A Field Study of Rebar Tying Machine as a Tool to Reduce Risk of Musculoskeletal Injuries

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Objective

A before-and-after experimental design was conducted to evaluate the potential reduction in the risk of musculoskeletal injuries to rodworkers when using an automatic rebar tying machine.

Study Design

Eleven (11) rodworkers participated in this experiment. All dependent variables (trunk posture, rebar tying time, and usability questionnaire) were measured before and after implementing the rebar tying machine.

Research Results

The results of the study indicated that working with a rebar tying machine significantly reduced the magnitude and duration of exposure to awkward trunk posture. Tying time was also faster when participants used the machine. The usability questionnaire indicated that most participants preferred to use the rebar tying machine for ground-level rebar construction.

The field study also revealed that the rebar tying machine is not limited to the reinforcing steel trade. The machine can be transferred and used for other purposes such as tying electrical conduit and attaching radiant heat tube to steel mesh.

Conclusions

Based on trunk posture exposure, rebar tying time, usability, and transferability, it is concluded that the rebar tying machine can be an effective tool to reduce risk of musculoskeletal disorders of the upper extremities and low-back.