

Measured friction of CareCare IGS Grip socks

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Background

In promoting the health of the elderly, emphasis is placed on increasing physical activity and avoiding bed rest. At the same time, the prevention of falls and slips is to be considered. The CareCare IGS Grip sock is intended for hospitals to be used periodically as a patient-specific aid for movement, transition and rehabilitation. The Grip sock has a mesh-like, breathable structure and adapts to the shape of the foot. The material is thermoplastic elastomer.

Methods

The friction properties of CareCare IGS Grip socks were studied at the University of Eastern Finland, Department of Technical Physics. Three subjects of different weights tested the friction of bare feet, hospital socks, hospital shoes and the Grip socks on a tiltable platform (figure 1). Testing was carried out on both dry (like hospital floors) and damp (like hospital shower floors) floors.²



Figure 1. The test subject stands on an inclined surface, the slope of which was adjusted during the measurement.

Results

According to the study, the best friction/grip properties on dry surfaces were with Grip socks compared to hospital socks or hospital shoes. The hospital sock has the least friction and starts sliding at an average angle of 16 degrees. The Grip sock has twice the friction and the foot only starts sliding at an average angle of 34.5 degrees (Fig. 2). Even on wet surfaces, the friction property of the grip sock is stronger compared to bare feet that start sliding at an average angle of 23 degrees. With the Grip socks, feet start to slide at an angle of 28 degrees on a wet surface (Fig. 3.)

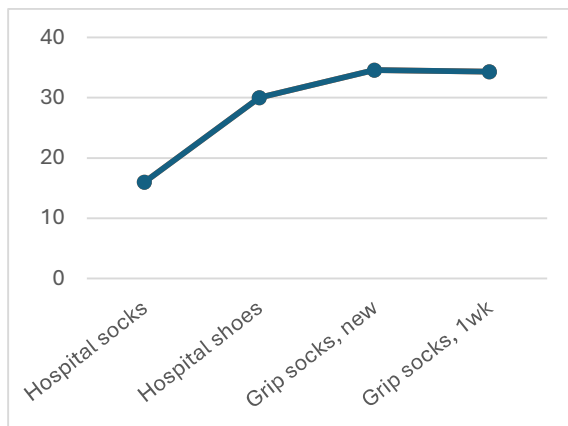


Figure 2. Friction on dry surfaces, the average value of three test subjects.

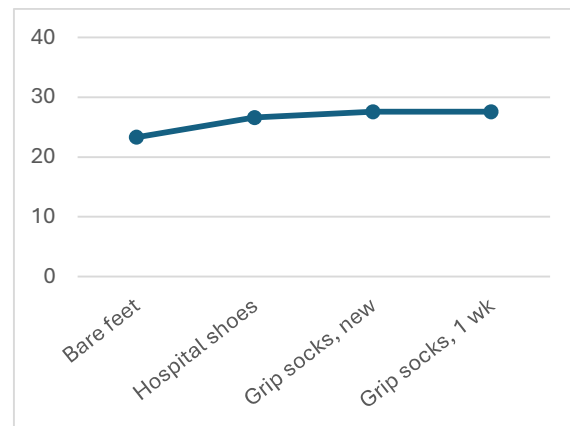


Figure 3. Friction on wet surfaces, the average value of three test subjects.

Conclusion

The Grip sock provides better grip (friction) to the floor compared with the hospital sock or hospital shoe and ensures standing and walking posture on both dry and wet surfaces. The friction provided by the Grip sock also makes it easier to change position in bed, as the legs slide less than with hospital socks when exerting. Grip socks increase the patient's own use of strength, because patients with weak or moderate strength can move themselves with less force compared to hospital socks.

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²Chari, S., Haines, T., Varghese, P. & Economidis, A. (2009) Are non-slip socks really 'non-slip'? An analysis of slip resistance. BMC Geriatrics 2009, 9:39 doi:10.1186/1471-2318-9-39.