of one of Graf's follicles into a mature egg capable of fertilization. The growth and development of the endometrium, where its membrane is thin (2 mm) on the fifth day, and then its cells begin to grow and toggle under the influence of estrogen.

This stage accompanies the growth of the Graf's follicle, which is called the marsupial.

At the end of the stage, the rupture of the Graf's follicle and the release of the egg occurs under the influence of the hormone (LH) on the fourteenth day from the beginning of menstruation. (Turkish translation of Jar Allah, previous reference, p.)

**1-2-2 Ovulation phase:** It extends from the fifteenth to the twenty-eighth day of the beginning of menstruation, and it is the second stage. In this stage, it is noted:

The secreted egg turns into what is known as the corpus luteum.

The secretion of progesterone by the corpus luteum. This hormone works to complete the action of estrogen on the endometrium.

The size and thickness of the endometrium has doubled (4-5 mm), and the glands are enlarged.

The duration of this stage is fixed for a period of (14) days after ovulation, but in case of disturbance or irregularity in the cycle, it is at the expense of the first stage.

### 1-2-3 The Luteal Phase:

This is the final phase of the menstrual cycle and lasts from the day of ovulation to the last day before the next period. Glands in the lining of the uterus called the endometrium secrete proteins in anticipation of implantation of the fertilised egg (embryo). If implantation does not occur, the endometrium starts to break down and is eventually sloughed off leading to menstruation. The luteal phase derives its name from the follicle that produces the egg which then becomes a functioning gland called the corpus luteum. The corpus luteum produces progesterone which prepares the endometrium.

**\* The mechanism of menstruation is not completely known, but according to a study (Fraihat, 2000 AD), it is:**

The contraction of the uterine particles for several hours, and thus a lack of oxygen perfusion in the area.

Bias and damage to the uterine mucus weakens the vascular wall and ruptures.

When the spasm ends, the blood returns to the flow and exits through the peripheral blood vessels inside the uterus with the damaged mucous membrane.

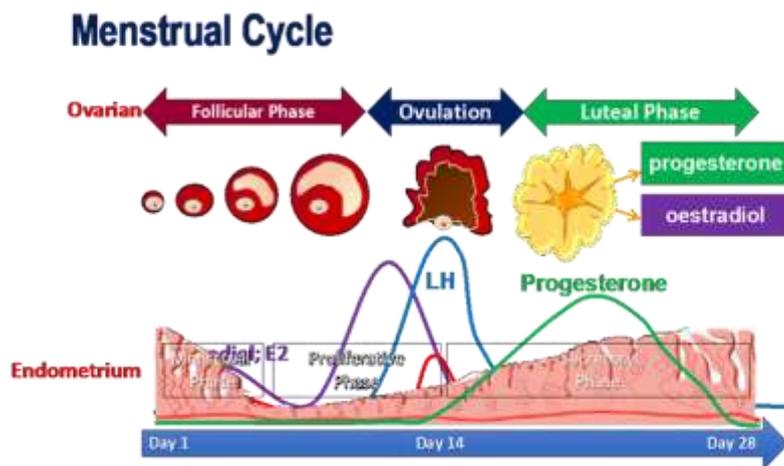
The amount of blood in menstruation ranges between (30 to 200 ml).

**Figure1:** Graphic representation menstrual cycle phases.



(DR. JOLENE BRIGHTEN, 2021)

**Figure2:** Graphic representation phases and hormones of the menstrual cycle.



(the society of endocrinology, Feb 2021)

### 1-3 What do you advise a menstruating woman?

There are several medical tips that women should follow to maintain their health and safety, which we summarize as follows:

- What was mentioned in the Book of God Almighty regarding the necessity of abstaining from intercourse during menstruation. Studies have proven that intercourse during menstruation is harmful to both men and women.
- Bathing a lot with warm water, especially for women who suffer from dysmenorrhea, every three or four nights prior to the time of menstruation, because warm water reduces blood congestion.
- Beware of constipation in the days prior to menstruation, by using some laxatives, preferably from natural herbs and plants, which reduce congestion of the pelvic organs and uterus.
- Reducing and abstaining from table salt during the week preceding menstruation, because estrogen stores an excess amount of salt and water in the body, which leads to less urine output during this period.
- Excessive care of the body and its cleanliness during menstruation, especially its sensitive parts, in order to avoid unpleasant odors and to avoid disturbing the husband.
- Excessive intake of iron-rich foods to replace the blood lost during menstruation.
- Women are advised to do light exercise, such as walking and housework, to revitalize the body, increase appetite, help sleep, and reduce blood congestion.
- Utilizing some herbs to reduce menstrual pain at a rate of three cups a day, such as chamomile, spherical...etc. (Fouad Ismail, 2013, pp 20-21).

