EFFECT OF ALACTIC AND LACTIC TRAINING ON BRAIN DC POTENTIAL IN RECREATIONAL RUNNERS

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Introduction

The brain direct current potential (DC) is regarded in physiology and medicine as an integrated system marker for the assessment of the body's functional state, stress resistance, and adaptation capacity [1]. Researchers emphasize that the DC is highly sensitive to short-term and long-term adaptational changes in the body in response to external factors [2]. This research aims to study the specificity of DC changes with different training types in recreational runners.

Methods

Subjects: 27 healthy male recreational runners, 35 y.o., 178 cm high, and weighing 75 kg on the average. In series 1, athletes performed "alactic training" (ALT) on a treadmill: 60 min; 30 sessions 10 s each; 50 s of rest between sessions; a speed of 90% of VO2max; lactate not exceeding the anaerobic threshold (AT). In series 2, athletes performed "lactic training" (LT) at field: 4 sessions 300 m each; the maximum speed; 5 min of rest between sessions; lactate above AT.

The DC was recorded using method [1], with the Omegawave V.4 system (Omegawave, Finland). The DC was measured at rest before a load, 15 min after training, and on the next 2 days. The lactate concentration was measured using a Biosen S-line Lab (EKF, Germany). For ALT, the subjects used an H/P Cosmos Ergometer (Sportgerate, Germany).

Results

After research, all subjects were divided into 2 subgroups, depending on the initial level of DC: 1) reduced DC (below 9 mV); 2) normal DC (9 to 35 mV). Before ALT, the average "reduced" group DC was -2.3 mV (n=19). After training, the DC increased by 6 mV (p<0.05), becoming 3.7 mV. The DC did not change during the next 2 days. In the "normal" group (n=8), a bidirectional trend of DC changes was observed after training: reducing in 5 athletes and increasing in 3 athletes. Before LT, the average "reduced" group DC (n=20) was -1.5 mV. After training, the DC increased by 6.1 mV (p<0.005), becoming 4.6 mV. In the "normal" group (n=6), the DC, which was 16.8 mV before training, decreased by 12.4 mV after training, becoming 4.4 mV (p<0.05). Thus, both training load models change the DC in recreational runners. The amount of changes depends on the initial DC before training.

Discussion

It is possible that the body response to training loads is associated with the initial CNS activation level. The role of the "slow regulatory system of the brain" in short-term adaptation changes after physical loads is discussed [1].

References
