DOES USING ALTITUDE ROOM DURING THE TWO DAY PRECEDING AN EVENT IMPROVE THE SUBSEQUENT PERFORMANCE?
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Purpose: The use of simulated altitude devices by athletes living in the Olympic village during the 2000 Sydney and 2004 Athens Olympics was prohibited. However, the immediate effects of a short-duration sojourn in altitude are still unclear. Consequently, the first objective of this study was to provide some recommendations concerning the two days preceding competition. Moreover, improvement of both short-term (Mizuno et al 1990, Schmitt et al 2006) and middle-term (Burtscher et al 1996, Roels et al 2006) performances were previously observed on return at sea level after an altitude sojourn, without modification of the maximal oxygen consumption. Thus, improvement in performance may come from other mechanisms. The second objective of this study was to track the effect of an altitude sojourn on both metabolic and neuromuscular (i.e., muscle drive) parameters.

Methods: 6 volunteers (preliminary data at the date of Abstract submission) randomly performed two self-paced 1500m on a treadmill in identical and controlled conditions of rest and diet. The first test session was preceded by 48 h in simulated moderate altitude (AL, 1800m) and for the Control (CO, 0m) subjects remained at sea level beforehand.

Results: The short-duration sojourn in moderate altitude failed to modify performance (365 sec for CO versus 364 sec for AL) but increase ventilation during exercise (VE, +6.8%) leading an increment in the VE/VO2 ratio (+6.9%). This increase in VE could be linked to the early increase in VCO2 observed during AL in comparison to CO. Muscle electrical activity was not influenced by the altitude sojourn.

Discussion: These changes could be a consequence of a different self-pacing of the event. Subjects adjusted their running velocity 0.5 km.h-1 higher (+3.0%) during the second third of the AL exercise compared to CO. This higher self-chosen running velocity could be a consequence of a believing in beneficial effect of altitude sojourn. However, the end spurt observed at the end of the event blunted any difference in performance in the AL trial. Interestingly, our data showed equivalent variation (i.e., significant higher VE, VE/VO2, respiratory ratio, and heart rate during AL in comparison of CO, all P < 0.05) during the warm-up performed at constant and imposed velocity suggesting that the physiological fluctuations observed during the event are not only a consequence of a different self pacing.

Conclusion: From a performance point of view, the use of an altitude room the two days preceding an event have no beneficial effect on a middle-duration run. From a physiological point of view, performance represents only a broad index with multifactorial determinants and some of these are modified either beneficially or negatively by the short-duration sojourn in moderate altitude. From a motor drive perspective, our data suggest a different self pacing during the exercise after an altitude sojourn.

Keywords: Running, Altitude Training

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