\* The menstruating woman must stay away from various forms of psychological pressure, through the study that he conducted (Ismail Abdel Rahman, 2008, pg. 43) on a sample of women in 2005, which showed that the various psychological pressures resulting from verbal and physical violence cause the following:

- 83.5% of girls experience menstrual disorders.
- 74.6% have an increase in the number of days of their menstrual cycle.
- 2.1% of girls have an increase in their daily blood volume.
- 3.8% of girls are late for their period.
- 3.4% of girls stop their period for a period of months.

## **2/Speed characteristic:**

### **2-1 Definition:**

**In language:** it is what the moving body seeks to reach in an environment of resistance, under the influence of a certain force. (Dictionnaire Larousse, 1998, p919)

**In terms:-** He defines it (Mohammed Sobhi Hassanein, 1998, p. 76) “as the individual’s ability to perform repetitive movements of one kind in the least possible time”.

It is also possible to include the definitions he mentioned. (Eric Batty, 1991, p156), where:

Davits defines it as: the ability to perform a particular task or movement at a very high speed in the shortest possible time.

- Kaslowski says: “The ability to perform or complete a set of movements in the shortest time.”

Claude Pierre sees it as: “The type that the individual possesses to accomplish several motor actions in the least possible time.”

**In soccer:-** He defines it (Taha Ismail and others, 1989, p 91) as: “The player’s ability to perform skillfully, as well as to move and react to internal and external variables very quickly and in the least possible time, thus fulfilling the requirements of playing.”

### **2-2 Speed types:**

Speed is characterized as a basic physical characteristic, (according to Al-Kammash Youssef Lazem, 2011, p. 127) that varies to the following:

#### **2-2-1 Transitional speed:**

It means trying to move or move from one place to another as quickly as possible, that is, trying to overcome a certain distance in the shortest possible time. etc.

#### **2-2-2 Kinetic speed:**

It means the speed of contraction of a particular muscle or muscle group when performing the only movements, such as the speed of entering the water in swimming, or when performing various movements or techniques such as the speed of receiving and passing, as well as the speed of approaching and jumping...etc.

#### **2-2-3 Reaction speed:**

It means the ability to respond to a kinetic stimulus in the shortest possible time.

In the sports field, we distinguish two types of reaction speed:

- **Simple reaction:** It is the time between the moment of appearance of one clear

and known stimulus and the moment of response to it.

- **Complex reaction:** In the event that there is more than one stimulus, and the individual athlete attempts to respond to only one stimulus, and this type is prevalent in many, but rather in most sports activities.

### **2-3 The importance and advantages of the adjective speed:**

Speed, like other physical attributes, is characterized by several advantages and characteristics that are reflected in the importance of this attribute. Here are some of the elements that show its importance:

- Speed is an important component of many aspects of physical performance in different sports, and is considered one of the success factors of various motor skills.

- Speed is an integral part of all physical abilities.

**\*An athlete's speed is a complex ability of several psycho-physical components, which are:**

- The ability to analyze different playing situations and make the necessary adjustments in the least possible time.

- The ability to predict all possible movements in the least possible time.

- Ability to check for possible movements in the least possible time.

- Ability to react quickly during various unexpected gameplay developments.

- The ability to make periodic and non-periodic movements without the ball and at a fast pace.

- The ability to quickly implement the movements of the ball and this is under the pressure of both the opponent and time.

- The ability to run successfully and quickly during the various stages of play, through the intervention of his cognitive, technical and tactical competence.

