The Effect of Target Position on the Accuracy of Cervical Rotation Active Joint Position Sense
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**Context:** Proprioception mediates neuromuscular control of joint stability. Clinically, previous studies have reported that individuals with neck pain can present with impaired cervical rotation active joint position sense (AJPS). The cervical spine can be divided into upper and lower units, and each unit contributes differently to the magnitude of rotation range-of-motion (ROM). Therefore, it is clinically important to determine if there are positional differences in cervical rotation AJPS. **Objective:** To compare cervical rotation AJPS near mid-ROM (30°) and near end-ROM (60°). It was hypothesized that AJPS is more accurate near end-ROM versus mid-ROM. **Design:** Cross-sectional. **Setting:** Warrior human performance research laboratory. **Patients or Other Participants:** Fifty-three Soldiers (5 males/48 females, age: 28.5 ± 6.4 years, height: 175.3 ± 9.8 cm, mass: 80.1 ± 11.8 kg) without a history of neck pain were recruited from the 101st Airborne Division (Air Assault). **Interventions:** A motion analysis system was used to record cervical rotation kinematics. Subjects sat in a chair wearing a headband and blindfold. Reflective markers were placed on the headband and over the sternum and cervical-thoracic spine. From a front-facing neutral start position, subjects actively rotated the head right or left to a target position (30°/60°) with real-time verbal cues provided by the tester. Subjects held the target position for five seconds and then returned to the start position. Subjects then replicated the target position as closely as possible. Five trials were performed in both directions to both target positions (R30/L30/L60/R60). Order of direction/position was randomized. The difference between target position and replicated position was recorded. Friedman tests and post-hoc tests were used to compare AJPS at the different target positions (p<0.05). **Main Outcome Measures:** The difference between the target and replicated angle was calculated and defined as absolute error (AE), the mean of five trials used for analyses. The standard deviation of five trials was also calculated and defined as variable error (VE) and used for analyses. **Results:** There was a significant difference for AE and VE (p < 0.001). End-ROM AE was significantly more accurate than mid-ROM AE (R30/L30: 3.0 ± 1.3°/3.2 ± 1.6°; R60/L60: 2.2 ± 1.0°/2.2 ± 1.2°; p = 0.001). End-ROM VE was significantly more accurate than mid-ROM VE (R30/L30: 2.7 ± 1.1°/3.0 ± 1.5°; R60/L60: 2.1 ± 0.9°/2.3 ± 1.5°; p < 0.010). **Conclusions:** Cervical rotation AJPS is more accurate near end-ROM versus mid-ROM in those without history of neck pain. Both target positions should be used to encompass cervical rotation AJPS of both the upper and lower units. Future studies should evaluate AJPS in Soldiers with neck pain and examine if ROM-specific interventions should be developed/evaluated for reducing the incidence and severity of neck pain.

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