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Analysis of the Menstrual Cycle and Symptoms of Premenstrual Syndrome in Martial Arts Athletes in 2024

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Abstract. The menstrual cycle experienced is undoubtedly different for each person, even for twin women. Symptoms felt before menstruation also vary, such as dizziness, difficulty concentrating, breast tenderness, sleep disturbances, defecation disorders, increased appetite, acne, fatigue, and excessive anxiety or anxiety. This study aims to describe the menstrual cycle and premenstrual symptoms felt by athletes. This study uses descriptive research, explaining what will be studied and measured with certainty. The approach used is a quantitative approach with the questionnaire method. The sample of this study was all martial arts athletes with centralised PON preparation of as many as 42 people using a total sampling technique. The data collection technique uses a closed questionnaire with yes and no answer options. The data obtained was then analysed using the questionnaire answer value, the percentage value was calculated, and the test was done using chi-square. This study concludes that all athletes have a regular menstrual cycle for <21 days, 28 days, and >35 days. PMS symptoms that do not feel disturbing include sensitivity, sleep disturbances, acne, constipation, and increased appetite. Symptoms that are supposed to be unsettling, such as dizziness, headaches, fatigue, excessive anxiety, and difficulty concentrating. The results of the chi-square test show that by comparing the Asymp, Sig. with the critical value limit of 0.05". In the data tabulation above, it is known that the value of the chi-square analysis results is 0.040 at the confidence level of 0.05 or 95% or $\alpha = 0.05$. Thus, it can be said that the chi-square is > 0.05. So, it can be concluded that there is no significant difference according to the variable level of PMS experienced between martial arts and nonmartial arts athletes. The coach should coordinate with medical personnel and the nutrition team to find a solution to relieve disturbing symptoms.

Keywords: Analysis; Menstruation; Premenstrual Syndrome.

INTRODUCTION

Sports are prevalent physical activities that explore almost all aspects of human life, especially in the health sector. Sports nourish the human body and are a means of competition to find someone's talent in sports. Men and women also cultivate sports; even yearly, the number of female sports players is increasing rapidly. Even the achievements of women in sports are unquestionable, all proven by the many accomplishments and awards in the National or International arena. The achievements of women in sports are extraordinary. Women are involved in various sports with high enthusiasm and integri-

ty to erase the notion that sports are only for men.

On July 13, 1908, women first participated in the modern Olympics. Of 997 athletes, 22 women competed in five sports: tennis, sailing, croquet, equestrian and golf. The IOC (International Olympic Committee) is committed to gender equality in sports. The Olympic Charter states that the role of the IOC is to encourage and support the promotion of women in sports at all levels and in all structures to implement the principle of equality of men and women. As the IOC revealed, "Initially, women competing in the Olympics only participated in tennis, sailing, cricket,

horseback riding and golf. With the advancement of science and technology, women have been able to play various modern sports such as soccer, hockey, martial arts, triathlon and even pentathlon".

Sports and women are unique things to study, especially regarding the regularity of the menstrual cycle. Women have physiological uniqueness in the reproductive organs that have become their nature. Besides physical, unique feelings significantly affect the physiological patterns and behaviour of the reproductive system. Broadly speaking, since puberty, women will experience menstruation, pregnancy, and also menopause. Exercise and the intensity of other physical activities can generally affect female reproductive physiology. The menstrual cycle is influenced by reproductive hormones whose production fluctuates in the body, depending on genetic factors, daily lifestyle, psychological conditions, diet, weight, intake of vitamin supplements, medication taken, and general health conditions.

Exercise can help maintain the balance of reproductive hormones, making menstruation smoother." Conversely, if a person no longer exercises, there is a considerable risk that the hormones will become unbalanced, and the menstrual cycle will be disrupted. Routine exercise is highly recommended to maintain a healthy body, providing benefits such as better sleep quality and a more energised body condition. However, authors [1] say, "Excessive exercise can cause hypothalamic dysfunction, which disrupts GRH secretion, causing delayed menarche and menstrual cycle disorders." Menstruation is bleeding from the uterus that takes place periodically. This is due to the decay of the endometrium due to the hormones estrogen and progesterone, which experience changes in levels at the end of the ovarian cycle, usually starting on day 14 after ovulation.

