



Making a Reliable Ladder Safety Assessment Tool

Portable ladder assessment tool development and validation – quantifying best practices in the field

Jack T. Dennerlein, Christopher J. Ronk and Melissa J. Perry. Safety Science, May 2009.

Overview

Every year dozens of construction workers die in falls from ladders, and thousands suffer significant injuries that cost them days of work. In order to investigate causes and solutions, researchers needed a reliable and easy-to-use audit tool to quantify compliance with best practices for ladder use on a construction site. The research team created an assessment tool based on West Virginia's Fall Safe tool and designed it for use on a handheld computer. The assessment tool contained checklists of yes/no questions covering ladder condition, setup, moving on a ladder, and completing tasks from a ladder. Three individuals scored a set of 78 photographs and videos of workers using ladders; the assessment tool had good agreement across and within raters. The tool offers a practical method to quantify best practices associated with ladder use that can ultimately inform targeted intervention efforts.

Key Findings

- The best practices assessment tool contained more than 30 yes/no questions but took only 2 to 3 minutes to complete.
- For the yes/no responses to the 78 ladder observations displayed in photos and videos, the inter-rater agreement ranged from 79% to 97% across the three raters.
- For the one rater who evaluated the photos and videos twice with six-weeks between evaluations, the reproducibility of scores were excellent with percentage of yes/no responses in agreement greater than 89% and Kappa coefficients greater than 0.67.
- The portable-ladder best practices assessment tool proved to be a reliable measure for a cross-sectional view of a work site. It has many potential uses for both the researcher and safety practitioner.

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