# Analysis of Female BMX Cross Athletes' Self Confidence and Anxiety Based on Menstrual Cycle

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## Abstract

In high-intensity sports such as BMX Cross, psychological factors such as anxiety play a significant role in influencing athlete performance. In female athletes, the menstrual cycle can cause hormonal changes that impact physical and psychological conditions, including increased anxiety. Each cycle phase—follicular, ovulatory, and luteal—has different potentials to trigger emotional responses, influencing an athlete's perception of readiness and performance during competition. This study aimed to understand the role of self-confidence and anxiety in female BMX Cross athletes during the menstrual cycle. This study uses a descriptive quantitative approach with a correlational design. The sample consisted of 22 female BMX Cross athletes. The instrument used was a self-confidence and anxiety questionnaire, given once to all respondents. The study's results showed a significant relationship between self-confidence and anxiety levels during the menstrual cycle. Physiological hormonal changes, physiological factors, and psychological factors such as self-perception and previous experiences affect the mental condition of athletes. This study concludes that, based on the menstrual cycle, the self-confidence and anxiety of female BMX Cross athletes are related. Therefore, a deeper approach is needed in athlete coaching to help athletes manage self-confidence and anxiety and maintain optimal performance. Therefore, we recommend paying more attention to athletes' menstrual cycles in training planning and match strategies to help maintain optimal athlete performance.

## How to Cite

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## INTRODUCTION

Heavy physical activity, such as training and mastery of techniques in BMX Cross sports, can play a role in triggering disorders during menstruation (Vandenborn, 2017). Menstruation is a biological marker of female reproductive function, which is greatly influenced by changes in reproductive hormone levels (Al-Suhaimi et al., 2022). Studies have shown that women who exercise regularly tend to have more regular menstrual cycles than those less physically active (Bajramovic et al., 2022; Sims et al., 2023). However, hormonal changes during menstruation can also have an impact on the physical and mental condition of athletes, including increasing anxiety during training sessions (Brown et al., 2021). Therefore, it is pretty reasonable that athlete performance experiences visible fluctuations during the menstrual cycle due to hormonal changes (Meignié et al., 2021). Usually, a menstrual cycle that is considered normal ranges from 24 to 38 days. It is categorized as an excessive cycle if it lasts less than 24 days (Handy et al., 2022). Some phases in this cycle are often accompanied by symptoms such as cramps, mood swings, and increased anxiety or fear of physical conditions, which ultimately affect the athlete‹s mental readiness and ability to compete (Brown et al., 2021; Lasnier, 2022).

Concentration is crucial for athletes, especially in extreme sports such as BMX Cross, which require complete focus during training and competition (Stogsdill, 2023). Good concentration is essential for achieving optimal performance. Conversely, low levels of concentration can trigger anxiety, which hinders the athlete‹s maximum potential (Hosek & Man, 2021). Anxiety itself is a psychological disorder characterized by fear, worry about things that have not happened, and physical symptoms such as heart palpitations, increased blood pressure, and excessive mental tension (Szuhany & Simon, 2022). Women who are menstruating tend to experience emotional instability and fluctuations in feelings during this period (Staňková et al., 2024). Excessive menstruation can have negative impacts physically, emotionally, socially, and economically. Increased anxiety during this period also has the potential to reduce the athlete‹s self-confidence (Read et al., 2022).

Many athletes believe that self-confidence is important in supporting success in sports activities (Junli et al., 2021). They assume that self-confidence does not just come but is formed through consistent training, hard work, and mature strategies (Rudman et al., 2024). This self-confidence reflects optimism that people can develop, think positively, and achieve their goals (Uglanova, 2024). Self-confidence is also part of an athlete‹s characteristics, enabling them to recognize their potential, understand their limitations, and be determined to show their best performance (Lochbaum et al., 2022). Athletes who believe in their abilities tend to have higher motivation and a greater chance of success (Schmid et al., 2021).

