



The influence of the ovarian-menstrual cycle phases on the psychological functioning of female athletes

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Postgraduate student **M. Shan**¹

M.S. Kozhedub¹

Dr. Hab., Professor **E.P. Vrublevskiy**^{1, 2}

¹Francysk Skaryna Gomel State University, Gomel, Belarus

²Smolensk State University of Sports, Smolensk

Corresponding author: vru-evg@yandex.ru

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Abstract

Objective of the study is to identify the dynamics of subjective assessment of the psychofunctional state of female athletes of various specialisations throughout the ovarian-menstrual cycle.

Methods and structure of the study. The WAM questionnaire (well-being, activity, mood) was used to record changes in the psychofunctional state of the athletes examined. To determine the psychofunctional state of the athletes examined at different phases of the ovarian-menstrual cycle (OMC), the questionnaire test for differential self-assessment of the functional state WAM (well-being, activity, mood), which allows for a rapid assessment of a person's condition during periods of mental and physical stress [2]. An assessment of situational (reactive) anxiety [5] was also carried out as a condition characterised by subjectively experienced emotions: tension, restlessness, concern, nervousness, etc. The experiment involved female athletes aged 15-17 who specialise in sprinting and ice hockey.

Results and conclusions. The article presents the dynamics of subjective assessment of the psychofunctional state throughout the ovarian-menstrual cycle (OMC) in female athletes. It is shown that the psychofunctional state of female athletes changes in accordance with the phases of their individual specific biological cycle, and taking this into account when designing a training programme can increase its effectiveness without excessively increasing the volume and intensity of the training activities used.

Keywords: *ice hockey, sprinting, ovarian-menstrual cycle, psychofunctional state, well-being, activity, mood.*

Introduction. Specialists in the field of sports training theory have accumulated considerable theoretical and experimental experience in solving the problem of training women in various sports [1, 3, 7, 8]. However, some aspects of the theoretical justification for the structure and content of micro- and mesocycles in the training process for female athletes require a more careful approach. The latter is related to the need to coordinate the individual manifestations of performance and motor qualities, as well as the mental and functional state of the female athlete's body with the cyclical nature of her reproductive system.

A number of researchers note that excessive training effects are fraught with overtraining in women to a much greater extent than in men [3, 7, 8]. This fact

objectifies the need to prevent overtraining by standardising loads that are adequate for the operational state of the female body, and the knowledge and use in practical activities of coaches of information about the peculiarities of biorhythmological patterns of the functioning of the body of a particular athlete is of significant importance not only for improving her athletic performance, but also for maintaining her health.

Objective of the study is to identify the dynamics of subjective assessment of the psychofunctional state of female athletes of various specialisations throughout the ovarian-menstrual cycle.

Methods and structure of the study. To determine the psychofunctional state of the athletes examined in different phases of the OMC, a test question-



nnaire for differential self-assessment of the functional state of WAM (well-being, activity, mood) was used. It is generally accepted that these three categories provide a sufficiently objective characterisation of the functional state of the human body [2]. This method is widely used to assess the mental state and emotional response to stress of athletes of different genders and specialisations, as well as to identify their individual characteristics. Scores of 5.0 and above indicate a high functional state of the individual, 3.0-5.0 indicate an average state, and 3.0 and below indicate a low state [4].

Situational (reactive) anxiety, as a state characterised by subjectively experienced emotions (tension, restlessness, concern, nervousness, etc.), was assessed using the test developed by C.D. Spielberger and Y.L. Khanin [5]. When interpreting the indicators, the following approximate anxiety ratings can be used: 30 points or less – low, 31-44 points – moderate, and 45 points or more – high [4, 5].

The experiment involved female athletes aged 15-17 who specialised in sprinting and ice hockey.

Results of the study and discussion. When characterising the factors that increase the effectiveness of sports activities, the importance of the psychological aspect is noted [5, 6]. At the same time, knowledge of emotional states, taking into account the biological patterns of the female body, allows for a scientifically based individual approach to the training process of female athletes.

