How much should a pet weigh?

Petra Viziova

HILL'S
HEALTHY WEIGHT
PROTOCOL

- How to determine ideal weight of pet?
- Hills diagnostic tools
- Research behind – BCS, BFI, MM
- How to perform measurements for dog
- How to perform measurements for cat

What is ideal weight of Sorkie ?

Nutritional Assessment Screening Evaluation

Nutritional History | Body Weight | Body/Muscle Condition score

Overweight
BCS > 3/5 or > 5 /9

Traditional **BCS only Validated** for pets with **< 50% Body Fat**

5 Point BCS	% Body Fat	9 Point BCS	% Body Fat
3	16-25	5	23-27
4	25-35	6	28-32
5	36-**45**	7	33-37
		8	38-43
		9	**44-47**

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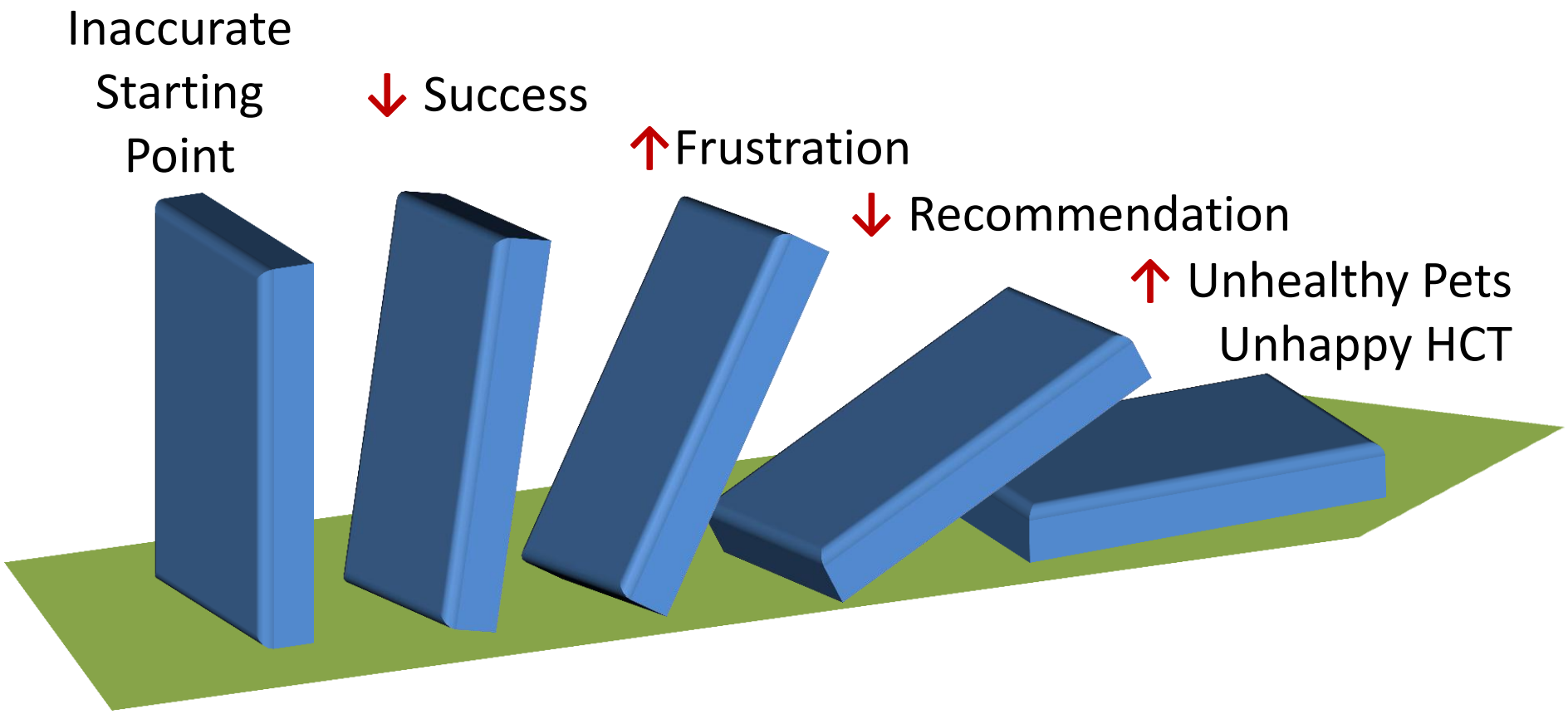
The **Domino** Effect of Starting with the **Wrong Ideal Weight**



Hill's is giving the Profession Better Tools

Diagnostic Tools

Morphometric Measurements

BFI Risk Chart

Research behind the tools

1. step - to evaluate **current BCS compare to DEXA**

2. step - to validate **BFI** compare to **DEXA**

3. step – to validate a new clinical method of measuring body composition in dogs and cats = **Morphometric measurement** compare to **DEXA**

Study Designed to **Evaluate Accuracy** of **Diagnostic Tests** to assess **Body Composition**

DEXA = Gold Standard

- Morphometric Measurements
- BFI Risk Chart
- Traditional BCS

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Study Population
Variety of Breeds and Sizes

83 Client-owned Dogs

Eighty three client owned dogs

Age:	Range: 1 to 12 years, Average 6 years
Gender:	47 females (5 intact), 36 males (3 intact)
Weight:	Range 11 to 162 lbs, Average: 58 lbs
Body Fat:	Range: 20% to 65%, Average: 44%
Breed:	64 (77%) were identified as a specific breed, 19 (23%) were classified as mutt or other

Number in each breed classification: 1 BASSET HOUND, 1 BOSTON TERRIER, 1 BOXER, 1 BULLMASTIFF, 1 CORGI, 1 DOBERMAN PINSCHER, 1 FLAT-COATED RETRIEVER, 1 FRENCH BULLDOG, 1 GERMAN SHEPHERD DOG, 1 POODLE, 1 RAT TERRIER, 2 BORDER COLLIE, 2 CHIHUAHUA, 2 JACK RUSSELL TERRIER, 2 MINIATURE PINSCHER, 2, PIT BULL TERRIER, 2 PUG, 2 ROTTWEILER, 2 SHETLAND SHEEPDOG, 2 SHIH TZU, 3 COCKER SPANIEL, 4 AUSTRALIAN SHEPHERD, 5 BEAGLE, 6 GOLDEN RETRIEVER, 6 OTHER, 7 DACHSHUND, 10 LABRADOR RETRIEVER, 13 MUTT

76 Client-owned Cats

Seventy six client owned cats:

Age:	Range: 1 to 15 years, Average 6 years
Gender:	38 females (0 intact), 38 males (1 intact)
Body Fat:	Range: 25% to 62%, Average: 46%
Weight:	Range 6.2 to 25.3 lbs, Average: 13.5 lbs
Breed:	

54 DOMESTIC SHORT HAIR, 14 DOMESTIC LONG HAIR, 2 BURMESE, 1 ABYSSINIAN/SOMALI, 1 AMERICAN SHORTHAIR, 1 DEVON REX, 1 SHOWSHOE, 1 SINGAPURA, 1 OTHER.

