

Effects of Wearable Garments on Postural Regulation in Community-Dwelling Elderly Adults

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Abstract : Wearable garments such as tapes, compression garments, and braces could improve proprioception and reduced postural sway. The aim of this study was to examine the effects of wearable garments on postural regulation in a sample of community-dwelling elderly individuals, aged 65 years. It was hypothesized that wearable garments such as socks would provide stimulation to lower leg mechanoreceptors, and help participants achieve better postural regulation. Participants (N=63) performed a 30-s Romberg balance test protocol under four conditions (barefoot; wearing commercial socks; wearing clinical compression socks; wearing non-clinical compression socks), in a counterbalanced order, with four levels of performance difficulty: (1) standing on a stable surface with open eyes (SO); (2) a stable surface with closed eyes (SC); (3) a foam surface with open eyes (FO); and (4) a foam surface with closed eyes (FC). Centre of pressure (CoP) measurements included postural sway area (C90 area), trace length (TL) and sway velocity. Thirty-five participants (55.6%) showed positive effects of wearing the socks (responded group). In the responded group, it was revealed that socks showed significant differences in SO, SC and FO conditions for the two CoP measurements - TL and sway velocity ($p < 0.05$). In contrast, in the non-responded group, barefoot condition significantly decreased the TL and velocity in the SO condition. From the positive effects observed in the responded group, it is possible that wearable garments provide sensory cues that could interact with a biological cueing system to enhance performance in the postural regulation system. This study suggests that individuals respond to the socks treatments differently and future research should be undertaken to examine the factors that benefited the responded group of participants.

Keywords : community-dwelling, elderly adults, postural regulation, wearable garments

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