### **3/Related and similar studies:**

#### **3-1 The study of Noor Hussain Muhammad Hamid, discussed on 12/08/2012:**

**The effect of the phases of the menstrual cycle on some physiological variables and mood among female students of the Faculty of Physical Education at An-Najah National University.**

Conducted on female students of the College of Graduate Studies - Physical Education - An-Najah National University, Nablus, Palestine.

#### **Study conclusions:**

After doing this study, the researcher found:

There is an effect of the different phases of the menstrual cycle on some physiological variables.

- Body temperature and resting pulse are the highest measurements during the ovulation phase.

The metabolic rate at rest was highest during menstruation.

- Both the oxygen capacity and the grip strength witness the highest

measurement in the follicular stage.

- The menstrual phase is accompanied by a feeling of anger, while the ovulation phase is accompanied by a feeling of depression, confusion and tension.

### **3-2 The study of M. Shatha Hazem Corgis 2007 study:**

**Studying the effect of the phases of the menstrual cycle on some elements of physical fitness.**

The study was conducted on female students of the College of Education for Girls, Department of Physical Education, University of Mosul, Iraq, 2007.

#### **Study conclusions:**

After doing this study, the researcher found:

- There is no change in the phases of the menstrual cycle on the explosive power of the legs in the first and second phases.

- The results of the research did not show any change for the phases of the first, second and third menstrual cycle on the explosive force of the arms and ran 30 meters transitional speed.

### **3-3 The study of Valentina et al. (2007):**

**A study of the relationship between the menstrual cycle and exercise performance.**

The study was on a sample of seven females who practice sports regularly between the ages of 19 and 29 years, who performed cervix exercises in a circular shape to measure lactic and oxygen strength in two stages:

In the early stages of the cycle, from day 6 to day 10.

In the later stages of the cycle, from day 20 to day 24.

#### **Study conclusions:**

What was reached in this study is that the amount of oxygen consumed in the first phase of the menstrual cycle was less than it was consumed in the second phase of the menstrual cycle.

### **3-4 The study of Abdul Sattar Al Nuaimi in 2006:**

Study of the relationship of training load intensity with menstrual disorders.

#### **Study conclusions:**

After carrying out this study, which showed the effect of the menstrual cycle by high-intensity physical exertion, the researcher concluded:

- High-intensity physical exertion affects ovarian function through long cycles punctuated by several interruptions, as well as a decrease in estrogen production.

- This deficiency in estrogen leads to a decrease in the amount of menstrual blood, which causes spasms in the uterine muscle when the blood is thrown out, causing severe pain.

### **4/Methodological steps of the research:**

**4-1 Research Methodology:** The descriptive approach (case study) is appropriate to conduct this study in the field.

**4-2 Nature of the study:** Since the nature of the study is the application of

physical tests to the sample in the normal case and during the menstrual cycle, the nature of the study is an applied field study.

#### **4-3 Research Areas:**

**4-3-1 The spatial domain:** The field study was conducted in the stadiums of the city of Constantine.

Stadium Martyr bin Abdul Malik Ramadan. And the stadium of the Higher National Institute for Youth and Sports Training.

**4-3-2 Time range:** The time range of this study extended from 2017 to 2018.

#### **4-3-3 Human domain research:**

- **research community:** The study community represents the social group on which the applied study is to be conducted, and since we are in the process of searching for the extent of the impact of the menstrual period on the speed of female football players, the study population is the female football players in Algeria.

