

Hypomenstrual Syndrome in Women Engaged in Athletic Sports

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Received date: December 04, 2024; Accepted date: December 12, 2024; Published date: December 23, 2024

Citation: Konstantin Anatolyevich Bugaev Sky, (2024), Hypomenstrual Syndrome in Women Engaged in Athletic Sports, *J. Women Health Care and Issues*, 7(8); DOI:10.31579/2642-9756/233

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Abstract

Based on the analysis and synthesis of literary sources, as well as the results of a pedagogical experiment, the article presents data on the manifestations of the hypo menstrual syndrome in athletes of different ages who are engaged in athletic sports. It was noted that a significant group of female athletes who took part in the study had clinical manifestations of oligo-opsomenorrhea and hypomenorrhea, often combined.

Method and materials of the study

To achieve the research objective, we used a set of scientific methods, including analysis of available scientific and scientific-methodical sources of information, determination of anatomical-anthropometric and morpho functional values in female athletes, interviewing. The experimental base of the research were sports sections in a number of regions of Ukraine, in which female athletes of youth age trained, engaged in weightlifting and powerlifting.

The study involved 22 female weightlifters and 24 female powerlifters. The average age in the weight lifters group was 21 ± 1.32 years, while in the powerlifters group it was 20.14 ± 0.87 years. All the athletes were of adolescent ($n=26$) and reproductive age ($n=20$). The duration of training in this sport was 3 to 5 years – 7 (30.44%), 5 to 8 years – 12 (52.17%), and more than 8 years – 4 (17.39%). 18 (78.26%) of the girls were students, and 5 (21.74%) were employed. 8 (34.78%) of the studied sportswomen started practicing these sports at the age of 11-15, 11 (47.83%) at the age of 15-18, and 4 (17.39%) after the age of 18. Sports qualification – 1st category – 9 (39.13%), candidates for master of sports (CMS) – 10 (43.48%), master of sports (MS) – 4 (17.39%). The intensity and frequency of training is 4-6 times a week, from 1.5 to 2.5 hours per 1 training. In conducting this study, we used such methods as literary-critical analysis of available sources of information on the issue under study, anthropometry, the index method, somatotyping, a questionnaire on the characteristics of the menstrual cycle in female athletes (author's questionnaire K.A. Bugaevsky, 2009, modification, 2018), the method of mathematical statistics. All young athletes who took part in this study gave their voluntary, both oral and written consent to participate in it.

Key words: female athletes; adolescence; I reproductive age; ovarian-menstrual cycle; athletic sports; hypo menstrual syndrome; sex somatotypes; adaptation

To The Medical Community Some Reflections

Questions concerning various aspects of the influence of physical and psycho-emotional loads on the female body, as well as its adaptive-adaptive reactions, are always relevant when conducting medical and biological studies of female athletes [1-8]. This also applies to the study of adaptation processes in athletes involved in weightlifting and powerlifting [1-8]. Therefore, any research work concerning the medical and biological characteristics of women's sports in ontogenesis, and especially in the traditionally male athletic-strength sports, are always relevant and in demand [1-8]. Weight lifting, intensity of strength loads, features of the training-competition period structure, its compatibility with cyclic changes in the female body, adaptation processes to these loads - this is not a complete list of questions that determines the problem of studying this issue [1-8]. Among the issues concerning changes in the body of women involved in

weightlifting and powerlifting, in our opinion, the issue of changes in such basic indicators of reproductive health as the menstrual cycle and, in particular, manifestations of hypo menstrual syndrome (HMS) is not fully covered. This is especially true for studies among athletes of adolescent and early reproductive ages. This was the reason for conducting our study, with an attempt to link the identified disorders in the reproductive system of athletes (primarily, menstrual cycle disorders) with intense physical and psychological stress present when practicing these sports.

Aim of the article

In this regard, the aim of our study is to present and analyze the results of the study, with identified changes in a number of indicators of the ovarian-

menstrual cycle of female athletes involved in such athletic sports as weightlifting and powerlifting.

Hypothesis of the article

During the preparation for this study, the author came up with a working hypothesis, the essence of which is as follows: in female athletes involved in athletic sports, in all age groups, as the duration, duration and intensity of the training and competition process and the increase in the severity of sports skills, as well as the intensity of physical and psycho-emotional loads, adaptively somatic changes occur in the form of inversions of their sexual somatotypes, from their physiological (gynomorphic) to transitional-adaptive - mesomorphic and, in some cases, to pathological-inverse - andromorphic sexual somatotype. These ongoing changes in sexual somatotypes gradually lead to changes and even disruptions in the functioning of a number of organs and systems of the female athletes' body, primarily in the endocrine and reproductive systems and in a number of others. The endocrine and reproductive systems, in the process of adaptive

restructuring, react to changes in the somatotype with gradual disturbances in their ovarian-menstrual cycle, towards hypomenorrhea, oligomenorrhea, proiomenorrhea, with the formation of persistent hypo menstrual syndrome and, in some cases, clinical manifestations of secondary amenorrhea.

