

COMPARISON OF MOTION RESTRICTION AND TRUNK STIFFNESS PROVIDED BY THREE THORACOLUMBOSACRAL ORTHOSES (TLSO).

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The amounts of thoracic and lumbar spine motion restriction and passive trunk stiffness provided by three thoracolumbosacral orthoses (TLSOs) (Aspen TLSO, Boston Body Jacket, and CAMP TLSO) were compared. Ten subjects executed maximum trunk flexion, extension, and lateral bending motions. The spine motion was measured noninvasively with a thin strain gauge device (Flexducer), and passive trunk stiffness around the neutral posture was estimated from an electromyography-assisted biomechanical model. No significant differences in either the restriction of motion or the amount of added passive trunk stiffness were found between the three orthoses. The subjects also did not perceive any difference in the restriction of motion but rated the Aspen TLSO significantly more comfortable than the other two orthoses. The rigid custom orthosis design may not be important for restricting the spine motion and providing passive trunk stiffness, or there may be other measures that reflect better the function of orthoses.

SELECTED QUOTATIONS

Introduction

“The subjects rated the Aspen TLSO as significantly more comfortable than the other two orthoses...” (Pg. 466)

Discussion

“In view of the rather limited potential of orthoses to restrict spine motion, one has to question whether spine ROM is a valid method for evaluating the effectiveness of orthoses. In support of this view are the studies that documented no benefits from the use of orthosis adjunct to spin fusion surgery.^{5,34,35} On the other hand, their beneficial role in alleviating self-reported low back pain symptoms during a conservative or surgical treatment cannot be dismissed.⁸⁻¹⁰ Perhaps the mechanisms by which spinal orthoses accomplish pain reduction are better reflected by measurements other than ROM.” (Pg. 467)

“Therefore, based on our results, the conclusion should be reached that differences between the three orthoses tested were not significant and perhaps comfort should dictate the choice of a device to improve patients’ compliance.” (Pg. 467)