VO₂ and velocity in rct during continuous incremental treadmill test of uphill and dowhill #69

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The etiology of the drift in VO_2 in the respiratory compensatory threshold (RCT) during downhill running is unclear. It was investigated the velocities (VRCT) and VO_2 in RCT ($RCTVO_2$) in three different inclinations in the continuous incremental treadmill test (Tt). Eight sedentary women volunteered (24±2 years old) to undergo 10% downhill (DT), 10% uphill (UT) and near-level (NL) in Tt to exhaustion to determine the $RCTVO_2$ and VRCT and peak VO_2 on different days and were randomly allocated. VCO_2 was examined as function of VE under the assumption that the RCT corresponds to the break point in the VE-VCO_2 relationship. Peak VO2 was taken as the average of the highest five consecutive breaths attained in the individual work rates for the steps test in three different inclinations. It was used one-way ANOVA (Tukey's post hoc test) to compare the differences. Statistical significance was set at $P \leq 0.05$. Peak VO2 was 34.62±4.20 mL.kg.min^{-1}, 33.14±3.60 mL.kg.min^{-1} and 32.74±2.66 mL.kg.min^{-1} for NL, UT and DT respectively ($P>0.05$). $RCTVO_2$ was NL = 29.14±7.95 mL.kg.min^{-1}, UT = 30.10±4.53 mL.kg.min^{-1} and DT = 29.70±3.00 mL.kg.min^{-1} ($P>0.05$). VRCT was 10.38±1.92 km/h, 8.25±0.89 km/h and 12.88±1.46 km/h for NL, UT and DT respectively ($P<0.01$). Tukey's post hoc test find the following differences between NL vs UT ($P<0.05$), NL vs DT ($P<0.05$) and UT vs DT ($P<0.01$). The drift in VO_2 in the respiratory compensatory threshold during the three bouts appears unrelated biomechanical factors possibly due to a decoupling of neuromuscular and metabolic responses under the status of training.

Key words: Respiratory compensatory threshold, incremental treadmill test, downhill, uphill.