

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

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Abstract

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 type ...Additionally, ill-fitting braces may be used in rural or other low-volume health-care 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)