

Changes in the acid-base balance and lactate concentration in the blood in amateur ultramarathon runners during a 100-km run.

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The aim of this study was to analyse the acid-base balance and partial pressure of blood gases of participants during a 100-km run. Fourteen experienced amateur ultramarathon runners (age: 43.36 ± 11.83 years; height: 175.29 ± 6.98 cm; weight: 72.12 ± 7.36 kg) completed the 100-km run. Blood samples were taken before the run; after 25, 50, 75, and 100 km; and 12 and 24 hours after the run. There were significant differences ($p < 0.05$) between the mean values registered for acid-alkaline balance, buffering alkalies, and current bicarbonate in each segment of the run, especially during the third, fourth, and fifth segments of the run (i.e., between 50 and 100 km), and there were only significant differences associated with buffering alkalies and current bicarbonate during the recovery. However, all the changes were within the physiological norm. A significant decrease in the compressibility of oxygen was observed after 100 km (from 92.80 ± 15.67 to 88.36 ± 13.71 mmHg) and continued during the recovery to 75.06 ± 8.60 mmHg 12 h after the run. Also there was a decrease in saturation to a mean value of 93.78 ± 3.10 at 12 h after the run. Generally the amateurs runners are able to adjust their running speed so as not to provoke a significant acid-base imbalance or lactate acid accumulation