



Abstract Example

MECHANICAL EFFICIENCY OF ASYNCHRONOUS HAND-RIM WHEELCHAIR PROPULSION AFTER 4-WEEKS OF PRACTICE

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PURPOSE: The purpose of this study was to investigate adaptations in gross mechanical efficiency during asynchronous hand-rim wheelchair propulsion of novice able-bodied participants following 4 weeks of practice.

METHODS: Twenty seven male participants performed a series of five, 4-minute sub-maximal exercise bouts at 1.7 ms⁻¹. Arm frequencies consisted of the freely-chosen frequency (FCF), followed by 4 counter-balanced paced trials pushing at 60, 80, 120, and 140% of the FCF. Gross efficiency (GE) was determined. Participants were divided into two experimental groups (FCF, N = 9; 80% FCF, N = 8) and a control group (N = 8). The experimental groups received a 4-week propulsion practice period (3wk⁻¹, 12 practice trials) at 1.7 ms⁻¹. Post practice period all groups repeated the five 4-minute sub-maximal exercise bouts.

RESULTS: The GE increased in both experimental groups (+1.5 & 1.4%) compared to the control group (+0.2%) (P = 0.001). Arm frequency decreased at FCF in both experimental groups (P = 0.001), however, larger changes were observed in the FCF experimental group.

CONCLUSIONS: Four-weeks practice had a beneficial effect on metabolic cost and GE. This improved GE appeared to be as a result of the changes in the self-selected arm frequency in both experimental groups.