v. 2, n. 60, 2022

International Journal of Health Science

THE WAY WOMEN'S ORGANIC PERFORMANCE IS INFLUENCED BY THEIR MENSTRUAL CYCLE

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Abstract: The present study seeks to analyze the influence of the menstrual cycle on the performance of active women in the practice of physical activity. The analyzes performed showed a possible physiological correlation to respiratory fatigue and muscle fatigue, in specific periods of the cycle. Throughout this work, you, the reader, will see the specific and precise characterization of each moment of the menstrual cycle, thus demonstrating the need to adapt the planning, application and evaluation of training in women.
Keywords: Physical activity. Menstrual cycle. muscle fatigue.

INTRODUCTION

When talking about women's health, the relationships between the reproductive organs, the menstrual cycle and hormone secretion are fundamental aspects to be considered. However, there are women who do not know in depth the functioning of the cycle itself, whether the physiological aspects or the effects of the cycle on daily life. This lack of knowledge is sometimes associated with the use of hormones as a contraceptive method, which acts on the female body in order to make the menstrual cycle linear, avoiding the hormonal changes characteristic of each period of the menstrual cycle.

Made possible through the interaction brain - ovary - endometrium - pituitary, the menstrual cycle occurs. Linked to the aforementioned factors, environmental stimuli, nutrition, stress, emotion, light, odor, sound are also conveyed. Biologically, the menstrual cycle is classified in the following ways: follicular, ovulatory and luteal phases, and can often be seen only as part of the follicular and luteal phases, classifying the ovulatory phase as proliferative.

In the follicular phase, menstruation begins on the first day and lasts until ovulation. The luteal phase, on the other hand, lasts from the

end of ovulation to the new menstruation. All these phases have characteristic hormone secretion by the anterior pituitary - follicle stimulating hormone (FSH) and luteinizing hormone (LH) - and by the ovaries (estrogen and progesterone).

Regarding changes in hormone secretion, the follicular phase has low levels of estradiol and progesterone, causing degeneration and shedding of the uterine lining. While the ovulatory phase is characterized by the peak of estrogen secretion, high amounts of estrogen and, mainly, progesterone are secreted. At the end of the menstrual cycle, if the egg is not fertilized, the corpus luteum undergoes degeneration and estrogen and progesterone levels fall, promoting the beginning of a new menstrual flow.

The series of hormonal changes mentioned above, if they occur naturally, promote a symptomatological chain in the female organism, affecting her entire body, including her physical performance. Some literatures also report alterations in premenstrual symptoms associated with physical exercise, such as an increase in the volume of muscular work force and a lower rate of fatigue during the follicular phase. In the same vein, there is also a significant drop in strength in the follicular phase, in which the menstrual cycle does not interfere with the maximum oxygen consumption (VO2max) in short-intensity aerobic activities.

It is worth mentioning that the consideration of hormonal changes in the menstrual cycle for planning and carrying out physical training in women is not new. Despite the limited amount of research in sports medicine and sports science for women, since only between 4% and 13% of scientific articles investigate the effects of physical and sports training for women 12, some methodological barriers need to be overcome in these studies. The single collection of blood samples to assess the phase of the menstrual cycle and hormone release, and thus establish associations with physical activity, presents difficulties in obtaining reliable data, since there are significant variations in the pulsatile patterns of hormone secretion throughout the life cycle. day. A recent study recommends that a combination of three methods be performed to verify the phase of the menstrual cycle in studies that assess hormone secretion: the calendar-based counting method, combined with the peak urinary luteinizing hormone test and measurement of concentrations. of estrogen and progesterone in the serum at the time of the test.

In view of the importance of adequate training planning that respects the periods of the menstrual cycle for active women, the use of the subjective perception of effort method can be an important ally for both women to regulate their activities and their own level of demand., and for the coach in an attempt to be more assertive in training planning. The use of perceived exertion is a training intensity control strategy that is easy to apply on the training day. It consists of a method in which the individual points out in a gradual scale of points the perceived effort during or after the execution of the exercise. Considering the low representativeness of studies that investigate the effects of training in women and consider the effects of the menstrual cycle for such activity, the objective of this research was to verify the influence of the menstrual cycle on the perception of performance of active women.

