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Passive Exoskeleton

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Abstract: This project focuses on the design, development, and evaluation of a passive exoskeleton aimed at reducing musculoskeletal strain among industrial workers engaged in repetitive tasks. The exoskeleton provides mechanical support without active power sources, enhancing worker endurance and safety. Prototypes using aluminum alloys and carbon fiber composites were tested for load reduction, range of motion (ROM), and user comfort. Results indicated muscle activation reduction by up to 15%, highlighting its potential as a cost-effective occupational health solution.

Keywords: Passive exoskeleton, musculoskeletal strain, industrial ergonomics, load reduction, occupational health

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