EVALUATION OF ZOOMETRIC MEASURES AS AN ASSESSMENT OF BODY COMPOSITION OF DOGS AND CATS  Laflamme DP, Hume E, Harrison J. Ralston Purina Co., St. Louis, MO

Obesity is the most common form of malnutrition in pet dogs and cats in developed countries, yet it often goes unrecognized or untreated. Methods of quantifying obesity that are readily available for practicing veterinarians may help in the management of this condition. The objective of this study was to evaluate several zoometric measures as a means for quantitative evaluation of body composition.

METHODS: Approximately 100 puppies and 100 adult dogs of various breeds and 50 adult Domestic shorthair cats were evaluated by the following methods: dual energy X-ray absorptiometry (DEXA) for analysis of % body fat (%BF); body condition score (BCS) according the Purina 9-point BCS system; body weight (W) in kilograms; body mass index (BMI) measured as length (cm)^2/weight (kg); thoracic girth (TG); abdominal girth (AG); and body length (L). Pearson Correlation Coefficients and stepwise regression were used to determine which measures or combination of measures most reliably predicted %BF determined by DEXA.

RESULTS: The %BF ranged from 4.6 to 27.8% (mean 14.6%; n=102) for puppies; 5.3 to 49.8% (mean 19.7%; n=98) for adult dogs; and 15.0 to 55.4% (mean 36.9%; n=49) for adult cats. The best single predictor of %BF was BCS: r^2 = 0.74, 0.78 and 0.59 for puppies, adult dogs and adult cats, respectively. Considering data from males and females separately improved the ability of BCS to predict %BF in adult cats: r^2 = 0.73 and 0.62 for males and females, respectively. Of the quantitative zoometric measures, BMI was the single best predictor of %BF for puppies (%BF= 38.3673 - 0.0635(BMI); r^2 = 0.56) and adult cats (%BF= 66.7135 - 0.0607BMI; r^2 = 0.47), while AG was the single best predictor for adult dogs (%BF = -12.9373 + 0.6959AG; r^2 = 0.57). The best multiple factor predictors of %BF for puppies and adult dogs, respectively, were %BF= 50.0786 - 10.6649TG/AG - 0.0605 BMI (r^2 = 0.59) and %BF= -27.7366 + 0.5783W + 62.4856AG/L (r^2 = 0.68). Gender was an important predictor of %BF in cats: %BF = -27.4966 + 1.4878L - 0.0485BMI - 9.0214Male/Female + 29.8796 TG/L, where Male=1 and Female = 0 (r^2 = 0.65).

CONCLUSIONS: For dogs, BCS remains the best predictor of %BF for use in the clinic. For cats, gender influenced the prediction of %BF whether using BCS or zoometric measures.