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Research article

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2014**Lactate Kinetics After Intermittent and Continuous Exercise Training**

Full Text

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[Author Information](#)[Publish Date](#)[How to Cite](#)[Email link to this article](#)**ABSTRACT**

The purpose of this study was to assess, the effects of continuous and intermittent exercise training on lactate kinetic parameters and maximal aerobic speed (MAS) using field tests. Twenty-four male sport students were equally divided into continuous (CT) and intermittent (IT) physically trained groups. Another six participants acted as non-trained controls (CG). The trained participants practiced 6-days per week for 6 weeks. Before and after training, all participants completed an incremental exercise test to assess their MAS, and a 30- second supra-maximal exercise followed by 30 minutes of active recovery to determine the individual blood lactate recovery curve. It was found that exercise training has significantly increased MAS ($p < 0.001$), the lactate exchange and removal abilities as well as the lactate concentrations at the beginning of the recovery ($[La]-(0)$); for both CT and IT groups; this was accompanied by a significant reduction of the time to lactate-peak. Nevertheless, the improvement in MAS was significantly higher ($p < 0.001$) post-intermittent ($15.1 \% \pm 2.4$) than post-continuous ($10.3 \% \pm 3.2$) training. The lactate-exchange and removal abilities were also significantly higher for IT than for CT-group ($P < 0.05$). Moreover, IT-group showed a significantly shorter half-time of the blood lactate ($t_{-1/2}-[La]$) than CT-group (7.2 ± 0.5 min vs 7.7 ± 0.3 min, respectively) ($p < 0.05$). However, no significant differences were observed in peak blood lactate concentration ($[La]_{peak}$), time to reach $[La]_{peak}$ ($t-[La]_{peak}$), and $[La]-(0)$ between the two physically-trained groups. We conclude that both continuous and intermittent

training exercises were equally effective in improving $t\text{-[La]}_{\text{peak}}$ and $[\text{La}]_{\text{peak}}$, although intermittent training was more beneficial in elevating MAS and in raising the lactate exchange (γ_1) and removal (γ_2) indexes.

Key words: Biexponential mathematical model, recovery, supra-maximal exercise.

Key Points

- Coaches and athletes need to be aware of the potentiality positive effects of exercise intensity.
- Improvements in physical fitness are associated with a concomitant increase in the lactate removal ability.
- In order to reduce lactate accumulation and increase maximal aerobic speed maximally, interval training method, with work speeds equal to 90% - 100% of MAS, may be the effective way when compared with continuous training method.

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