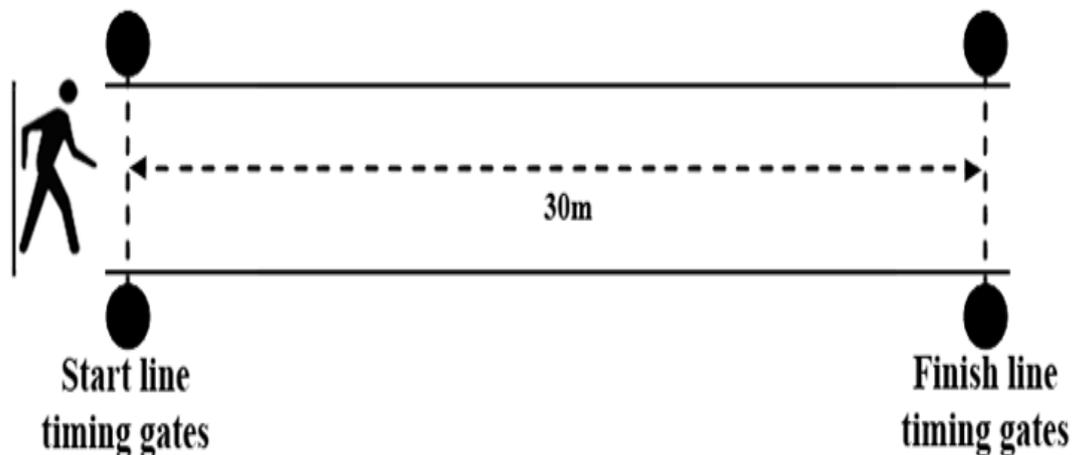
- **The research sample:** Therefore, the research sample included 8 players from the Wiam Constantine girls team, who are active in the excellent section of the Algerian championship, and their ages ranged from (18-19 years).

\*Selected physical tests were applied to them in the normal condition as well as during menstruation (the third day after menstruation).

#### **4-4 Data collection tools:**

- **Physical test used: Speed test:** Running test 30m from standing.

**Figure3:** Graphic representation of 30m sprint running test.



(Celil Kaçoğlu, 2020, p343).

**5/ Presentation and discussion of the results:**

**5-1 Show results:**

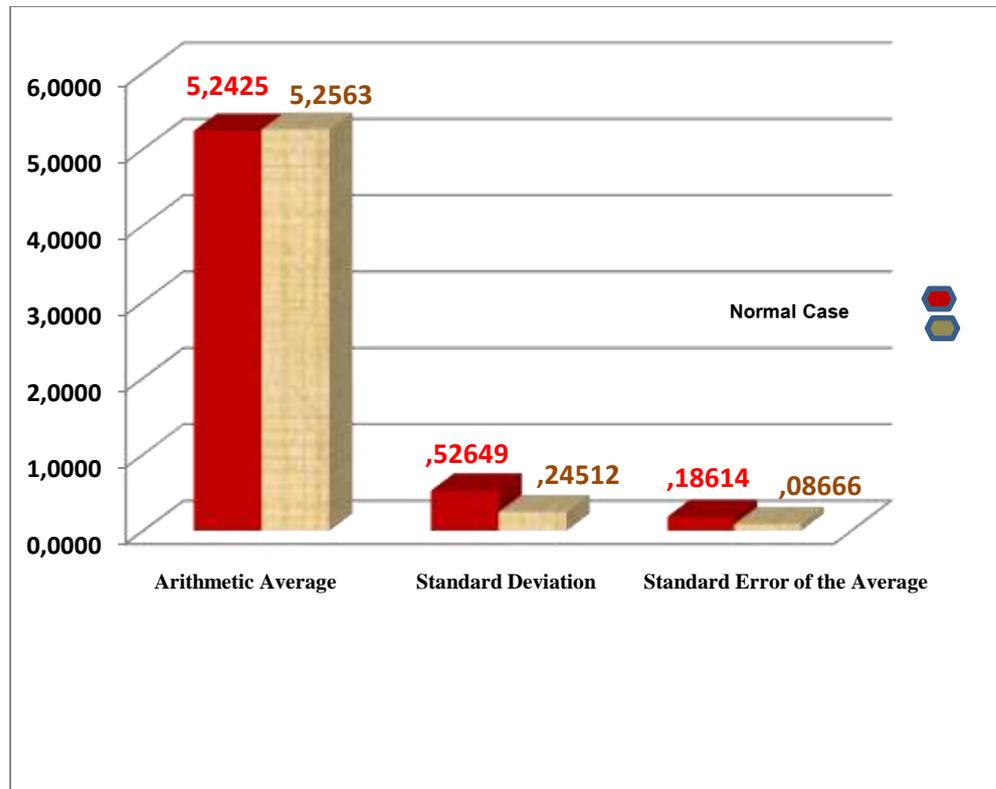
**Table no. (01):** Represents the results of the speed test: 30m running test in the normal state and during menstruation.