The first thing that becomes a disturbance is bleeding outside the menstrual cycle; this can cause menstruation to occur earlier before the period, or it can also happen longer. Exercise-induced disruption of the menstrual cycle is caused by random shedding of the uterine lining. Bleeding that occurs outside the menstrual cycle is also called abnormal uterine bleeding. Usually, the blood that comes out is less or only spotting. The blood also usually has a dark red or slightly light red colour. In addition to bleeding outside

the menstrual cycle, of course, athletes may also experience bleeding during or after heavy martial arts training. Bleeding after strenuous exercise is caused by an irregular endometrium. It could also be due to structural changes in the uterine wall lining or cervix due to abdominal pressure.

The author [2] states, "There are several disorders of the menstrual cycle, one of which is exercise because exercise affects almost all hormones produced by the body; adequate or excessive exercise can cause menstrual irregularities, especially in competitive athletes." The second disorder is women who do not experience menstruation at all. Most women who are athletes will be very uncomfortable and afraid of events like this. The author [3] states that "Excessive exercise can cause menstrual disorders due to several factors, such as excessive weight loss, metabolic disorders, nutritional deficiencies, and others". Menstrual disorders due to strenuous exercise are called exercise-induced amenorrhea. The extreme form of exercise-induced amenorrhea is known as the female athlete triad.

Combining martial arts training in the heavy, intense category, if added to the low-calorie intake, will undoubtedly put tremendous pressure on the athlete's body. When experiencing menstruation, of course, women will have complaints or symptoms that are felt before the arrival of menstruation or what is known as premenstrual syndrome. Premenstrual syndrome symptoms are symptoms that appear during the menstrual cycle caused by fluctuations in steroid hormones that occur during the reproductive period [4]. The author [5] states, "Premenstrual syndrome is complaints that usually start from one week to several days before the arrival of menstruation, and disappear after menstruation comes, although sometimes it lasts until menstruation stops".

The author [3] states, "Signs and symptoms of someone experiencing menstruation include nausea, heartburn, cramps in the lower abdomen, lack of blood (anaemia), unfit body, fever, headache and dizziness, vaginal discharge and itching in the vagina". According to [1], there are several signs and symptoms when menstruation occurs for the first time (menarche) including "abdominal pain and nausea, increased body temperature, dizziness, breast swelling, skin disorders, pain during bowel movements, frequent vaginal discharge and excessive appetite". Of

course, the cycle and symptoms of premenstrual syndrome also go hand in hand with the training carried out by athletes preparing for the Aceh National Sports Week, where [2] states that "Exercise is a process of practising systematically and repeatedly with progressive loading."

Exercise is an effort to prepare oneself to achieve a specific goal. Furthermore, disturbances can occur because intense exercise changes the course of menstrual flow. The average female athlete, especially in martial arts, claims that her menstrual cycle becomes lighter and shorter after intense exercise, even to the point of not experiencing menstruation. Hormonal changes can have a milder effect on the body and cause less blood flow. In addition, weight loss can also contribute to lighter menstrual flow. The body's fat tissue produces a type of estrogen. Estrogen is a type of female sexual hormone produced by the ovaries. This hormone is essential in regulating the menstrual cycle, supporting a healthy pregnancy, and maintaining a woman's heart health.

The excess estrogen can cause the uterine lining to build up more than usual in the first half of the menstrual cycle. The thicker the lining, the heavier the menstrual flow. Weight loss reduces the amount of estrogen in the body. In turn, this minimises the cyclic buildup of the uterine lining. A thinner uterine lining will reduce menstrual blood flow. Based on the author's questions and answers with martial arts athletes in the regional training camp team for the 2024 National Sports Week, some admitted that they initially had irregular menstrual cycles and became regular after attending the training camp. Being a big question mark for the author, some athletes admit the opposite. The author herself had experienced undergoing a routine and relatively heavy sports program and experienced a shorter menstrual cycle.

