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P20 CHANGES IN VOLUMETRIC VARIABILITY OF SPONTANEOUS RESPIRATION UNDER THE INFLUENCE OF TRAINING LOAD

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Introduction and Purpose: The equivalent of the body's needs in different states is the minute volume respiration (MVR), which is calculated as the product of respiratory rate and tidal volume. To assess the state of the respiratory system, we proposed to use indicators of volumetric variability of respiration (VVR), which are associate with the MVR and there are derivatives of the volumetric inspiratory and expiratory velocities. They also take into account the rhythmic and frequency characteristics of respiration.
The purpose of this study was to analyze changes in VVR indicators under the influence of the training load of highly qualified athletes.

Material and Methods: 202 highly qualified athletes were examined in the pre-competition training period. Measurements were performed before, after and the next morning after training. A spiroarteriocardiorhythmograph was used, which simultaneously records the ECG, pulse wave and airflows on inhalation and exhalation. According to the measurement of air flows, VVR indicators were calculated in the ranges similar to heart rate variability - the total power (TP_R (l/min)^2), the very low frequency range power (VLF_R (l/min)^2), the low frequency range power (LF_R (l/min)^2), the high-frequency range power (HF_R (l/min)^2).

Results: It was found that after training there was a significant increase in TP_R from 283.9 (176.9; 515.3) to 384.2 (222.0; 595.4), $p < 0.05$, VLF_R from 2.0 (1.2; 3.6) to 2.6 (1.6; 5.3), $p < 0.01$, HF_R from 223.5 (122.1; 374.5) to 289.0 (147.7; 504.0), $p < 0.05$. The next morning after training, these indicators returned to baseline: TP_R to 278.9 (179.6; 445.2), $p > 0.05$, VLF_R to 2.3 (1.4; 4.0), $p > 0.05$ and HF_R to 204.5 (116.6; 346.0), $p > 0.05$.

Conclusion: The dynamics of changes in VVR indicators shows their informativeness about the impact of training loads. The results obtained may be significant in the further processing of data in combination with other parameters.