Regarding the menstrual cycle, some athletes admit that this condition does not affect their physical or mental state when exercising or competing (Brown et al., 2021). However, other studies have shown that 19 out of 30 athletes admitted to feeling psychological impacts from menstruation, such as increased emotional sensitivity and selfishness, which can ultimately interfere with and reduce athletes› self-confidence (Kiemle-Gabbay et al., 2024). To date, research that specifically examines the relationship between the menstrual cycle and self-confidence and anxiety levels in female BMX Cross athletes is still relatively minimal. Therefore, more in-depth research is needed to understand how hormonal dynamics in the menstrual cycle can affect these psychological aspects. That way, appropriate supporting strategies can be developed to help athletes maintain their best performance.

The objective of this study is to examine the relationship between the menstrual cycle, anxiety levels, and self-confidence in female bmx cross athletes. This study aims to identify whether specific phases of the menstrual cycle significantly impact the athletes› psychological readiness, particularly their ability to manage anxiety and maintain optimal self-confidence during training and competition.

The novelty of this research lies in its focus on female athletes in extreme sports, particularly bmx cross—a field that has received limited academic attention in the context of hormonal and psychological fluctuations during the menstrual cycle. By addressing this gap, the findings of this study can contribute to the development of personalized training strategies that align with the athlete's physiological cycles and enhance overall performance sustainability.

## METHOD

This study uses a descriptive method with a correlational design (Nugraha et al., 2021). Data collection was carried out by distributing the Sport Anxiety Scale-2 (SAS-2) questionnaire (Smith et

al., 2006) and the Athlete Self-Confidence Questionnaire (ASQ) (Nursaba et al., 2024) to subjects once as a research instrument. Respondent characteristic data includes information about the respondent's menstrual cycle during training and competition. The respondents' characteristic data includes name, age, weight, height, BMI, duration of training in a day, duration of training in a week, and duration of menstruation in a year. (Supriadi, 2021, 2023). The subjects in this study were 15 BMX Cross Female Athletes aged 18-22 years. All subjects are active BMX cross-female athletes who routinely participate in training and competition activities. The researchers chose these subjects because they were considered to have great potential to achieve achievements in sports. However, at the same time, they were still in late adolescence, a developmental phase characterized by high emotional and psychological dynamics. This condition is an important background in studying psychological aspects such as self-confidence and anxiety, especially about the menstrual cycle (Harris et al., 2016). The data were processed and analyzed using SPSS Version 26 with a correlation test (Fadluloh et al., 2024).

## RESULTS AND DISCUSSION

The data obtained were then processed and analyzed using the SPSS 24 program. Normality test, correlation, statistical description, and percentage of results.

**Table 1.** Demographic Data

|  | Average | Standard Deviation |
|---|---|---|
| Age (years) | 19,35 | 1,268 |
| Height (m) | 1,59 | 0,052 |
| Weight (kg) | 55,2 | 5,207 |
| BMI (kg/m2) | 21,88 | 2,304 |
| Exercise duration per week (hours) | 14,45 | 4,559 |
| Exercise duration per day (hours) | 2,05 | 0,605 |
| Menstruation duration per year (days) | 72 | 14,567 |
| N = 22 | | |

**Table 1** presents demographic data, including age, with an average of 19 years with a standard deviation of 1.268, height with an average of 1.59 with a standard deviation of 0.052, weight with an average of 55.2 with a standard deviation of 5.207, BMI with an average of 21.88 with a standard deviation of 2.304, duration of exercise per week with an average of 14 hours with a stan-

dard deviation of 4.559, duration of exercise per day with an average of 2 hours with a standard deviation of 0.605, duration of menstruation per year with an average of 72 days with a standard deviation of 14.567. In **Table 2**, the author presents the menstrual cycle in the subject.

**Table 2.** Menstrual Cycles that Occurred in Subjects

| Indicator | | Average | % |
|---|---|---|---|
| Menstrual Duration per year | 36 days | 4 | 18% |
| | 60 days | 7 | 32% |
| | 84 days | 11 | 50% |
| How do you feel during training menstruation? | Stomach Ache | 7 | 32% |
| | Easily Tired | 6 | 27% |
| | Uncomfortable | 8 | 36% |
| | Just Normal | 1 | 4% |
| How do you feel during competition during menstruation? | Stomach Ache | 4 | 18% |
| | Easily Tired | 4 | 18% |
| | Uncomfortable | 10 | 45% |
| | Just Normal | 4 | 18% |

