FOOTWEAR FOR THE PREVENTION OF HUMAN SLIPS: FROM FRICTION MECHANICS TO ERGONOMIC SOLUTIONS

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ABSTRACT

Slip and fall accidents are an important contributor of slip and fall events. Liquid contaminants are frequently the cause of these accidents. Our research team has aimed to develop novel experimental and modelling methods to characterize the mechanics of shoe-floor friction. Notably, these methods include measuring under-shoe fluid contaminant pressures and using finite element analysis to simulate friction due to contacting shoe and floor surfaces. Applying these methods has revealed new knowledge on the mechanics of shoe-floor friction and identified footwear tread features that are relevant to slip risk. These mechanics-based experiments and models have informed observational assessments that further defines the "real-world" problem. Thus, studies based on rigorous mechanics-based experiments and models can inform practical ergonomic solutions to slip and fall events.

Keywords: slips and falls, coefficient of friction, footwear, hydrodynamic lubrication, hysteresis friction

Topic: Footwear

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