

ASSESSING RANGE OF MOTION TO EVALUATE THE ADVERSE EFFECTS OF ILL-FITTING CERVICAL ORTHOSES

Bell K, Frazier E, Shively C, Hartman R, Ulibarri J, Lee J, Kang J, Donaldson III W.
Ferguson Laboratory for Spine Research, Department of Orthopaedic Surgery,
University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania
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BACKGROUND CONTEXT: Although previous studies have primarily focused on testing the effectiveness of cervical orthoses under properly fit conditions, this study focuses on analyzing the effects of an ill-fitted cervical orthoses (Miami J). This may have significance to health-care providers in understanding the effects of an improperly fitted neck brace. **PURPOSE:** The aims of this study were threefold: first, to apply virtual reality (VR) feedback control to repeatedly measure orthoses effectiveness in the primary motions; second, to use this control methodology to test the orthoses ability to restrict flexion/extension (FE) as a function of axial rotation (AR); third, to test the effects of an ill-fitting Miami J on cervical motion.

SELECTED QUOTATIONS

Introduction

“...because of limited availability, emergency application, and financial constraints, it is not uncommon that a patient is fitted with a cervical orthoses that is not optimal for his or her size and body typeAdditionally, ill-fitting braces may be used in rural or other low-volume healthcare facilities where it is unreasonable to have all possible brace sizes available.” (Pg. 226)

Discussion

“...after a cervical injury, a patient wearing a collar that is either too big or too small could experience added cervical impairment because of the lack of restriction and under-restrained motion of the neck. ...Patient care could be compromised as a result of the increased motion permitted by improper fitting of cervical orthoses. Other researchers investigating clinical implications of ill-fitting orthoses have shown that dermal contact with an ill-fitted cervical brace can cause skin lesions and affect CRoM and patient satisfaction [17,18]. The results show that the ill-fitting Miami J does not restrict motion as completely as the correctly sized Miami J, potentially adding to the 3% to 25% of spinal cord injuries that occur after the initial injury.” (Pg. 230)