

Abstract

Title: Cervical Motion in Elderly

Background: The term 'physiological motion of the spine' is commonly used although no proper definition exists. Previous work has revealed a consistent sequence of cervical segmental contributions in 80-90% of young healthy individuals. Age has been shown to be associated with a 0.11° decrease of segmental range of motion (sROM) per year, which means 5° decrease in motion of the total subaxial cervical spine every 10 years of ageing. Therefore, it is of interest to study whether this sequence remains present in elderly.

Research question: The aim is to investigate if the consistent sequence of cervical segmental contributions in young asymptomatic individuals is also present in elderly asymptomatic individuals. Secondary objectives are the assessment of sROM and cervical sagittal alignment.

Design/Methods: Dynamic extension cinematographic recordings of the cervical spine were made in asymptomatic individuals aged 55-70 years old. Individuals without neck pain and severe degenerative changes were included. Two recordings were made in each individual (T1 and T2). Segmental rotation of each individual segment from C4 to C7 were calculated to determine the sequence of segmental contributions. Secondary outcomes were sROM and sagittal alignment.

Results: Ten individuals, with an average age of 61, were included. The predefined normal sequence of motion was found in 10% in T1 and 0% in T2 of individuals. sROM and total ROM were low in all patients. There was no statistically significant correlation between sagittal alignment, degeneration and sROM in the respective segments, nor between cervical lordosis and total ROM.

Discussion: This study shows that ageing is not only associated with a decrease in ROM, but also with a change in motion patterns, as observed in healthy asymptomatic individuals. The altered contribution of the cervical segments during extension appears not to be caused by degeneration and clinical condition.