METHODOLOGY

The present work consists of a qualitative review of literature that sought to address results found in research on women's health work and its influence on female physical performance, whether in a comprehensive, orderly or systematic way. To carry out the

work, the following steps were followed:

1) Selection of the corresponding themes;

2) Selection of samples found and used;

3) Analysis of the characteristics of the original research;

4) Analysis of the results obtained;

5) Conducting the review.

The databases of scientific literature and techniques used in carrying out the review were Google Scholar, Scientific Electronic Library Online (SciELO), Virtual Health Library, Latin American and Caribbean Literature on Health Sciences (LILACS), using the following search engines: "menstrual cycle", "woman's physical performance and her menstrual cycle" and "woman's health and physical activity".

Thus, the present work seeks not only to analyze the interface of women's health and their menstrual cycle, but also to highlight the various contents on the subject in question, aiming to shed light on an educational path, clarifying possible influences on physical and organic performance. of the women.

RESULTS AND DISCUSSIONS

To carry out this work, we verified the existing literature that addresses the influence of the menstrual cycle on the perception of performance of active women. We noticed that in the luteal phase, when compared to the follicular phase, there was greater daily predisposition in these women. Concomitantly, in this phase, it was possible to notice that there is greater muscle fatigue and joint discomfort, while respiratory fatigue was slightly higher in the follicular phase, as well as a slight increase in joint discomfort.

After repeated analyses, it is concluded that there is less disposition in the follicular phase, especially at the beginning of menstruation. Days before menstruation, the empty follicle converts its endocrine cells into the structure called the corpus luteum. If the egg is not fertilized, the corpus luteum degenerates, estrogen and progesterone levels decrease, and uterine contractions begin to shed the lining such as tissue, mucus, and blood, thus initiating menstruation. The hormonal drop occurs two days before the start of menstruation and continues until the end of it, contributing to some physical manifestations, such as headache, swelling, blood flow, in addition to other factors, are contributors to the lack of disposition in this period.

At the end of the follicular phase, it is concluded that there is an increase in hormone levels. Then, after menstruation, the increase in estrogen level causes the uterine walls (endometrium) to thicken and blood vessels to approach the lining of the uterus, inhibiting the secretion of FSH, however, promoting a rise in LH, allowing follicular maturity, initiating the second phase of the cycle, ovulation (or second follicular phase).

Progesterone (a hormone characteristic of the luteal phase) is a potent stimulator of the respiratory center, exerting an influence on ventilatory responses during the luteal phase when compared to the follicular phase. Estrogen is highly correlated with the respiratory system, exerting progesterone-like effects. Thus, the fluctuations and interaction of these hormones during the menstrual cycle is considered important for the respiratory system and the phase of the menstrual cycle needs to be accurately identified to understand the perception of exertion. The variable joint discomfort is closely associated with a hormone called relaxin, which decreases soft tissue tension and confirms the involvement of cruciate ligament injury with the menstrual cycle. The literature used as a basis points out that relaxin has the ability to increase tissue lassitude, which can cause physical and metabolic changes in the expression of joint mobility or ligament lassitude. The effects of the hormone relaxin are significantly

enhanced by estrogen and fully antagonized by progesterone. Understanding joint discomfort, both in the follicular phase, where the estrogen level gradually rises reaching its peak, and in the luteal phase, where there is the presence of progesterone and estrogen fluctuations. When there is interaction between the hormones relaxin, estrogen and progesterone, there is a greater probability of discomfort, mainly respiratory. Estrogen, on the other hand, is seen as an agent of the central nervous system, it also acts at the cellular level, decreasing the production of collagen in the tendons, coinciding with greater joint discomfort in the follicular phase.

FINAL CONSIDERATIONS

It is essential that the phases of the menstrual cycle are observed in detail, in order to plan, apply and evaluate exercise in active women, since changes in the perception of effort are reported in the variables willingness to train, muscle fatigue, respiratory fatigue and joint discomfort.

The likely relationships between perceived exertion during exercise and the phases of the menstrual cycle indicate that willingness may be greater in the luteal phase, right after ovulation. However, discomforts such as muscle fatigue, respiratory fatigue and joint discomfort can also be present depending on the exact period of the menstrual cycle in which the woman is.

Therefore, it is recommended that, when considering the periods of the menstrual cycle in the planning and execution of training for women, a more detailed identification of the phase of the cycle must be made, considering 3 distinct phases: follicular, ovulatory and luteal. The more detailed the characterization of the present menstrual cycle phase, the more appropriate will be the prescription and performance evaluation in women.

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