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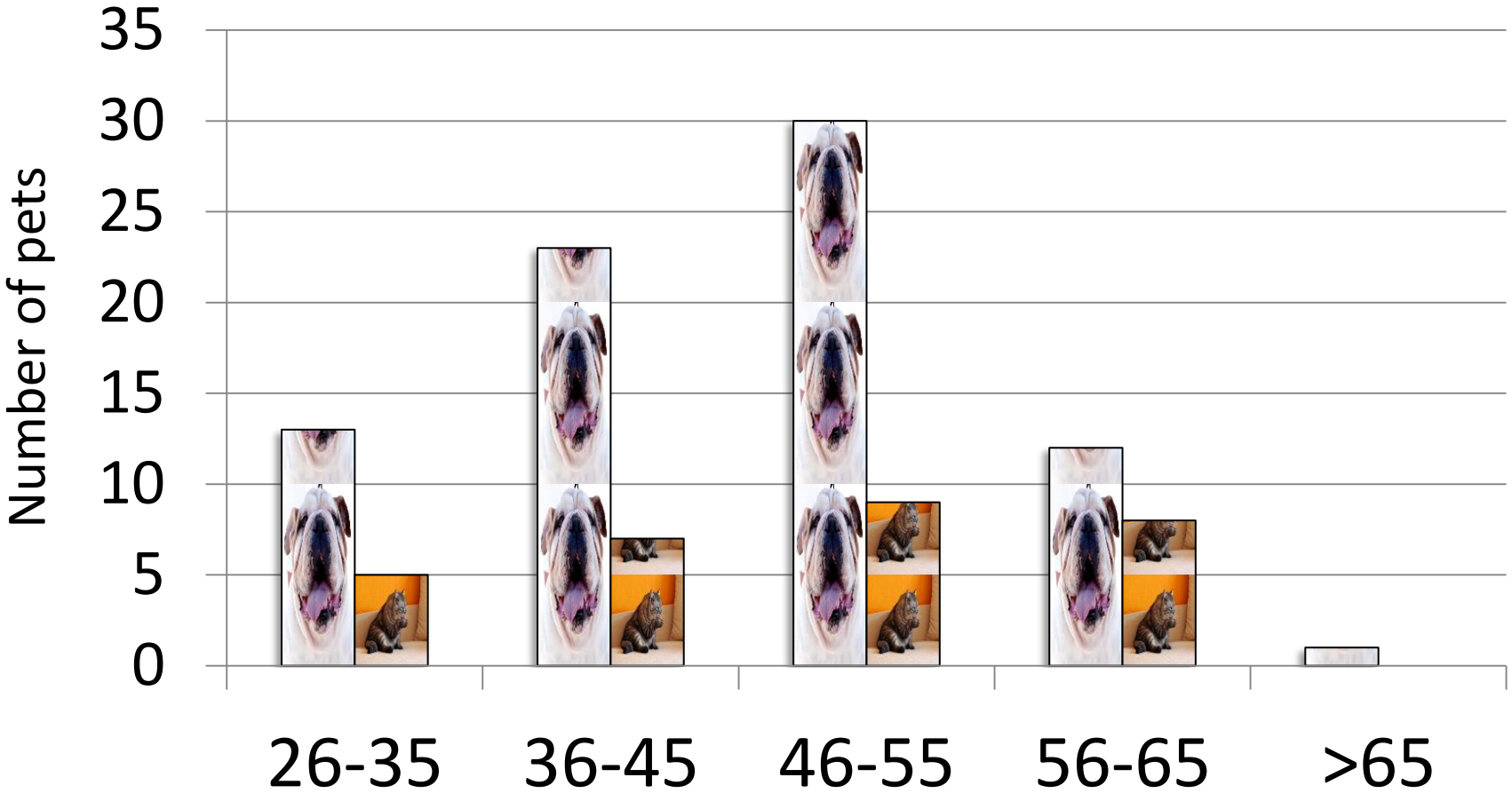
Distribution of Pets based on **DEXA** determined **Percent Body Fat**



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Diagnostic Tests to assess Body Composition

DEXA = Gold Standard

Morphometric Measurements

BFI Risk Chart

Traditional BCS

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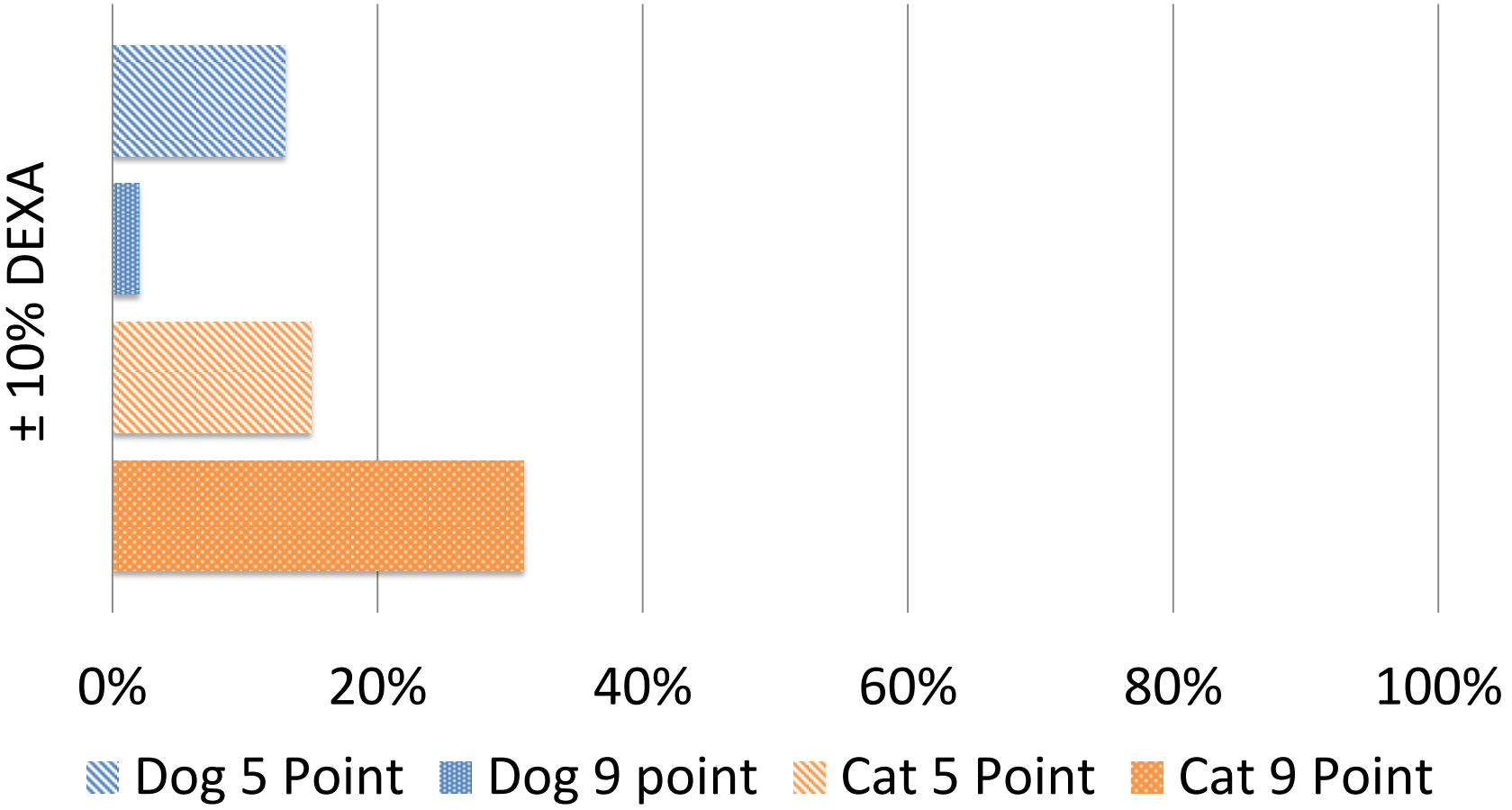
Accuracy of Predicting **Ideal Weight** with **Traditional BCS Compared to DEXA**



