

Title: Ergonomic Interventions to Reduce Back Injuries in the Home Building Industry

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500 word Abstract:

**BACKGROUND.** Workers in the home building industry are exposed to most of the recognized occupational risk factors for back disorders including heavy work, materials handling, pushing, twisting, frequent lifting over 25 pounds, requirements for sudden unexpected maximal effort, awkward postures. Engineering controls for the reduction of low back injuries in this population was the focus of this study.

**METHODS.** The biomechanical demands placed on low back of workers from three trades within the home building industry (masons, drywall hangers and framers) were quantified using the CABS method (Mirka et al, 1998a, 1998b) From this data, the activities that placed the workers at risk of low back injury were identified and 15 different interventions were developed and evaluated in the lab and field. Described below are a small subset of these tasks along with a description of the interventions developed and their lab and field assessments.

**WALL CYLINDER.** When framers complete the construction of a wall, typically it is lying on the floor. The workers then get together and manually lift the wall the vertical position. This exposes the workers to high loads on the spine while in extreme flexed postures. A wall lifting device was created that utilizes an air cylinder capable of producing a lifting force of 1200 lbs. An attachment harness is secured to the header of the wall and then the cylinder lifts the wall to slightly above head height. At this point the framers can easily push the wall the rest of the way to the vertical position. Laboratory analysis of this device documented tremendous reduction in loads on the spine and field assessment indicates great enthusiasm for the design, particularly for the increased productivity in developing wall for the second story where application of sheathing after the walls were erected was an annoyance with the existing methods.

**DRYWALL LIFT.** The installation of drywall often requires excessive spine

