

RELIABILITY OF POCKET SIZE LACTATE ANALYZER

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The blood lactate concentration is often measured during training. Until recently lactate analyzers have been very expensive, relatively heavy and difficult to use, making lactate analyses more suited for laboratory experiments than for field use. Recently two battery-driven pocket-size lactate analyzers weighing ~100 g have been developed. We have examined the performance of these analyzers under different conditions. In the laboratory the Lactate Pro LT-1710 (Arkray factory inc, KDK corp., Japan) performed well against the reference method, enzymatic photofluorometry, with the regression equation $Y = -0.29 + 1.127x$. $r = 0.992$ and an error of regression ($S_{y|x}$) of 0.56 mmol L^{-1} ($n = 115$). The slope is larger than 1.00 ($P < 0.001$). The regression equation of Accusport from Boehringer Mannheim, Germany was $Y = 0.92 + 0.814x$; $r = 0.991$, $S_{y|x} = 0.41 \text{ mmol L}^{-1}$ ($n=45$). The slope and intercept differed from 1.00 and 0.0, respectively ($P < 0.001$). This instrument thus gave too high readings on samples with lactate concentrations $< 5 \text{ mmol L}^{-1}$ and too low readings on samples with higher concentrations. Measurements by the Lactate Pro were not affected by hypoxia ($pO_2 < 10 \text{ kPa}$) or by hypothermia ($-20 \text{ }^\circ\text{C}$) when the instrument was well shielded from the cold. The Accusport showed too high values in hypoxia but correct readings at low temperatures. *Conclusion:* The Lactate Pro is easy to use, it requires only a small blood sample of $\gg 5 \mu\text{l}$ and gives reliable results under a wide variety of field conditions.

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