ECG phenomena during professional work underwater

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The two diver groups participated in current study in which the first group included 12 beginners, aged 18.8±1.7 yr and the second group included 11 professional divers aged 28.6±3.9 yr, which had 300 and more hours of underwater work in polar region. The study was carried out in Murmansk region, in April to May and August to September. The temperature range of water is 0 to +5 °C in KolaBay during these periods. Long-term monitoring of Electrocardiogram (ECG) was performed using a complex Valenta (Russia, St. Petersburg). ECG was recorded for each person in rest, orthostatic test, and during underwater work between 2 to 5 m depth. The diving equipments were used (dry diving suit and rebreather). The professional divers had respiratory arrhythmia in rest, i.e., RR was 1200 – 1500 mc, heart rate was 40 – 50 bpm on the expiration, and RR was 700 – 800 mc, heart rate was 75 – 85 bpm on inspiration. During underwater swimming with flippers, professional divers had rigid ECG (40 – 50 bpm) in significant reduction in the variance of RR, and heart rate was 150 – 170 bpm. In this process, underwater work professional divers had significant increase on amplitude of R wave and shortening of QRS complex. The beginners had latent respiratory arrhythmia in rest, tachycardia in diving and during underwater work. It was observed that it is important to control organism tolerance with high frequency cardiac rhythms during underwater work which were emphasized. The presence of respiratory arrhythmia following diaphragm breathing in rest, and bradycardia which is typical for marine mammals in induced apnea are taken into account.

Biography
V B Voynov has completed his PhD from Rostov State University (Russia) in the year 1992 and Dr. Sci. Biol. in the year 2011 from Astrakhan University. He is an Associate Professor and Leading Researcher at the Department of Physiology, Institute of Arid Zones of the Southern Scientific Center, Russian Academy of Sciences. He has published more than 180 papers in reputed journals.

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