Results of the study and discussion

As a result of the conducted research, we obtained the following data: when distributing female weightlifters (n=22) into somatotypes based on sexual dimorphism (J. Tanner classification), we obtained the following indicators: the average value of the sexual dimorphism index (SDI) in the group was 81.64 ± 1.07 ($p < 0.05$). This corresponds to the values of the mesomorphic somatotype (73.1–82.1) [4]. In the group of female athletes involved in powerlifting (n=24), the SDI value was 81.17 ± 0.06 ($p < 0.05$), which also corresponds to the values of the mesomorphic somatotype [4]. The distribution of sexual somatotypes according to J. Tanner in the studied groups of athletes is reflected in the table:

№	Name of the indicator	Andromorphic sexual somatotype	Mesomorphic sexual somatotype	Gynomorphic sexual somatotype
1.	Sportswomen (weightlifting) (n=22)	8 female sportsmens 36,36%	12 female sportsmens 54,55%	2 female sportsmens 9,09%
2.	Sportswomen (powerlifting) (n=24)	10 female sportsmens 41,67%	12 female sportsmens 50,00%	2 female sportsmens 8,33%

Table: Indicators of the values of the index of sexual dimorphism in groups (%)

When analyzing the results of the somatotyping, attention is drawn to the fact that in both groups, athletes with "non-female" sexual somatotypes - andromorphic and mesomorphic - predominate [4]. Thus, in the group of female weightlifters, the total number of athletes with "non-female" sexual somatotypes was 20 (90.91%), with only one athlete with a gynomorphic sexual somatotype. A similar picture is in the group of athletes involved in powerlifting - the total number of girls with andromorphic and mesomorphic sexual somatotypes is 22 (91.67%), with only two athletes with a gynomorphic somatotype. It was found that both of these girls have been involved in these sports for 3-3.5 years and the intensity of their physical activity is moderate. Considering the data concerning the characteristics of the ovarian-menstrual cycle (hereinafter referred to as OMC) and variants of its disorders, based on the data obtained as a result of the questionnaire and anamnesis collection, we were able to obtain the following information: in the group of weightlifters (n=22), the time of onset of menarche was 12.26 ± 0.63 years. This is slightly lower than the average rate of onset of menarche in girls in Ukraine, which is 12.52 ± 0.52 years ($p < 0.05$) [1, 3, 6]. Moreover, in 6 (27.27%) athletes menarche occurred at 11 years of age, in 8 (36.36%) – from 11 to 12 years of age, and in 8 (36.36%) – from 13 to 14 years of age, which also fits into the indicators that, on the one hand, are higher than the average norm, and on the other hand, correspond to the normative physiological values for menarche [1, 3, 6].

The duration of the menstrual cycle in the entire group was 18.14 ± 0.53 days ($p < 0.05$), which does not correspond to the generally accepted international norm of 21-35 days ($p < 0.05$) [1, 3, 6]. At the same time, 10 (45.46%) athletes do not have menstruation for periods of 60 to 120 days or more, which is regarded as secondary amenorrhea [1, 3, 6], and 12 (54.55%) have a "floating" number of days of menstrual bleeding (hereinafter MB) from 1 to 2, very rarely 3 days, with scanty, spotting discharge, which is typical of oligo-opsomenorrhea [1, 3, 6]. The duration of menstrual bleeding in the group was 2.21 ± 0.24 days, which also does not correspond to the physiological norm of 3 to 7 days [1, 3, 6, 8]. Also, all athletes have pain in the abdomen and lumbar region, headaches, discomfort and vegetative disorders during menstrual bleeding. In this group of athletes, there are manifestations of hypo menstrual syndrome and oligomenorrhea [1, 3, 6, 8].

As for the group of female athletes involved in powerlifting (n=24), the age of menarche in this group of girls was 12.13 ± 0.17 years. This is also lower than the average age of menarche in girls in Ukraine, which is 12.52 ± 0.52 years ($p < 0.05$) [1]. At the same time, menarche occurred at the age of 11 in

6 (25.00%) athletes, from 11 to 12 years in 14 (58.33%), and from 13 to 14 years in 4 (16.67%), which also fits into the indicators that, on the one hand, are lower than the average norm, and on the other hand, correspond to the normative physiological values for menarche [1, 3, 6, 8]. The duration of the menstrual cycle in the entire group was 18.14 ± 0.32 days ($p < 0.05$), which also does not correspond to the generally accepted international norm of 21-35 days ($p < 0.05$) [1, 3, 6]. Moreover, in this group, 11 (68.75%) athletes have an unstable menstrual cycle, from 1 to 3 days, scanty, and 5 (31.25%) have no menstrual bleeding for 60 to 120 days or more. In this group, 13 (81.25%) have premenstrual syndrome (PMS). The duration of menstrual bleeding (MB) in the group was 2.23 ± 0.14 days ($p < 0.05$), which also does not correspond to the physiological norm of 3 to 7 days [1, 3, 6, 8]. In this group of athletes, as in female weightlifters, hypo menstrual syndrome phenomena have been reliably recorded, with oligo-opsomenorrhea and algodismenorrhea [1, 3, 6, 8].

All the athletes in both groups, although they associate the deterioration of their reproductive health with intense physical activity, nevertheless consider the frequency of training, the total volume and intensity of physical activity acceptable for them and do not want to reduce the level of intensity of the training process, considering the practice of these sports to be a higher priority than disruptions to their menstrual cycle.

Conclusions

1. In both study groups, 12 (54.55%) female weightlifters and 22 (91.87%) female powerlifters were found to have various, often combined, menstrual cycle disorders, mainly in the form of hypo menstrual syndrome.
2. The numerous, combined disorders of a number of reproductive indicators revealed as a result of the study give grounds to assert that they are directly related to intense physical and psycho-emotional stress.
3. The analysis of the obtained results of the study fully confirms the hypothesis of the author of this article, at the beginning of this study.

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DOI:10.31579/2642-9756/233

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