

The connection between the dynamics of urinary ions and endurance exercise

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Abstract

Background. Physical exercise imposes ever more biological requests upon the sportsman's organism, as a measure of adapting the possible responses to a superior homeostatic level (***, 1996).

Aims. Investigation using the electrolytic circuit for the testing of specific biochemical parameters to highlight the immediate cellular adaptive dynamics, as well as the changes in long term among athletes and cyclists.

Methods. The longitudinal experiment, tracking the modifications of variables at different moments of the subjects after exercise was applied. For this purpose, we considered as an absolute variable the specific type of exercise – athletics or cyclism over a distance of 30 km, and as a dependent variable the urinary level of sodium, potassium and chlorine ions.

Results. The specific postexercise urinary ions levels after 24, 48 and 72 hours pointed out significant quantity variations, which reflects the recovery ability of the renal function under the pressure of aerobic exercise. A clear example can be shown in cyclists, when the variations in the values are highlighted between the three tests (the average of chlorine was 94.60 mEq/l after 24 hours, 92.27mEq/l after 48 hours and only 0.60 mEq/l after 72 hours). According to the significant level of average difference ($p < 0.05$), the anion takes different significant values in both groups of subjects (athletes and cyclists).

Conclusions. The postexercise ionic variations after 24, 48 and 72 hours are related to the capacity of the renal function, strongly affected by endurance exercise. This type of exercise can turn into a stress factor for the nephron's activity, which changes its filtering degree demanded by plasmatic osmolality and ultrafiltering.

Key words: metabolic adaptation, electrolytic balance, endurance exercise, athletes, cyclists.