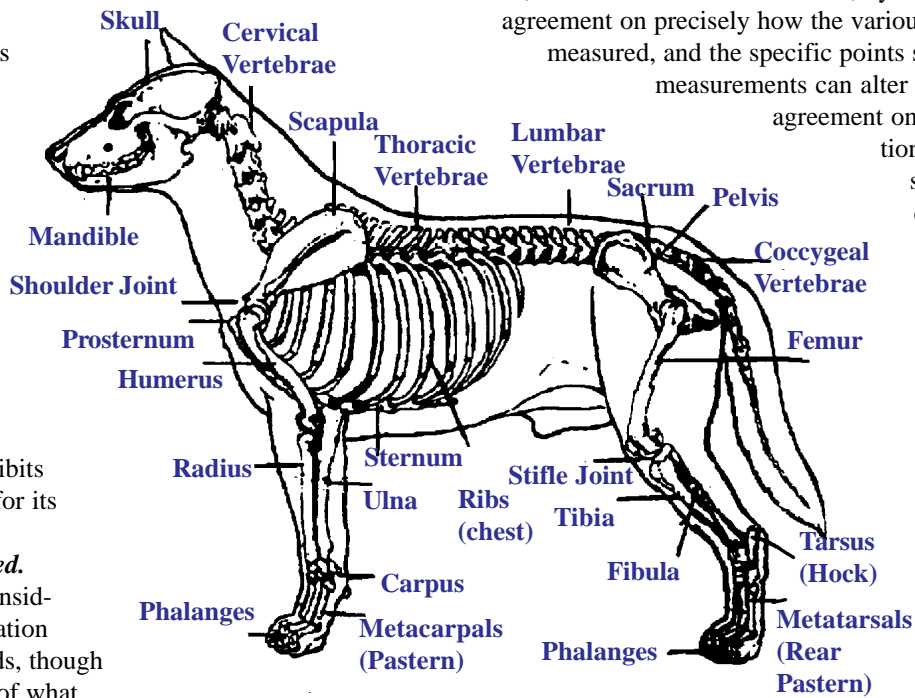


According to Spira¹, angulation is probably one of the most frequently used (and often misused) terms among dog fanciers.

Angulation refers to the angles formed by bones meeting at various joints (articulations), especially at the shoulder, stifle, and hock; the pastern and pelvic regions may also be involved. In general the terms *forequarters angulation* and *hindquarters angulation* are used to describe the combined joint angles of these regions. A dog that exhibits the proper joint angles for its breed is said to be *well-angulated* or *well-turned*. Variations in what is considered to be proper angulation occur between the breeds, though there is a commonality of what constitutes good angulation for most breeds if the individual dog is to move with ease and grace. If a dog's forequarters angulation generally matches his hindquarters angulation he will be said to be *in balance* even if both front and rear angles are less than the ideal for his breed.



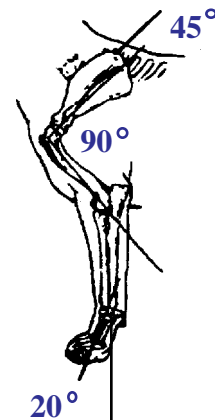
A dog that is in balance will usually move better and have greater stamina than a dog with greater angulation, front or rear, that is not balanced. There is, by no means, common agreement on precisely how the various joint angles should be measured, and the specific points selected for these measurements can alter the results. Nor is there agreement on what degree of angulation constitutes the ideal standard for the generic dog, that is, the dog that will move most fluidly, with speed and stamina.

In particular, the so-called shoulder layback angle measured along the spine of the scapula (shoulder blade) from the vertical is often considered ideal at 45 degrees (Spira¹, Lyon²). This is hotly disputed by Elliott³ who considers the 45 degree angle to be extreme and notes that such an angle

would bring the lower end of the scapula so far forward as to lose the support of the chest wall. Elliott prefers an angle more like 60 degrees as expressing the normal ideal for most breeds.

A common method for evaluating the slant of the bones in the forequarters is to take a line from the uppermost edge of the scapula to the frontmost prominence of the humerus (the point of shoulder), then take another line from there to the elbow. As a general rule, the distance between these points of reference should look or feel about equal, and if the front is balanced the elbow will be set approximately on a line dropped from the rearmost angle of the scapula. Another way to measure this angle is to feel the ridge of the scapula, and to determine the angle between this ridge and the slant of the humerus (measured from its upper center to its lowest end (not the elbow)). These latter measurements differ from the first procedure and will give the impression of less shoulder layback and a greater angle between shoulder and humerus, but the findings are more realistic as to the actual bone placement and joint angulation. The nominal ideal for this angle is 90 degrees, however, most breeds will be found to measure closer to 105 degrees, and terrier breeds in particular will probably measure at more than 130

degrees. The angle the pastern makes with the vertical should be about 20 degrees in most breeds, a greater slope indicating weak pasterns (down in pasterns).



**Forequarters
(Thoracic Limb)**

¹ Spira, Harold R., *Canine Terminology*, Howell Book House, Inc., New York, 1982

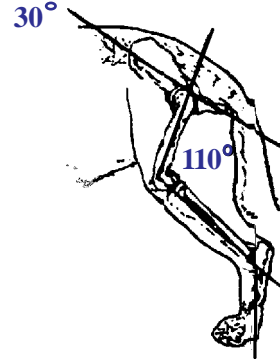
² Lyon, McDowell, *The Dog in Action*, Howell Book House, Inc., New York, 1985

³ Elliot, Rachel Page, *The New Dogsteps*, Howell Book House, Inc., New York, 1983

CANINE TERMINOLOGY - Angulation

(Continued)

Most standards suggest angles within the range of 90 to 110 degrees for the hindquarters angulation to bring it in line with the forequarters angulation. The rear angle (the stifle joint angle) is measured along the longitudinal axes of the femur (thigh bone) and the tibia/fibula (lower thigh bones). In practice, most stifle angles vary from 110 to 130 degrees with the Chow Chow as the major variant at 150 degrees¹. A reference to hindquarter angulation sometimes also includes the angle of the pelvis from the horizontal (the pelvic slope). Length and slope of the pelvic assembly can be approximated by taking a line from the forward edge of the pelvis (ilium) to the buttock (ischium). Pelvic slope and outline of the croup are not one and the same. While the outline of the croup and set-on of the tail may be influenced by the slant of the pelvis, the outline may be more affected by the arch, dip or straightness of the lumbar section of the spinal column. The angle between the lower thigh and the rear pastern (the hock joint) is also significant. The rear pastern should drop vertically, however, if the hock angle is too great (straight in hock), the rear pastern will slope backwards, and if the hock angle is too small (sickle hocks), it causes the dog to “stand under itself”.



*Hindquarters
(Pelvic Limb)*