

Background: Glenohumeral internal rotation deficit (GIRD) is a known risk factor for shoulder pain with overhead activity. Assessment of GIRD requires reliable measurements and comparison with normative data. The commonly cited AAOS “normal” value for shoulder internal rotation (IR) range of motion (ROM) is 70°, a value based on measurement in supine that does not appear to reflect adequate stabilization of the scapula. More recently, a sidelying position has been recommended to better stabilize the scapula and more accurately reflect the amount of IR ROM available specifically from the glenohumeral joint.

Clinical Question: For a patient with shoulder pain, is supine or sidelying measurement more reliable for glenohumeral IR ROM? In addition, what are normative values for this position?

Evidence: In the September, 2010, Journal of Orthopaedic and Sports Physical Therapy, Lunden and colleagues from Fairview Sports Medicine clinics and St. Catherine University found that the sidelying internal rotation measurement had superior intrarater reliability (ICC range .94 - .98) compared to the supine position (range .70 - .93). Interrater reliability was also superior, ranging from .88 – .96 for sidelying vs. .74 – .81 for supine. A more recent study by Cieminski and colleagues at St. Catherine University in the 2016 Journal of Shoulder and Elbow Surgery confirmed excellent intra-rater (.87-.97) and inter-rater (.91) for sidelying measurement. They tested 204 healthy, non-athletic subjects in the sidelying position to establish normative IR ROM values of 47.1° (sd=12.5°) for the dominant shoulder and 53.9° (sd=11.6°) for the non-dominant shoulder. They also found that women had 4°-7° more IR ROM than men, and that this motion decreased with increasing age.

Clinical Decision: These results of these studies support the sidelying position for glenohumeral internal rotation measurements due to its greater intra- and interrater reliability. In addition, normative values for sidelying IR ROM have now been established for non-athletic subjects.

References:

1. Lunden J, Muffenbier M, Giveans M, Cieminski C. Reliability of shoulder internal rotation passive range of motion measurements in the supine versus sidelying position. *J Orthop and Sports Phys Ther* [serial online]. September 2010;40(9):589-594. doi: 10.2519/jospt.2010.3197.
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2. Cieminski CJ, Kelly SM, Nawrocki TJ, Indrelie AJ, Klaers H, Stelzmilller MR. Comparison of shoulder internal rotation passive range of motion in various positions in nonathletic persons and the establishment of normative values for the sidelying position. *J. Shoulder Elbow Surg.* 2016;25:1523-1531. doi:10.1016/j.jse.2016.01.007.
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