The Player	In The Normal Case	During The Menstrual Period
Player01	5,75 s	5,33 s
Player02	5,88 s	5,39 s
Player03	4,65 s	4,99 s
Player04	5,02 s	5,73 s
Player05	5,95 s	5,23 s
Player06	4,83 s	5,05 s
Player07	4,86 s	5,31 s
Player08	5 s	5,02 s
<b>Arithmetic Average</b>	<b>5,243</b>	<b>5,256</b>
<b>Standard Deviation</b>	<b>0,526</b>	<b>0,245</b>

**Table no. (02):** T-test results for tests in the normal state and during menstruation:

		Degrees of Freedom	T	Sig. (Bilaterale)
<b>Normal Case – During The Menstrual Period</b>	<b>Pair 1</b>	<b>7</b>	<b>-,077</b>	<b>,941</b>

**Histogram (01):** shows the Arithmetic Average, Standard Deviation, and Standard Error of the Average for velocity tests.



#### **6/Discuss the results:**

##### **Using the data of Table No(02):**

From the previous table, we are interested in the value of the t-test and the associated probabilistic value:

- The value of (t) is (-0.077).
- Its probability value is (0.941).
- The probability value is greater than the significance level 0.05.

##### **Including the decision:**

Acceptance of the null hypothesis that the averages are equal means that there are no statistically significant differences between the results of the speed test in the high condition of the female athletes and the results of the same test applied to the female athletes during menstruation.

##### **Reason:**

The probability value is greater than 5%.

##### **Extraction:**

Through the results obtained from comparing the results of the tests in the normal case and during the menstrual cycle for the speed characteristic in this research, and after presenting and analyzing these results, we reached the following:

Menstrual cycle had no effect on the speed trait of female soccer players in our research.

And the hypothesis that was set for our research is not verified.

Therefore, it is not possible to be absolutely certain that the menstrual cycle does not actually affect the speed of these female soccer players on the one hand, and on the other hand, it cannot be said that it has a clear effect.

Which prompts to present problems and future research in order to diagnose this biological phenomenon rooted in women and to be familiar with all its aspects and to delve into it more and more in order to reach fixed facts in this field on which the training process is built, which allows the prosperity and advancement of this sport whose practice still suffers from shame in Arab societies, especially Algerian society.

**Conclusion:**

Through the results obtained from comparing the results of the speed test: the 30-meter running test from standing in the normal condition as well as during the menstrual cycle on the female soccer players, we conclude that the menstrual cycle did not affect the speed characteristic of the female soccer players, as the results of the test applied to the sample in the normal case and during the menstrual cycle showed There are no statistically significant differences between the results of the speed test applied in the normal case of female soccer players and the results of the same test applied to female soccer players during menstruation.

This was confirmed by researcher Shatha Hazem Korkis through the study she carried out in 2007 under the title “Studying the Effect of the Phases of the Menstrual Cycle on Some Elements of Physical Fitness”, as one of the results that came out of this study is that there is no effect for the phases of the first, second and third menstrual cycle On ran 30 meters transitional velocity.

But this does not mean that there is an absolute adoption of these results, which prompts to present problems and future research in order to improve the training process and to know all its aspects and go deeper into it, especially when it comes to the fair sex in its monthly biological cycle.

As recommendations and suggestions after doing this research, the following were suggested:

- Programming special theoretical classes during the specialized sports activity of women's teams in various disciplines, to highlight the biological limits of the body during its exercise of sports activities during the various phases of the menstrual cycle.
- The necessity of providing the women’s teams with physiotherapists who are familiar with the various stages of physical preparation and are aware of the biological characteristics of women in all cases.
- Diversifying physical exercises for different characteristics and attaching them

to the exciting aspect to draw attention to the work and its nature and to keep girls away from the feelings associated with the occurrence of menstruation.

- Communicating in work and training in a normal way and not stopping under the pretext of the menstrual period as a result of false illusions

Through this study, it is clear that the menstruation period in our time is no longer an obstacle to a woman's life that prevents her from engaging in sports activities. Good programming to develop and improve the quality of strength in line with the normal situation of women.

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