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Appendix E-1: Measurement Technique

The alpha angle and the posterior humeral head displacement (PHHD) were measured according the method of Vathana et Al.[12]. The alpha angle is formed at the intersection of a line drawn along the posterior border of the scapula and a second line tangential to the humeral head. The apex is placed at the posterior ossified lip of the glenoid. The PHHD was measured by determining the position of the humeral head relative to a line drawn along the posterior scapular border. The distance from this line to the posterior aspect of the humeral head was then divided by the diameter of the humeral head to determine the percent displacement. A best-fit ellipse was used to approximate the anterior location of the humeral head when it was not clearly visible on ultrasound. Glenoid version and the percentage of the humeral head anterior to the scapular axis (PHHA) were measured according to the method described by Waters et al.[4]. Both measurements are based on a line bisecting the scapular axis and glenoid. For glenoid version, a second line is drawn tangential to the surface of the glenoid. These lines intersect at the midpoint of the glenoid. Version is determined by subtracting 90° from the angle formed in the posteromedial quadrant of this intersection. The PHHA was calculated similarly to the method described for PHHD but references the glenoscapular axis instead of the posterior scapular border (**Figs. 1 and 2**).