DEVELOPMENT OF WAIST PERTURBATION EFFECTOR FOR INVESTIGATING RELATIONSHIP BETWEEN MECHANICAL WORK AND METABOLIC COST

Arash M. Gonabadi, Prokopios Antonellis, and Philippe Malcolm
Department of Biomechanics, University of Nebraska at Omaha, Omaha, NE 68182, USA

INTRODUCTION

- Different groups studied the effects of constant force perturbations on metabolic cost.

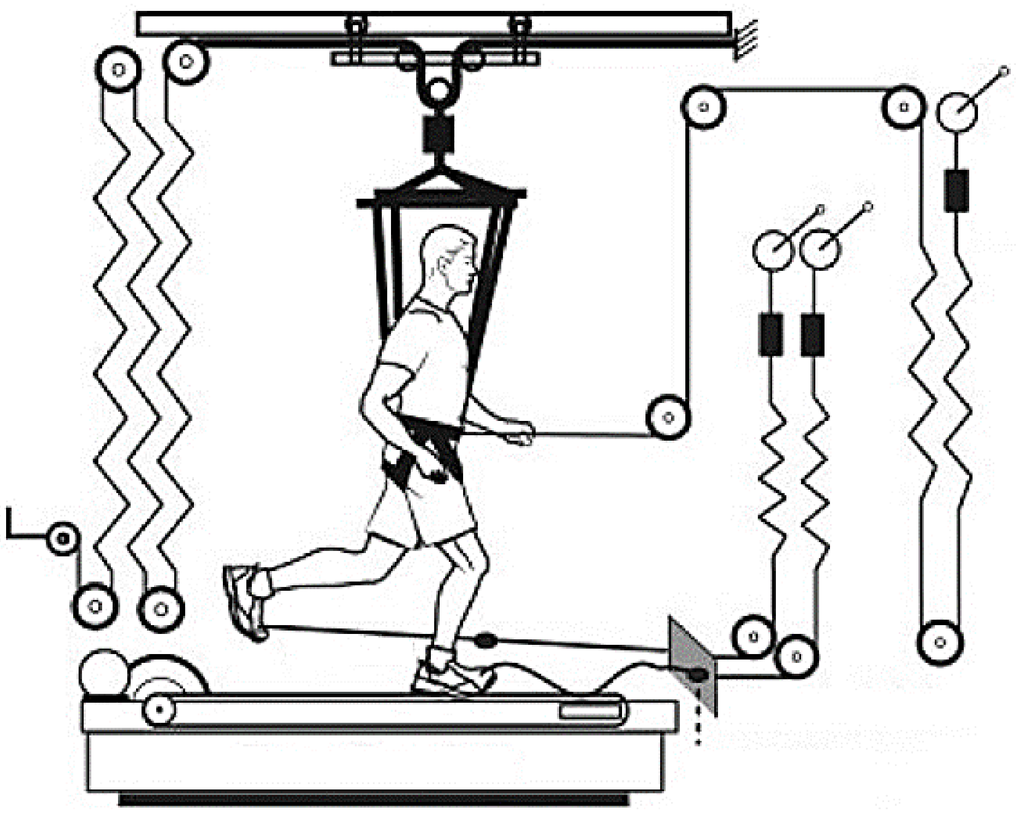


Figure 1. Study from Kram et al. [1] with constant perturbations.

Aim

- Develop robotic setup that allows to test the effect of timing.