This is undoubtedly of interest to the author to further explore the menstrual cycle experienced by martial arts athletes. The menstrual cycle of athletes is not influenced by the training program alone; women will undoubtedly be very thick with emotional pressure. This will often arise when knowing that they will undergo a heavy training program. High levels of stress, mood, and psychology are associated with an increased risk of menstrual cycle irregularities. The next factor affecting the menstrual cycle is nutritional status or intake. Fast food affects women's nutritional status, resulting in irregular menstrual cy-

cle. Typically, the length of each woman's menstrual cycle varies, with the average period of one menstrual cycle lasting 28 days.

A longer or shorter regular cycle lasting 21 to 35 days is still considered normal. Other factors that can interfere with the menstrual cycle include weight, anxiety, diet, environmental exposure, working conditions, and impaired hormonal function [5].

METHOD

The approach in this study is quantitative with descriptive methods. According to [6] "Quantitative data is a research method based on concrete data, research data in the form of numbers that will be measured using statistics as a calculation test tool, related to the problem under study to produce a conclusion". This type of research uses descriptive research methods, considering that this research will describe the actual conditions of the research subject based on the object of this research, which is questionnaire data.

The research location is where researchers conduct research, especially in capturing phenomena or research from the object under study to obtain accurate research data. The research location is determined deliberately. In January 2024, the research location was carried out in the training environment of the KONI Aceh regional training centre.

To obtain research data, the data collection technique used by the author uses a closed questionnaire with yes and no answer options. According to [4], "Data analysis is the process of organising and sorting data into patterns, categories, and basic description units so that themes can be found and working hypotheses can be formulated as suggested by the data. The data processing stage is a reduction stage, data presentation, and conclusion drawing. Furthermore, the author also calculates the percentage of the results of the questionnaire answers obtained using the formula $P = \frac{f}{n} \times 100\%$.

RESULTS AND DISCUSSION

The results of the study were obtained by filling out a questionnaire. After the research data collection stage, data processing was carried out from the raw data. This step is taken so the research data has a picture and draws conclusions.

Based on the data from the questionnaire results in the field regarding the menstrual cycle and symptoms of premenstrual syndrome experienced by the Aceh PON training athletes in 2024, the discussion is divided into the athlete's menstrual cycle and also the symptoms of premenstrual syndrome, both disturbing and not disturbing the athlete's condition. Based on the results of the questionnaire in the field illustrate that all athletes, both martial arts and nonmartial arts, have a regular menstrual cycle, meaning that they experience menstruation once a month. Still, the menstrual time experienced by each athlete is different. Martial arts athletes experience menstruation for 4-8 days, as much as 93%; the remaining 7%, namely two athletes, experience short menstruation of fewer than four days, and one athlete experiences menstruation for more than eight days. For the remaining 3% of nonmartial arts athletes, one athlete experienced menstruation for over eight days.

The author [2] states, "The normal cycle that occurs in women is 21-35 days with a length of menstruation between 3-7 days." Training frequency and duration significantly affect the athlete's menstrual cycle. The incidence of irregular menstrual cycles is primarily found in athletes who frequently exercise. Increased frequency of training is associated with a higher incidence of menstrual cycle disorders.

Furthermore, the symptoms of premenstrual syndrome show that there are several disturbing symptoms, such as fatigue, breast pain, dizziness, and reduced concentration. Most athletes feel tired when approaching menstruation, reaching 88% in martial arts athletes and 57% in nonmartial arts athletes. The fatigue experienced is closely related to hormonal changes that often disrupt the quality of rest; this makes some women feel excess fatigue during the premenstrual period and will usually subside when they enter the menstrual period.

The symptoms of pain or swelling in the breast are still high among martial arts athletes at 64%. This symptom is caused by the influence of the hormone progesterone, which causes the mammary glands to swell, so it often causes pain to the breasts. According to [4], "There are several signs and symptoms of menstruation, including abdominal pain and nausea, increased body temperature, dizziness, swollen breasts, skin disorders, pain during bowel movements, frequent vaginal discharge and excessive appetite.

