Materials of Conferences

BASIC HEMODYNAMIC PARAMETERS IN HIGHLY SKILLED ACROBATS

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It has been established that interpretation of various physiological mechanisms of organism adaptation among acrobatic athletes requires information on condition of functional systems [1, 2].

Cardiorespiratory system, being the most important component in provision for organism adaptation, can also limit level of development in adaptation reactions and is an indicator of integrated adaptive processes [3, 4].

The objective of this research is to define basic hemodynamic indicators among high-qualified acrobats.

Male acrobatic pairs took part in the research. Considering their qualification they have been divided into two groups. The first group included ($n = 22$) high-qualified sportsmen (masters of sport and masters of sports of international degree – active members of national teams of Russia and Krasnodar region); the second group ($n = 28$) included sportsmen of average qualification (1st degree and candidates for master of sports). Age of the studied sportsmen varied from 17 to 21 years. Observation took place during training classes at the base of State Budget Institution of Krasnodar region "Center of sports training of G.K. Kazadjiyev" and Municipal Budget Educational Institution of additional education for children Children-Youth sports school № 1 of the city of Krasnodar.

The sportsmen participated in the research on their free will, written informational confirmation was received.

Considering possibility of differences in physiological gifts and in dependence on program content of acrobatic exercise, the whole observed contingent of research was divided into "higher" sportsmen, whose basic activity consisted of balance and volt elements, and "lower" ones, who perform supports, balance, throws and catches of partners. All of the tested parameters were registered on off-training days.

The following indications were defined: heart contraction rate (HCR) if idle (evaluated with automatic apparatus 'Omron" (Japan); arterial pressure (AP) according to the method of Korotkov; systolic pressure (SAP) was defined at the moment of the first tone emergence, and diastolic pressure (DAP) – at the moment of tones disappearance); index of pulse pressure (IPP) – defined via calculation method – exclusion DAP from SAP).

We should outline that no differences were revealed between acrobats of "higher" and "lower" groups during the comparative analysis according to basic hemodynamic indexes.

As the received data shows, heart rate ($65,1 \pm 1,8$) was reliably higher among sportsmen of the first group ($65,1 \pm 1,8$; $p < 0,05$) in comparison to the observed of the second group, and it supports the fact of economization of chronotropic function of heart. Decrease in heart rate is also defined by increase in parasympathetic impacts upon function of heart automatism due to systematic sports training.

No reliable difference in systolic AP between the observed sportsmen of groups 1 and 2 was discovered in process of studying arterial pressure level. However, indexes of diastolic AP among the qualified acrobats (group 2) was reliably higher that the same index among the studied sportsmen of group 1, and this fact reflects increase in blood vessel tone. Increase in diastolic pressure testifies for disturbance in adaptation of blood flow apparatus to strain and can be referred to the signs of overtraining.

Thus the presented research provide for understanding of sport effect upon certain indexes of cardiovascular system among high-qualified acrobats.

References

1. Gronenborn A.M. Protein acrobatics in pairs – dimerization via domain swapping // Current Opinion in Structural Biology. – 2009. – P. 39–49.

2. Purnell M. Acrobatic gymnastics injury: Occurrence, site and training risk factors / M. Purnell, D. Shirley, L. Nicholson, R. Adams // Physical Therapy in Sport. – 2010. – P. 40–46.

3. Baranova E.A. Influence of muscular work upon parameters of breathing and hemodynamic of lower limbs among sportsmen and untrained people / E.A. Baranova, L.V. Kapilevich // Messenger of Tomsk state university – 2012. – № 364. – P. 140–142.

4. Vanyushin Y.S. Cardiorespiratory system as indicator of functional condition of sportsmen / Y.S. Vanyushin, R.R. Highrulin // Theory and practice of physical education. – 2015. – № 7. – P. 11–14.

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