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Diagnostic Tests to assess Body Composition

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BFI Risk Chart

Traditional BCS

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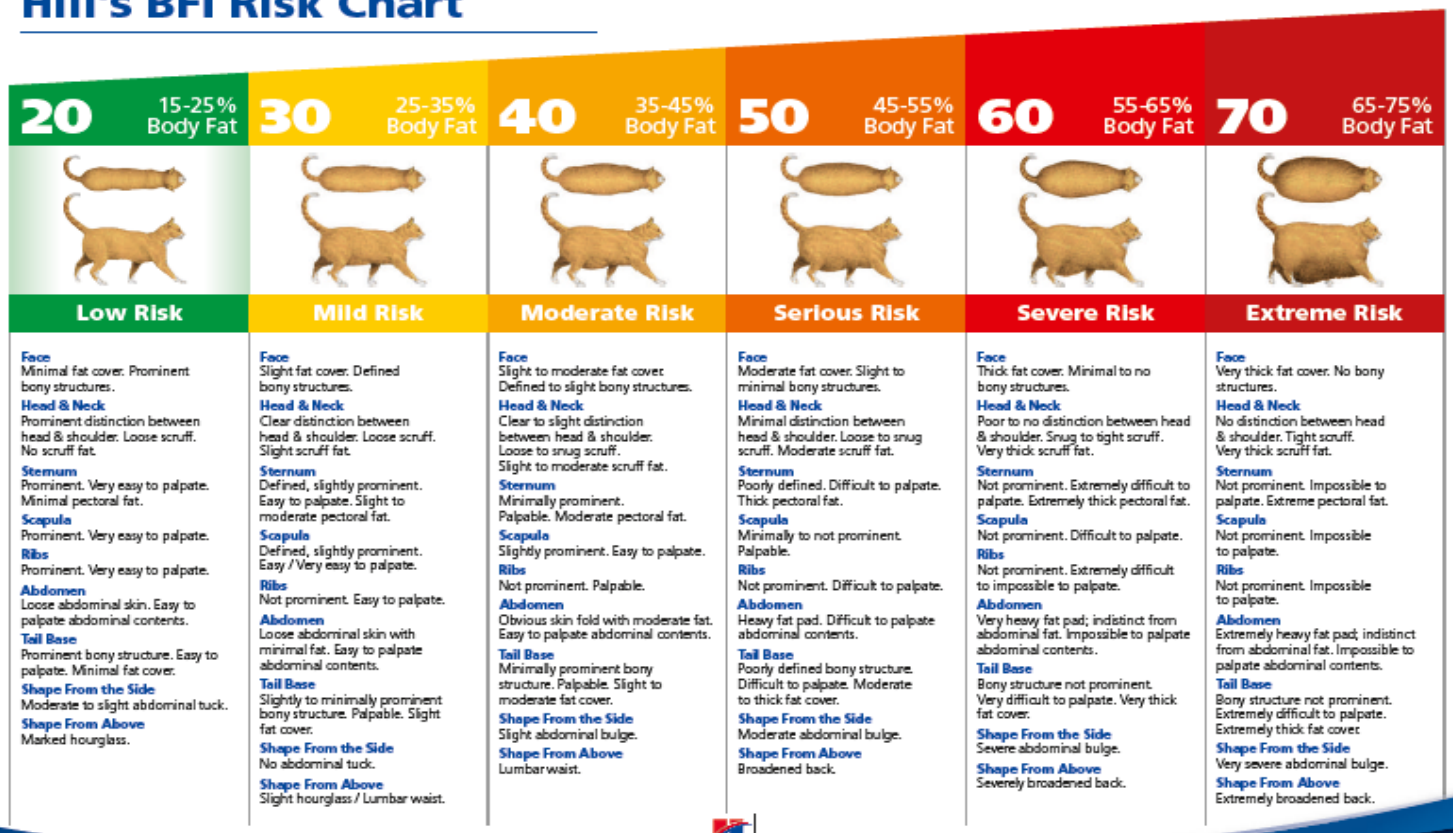
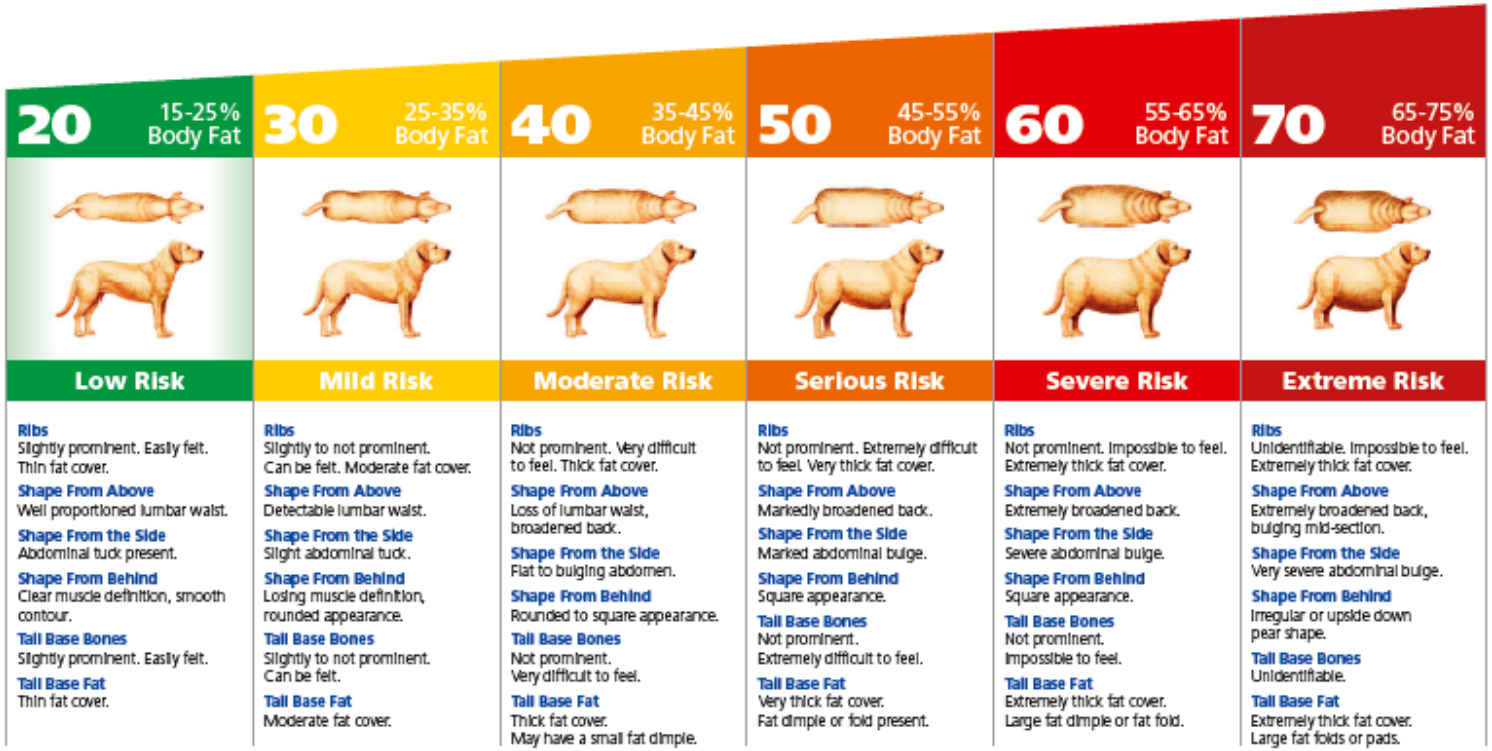
BFI Risk Chart is **Validated** in dogs and cats with **> 50%** Body Fat