METHODS

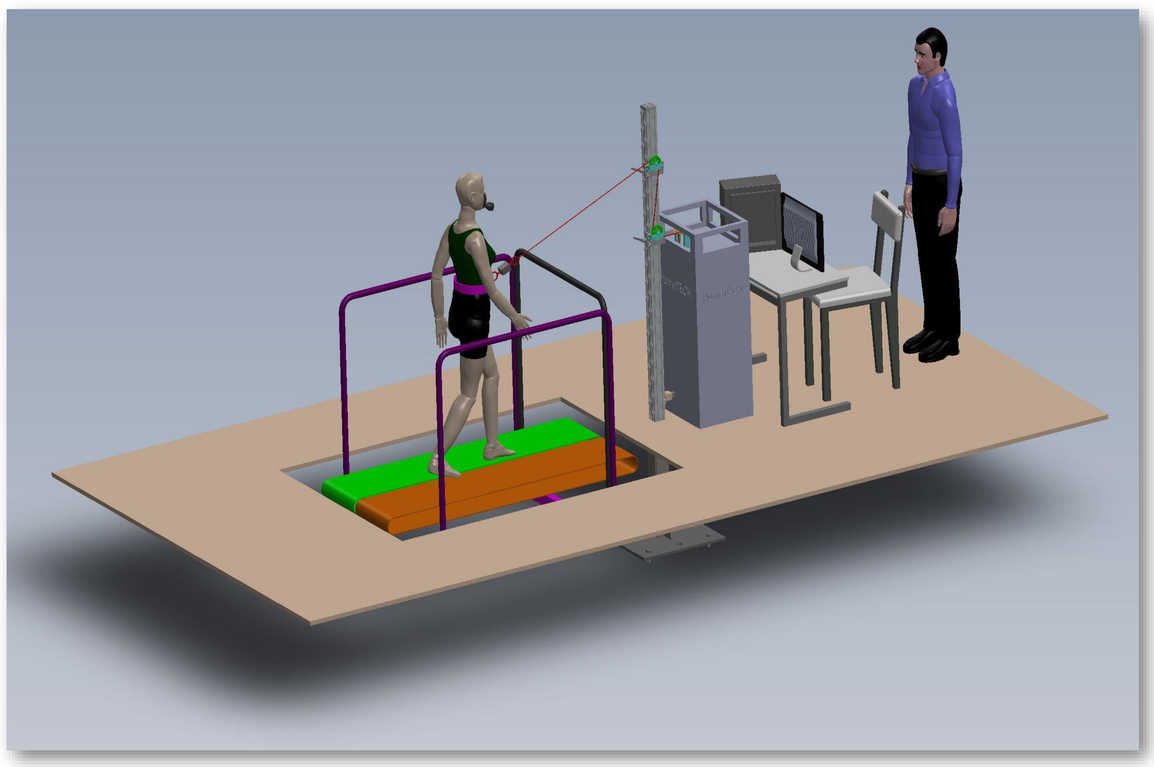


Figure 2. Experimental setup with the Humotech actuator unit.

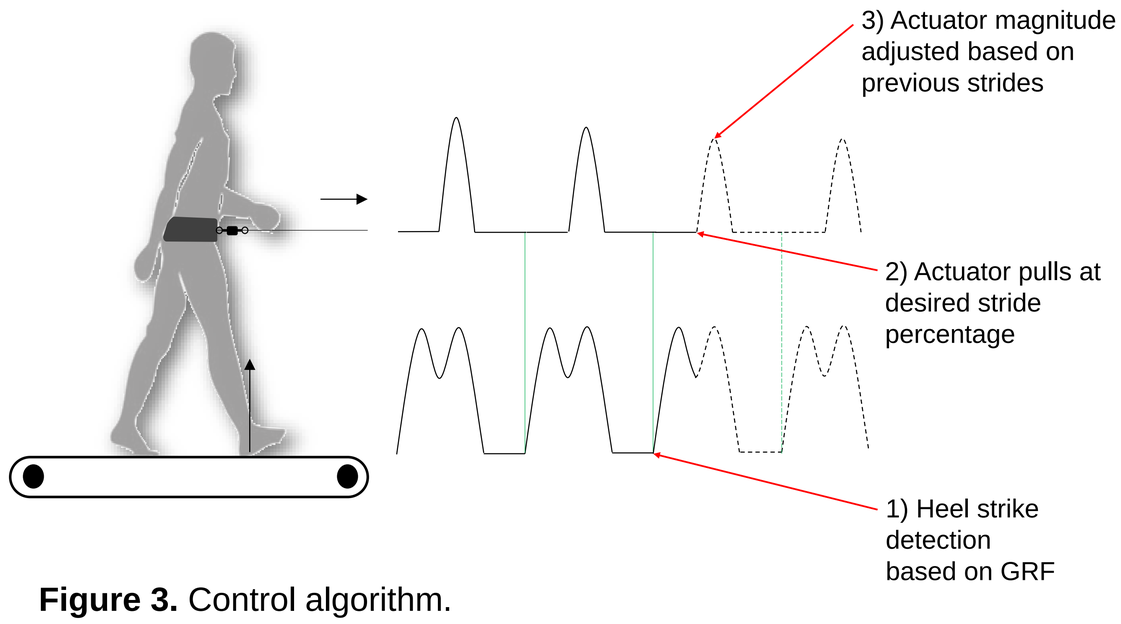
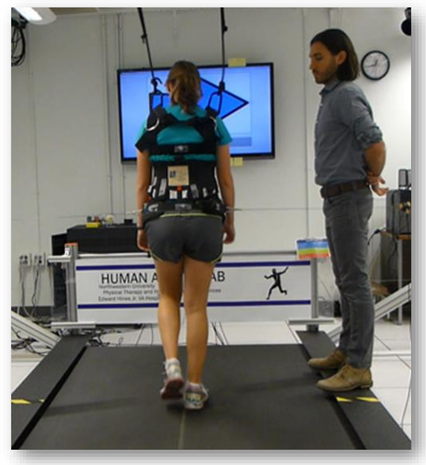


Figure 3. Control algorithm.

POTENTIAL APPLICATIONS

- Optimizing linear assistance devices (e.g. motorized walker or running jetpack) [2, 4].
- Investigating the relationship between changes in biomechanical parameters and metabolic cost.
- Balance perturbation, gait retraining [3,5].

Andreetto et al. [2]



Wu et al. [3]

Kerestes et al. [4]

Vashista et al. [5]

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