PHYSIOLOGICAL REACTIONS OF GIRLS WITH DIFFERENT MOTION ACTIVITY FOR LOCAL COLD STRESS DURING OMC (OVARIAN MENSTRUAL CYCLE)

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The problem of productive life of a human being in the regions of high latitudes is always in the sphere of interest of scientific researches and practical studies.

The interest for studying of low temperatures influence on European North population health is quite feasible, as the northen regions which are rich of natural resources cut a swath that leads to its bigger invasion. The process of urbaniztion of the north brought up a question of climatic conditions influence of certain region on the organism of human being. [2].

Specific climatic conditions, dynamics of day length, heliogeomagnetic bonds, macro- and microelement ground and water content, cyclonic rhythm and other peculiarities cause alternations of physiological processes in the human organism. Initially a man in the north experiences the force of low temperatures, and that in combination with other unfavourable factors exerts a big stress on all the functional systems of the organism. [1, 4].

Unfavourable dynamic shears of disease incidence, incapacitation and mortality of population in Arkhangelsk and its region under the influence of complex of extreme climaticgeogeographic, social and ecological factors. This applies especially to the blood circulatory system. The researches on cold influence on cardiovascular system in particular and in general would be enable to prognosticate the pathologies development and to deal with its origin more effectively [3, 5, 6,].

The health of woman's organism is accompanied with prominent stains which will not extend to the course adaptation process.

The purpose of research is the studying of response peculiarities of arterial tension to the local arm exposure to cold of young women living in the north to determine the peculiarities due to the OMC phase and due to the level of motion activity.

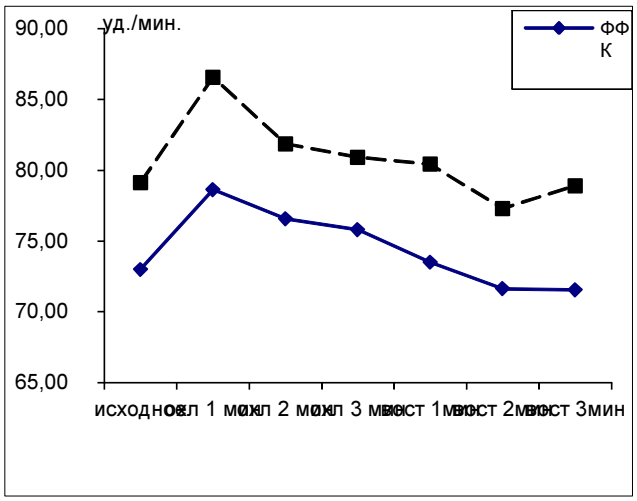
With reference of stated objectives the flowing **tasks** were performed:

1. To give the comparative characteristics of alternations of arterial tension parameters during local cold exposure at young women of faculty of physical education and students of faculties of Humanities.
2. To determine differences vascular component of thermoregulatory reactions at trial subjects with different motion activity during favourable and unfavourable OMC phases.
3. To study the alternations peculiarities of systolic and diastolic blood pressure during cold exposure at trial objects at each of 5 OMC phases.

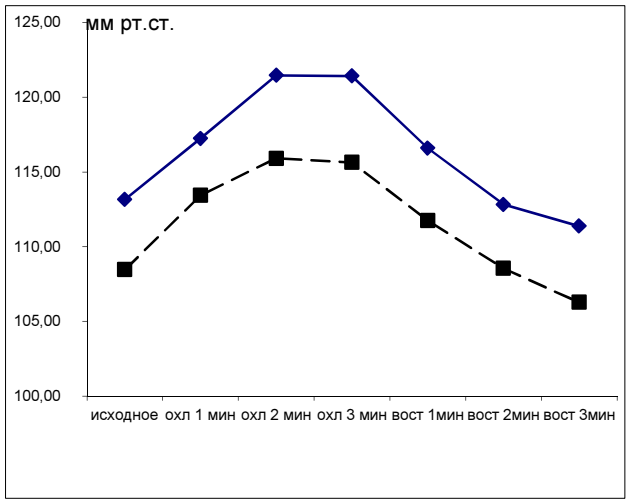
For experiment the young women from faculty of physical education and from faculties of Humanities with the least motion activity level aged 19-20 years were invited who were born in Arkhangelsk or in the Arkhangelsk region.

The experiement was carried out during the first half of the day excluding preceding exercise stress. The alternations of body weight and lenght were measured. Motionless and at room temperature (22 ^{o}C) and while sitting the pulse was registered palpatory, the arterial tension was measured according to the Korotkov method, and afterwards the local exposure to cold was carried out which concluded in putting the arm into cold water (t – +3^{0}C) fro 3 minutes and in the end of each minute the arterial tension and pulse rate were measured again.