Hill's BFI Risk Chart



Directly links excess body fat (BFI) to the increased health risks.

Hill's BFI Risk Chart



BFI Risk Chart associates **body composition** with risk

Traditional BCS Validated for pets with **< 50% Body Fat** and uses **stigmatized language** to communicate

5 Point BCS	% Body Fat	9 Point BCS	% Body Fat
3	16-25	5	11-27
4	25-35	6	28-32
5	36-45	7	33-38
		8	38-44
		9	45-47

Discuss **RISK** not weight

BFI Risk Chart	% Body Fat	Risk
20	16-25	Normal
30	25-35	Moderate
40	36-45	High
50	46-55	Serious
60	56-65	Severe
70	**66-75**	**Extreme**

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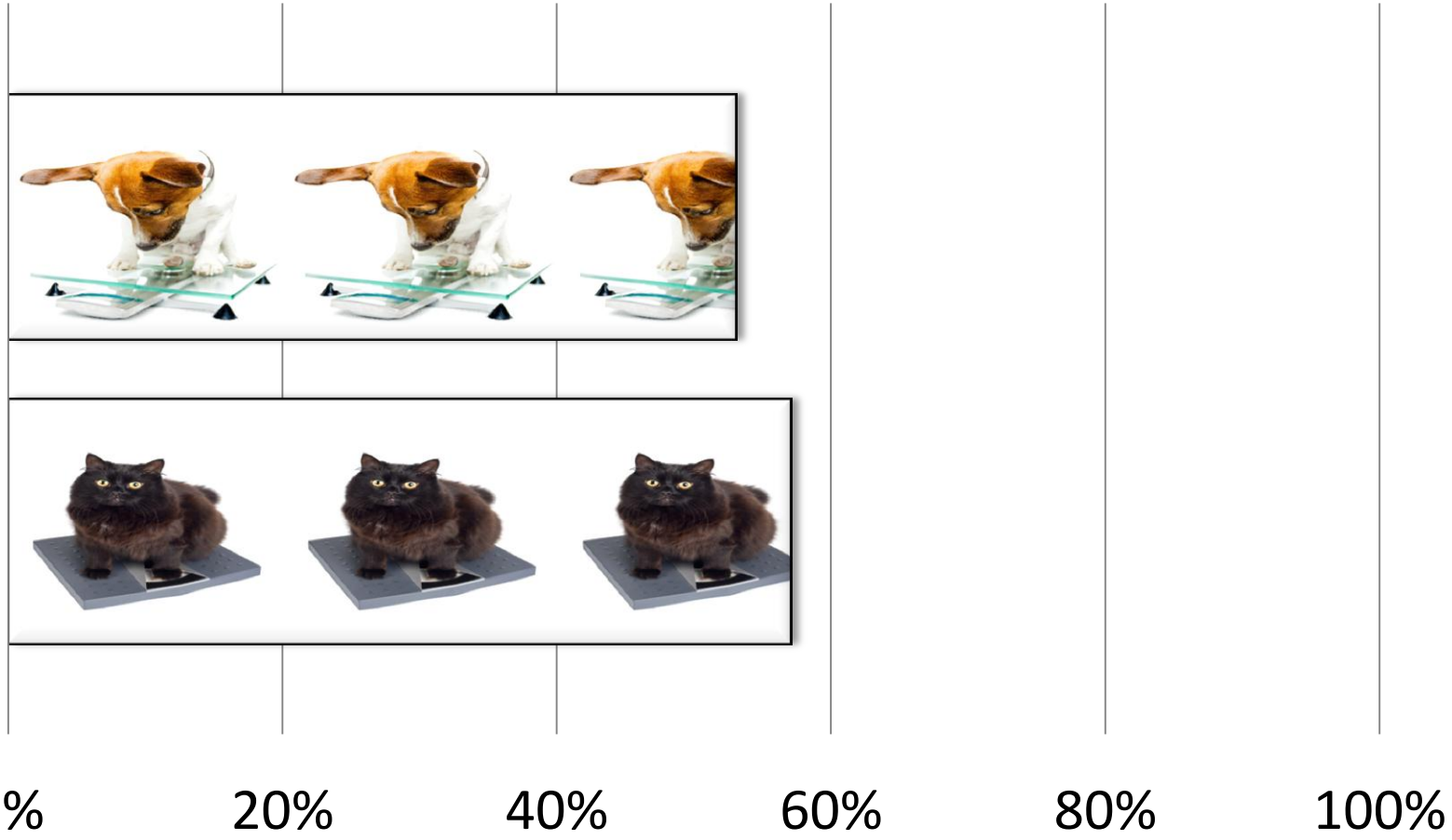
Accuracy of Predicting **Ideal Weight** with **BFI Risk Chart Compared to DEXA**



