

# Gas Exchange Responses to Constant Work-Rate Exercise in Patients with Glycogenosis Type V and VII

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During constant work-rate exercise above the lactic acidosis threshold, oxygen consumption fails to plateau by 3 minutes, but continues to rise slowly. This slow component correlates closely with the rise in lactate in normal subjects. We investigated if oxygen consumption during constant work-rate exercise could rise after 3 minutes in the absence of a rise in lactate. We studied five patients with McArdle's disease, one patient with phosphofructokinase deficiency and six normal subjects. Subjects performed two 6-minute duration constant work-rate exercise tests at 40 and 70% of peak oxygen consumption. During low-intensity exercise, oxygen consumption reached steady state by 3 minutes in both groups. Lactate rose slightly in control subjects but not in patients. During high-intensity exercise, oxygen consumption rose from the third to the sixth minute by 144 (21–607) ml/minute (median and range) in control subjects and by 142 (73–306) ml/minute in patients (*p* not significant, Mann-Whitney *U*-test). Over the same period, lactate (geometric mean and range) rose from 2.68 (1.10–5.00) to 5.39 (2.70–10.00) mmol/L in control subjects, but did not rise in patients (1.20 [0.64–1.60] to 0.70 [0.57–1.20] mmol/L). We conclude that the slow component of oxygen consumption during heavy exercise is not dependent on lactic acidosis.

**Keywords:** glycogen storage disease; exercise; acidosis, lactic; oxygen Consumption

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