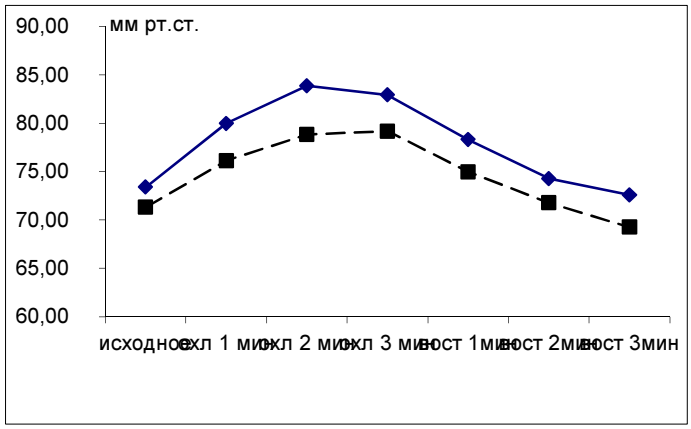
As it is known sufficient motion activity and physical trainings contribute to higher effectiveness and economy of vital organism processes. It is confirmed by our researches. If estimated, the alternation of heart and vessels functionning during local exposure to cold at young women with different rate of motion activity, the advantage of students of physical education faculty is outstanding (pic. 1).



A



B



C

Pic 1. Dynamics of cardiac rate (A), systolic (B) and diastolic (C) arterial tension during local c exposure to cold.

It is clear the presented above charts that as motionless as during local exposure to cold the cardiovascular system of physical education faculty students works more sufficient as their vascular system provides more necessary blood supply level, and less myocardium work. This can explain lower cardiac rate and higher systolic and diastolic blood pressure motionless and sitting, and during exposure to cold. However as it was mentioned above, the cyclic alternations take place into women's organism connected with OMC and influencing not only their exercise performance but adaptation processes, too.

The alternations of studied parameters at young women of faculty of physical education and other faculties during favourable and unfavourable OMC phases cardiac rate and systolic and diastolic arterial pressure differences appear due to menstrual cycle phase. These differences are not only in initial state, they manifest in responses of cardiovascular system to the local exposure to cold. Ultimately this is the degree of manifestation of parameter alternations of arterial tension and pulse to local cooling of an arm.

We also attempted to realize a detailed study of key figures of heart and vessels activity, namely, an estimation of their alternations in every 5^{th} OMC phase. First of all we interested in the problem how studied parameters due to OMC phase and rate of motion activity in critical period of exposure to cold.

Analyzing the data in scientific research we took consideration to next issues. The young women from physical education faculty motionless have clearly seen regularity: cardiac rate, systolic and diastolic arterial tension motionless have the same value of 1 and 3 phases (lower) and of 2 and 4 phases (higher). In the 5^{th} phase (premenstrual phase) when estrogen content is efficiently low and progesterone content is high, thyroids are the lowest. We suppose that of all the unfavourable phases the 5^{th} phase is the most impropriate phase for endurance training.

When the arm is exposed to cold, also at the first minute of recovery this correlation of SAT and DAT is still kept, i.e. the highest parameters in the 2^{nd} and 4^{th} phases, and the cardiac rate loses its regularity.

The young women from faculties of Humanities failed to determine the same correlation regularity of CR, SAT, DAT during 1^{st}, 3^{rd}, 5^{th} and 2^{nd} , 4^{th} OMC phases. Therefore, the highest cardiac rate has been found in the 1^{st} OMC phase, and the lowest during the 2^{nd} one. 3^{rd}, 4^{th}, 5^{th} phases are characterized with nearly equal pulse frequency ($P>0,05$). Systolic and diastolic arterial tension is at the same level in the 1^{st} and 5^{th} phases (lower) and in the 2^{nd} and 4^{th} is higher.

Nevertheless while arm exposure to cold the level of SAT and DAT is the highest in the 2^{nd} and 4^{th} phases ($P<0,05$). But the cardiac rate increases in the 1^{st} OMC phase and becomes truly higher than all the other phases ($P<0,05$).

During the period of recovery the cardiac rate decreases mainly in the 2nd and 4th phases, and systolic and diastolic arterial pressure in the 1st and 5th.

References

1. Avtsin A.P., Marchev A.G. Adaptation and disadaptation presentation of the extreme North citizens// Human physiology, 1975, N 4. p. 587-600.
2. Agadjanyan N.A. Organism adaptation and reserves, Moscow, Physical education and sports, 1983, p. 176.
3. Bannikova R.B. Diseases dynamics of population in the northern region of climatic geographical and ecological extremness// Human Ecology, 1994, N1, p. 138-142.
4. Danishevskyi G.M. Labour and healthy in the extreme North, Moscow, 1970, p. 219.
5. Kaznacheev V.P. Modern reviews of adaptation, Novossibirsk, Science 1980, p. 192.
6. Koryakina L.A., Systems and persistence for exposure to cold// Mechanisms of natural hyperbolic condidtions, USSR Puschino, 1991, p. 120-126.