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Diagnostic Tests to assess Body Composition

DEXA = Gold Standard

- Morphometric Measurements
- BFI Risk Chart
- Traditional BCS

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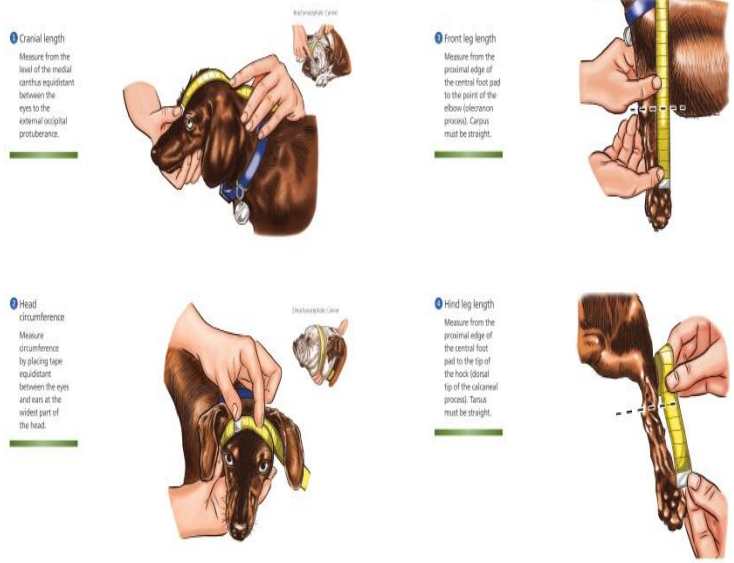
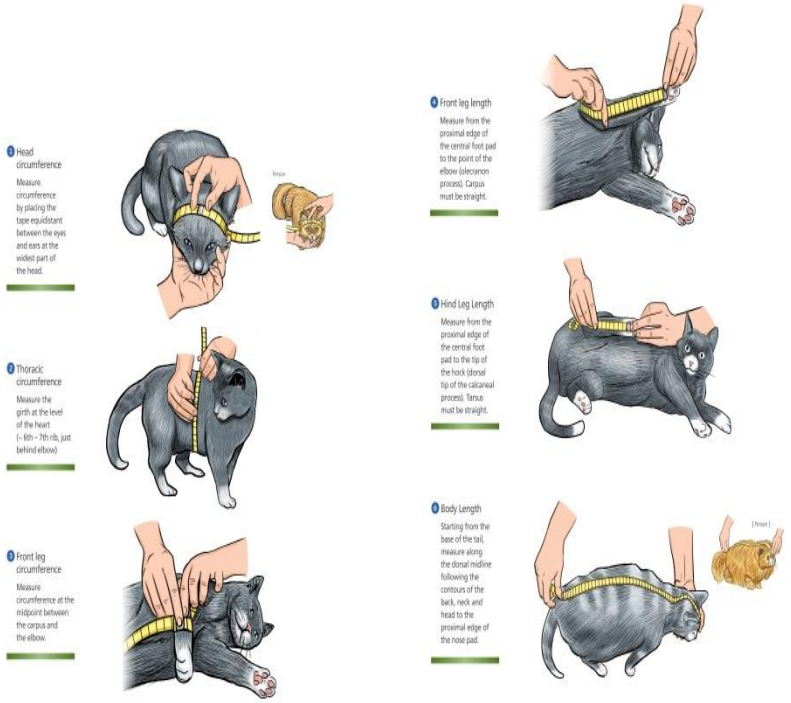
Simple Body **Measurements** using a tailors tape ~ 2 mins

4 Measurements



6 Measurements



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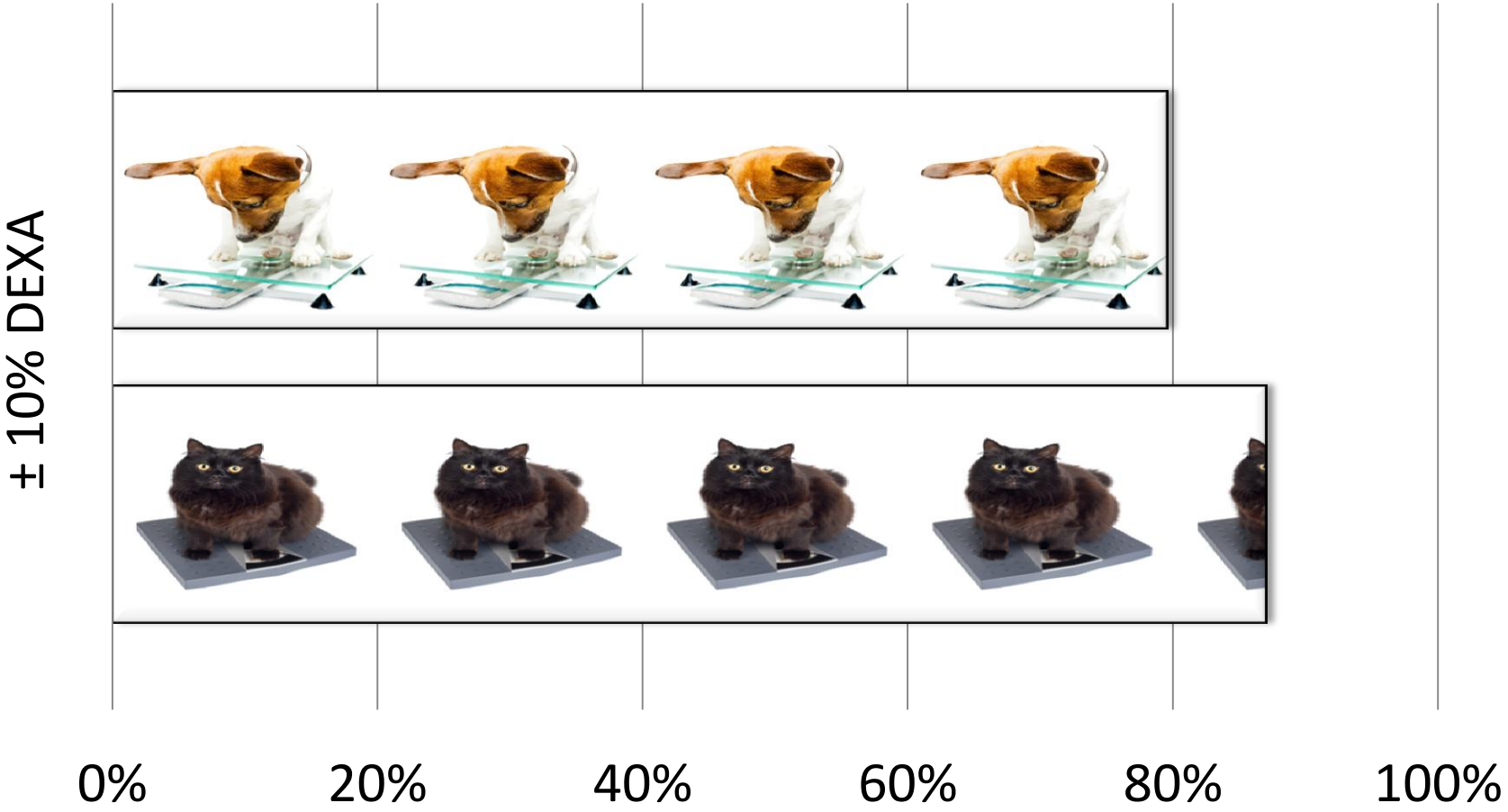
Accuracy of Predicting **Ideal Weight** with **Body Measurements** Compared to DEXA



