

TECHNICAL REPORT

COMPARATIVE EVALUATION OF THREE CERVICAL ORTHOSES IN, EXTENSION, LATERAL MOTION AND ROTATION: A comparison of the Vista® Cervical Collar, the Aspen® Cervical Collar, and the Miami J Cervical Collar®

Overview

The ability of a cervical orthosis to restrict motion of the cervical spine is an important measure of its effectiveness. The Vista® Cervical Collar provides better motion restriction than other widely used extended-wear cervical collars.

Materials & Methods

Twenty-one adults from 22 to 50 years old (13 men and 8 women) with no reported history of cervical injury or pathology served as subjects. The orthoses studied were: (1) the Vista® Cervical Collar, the Aspen® Cervical Collar (multiple sizes), and the Miami J® Cervical Collar (multiple sizes). Each orthosis was fitted according to the manufacturer's written instructions.

Gross sagittal motion of the head and neck was measured relative to the horizon using the Cervical Range Of Motion Instrument (CROM). An electromyogram (EMG) machine was used to measure the force applied to each Cervical Collar.

Each subject was instructed to flex, extend, laterally tilt, and rotate their head and neck as far as possible and then return to their neutral position under four conditions- no orthosis, Vista® Cervical

Collar, Aspen® Cervical Collar, and the Miami J® Cervical Collar. The order of these conditions was randomized for each subject. The angular motion in flexion, extension, lateral movement and rotation was recorded for each subject. Each test was repeated 5 times and the results were averaged. The amount of flexion, extension, lateral motion and rotation allowed by each collar was calculated as a percentage of normal unrestricted motion.

Results

In flexion, the Vista® Cervical Collar allowed 17.38% of normal unrestricted motion, the Aspen® Cervical Collar allowed 26.01% of normal unrestricted motion, and the Miami J® Cervical Collar allowed 27.79% of normal unrestricted motion (FIGURE 1). In extension, the Vista® Cervical Collar allowed 35.54% of normal unrestricted motion, the Aspen® Cervical Collar allowed 36.60% of normal unrestricted motion, and the Miami J® Cervical Collar allowed 44.25% of normal unrestricted motion (FIGURE 2). In lateral motion, the Vista® Cervical Collar allowed 43.61% of normal unrestricted motion, the Aspen® Cervical Collar allowed 44.50% of normal unrestricted motion, and the Miami J® Cervical Collar allowed 55.46% of normal unrestricted motion (FIGURE 3). In rotation, the Vista® Cervical Collar allowed 24.61% of normal unrestricted motion, the Aspen® Cervical Collar allowed 26.94% of normal unrestricted motion, and the Miami J® Cervical Collar allowed 37.71% of normal unrestricted motion (FIGURE 4).

Discussion

It is important for healthcare professionals to be able to make informed decisions about the effectiveness of new cervical orthoses such as the Vista® Cervical Collar. Both the Aspen® Cervical Collar and the Miami-J® Cervical Collar were used as points of comparison. The data suggests that the new Vista® Cervical Collar provides better motion restriction than both the Aspen® Cervical Collar, and the Miami-J® Cervical Collar.