Of particular interest and importance is the definition of anxiety as a reactive state of a person that arises as an emotional response to a stressful situation. It can vary in intensity and dynamics, be accompanied by activation of the autonomic nervous system, and in athletes indicate mental strain and overtraining [5]. Analysis of test results based on the use of the Spiel-

berger-Hanina Anxiety Scale Hanina shows (Table 1) that the level of situational anxiety is highest in the V (premenstrual) phase and statistically significantly ($p < 0.05$) differs from the indicators in the II and IV phases. This state, which is clearly perceived and assessed by athletes as a distinct feeling of anxiety, restlessness and fear, is most pronounced in this phase.

In phase I (menstrual), the mental state is characterised by feelings of dissatisfaction, fatigue, some emotional depression or tension. In general, this is confirmed by studies of female hockey players using the WAM method (Table 2), in which the psychofunctional colouring in the menstrual phase is negative in nature, with a predominance of negative moments.

In the postmenstrual phase, the picture changes significantly, and the athletes subjectively rated their well-being and mood as the best. For most of them, their emotional state is characterised by a feeling of satisfaction, optimism, and a desire for activity.

During the ovulatory phase, the changes are not as pronounced. In this phase, it is difficult to determine the predominant direction of emotional reactions. Here, female athletes may experience diametrically opposed psychofunctional states, depending on many external and internal factors [7]. Thus, in this phase, there is a simultaneous manifestation of fairly high activity and a desire for action on the one hand, and dissatisfaction, fairly high emotional tension and anxiety on the other. In the process of interaction, this state manifests itself in the initiation of conflicts, mood swings and poor health.

The post-ovulatory phase is very similar to the postmenstrual phase in terms of the characteristics of the athletes' psychofunctional state. Their state in this phase is characterised by a positive emotional background, some euphoria, a desire for new events and impressions, and an increase in mood and activity.

Table 1. Indicators of situational anxiety in short-distance runners ($n=18$) at different phases of the OMC ($\pm S$)

Points		OMC phase	Significance of differences – t-test Student's				
\bar{X}	S		OMC phase				
			I	II	III	IV	V
44,2	5,7	I	X				
28,9	4,4	II	2,24*	X			
38,8	7,2	III	1,39	2,17*	X		
30,2	3,1	IV	2,19*	0,13	1,96	X	
46,3	4,6	V	0,36	2,39*	1,83	2,29*	X

Notes: 1) * – differences are statistically significant ($p < 0.05$); 2) OMC phases: I – menstrual; II – postmenstrual; III – ovulatory; IV – post-ovulatory; V – premenstrual.



Table 2. Indicators of the emotional state of female hockey players ($n=23$) according to the SAN questionnaire at different phases of the OMC (points, $\pm S$)

Indicators	OMC phases				
	I	II	III	IV	V
Well-being	2,91 \pm 0,14	5,38 \pm 0,24*	4,77 \pm 0,31	5,26 \pm 0,39	3,16 \pm 0,35*
Activity	2,82 \pm 0,32	5,31 \pm 0,18*	5,01 \pm 0,21	5,36 \pm 0,58	2,92 \pm 0,42*
Mood	3,14 \pm 0,29	5,96 \pm 0,42*	4,83 \pm 0,52	5,88 \pm 0,26*	2,87 \pm 0,53*

Notes: 1) * – differences are statistically significant between adjacent phases ($p<0.05$); 2) OMC phases: I – menstrual; II – postmenstrual; III – ovulatory; IV – postovulatory; V – premenstrual.

Based on the analysis of the data obtained, it can be concluded that the most pronounced changes in the psychofunctional state of athletes, manifested in an increase in their anxiety level, a decrease in activity and well-being, and a deterioration in mood, are observed in the premenstrual and menstrual phases of the OMC, the composition of sports training in which requires special attention.

Thus, the coach is faced with the task of constantly adjusting the training loads of a particular athlete in terms of focus and volume, guided by the individual characteristics of her performance and psychofunctional state in different phases of the body's biorhythms.

Conclusions. The data from the study indicate that there are variations in the psychofunctional status of female athletes throughout the OMC. In turn, synchronising the training structure and the phases of the athletes' ovarian-menstrual cycle will not only make it possible to increase their level of preparedness without increasing the volume and intensity of the training loads applied, but will also, to a large extent, allow them to maintain their psycho-emotional state and reproductive health.

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