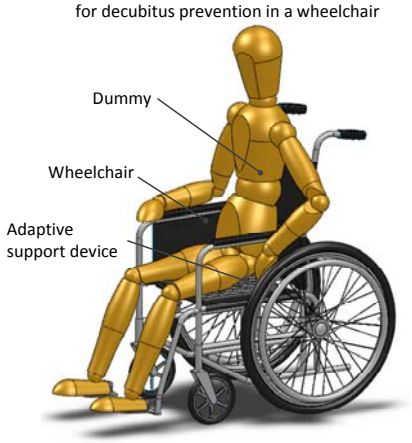
ADAPTIVE ANTI-DECUBITUS-SUPPORT-DEVICE II

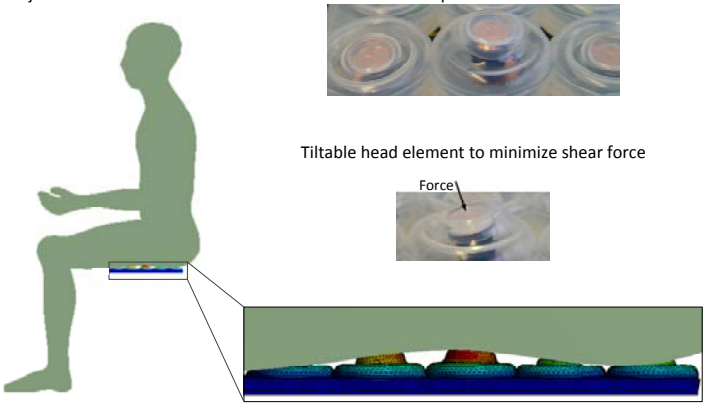
System: An adaptive tissue with pressure-controlled stiffness and integrated sensors

Functional principle:
The aim of the adaptive storage system is the prevention of bedsore (decubitus). The single actuator-cells are multi-arced. The pressure-displacement curve was designed using finite element simulations to produce a large stroke at a low structure height. By measuring the pressure distribution with thin-film pressure sensors and a corresponding increase or decrease of the pneumatic pressure in the actuators, harmful pressure peaks can be reduced to prevent bedsores. Furthermore, the actuator-heads adapt themselves to the body contours to passively minimize shear forces. Furthermore, the actuator-heads can adapt to the body contours and minimize passively shear forces.

Use of adaptive support device for decubitus prevention in a wheelchair



FE-simulation for the contour adjustment of actuators



System with a chamber under increased inner pressure

Tiltable head element to minimize shear force

Characteristics and advantages:

- support for decubitus risk assessment by measuring the pressure distribution
- efficient adaptation to the patient independent of his position and his weight through pressure-controlled stiffness
- passive shear force minimization
- measurement and reduction of forces acting on the patient
- modular design with different resolutions

Application:

- main goal is a preventive human health protection through decubitus prophylaxis

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