

Evaluation of the Human Body Posturizer in postural diseases and its impact on of the fall risk in the elderly

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Introduction: Orthosis are external aids designed for different postural problems and represent the most commonly used conservative treatment (Noonan K et al., 1996). In this analysis, a modular exoskeleton named Human Body Posturizer (HBP) has been tested to evaluate the morphological variations due to it's prolonged use and its effects on the fall risk in the elderly.

Methods: a sample of 20 normal male subjects (age: 23.4 ± 4.3) have worn the HBP 3 days for week for 6 months. Subject were examined by baropodometry, Surfacer system and SF-36 questionnaire.

Furthermore, 150 subjects with mild fall risk met inclusion criteria (64.85 ± 2.75) were enrolled. A test battery of physiological parameters related to balance and falls (Tinetti Gait and Balance test, Short Physical Performance Battery, Numeric Pain Rating Scale) has been used in order to determine fall risk in elderly people (Shimada H et al., 2011).

Results: in normal subjects, a general increasing of the bilateral symmetry associated to a structural reorganization of the dorsal and lumbar regions. In elderly subjects, a significant improvements in Short Physical Performance Battery, Tinetti Scale and Pain Numeric Rating Scale ($p < 0.05$) have been showed after treatment with HBP. A significant reduction in fall risk was shown in HBP treated subjects.

Discussions: the results of this study suggested a general improvement of the postural assessment due to the increasing of the structural symmetry of the back. The use of Human Body Posturizer seems to be a new significant device for prevention of fall in elder patients. The use of the HBP could represent an integrative therapy for different postural diseases. Further studies will be performed in order to demonstrate the efficacy of this device on elder patients.

References

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