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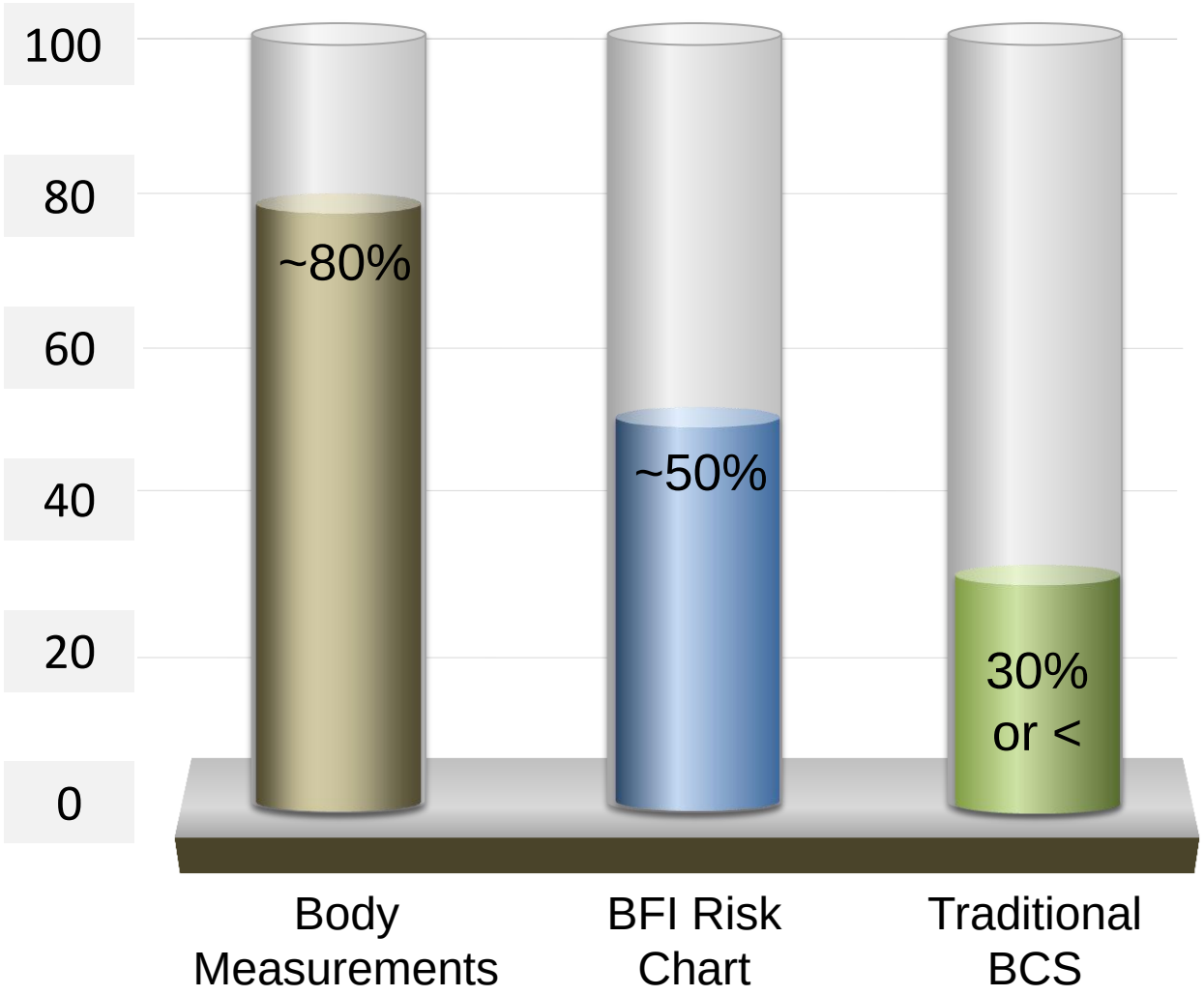
Relative **Accuracy** of Predicting **Ideal Weight**



