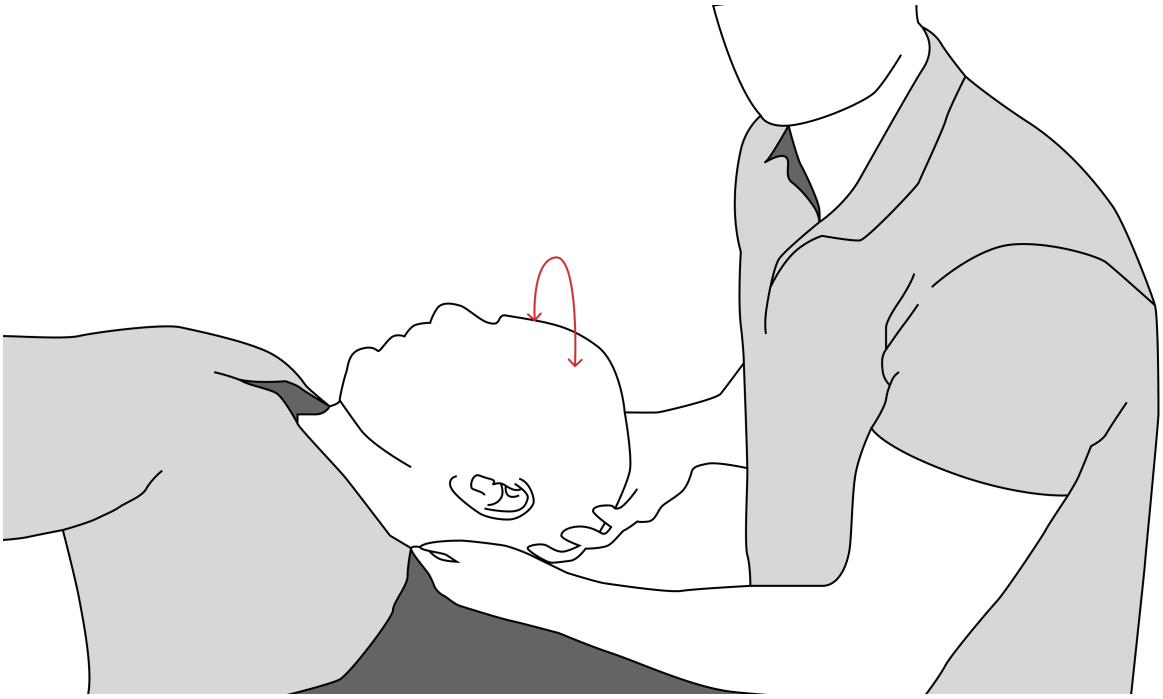
# Alar Ligament Test

**Patient's name:** _____ **Age:** _____ **Gender:** _____

**Examiner:** _____ **Date:** _____

## Rotation stress test

1. Place the patient in a supine lying position.
2. Stabilize the C2 spinous process and lamina using a firm grip.
3. Grasp the patient's head with a wide hand span and rotate the occiput, taking the atlas along with it.
4. Rotate the head to one side in three planes: neutral, flexion, and extension.
5. Ensure no lateral flexion occurs during rotation.
6. Assess the range of motion and end feel in all three planes.
7. Repeat for the other side.

