

## Human Body Posturizer (H.B.P.): new orthosis for improving postural dynamics

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**Introduction.** Posture is the result of many complex processes involving the entire body in relationship with different environmental changes (Penha P.J.,2005). Interaction between the different anatomical districts occurs at different levels and it is influenced by different initial conditions. Alterations in imbalances and associated diseases produce a structural and physiologic reorganization of the anatomical structures to improve postural dynamics (Kasim et al., 2010). Generally, these modifications can be divided into para-morphisms and dis-morphisms of the spine. Currently postural diseases are treated by passive (brace and orthosis) and active (gymnastic) methods according with the severity of imbalance (LeBauer et al., 2008; Ugwonali et al., 2004). Purpose of this study is to validate a new type of orthosis named Human Body Posturizer (H.B.P). It is a modular flexible structure composed of different modules which act on the cervical, thoracic and lumbar traits of the back, and an inferior module which acts on the inferior limbs.

**Materials and methods.** The present study considers a sample of 20 male subjects with age spanning from 19 to 35 years (mean age  $23,4 \pm 4,3$ ). Subjects underwent 4 weeks of H.B.P. treatment consisting of 30 minutes, two times for week. The sample was analyzed by using the Surfacer System (Diagnostic Support), which permits to capture the external geometry of the back. Each subject was sampled before and after the treatment and differences between pre and post treatment were analyzed trough geometric morphometric approach (Slice 2000).

**Results.** The results of this study showed a reorganization of the bilateral structures of the back after treatment. In particular an increased degree of symmetry was observed both in trunk and lumbar regions of the back.

**Conclusions.** The preliminary results of the present study suggest that the HBP, acts on the spatial organization of the back, rectifying the position of the anatomical components associated to the early postural diseases. Nevertheless these results should be considered as preliminary and need of further researches.

Keywords: posture, Human Body Posturizer, spine, orthosis, geometric morphometry