

Comparative Analysis of the Features of the Menstrual Cycle in Students Going into Sports and Physical Education at The University

ISSN: 2577-1914



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Abstract

The article presents research materials related to the study of the individual characteristics of the menstrual cycle in female students at the university, adolescence, involved in various sports and physical culture. It has been established that most of the student-athletes have different types of menstrual irregularities, often accompanied by somatic manifestations of premenstrual syndrome. The interrelation of the existing violations of the menstrual cycle with the start of practicing various sports was revealed. It is noted that female students, who are engaged only in physical culture, have a smaller number of menstrual irregularities, compared with female athletes of the same age.

Keywords: Female students; Adolescence; Menstrual cycle; Sport, Premenstrual syndrome, disorders

Abbreviations: WP: Width of the Pelvis; WS: Width of the Shoulders; SDI: Sexual Dimorphism Index, according to J Tanner; BMI: Body Mass Index; OMC: Ovarian Menstrual Cycle; CMS: Candidate Master of Sports; MS: Master of Sports; PMS: Premenstrual Syndrome; MB: Menstrual Bleeding

Introduction

Physical culture and sports are very popular types of physical activity among student youth. In addition to physical education at the university itself, many students attend sports sections and clubs, where they actively train and participate in competitions in many sports. Many of them started their sports activities in the prepubertal and pubertal period, even before their first menstruation, before their puberty [1-5]. The intensity of physical and psycho-emotional stress increases significantly among female students at a physical education university, who specialize in a particular sport, then among their peers who are not so actively involved in physical education and sports [3-9]. The intensity of studying at the university, combining studies and sports, individual nutritional characteristics of girls, the presence or absence of a few bad habits, the formation, maintenance and level of their reproductive health is a very relevant topic for studying medical, biological and psychological processes occurring in the body. this group of female students [3,4].

Aim of the Work

The purpose of our study is the issue of studying and comparative analysis, the features of the formation and course of the menstrual cycle in female athletes who are actively involved in sports and in their peers who are engaged only in physical education at the university.

Object, material and methods of research and organization of the study

To conduct the study, we used anthropometry methods (weight and length of the body, width of the pelvis and shoulders), the index method, with the determination of the Body Mass Index (BMI) and the Sexual Dimorphism Index (SDI), anonymous questionnaires to determine the characteristics of the Ovarian-Menstrual Cycle (OMC) in girls of both groups (author's questionnaire of Bugaevsky KA 2017-2018), the method of literary analysis, using available sources of information, the method of mathematical statistics. This study was conducted in 2021-2022, with the participation of 137 students from a number of faculties of the Petro

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Submission:  August 15, 2023

Published:  August 28, 2023

Volume 9 - Issue 5

How to cite this article: Bugaevsky KA*. Comparative Analysis of the Features of the Menstrual Cycle in Students Going into Sports and Physical Education at The University. Res Inves Sports Med. 9(5), RISM.000724. 2023.
DOI: [10.31031/RISM.2023.09.000724](https://doi.org/10.31031/RISM.2023.09.000724)

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Mohyla Black Sea National University, Nikolaev, Ukraine. Among them there were 70 female students engaged only in physical culture at the university and 67 female students of the faculty of physical education and sports. Student-athletes are engaged in such sports as: athletics (short and medium distance running, high and long jumps, team sports-volleyball, basketball, handball; martial arts-freestyle and classical wrestling, judo). The level of sportsmanship among female athletes is from the 1st sports category to the Candidate Master of Sports (CMS) and Master of Sports (MS). The frequency of sports (training)- from 3 to 5 times a week, from 2 to 3 hours per 1 workout. Physical education classes at the university for non-sportsman students-2 times a week, 1.5 hours for 1 lesson. All sportswomen were assigned to adolescence and selected by random sampling. The average age of female students-non-athletes was 19.23 ± 0.56 years, female students-athletes- 19.56 ± 1.02 years ($p \leq 0.05$).