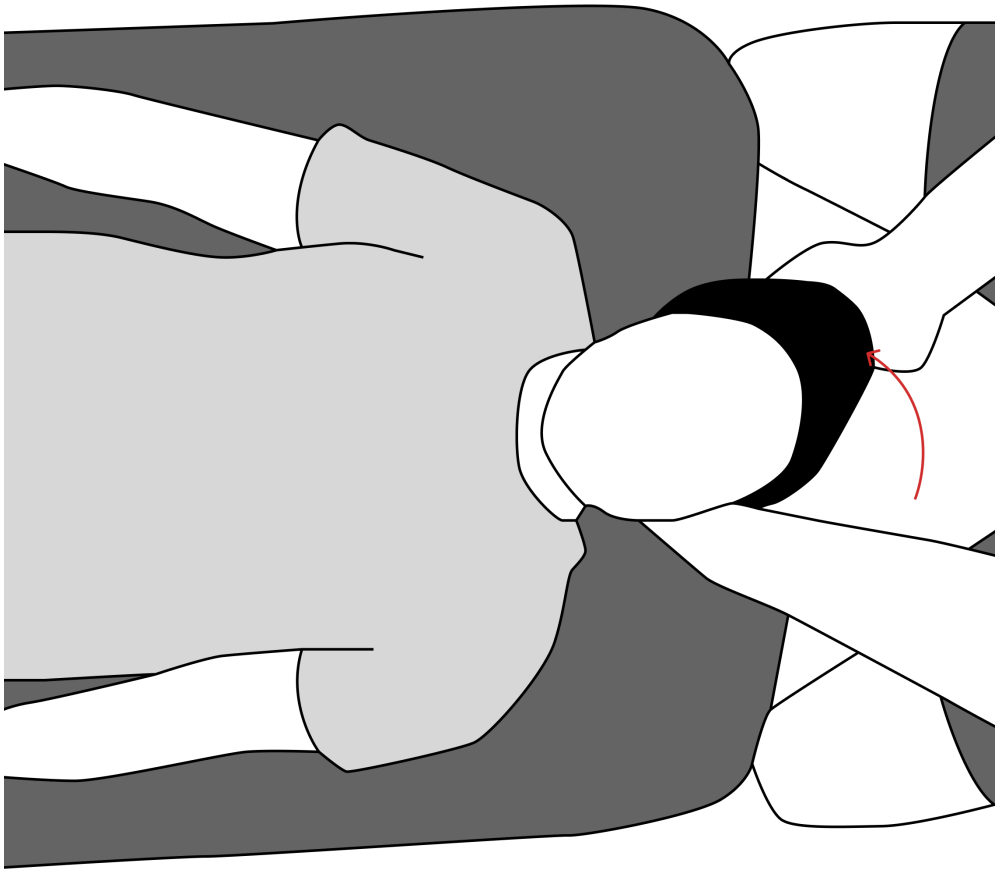


**Rotation stress test results and interpretation**

- ◯ **Negative**: Normal rotation (20-40 degrees with no lateral flexion) without excessive movement in any plane in both directions, indicating an intact alar ligament.
- ◯ **Excessive bending occurs in only one or two planes**: This does not confirm ligament injury, but may indicate other issues such as joint hypermobility or muscle imbalances. This requires further diagnostic tests but is still not a positive test.
- ◯ **Positive**: If excessive side bending occurs in all three planes, this suggests alar ligament laxity.

# Side-bending stress test (lateral flexion)

1. Position the patient sitting or lying supine.
2. Stabilize the C2 spinous process and lamina to prevent segmental rotation or side bending.
3. Apply slight compression through the crown of the patient's head to facilitate atlanto-occipital side bending.
4. Passively bend the patient's head by directing the ear toward the opposite side of the neck.
5. Perform side bending in three planes: neutral, flexion, and extension.
6. Observe for lateral movement during each test.
7. Repeat for the other side.