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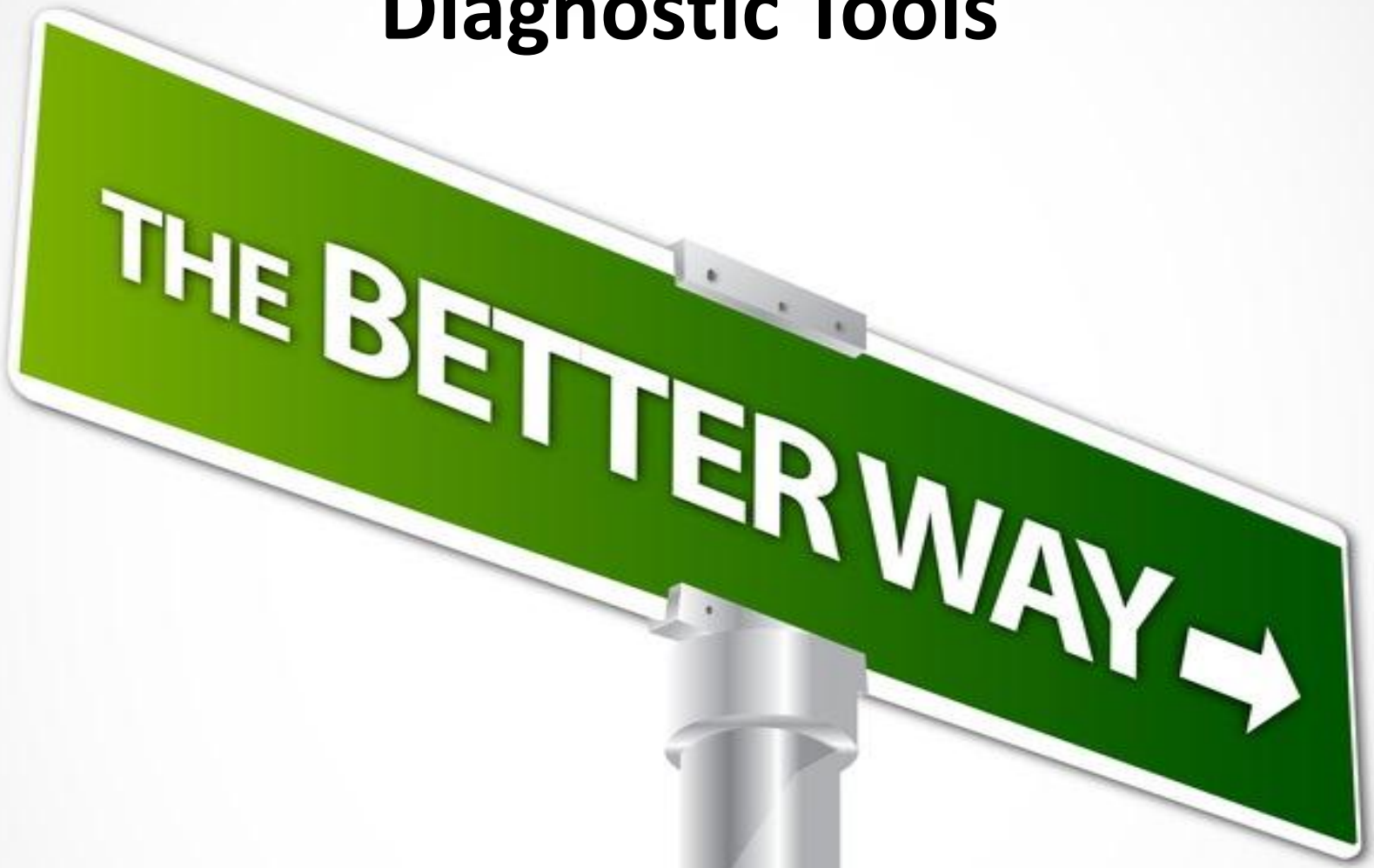
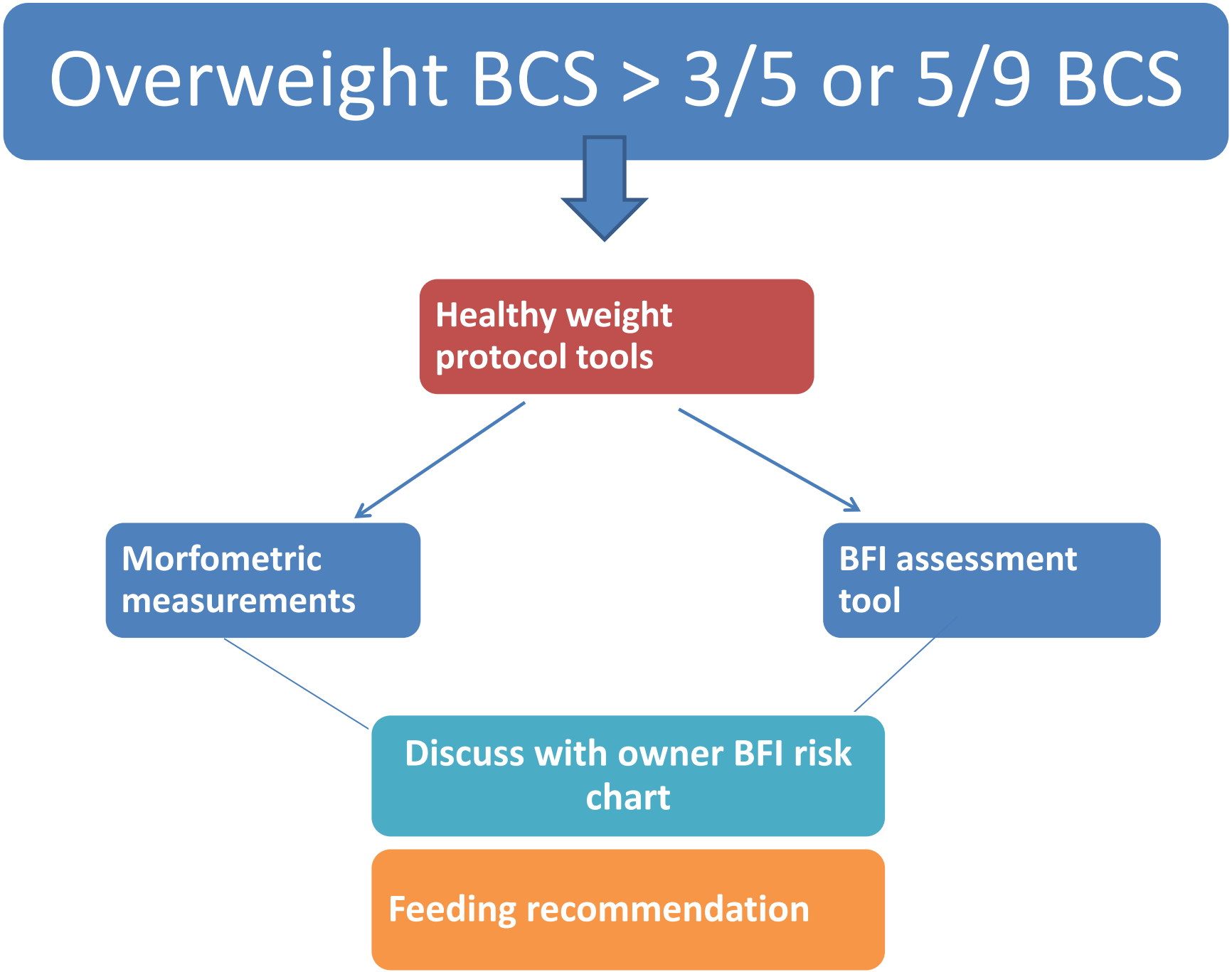
Healthy Weight Protocol
Diagnostic Tools



To determine **ideal body weight** in **overweight** pets


Overweight BCS > 3/5 or 5/9 BCS
Healthy weight protocol tools
Morfometric measurements
BFI assessment tool
Discuss with owner BFI risk chart
Feeding recommendation

Morphometric measurements

- Validate only for overweight and obese patients.

- For dogs from 5kg to 73 kg
- For cats from 3 kg to 11.5 kg

- Not enough information for pets outside of that range.

How to perform measurements?

- A series of body frame (morphometric) measurements are taken using a flexible tape measure
- **Canine Measurements (1/4) :**

Head Length
Measure from the external occipital protuberance to the point equidistant between the eyes

Canine Measurements 2/4 :

Front Leg Length
Measure the length from top of the central foot pad to elbow. Carpus must be straight.

Canine Measurements 3/4:

Head circumference
Measure between the eyes and the ears at the widest part of the head

Canine Measurements 4/4:

Hind Leg Length
Measure the length of the hind leg from the top of the central foot pad to the dorsal tip of the calcaneal process

Ready for the cat?