**Table 2** presents the data obtained; the annual menstrual duration in subjects varied with an average of 36 days for four subjects, 60 days for seven subjects, and 84 days for 11 subjects. This shows that most subjects experience a longer menstrual cycle in one year. The majority of subjects experienced discomfort (8 subjects), abdominal pain (7 subjects), and fatigue (6 subjects), while only one subject felt normal without any problems. When competing during menstruation, 10 subjects felt uncomfortable, while four subjects experienced abdominal pain and fatigue. Only four subjects felt that they did not experience significant disturbances when competing. It can be concluded that menstruation affects the comfort and performance of athletes when training or competing, with the majority experiencing discomfort at various levels. Therefore, a special strategy is needed to manage this condition so that it does not interfere with the performance of athletes when training or competing. In **Tabel 3**, the author presents a statistical description.

**Tabel 3.** Statistics Description

| Indicator | | Self-Confident | Anxiety |
|---|---|---|---|
| Menstrual Duration / year | 36 days | 27,75 ± 2,217 | 40,5 ± 6,028 |
| | 60 days | 35,43 ± 3,207 | 34,29 ± 10,484 |
| | 84 days | 35,91 ± 6,457 | 37,18 ± 4,446 |

**Tabel 3** presents a statistical description of the relationship between the duration of menstruation per year and the level of self-confi-

dence and anxiety. In the group with a menstrual duration of 36 days per year, the average level of self-confidence reached 27.75 ± 2.217, while the level of anxiety reached 40.5 ± 6.028. The group with a menstrual duration of 60 days per year had an average self-confidence of 35.43 ± 3.207, with an anxiety level of 34.29 ± 10.484. Meanwhile, the group with a menstrual duration of 84 days per year had the highest average self-confidence, namely 35.91 ± 6.457, and an anxiety level of 37.18 ± 4.446. It can be concluded that the longer the duration of menstruation per year, there is a tendency for increased self-confidence. However, the level of anxiety does not show consistency. In Table 4, the author presents a normality test on subjects with a 36-day menstrual cycle.

Normality Test on Subjects with a 36-day Menstrual Cycle, subjects with a 36-day menstrual cycle show the results of the Shapiro-Wilk normality test for the self-confidence variable with a significance value (Sig.) of 0.798, while for anxiety, it is 0.628. In the normality test, if the significance value is greater than 0.05, it can be concluded that the data is usually distributed. In Table 5, the author presents a correlation test on subjects with a 36-day menstrual cycle.

Correlation Test on Subjects with a 36-day Menstrual Cycle, subjects with a 36-day menstrual cycle show the results of the correlation test using Pearson correlation. Based on Table 5, it can be seen that the Pearson correlation value is 0.985 with a Sig. (2-tailed) value of 0.015. Based on the test results, the Sig. (2-tailed) value <0.05 is obtained so that H0 is rejected, so it can be stated that there is a relationship between self-confidence and anxiety in sample 4. In Table 6, the author presents a normality test on subjects with a 60-day menstrual cycle.

Normality Test on Subjects with a 60-day Menstrual Cycle, subjects with a 60-day menstrual cycle show the results of the Shapiro-Wilk normality test for the self-confidence variable with a significance value (Sig.) of 0.842, while for anxiety, it is 0.732. In the normality test, if the significance value is greater than 0.05, it can be concluded that the data is usually distributed. In Table 7, the author presents a correlation test on subjects with a 60-day menstrual cycle.

Correlation Test on Subjects with a 60-day Menstrual Cycle, subjects with a 60-day menstrual cycle show the results of the correlation test using Pearson correlation. Based on Table 7, it can be seen that the Pearson correlation value is 0.804 with a Sig. (2-tailed) value of 0.029. Based on the test results, the Sig. (2-tailed) value is <0.05, so H0 is rejected, so it can be stated that

there is a relationship between self-confidence and anxiety in sample 7. In Table 8, the author presents a normality test on subjects with an 84-day menstrual cycle.

Normality Test on Subjects with 84-day Menstrual Cycle, subjects with an 84-day menstrual cycle show the results of the Shapiro-Wilk normality test for the self-confidence variable with a significance value (Sig.) of 0.775, while for anxiety, it is 0.854. In the normality test, if the significance is greater than 0.05, it can be concluded that the data is usually distributed. In Table 9, the author presents a correlation test on subjects with an 84-day menstrual cycle.