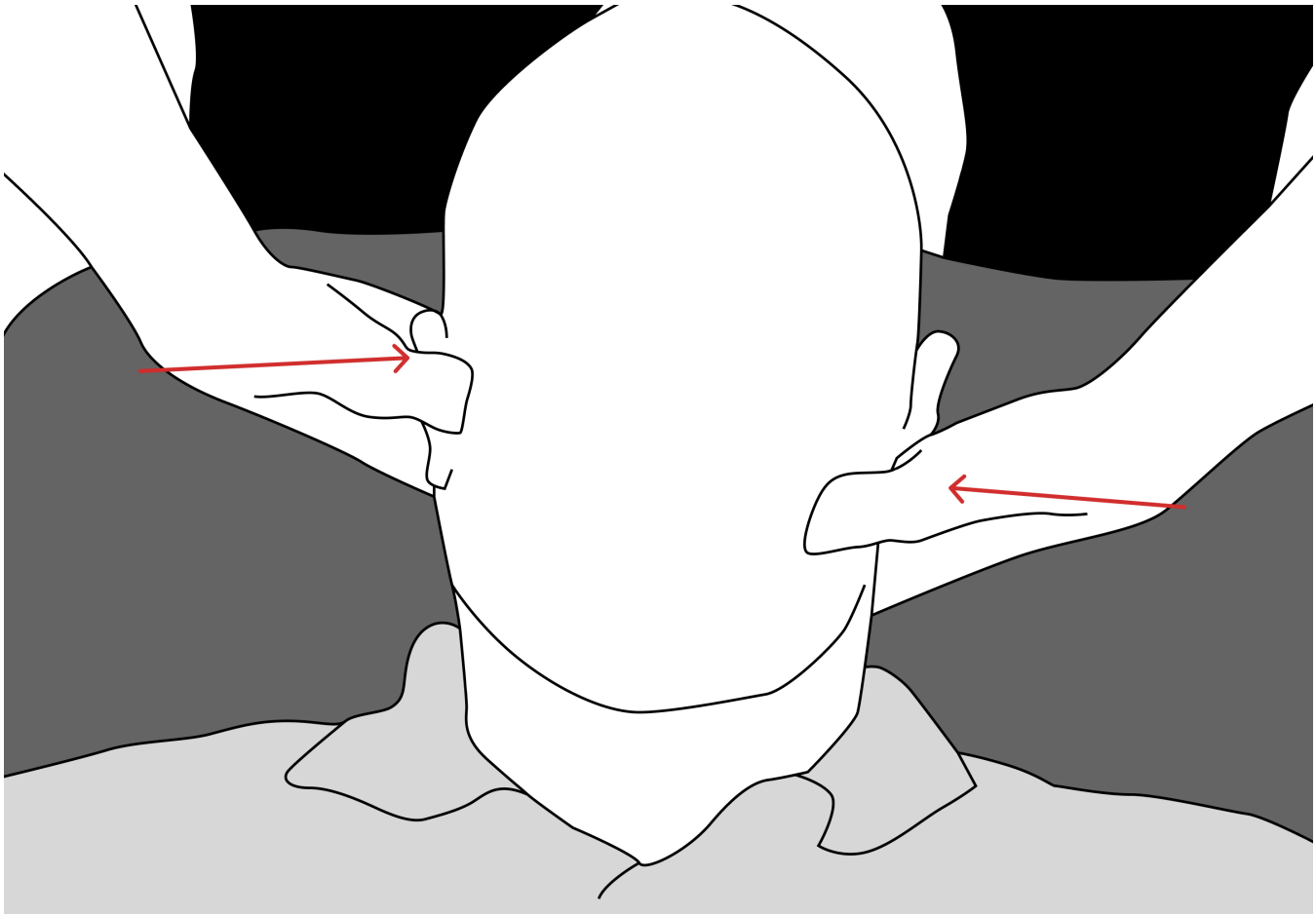


**Side-bending stress test results and interpretation**

- **Negative**: No abnormal movement or lateral flexion, indicating an intact alar ligament.
- **Excessive side bending occurs in only one or two planes**: This does not confirm ligament injury, but may indicate other issues such as joint hypermobility or muscle imbalances. This requires further diagnostic tests but is still not a positive test.
- **Positive**: If excessive side bending occurs in all three planes, this suggests alar ligament laxity.

# Lateral shear/lateral displacement/lateral gliding test

1. Place the patient in a supine position.
2. Stand at the patient's head.
3. Place on hand on the transverese process of C1 and your other hand on the contralateral transverse process of C2.
4. Apply a shearing force by approximating your hands, creating lateral stress on the ligaments.
5. Repeat the test with hands switched.



**Lateral shear test results and interpretation**

- **Negative**: No abnormal or excessive movement between C1 and C2, indicating an intact alar ligament.
- **Positive**: If excessive movement occurs, this suggests alar ligament laxity or possible injury.

## Additional notes


Catalyst University. (2022, January 26). *Alar ligament stress test (with rotation & sidebending)* | *Demonstration & interpretation*. YouTube. https://www.youtube.com/watch?v=KkXnT6LNLhI

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Osmotherly, P. G., Rivett, D. A., & Rowe, L. J. (2012). Construct validity of clinical tests for alar ligament integrity: An evaluation using magnetic resonance imaging. *Physical Therapy, 92(5)*, 718–725. https://doi.org/10.2522/ptj.20110261

Physiotutors. (2018, April 11). *Alar ligament stress test* | *Upper cervical spine instability*. YouTube. https://www.youtube.com/watch?v=pj-8cAkFYiA

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