Results of the Study and Discussion

After conducting a survey, processing the analysis of the results obtained, and an additional interview, it was revealed that female students-athletes have a greater number and variety of types and combinations of OMC disorders than their peers who do not go in for sports, but attend only physical education classes at the university. Data on the peculiarities of OMC and its disorders, obtained from female students-non-athletes ($n=70$), at $p \leq 0.05$, are

presented in Table 1. It should be noted that a rather high rate of female students, with normal, physiological values of their OMC-27.14% of the entire group of non-athletes. At the same time, among them there is the presence of female students, both with meager in terms of the volume of Menstrual Bleeding (MB)-less than 50ml for all days of MB, menstrual flow and short in duration (less than 3 days), manifestations of OMC, and long (more than 35 days), breaks between regular MB, periods of time, which corresponds to the clinical manifestations of hypo menstrual syndrome [3-8]. At the same time, in 11 (15.71%) female non-athletes, manifestations of PMS were detected, both somatic (also menorrhea) and psychological (irritability, poor sleep, aggression or depression, decreased performance and depression), manifestations of PMS. In their own 9 (12.86%) colleagues, female students-non-athletes, on the contrary, the phenomena of abundant (more than 150ml for all days of MB) menstrual flow, sometimes with clots, frequent (less than 21 days) and prolonged (more than 7 days) were revealed.), which was defined as a manifestation of hyper menstrual syndrome [10,11]. At the same time, in 14 (20.00%) female students-non-athletes, both somatic and psychological manifestations of PMS were detected. Speaking about the revealed violations of the OMC, its volume, duration, intervals and clinical manifestations of the existing violations of the OMC, in female students-athletes ($n=67$), one should refer to Table 2, with the indicators presented in it, at $p \leq 0.05$.

Table 1: Identified features of OMC in female students-non-athletes.

The Name of the Indicator of the Identified Values of the OMC	Number of Identified Changes in OMC
Normal values of OMC; number of OMC days in the group: 28.23 ± 1.14 days	19 (27,14%) female students
Hypo menstrual syndrome: MB 2.36 ± 0.65 days; MB volume 46.17 ± 1.19 ml; duration of MB $\leq 43.65 \pm 0.45$ days	11 (15,71%) female students
Hyper menstrual syndrome: MB 11.78 ± 1.17 days; MB volume $\leq 174.58 \pm 1.07$ ml; duration of MB $\leq 19.89 \pm 1.13$ days	9 (12,86%) female students
Secondary amenorrhea (absence of menstrual bleeding 60 to 120 days)	3 (4,29%) female students
Premenstrual syndrome (PMS) - its physical and psychological manifestations	28 (40,00%) female students
Combined OMC disorders	37 (52,86%) female students

Table 2: Identified features of OMC in female students-athletes.

The Name of the Indicator of the Identified Values of the OMC	Number of Identified Changes in OMC
Normal values of OMC; number of OMC days in the group: 28.23 ± 1.14 days	7 (10,45%) female students
Hyper menstrual syndrome: MB 11.78 ± 1.17 days; MB volume $\leq 174.58 \pm 1.07$ ml; duration of MB $\leq 19.89 \pm 1.13$ days	44 (65,67%) female students
Hyper menstrual syndrome: MB 11.78 ± 1.17 days; UA volume $\leq 174.58 \pm 1.07$ ml; duration of MB $\leq 19.89 \pm 1.13$ days	2 (2,99%) female students
Secondary amenorrhea (absence of MB 60 to 120 days)	14 (20,90%) female students
Premenstrual syndrome (PMS)-its physical and psychological manifestations	37 (55,22%) female students
Combined OMC disorders	57 (85,08%) female students

The analysis of the results obtained by student-athletes is strikingly different from their peers, female students-non-athletes. There are significantly fewer girls with preserved OMC-only 10.45% of female students. Four times more female students with clinical manifestations of hypo menstrual syndrome and more than

4 times more female students with symptoms of hyper menstrual syndrome. Also, 4 times more female students, with manifestations of secondary amenorrhea. Also, among student-athletes, a greater number of girls with psychological and physical manifestations of PMS were revealed, and one and a half times more students with

various, combined manifestations of OMC disorders [3,4]. An additional survey revealed that the existing violations of the OMC, non-athlete students, are associated with intense psycho-emotional stress in the process of studying at the university, existing violations in the diet and with existing endocrine, somatic and gynecological diseases. Female students-athletes associate their options for OMC disorders, first, with intense physical activity associated with their sports (training regimen and competitive schedule), and only then, with other factors related to their studies, life and health [10,11].

Conclusion

A. It has been established that the number and types of existing violations of the CMC in female students-athletes dominates the number of violations of the OMC, defined in female students engaged only in physical education at the university.

B. Established violations of the OMC in student-athletes require further, dynamic study in a larger group of female students, different courses.

C. Female students, both athletes and non-athletes, with existing ones, incl. and with combined disorders of the OMC, require active dispensary observation of both a sports doctor and an endocrinologist and gynecologist.

D. All female students who have various menstrual irregularities are strongly recommended to undergo an additional examination, and, if necessary, treatment by such specialist doctors as an endocrinologist, gynecologist and gynecologist-endocrinologist and proctologist, to eliminate the violations identified in them.

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