Dizziness is lower in nonmartial arts athletes at only 20% and 50% in martial arts athletes. After ovulation (the release of an egg from the ovary), hormone levels drop. Estrogen and progesterone levels are at their lowest just before menstruation. This decrease often causes dizziness and even headaches in some women. While symptoms of reduced concentration are only in some martial arts athletes at 59%, in nonmartial arts athletes, it is shallow, with a percentage of 17%. Hormonal changes during premenstrual syndromes sometimes make a person have complaints of difficulty concentrating. When the hormone progesterone increases, it can decrease serotonin, which plays a role in helping the brain function and stay sharp.

Furthermore, for symptoms that do not bother athletes, such as feelings of anxiety or restlessness, sensitivity or feelings of wanting to cry, sleep disturbances, increased appetite, acne, and difficulty defecating. Some athletes, both martial arts, totalling 57% and nonmartial arts, totalling 53%, still feel a lot of anxiety or anxiety before menstruation. These feelings arise due to hormonal changes, and some people can be exposed to excessive panic attacks. Most martial arts athletes, totalling 64%, and nonmartial arts, totalling 50%, feel more sensitive or even want to cry before menstruation. Hormonal changes can cause feelings to arise. During ovulation, the female body releases an egg, which decreases the levels of estrogen and progesterone produced in the body. This is what makes sudden mood swings occur; even some people can get panic attacks.

The symptoms of increased appetite were more pronounced among martial arts athletes at 62%. Usually, with this symptom, someone craves sweets such as chocolate. A study conducted by [3], found that 85.5% of women experienced an increase in appetite during the 3-10 days before menstruation, which can also be called the premenstrual phase. Symptoms such as sleep disturbances are not very significant in both martial arts and nonmartial arts athletes; this is evidenced by the achievement of percentages in the low category and even very low in nonmartial arts athletes, which is only 10%. Symptoms of acne almost occurred in all athletes, especially those in martial arts, which reached 93%. Nonmartial arts athletes reach a percentage level of 77% and are already in the high category. This can occur because an increase in progesterone hormone levels before the menstrual cycle triggers an increase in sebum production or natural

facial oil. As a result, the buildup can clog the pores of the facial skin and cause acne. Symptoms of defecation disorders are very rarely experienced by athletes, as evidenced by the meagre percentage rate of 17% in martial arts athletes and 13% in nonmartial arts athletes.

Based on the chi-square test analysis, the Asymp. Sig. (2-sided) on the Pearson chi-square test is 0.040. According to [5], "decision-making guidelines in the chi-square test by comparing the Asymp. Sig. with the critical value limit of 0.05". The data tabulation above shows that the value of the chi-square analysis results is 0.040 at the confidence level 0.05 or 95% or $\alpha=0.05$. Thus, it can be said that the chi-square is > 0.05 . So, it can be concluded that there is no significant difference according to the variable level of PMS experienced between martial arts and nonmartial arts athletes.

CONCLUSIONS

All athletes have a regular menstrual cycle, experiencing menstruation once a month with a range of 21-35 days. Athletes feel symptoms before the

arrival of menstruation, such as anxiety, sensitivity, increased appetite, sleep disturbances, acne, and even constipation. However, these symptoms do not interfere with the training or competition because the athletes can adequately overcome them. Symptoms that feel disturbing such as fatigue, dizziness, breast pain, and difficulty concentrating. Furthermore, the results of the chi-square test > 0.05 showed that there is no significant difference according to the variable level of PMS experienced between martial arts and nonmartial arts athletes.

To the coaches, coordinating with medical personnel and a team of nutritionists in the scope of the regional plate regarding premenstrual symptoms felt by athletes is to find solutions in relieving symptoms that can interfere with athlete performance when practising or competing.

To athletes, to be more courageous and open to consult about premenstrual complaints, to be discussed so that a solution can be found.

There must be someone who is a special consultant for female athletes regarding their cycles and symptoms of premenstrual syndrome.

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