Laboratory tests ability to predict aerobic performance in army athletes #26

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Although VO_2max is the index which represents maximum aerobic power, the corresponding exercise velocity (vVO_2max) can be different in athletes with the same VO_2max values. This study investigated associations between absolute (VO_2p_{abs}), relative (VO_2p_{re}) VO_2peak, and vVO_2max for aerobic performances determined in the field. Thirteen runners, aged 20.1 ± 2.1 years, height 170 ± 0.1 cm, and weight 66.0 ± 3.7 kg participated from the 13th Armoured Infantry Battalion (Brazilian Army) based in Ponta Grossa, PR, Brazil. Participants were submitted to an exhaustive progressive test in a treadmill with $12km.h^{-1}$ initial velocity, 3min stages, and $1 km.h^{-1}$ increments. Breath-by-breath gas samples were collected (Parvomedics – TrueOne, 2400 – USA) to determine VO_2p_{abs}, VO_2p_{re}, and vVO_2peak. They later performed three maximum effort tests on an athletics track over 1200m (P1200), 2400m (P2400), and 2800m (P2800). Associations between laboratory and maximum performances were verified by the Pearson correlation test at 95% significance level. VO_2p_{abs} presented significant correlations with the 2400m (r=0.64; p=0.02) and 2800m (r=0.58; p=0.04) tests, but not the P2800. VO_2p_{re} significantly correlated only with the 2400m (r=0.61; p=0.02) test. However, vVO_2peak presented high correlations with all three; P1200 (r=0.87; p=0.0001), P2400 (r=0.86; p=0.0001), and P2800 (r=0.80; p=0.001). We can therefore conclude that vVO_2peak was the best predictor for P1200m, P2400m, and P2800m.

Key words: VO_2max; vVO_2max; maximum aerobic capacity; running.