

CT Scan Research

Interface pressure readings have been the comparative mechanism used to predict pressure ulcer risk when a human body is placed on a support surface. Even though this practice has advantages in being able to compare dissimilar products, (air/liquid/solid media) its limitations are numerous. The limitations of measuring only at the skin surface contact area are: the inability to measure gradiency of the pressure, the inability to measure shear and thus the true resultant mechanical stress, the segregation of the body due to the limited area of measurement, the inability to correlate the surface measurement with the bone-soft tissue interface, and not to mention the poor reproducibility of the procedure itself.

Since the human body responds to a support surface in a mechanical stress to strain relationship one can investigate what happens to the soft tissue by either measuring the resultant mechanical stress (PresShear™) created by the support surface design and material or visualize the soft tissue strain by radiographic imaging (CT Scan).

This author is unaware of a process by which the resultant mechanical stress (PresShear™), created at the skin support surface interface, can be measured at its entire depth of transmitability through the viscoelastic soft tissue to the wedge like bony prominence level. The use of CT Scan technology has made it possible to visualize the soft tissue strain, which is the reaction to the resultant surface stress, at all levels in the human body. By visualizing the type of strain one can extrapolate what mechanical stresses are occurring at the skin support surface interface.

The subjective and objective findings obtained from the CT Scan evaluation concerning soft tissue strain created by various support surface product types correspond to previously reported biomedical, animal studies, and clinical findings.