

## Supplementary file

**Table S1. Normal range of motion of the cervical spine.** One of the first findings in DCM conditions is a limited range of motion, often due to pain and this finding can appear even before any radiologic changes. The decrease in range of motion is often subtle at first and a significant limitation is usually present before the patient seeks medical attention for this cause [14].

<b>Movement</b>	<b>Average (normal) range of motion</b>	<b>Main joint(s) involved</b>
Flexion	90°	C0-C1 (10 °), Sub-axial cervical spine (60°)
Extension	70°	C0-C1 (21°), Sub-axial cervical spine (40°)
Lateral Bending	20-45°	Sub-axial cervical spine (10-35°)
Axial Rotation	90° each side	C1-C2 (40°)