

Scientific/Educational Workshop

Workshop title

Managing Shear Forces Through Strategic Friction Reduction: Science, Standards and Outcomes

Workshop organizer

Caroline Portoghese (Tamarack Habilitation Technologies, Inc.)

Speakers

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Workshop goals

The participants will be able to:

- 1) list and define friction, shear force, shear stress, and shear strain from the perspective of physical, cellular, and clinical levels
- 2) associate the damaging effects of friction and shear forces in both dynamic and static loading contexts
- 3) experience the hands-on effects of a change in the coefficient of friction
- 4) assess at least three research-based friction reduction strategies for minimizing damage from shear

Abstract

Shear stress is a relevant underlying cause of skin and soft tissue damage, leading to pressure injuries and creating an exorbitant segment of health care cost.

Current prevention and treatment options often concentrate on managing pressure, and neglect the fact that friction, movement, and the resulting shear stresses and strains within tissues are controllable. Such control can provide a significant factor in primary prevention, in healing and in secondary prevention of occurrence.

The National Pressure Ulcer Advisory Panel (NPUAP) updated the definition of pressure injury and specifically included shear and friction as components of a pressure injury. There is increased focus on the significant and complex relationships between all the intrinsic factors. Pressure and shear are closely linked, friction has a role in the development of shear, and microclimate influences the susceptibility of skin and soft tissues to the effects of pressure, shear, and friction. This has significant relevance for safety, function, and mobility outcomes.

There is active International Organization for Standardization (ISO) work on shear. This presentation will update you on the development of standards for definitions and testing relative to shear forces, stresses, and strains from a physics and engineering perspective, as well as the clinical significance of these factors.

This presentation provides education regarding accepted definitions and terminology regarding shear, and a review of the research on the implications of shear stress on the body. It will also address what affects the coefficient of friction, including the contributions of the interface, skin moisture content and surface wetness, and ambient humidity. The talk will review the influences of external pressure and friction to induce shear stress in human soft tissue. Presenters will share research and testing evidence regarding friction reduction, the



measurable associated shear reduction, as well as the clinical implications of managing this characteristic. Understanding and applying the benefits of friction reduction can assist in reducing the risk of pressure injury the avoidance of their costly impact, and more importantly, their devastating effects on the at-risk individuals. Clinical management of shear stresses and friction will be included.