Angular limb deformity of the femur is an important characteristic of developmental patellar luxation, particularly in large-breed dogs. Femoral varus and valgus are associated with medial and lateral patellar luxation, respectively. A radiographic measurement of varus, the anatomic lateral distal femoral angle (a-LDFA) is the angle between the anatomical proximal femoral axis (a-PFA) and the condylar axis. Different a-PFA methods vary by landmark definitions. This cadaveric radiographic study compared radiographic measurement repeatability and reproducibility for 4 a-PFA methods and to determine a-LDFA agreement within and between these methods at 3 increasing angles of distal femoral elevation. All images were analyzed by 2 clinicians, with good inter-observer agreement. Median a-LDFA increased significantly with increasing femoral elevation by all a-PFA methods, and the choice of method affected the measured a-LDFA at all elevations. Combined, these differences could result in errors of ±2.6°, which could affect decisions regarding clinical intervention; however, it is not possible with these results to determine which a-PFA method is most valid.

Commentary
Femoral deformity develops secondary to patellar luxation in growing dogs. Failure to recognize this bone deformity may contribute to surgical correction failure. Conventional radiography can be used in cases with varus or valgus deformity; however, as shown in this study, it is important to ensure the femur is positioned 90° orthogonal to the radiographic beam. This is a common oversight in clinical practice with inadequate extension of the hips, particularly in cases with concurrent hip dysplasia or arthritis. This can be overcome by using horizontal beam radiography to obtain a true craniocaudal view of the femur. The presence of femoral torsion, however, requires axial radiographs or CT for assessment. Ultimately, accurate assessment of the limb axis and joint angles is critical for complete patient assessment, determination of a surgical plan, and successful corrective osteotomy.—Jason Bleedorn, DVM, DACVS

Source