

Studying the Influence of the Relationship of the Menarche's Debut and the time of Starting Sports

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Received date: November 09, 2023; **Accepted date:** November 16, 2023; **Published date:** November 28, 2023

Citation: Bugaevsky KA, (2023), Studying the Influence of the Relationship of the Menarche's Debut and the time of Starting Sports, *Dermatology and Dermatitis*, 9(1); DOI:10.31579/2578-8949/140

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Abstract

The article presents data on the study of the timing of the first menarche in 143 athletes of puberty age - representatives of various sports (artistic gymnastics - 15 athletes, rhythmic gymnastics - 14, volleyball - 19, basketball - 17, cycling - 13, rowing and canoe - 12, freestyle wrestling - 15, taekwondo - 14, boxing - 13, athletics (middle distance running) - 11 people) in comparison with the general population age and sex group of 145 people.

The relationship between the timing of the formation of the ovarian-menstrual cycle in female athletes and the time of starting sports was established. The dynamics of the formation of the ovarian-menstrual cycle has been determined. It was revealed that in each of the groups presented, the female athletes had an extended period for the debut of menarche and the onset of the establishment of the ovarian-menstrual cycle. The most influencing on violations of the debut of menarche and the formation of ovarian-menstrual cycle among athletes are such sports as artistic and rhythmic gymnastics, rowing and canoeing.

The time of the beginning of sports activities and the time of the onset of menarche in the aggregate are an etiological factor that causes disturbances in the dynamics of the formation of the ovarian-menstrual cycle and a malfunction in the reproductive system of athletes in general and is the result of the body's adaptation to the physical and psychological stresses corresponding to these sports.

Keywords: menarche; ovarian-menstrual cycle; female athletes

Introduction

In the modern world of women's sports, research concerning the medical and biological problems of athletes of different age periods is very relevant. The demand for such research is due to many years of discussion between specialists from different countries regarding the influence of intense physical activity on the female body and in particular on the function of the female reproductive system - both on the ovarian-menstrual cycle, which is a marker of the functioning of this system, and on the fertility of female athletes in the future, if they have a desire to have children, both during their sports career and after its completion [1-8].

Researchers disagree on what, first of all, is the cause of the detected disorders of the ovarian-menstrual cycle (OMC) and fertility in female athletes, putting forward their own assumptions and arguments. Some authors believe that these disorders are influenced by the selective selection of young athletes into one sport or another, with the selection of girls with an initial masculine somatotype and certain physical qualities [6, 7].

The second researchers believe that the cause of inversions of sexual somatotypes and the totality of detected disorders in the reproductive and endocrine systems are significant and sometimes inadequately intense physical and psychological stress imposed by the coaching team in order for the athlete to obtain the desired result [1, 8].

According to others, the reason for future pathological changes in OMC and fertility lies in the fact that young athletes begin their intensive training in one or another sport at a very early age, before the appearance of their first menstruation (menarche, hereinafter Me) [2, 3, 6]. And finally, there is a fairly large group of specialists in the field of sports medicine, studying the characteristics of medical and biological problems in women, who believe that the identified disorders in female athletes are caused by the combination of all of the above etiological factors, as a result of adaptive changes in the bodies of female athletes of all ages

groups. This is especially true for those young athletes who began their training in one or another sport before their Me debut [2, 3, 6].

Aim of study

In connection with all of the above, the purpose of our study was to track the relationship between Me delay, the dynamics of the establishment of OMC and its process in pubertal female athletes involved in different sports.

Material and methods

For comparison, we selected a control group of girls of the same age from the population of their peers who do not go in for sports, numbering 145 people. The average age of the athletes in all study groups was 15.36 ± 1.12 years, and in the control group – 15.27 ± 0.83 years. The average frequency of sports activities for all study groups was from 5 to 6 times a week, 1.5–2.5 hours per session. This study was carried out with the mandatory consent of the athletes' parents, coaching teams and with the voluntary consent of the female athletes themselves. To conduct the research, we used the author's questionnaire (Bugaevsky K.A., 2018©), the method of

extended interviewing, the method of literary analysis of available sources of information on the issue under study, and the method of mathematical statistics.

All female athletes of the study groups gave their voluntary, written consent to participate in the study. The following sports were represented: artistic gymnastics - 15 athletes, rhythmic gymnastics - 14, volleyball - 19, basketball - 17, cycling - 13, kayaking and canoeing - 12, freestyle wrestling - 15, taekwondo - 14, boxing - 13, light athletics (middle distance running) - 11 female athletes, total - 143 female athletes. A mandatory condition for the selection of female athletes into the study groups was the time they started playing sports - before the onset of Me.

Results and discussion

After receiving completed questionnaires and conducting additional (if necessary) interviews, studying and analyzing the results obtained, we obtained data on the debut of Me and the timing of the formation of OMC, which we presented in the table, at $p < 0.05$:

Indicator name	Time of debut Me (years)	Time frame for establishing CMC (years)
Artistic gymnastics (n=15)	14,56±1,03	1,78±0,83
Rhythmic gymnastics (n=15)	14,86±1,11	1,84±0,79
Volleyball (n=15)	13,57±0,11	1,63±0,64
Basketball (n=17)	14,12±0,33	1,59±0,84
Cycling (n=13)	13,73±0,56	1,53±0,29
Kayaking and canoeing (n=12)	14,79±0,41	1,89±0,69
Freestyle wrestling (n=15)	13,54±0,63	1,49±0,39
Taewondo (n=14)	13,78±0,23	1,64±0,32
Women's boxing (n=13)	14,21±0,32	1,61±0,66
Light Athletics (middle distance running) (n=11)	14,22±0,23	1,84±0,29
Total female athletes (n=143)	14,65±0,73	2,40±0,47
Control group of girls (n=145)	12, 24±0,64	1,37±0,86

Table: Comparison of the debut of Me in the study and control groups

As follows from the analysis of the obtained results of the debut of Me and the time of formation of OMC in athletes involved in artistic and rhythmic gymnastics, kayaking and canoeing, the period of debut of Me is noticeably prolonged compared to girls from the population. In other groups of female athletes, the onset of Me, although it fluctuates within the conventionally acceptable limits of this age group, is at the level of the upper limits of the age group.

Also, in all study groups, the timing of the establishment of OMC after the onset of menarche in girls is significantly longer than the acceptable physiological norm of 1–1.5 years in the population [2-4, 5, 7], as well as compared with the indicators in the control group. The greatest delay in establishing (stabilizing) the timing of OMC was found among young athletes in artistic and rhythmic gymnastics, kayaking and canoeing, athletics (middle-distance running), volleyball, basketball and boxing. The closest values for the debut of Me and the establishment of OMC were recorded among athletes involved in such types of martial arts as freestyle wrestling and taekwondo and, partly, in cycling.

Conclusions

1. Based on the results of the study, it can be argued that there is a relationship between the time of the start of sports and the debut of menarche.
2. For all athletes, in each of the presented groups, the timing of the debut of Me and the onset of the establishment of OMC is extended.

3. In our study, sports such as artistic and rhythmic gymnastics, kayaking and canoeing turned out to have the most influence on disturbances in the debut of Me and the formation of OMC.
4. Taking into account the intensity, volume and duration of sports activities, as well as, in conjunction with the established relationship between the start of sports activities and the timing of menarche, it can be argued that this dependence is one of the important etiological factors in the onset of disorders of the general mental health, in particular, a malfunction in the reproductive system of female athletes as a whole, and is the result of the body's adaptation to the physical and psychological stress corresponding to these sports.

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DOI:10.31579/2578-8949/140

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