Correlation Test on Subjects with 84-day Menstrual Cycle, subjects with an 84-day menstrual cycle show the results of the correlation test using Pearson correlation. Based on Table 9, it can be seen that the correlation value is 0.631 with a Sig. (2-tailed) value of 0.037, based on the test results, the Sig. (2-tailed) value <0.05 is obtained so that H0 is rejected, so it can be stated that there is a relationship between self-confidence and anxiety in subjects with an 84-day menstrual cycle.

Menstrual cycle disorders are the most common problem experienced by female athletes. The prevalence reaches 66% in female athletes, much higher than in non-athletes, which is only 25% (Fernanda et al., 2021). The menstrual cycle can cause athletes fatigue, leading to hypothalamic dysfunction and interfering with GnRH hormone secretion (Kurniawan et al., 2016). In female BMX Cross athletes, the menstrual cycle phase often hurts training performance, characterized by feelings of weakness and excessive fatigue, which ultimately reduces their aerobic endurance and performance (Supriadi, 2023). Data analysis shows that the menstrual cycle phase significantly influences the self-confidence and anxiety levels of female BMX Cross athletes. There is a close relationship between changes in self-confidence and anxiety with the menstrual cycle. Menstrual disorders can affect a person's psychological activities, such as the emergence of negative emotions in the form of anxiety, doubt, and depression related to low levels of self-confidence (Komarudin, 2015). Anxiety itself is a typical emotional response characterized by fear, worry, and discomfort (Kahiji et al., 2024).

Studies show that women, especially adolescents, experience a monthly menstrual cycle that lasts between 7 and 14 days. During this time, physical changes occur rapidly but are not always followed by balanced psychological and emotio-

nal adjustments (Fitriningtyas et al., 2017). Factors such as body weight, physical activity levels, stress, diet, environment, and endocrine disorders can influence the occurrence of menstrual disorders (Mahitala, 2017). Excessive sports activities can also disrupt this cycle because intense physical exercise can potentially affect the physiology of the menstrual cycle (Kurniawan et al., 2016). The menstrual cycle plays a significant role in influencing athlete performance. Therefore, it is important to understand how each phase in this cycle affects athlete performance. This knowledge is important in building a scientific basis for women's sports. By understanding the influence of the menstrual cycle, athlete training, recovery, and monitoring programs can be adjusted more effectively to the cycle phases (Supriadi, 2021).

Athletes who understand the menstrual cycle generally show higher self-confidence when competing on the field. This finding indicates that various factors influence athletes' perceptions of the influence of the menstrual cycle on their performance (Larsen et al., 2020). The knowledge gained from this experience is important in building self-confidence, which contributes to achieving the best performance. Self-confidence is vital in achieving peak performance for an athlete and maintaining consistent optimal performance (Mayangsari et al., 2024). Therefore, self-confidence must be considered a primary motivational factor in efforts to achieve achievement. Athletes with high levels of self-confidence tend to experience lower anxiety so they can perform better (Bayani et al., 2024).

This study also showed that most athletes continued participating in competitions despite menstruating. However, some athletes reported complaints such as fluid retention and abdominal cramps, both before and during menstruation (Pardela, 2019). In addition, many women experience other symptoms related to menstruation, including pain that is not limited to the lower abdominal area (Sugiharti & Sumarni, 2018). Based on the data collected, out of 22 female BMX Cross athletes, four athletes experienced complaints during the competition, while 18 others felt discomfort, fatigue, and abdominal pain before competing. This study also examined the athlete's response to complaints or concerns related to the menstrual cycle, especially related to the schedule and intensity of training. On average, athletes train 3 to 4 times per week with a training duration of around 2 hours per session. Most athletes continue their training program even though they are in the menstrual phase. These findings emphasize the importance of the support team's role in consistently monitoring the condition of athletes and implementing an approach that can detect and adjust the training program based on symptoms or effects experienced by athletes during menstruation.

## CONCLUSION

This study concluded that the menstrual cycle is related to self-confidence and anxiety levels in female BMX Cross athletes. Therefore, a more in-depth coaching approach is needed to support the management of athletes' mental health and maintain peak performance during competition. We recommend that coaches consider athletes' menstrual cycles when designing training programs and match strategies to maintain optimal performance.

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