Feline Measurements 1/6

Head circumference
Wrapping tape snugly, measure between the eyes and the ears at the widest part of the head.

Feline Measurements 2/6

Thoracic circumference

Wrap tape snugly around rib cage at the heart girth (behind elbow)

Feline Measurements 3/6

Front Leg Circumference
Wrap tape snugly around front leg at the midpoint between the carpus and the elbow

Feline Measurements 4/6

Front Leg Length
Measure the length from top of the central foot pad to the point of the elbow. Carpus must be straight.

Feline Measurements 5/6

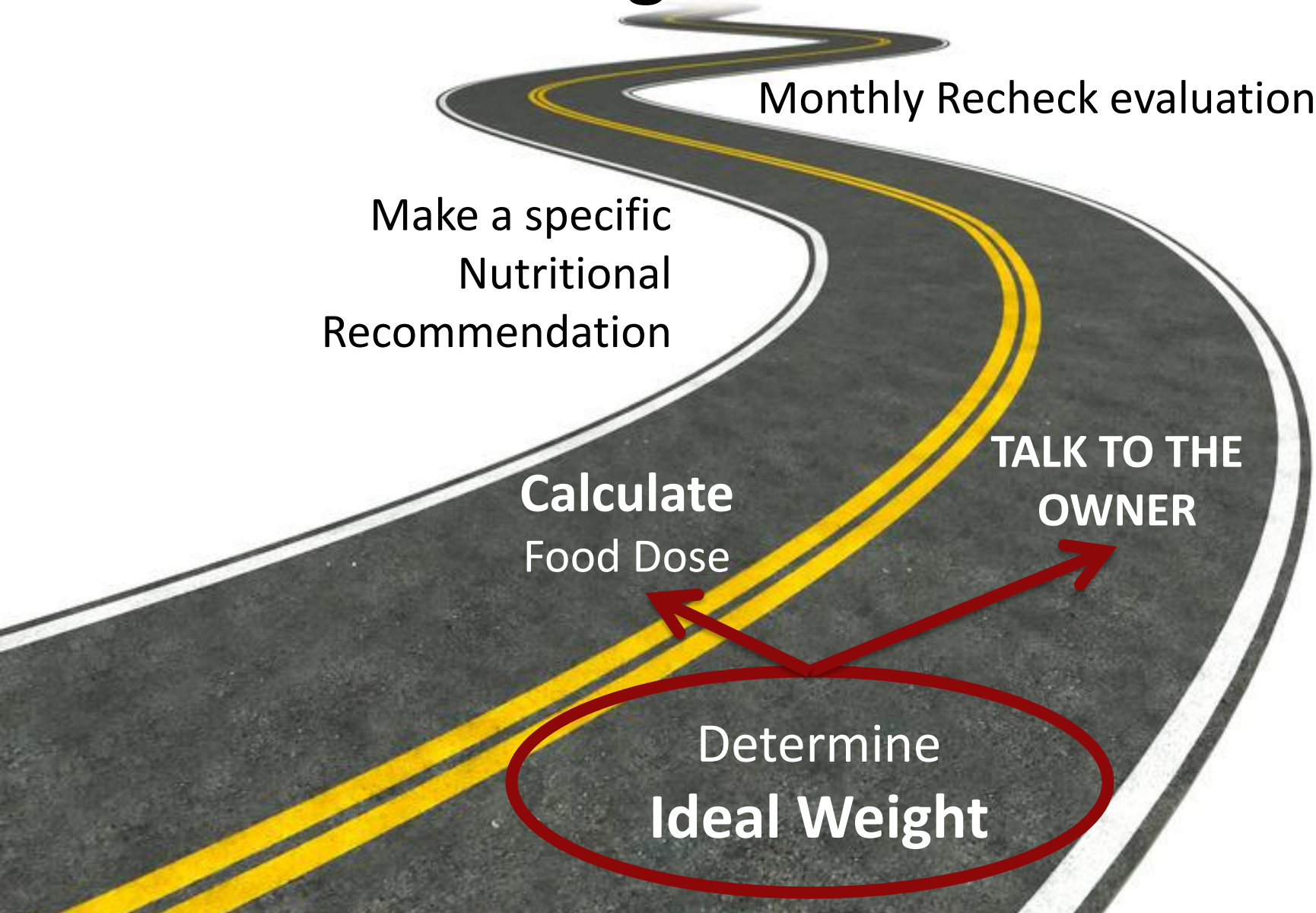
Hind Leg Length
Measure the length of the hind leg from the top of the central foot pad to the dorsal tip of the calcaneal process.

Feline Measurements 5/6

Body Length
Measure from the tip of the nose to the base of the tail where it meets the body. Hold tape gently along the dorsal midline.

Video

Road to Weight Loss **Success**



Thank you

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PROTOCOL

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- Lusby AL, Kirk CA, Toll PW, et al. Effectiveness of BCS for Estimation of Ideal Body Weight and Energy Requirements in Overweight and Obese Dogs Compared to DXA (abstract). *Journal of Veterinary Internal Medicine* 2010;24:717.

- ***EFFECTIVENESS OF MORPHOMETRIC MEASUREMENTS FOR PREDICTING BODY COMPOSITION IN OVERWEIGHT AND OBESE DOGS. PW Toll,[1] I Paetau-Robinson[1], AL Lusby,[2] GA Henry, [2] CA Kirk,[2] 1. Hills Pet Nutrition, Topeka, KS 2. University of Tennessee Department of Small Animal Clinical Sciences, Knoxville, TN***
- In a prior study we demonstrated that current methods of estimating ideal body weight for weight loss feeding are inaccurate in dogs having > 45% body fat. The purpose of this study was to develop simple and accurate methods of measuring body composition in clinical practice in overweight to morbidly obese dogs. Current morphometric measurement methods do not adequately predict body composition in obese dogs. Additionally, these methods tend to be difficult to use and have poor accuracy. This study evaluated two methods of predicting lean body mass (LBM) from animal morphology, radiographic measurement of skeletal size and external physical measurement of body size.
- Thirty-six client-owned overweight or obese adult dogs (28% to 64% body fat) weighing 5 to 73.6 kg underwent dual energy x-ray absorptiometry (DXA) scanning to assess their body composition. Nine measurements were made from digital radiographs to assess skeletal size and 16 external physical measurements were made to assess body size. Body weight was also measured. Multiple regression analysis using DXA results as the dependent variable was used to develop regression equations for the prediction of LBM from the skeletal size and body size data. Several equations were developed that had high (>0.9) correlation coefficients for both methods when the dogs were divided into 2 size groups (≤ 40 lbs and > 40 lbs). The best equations were applied to the data from the same group of dogs to evaluate how well values for individuals were predicted (within ± 10% of the DXA value). The best equations using skeletal size data resulted in a $r^2 = 0.99$ and a predictability (± 10%) ≥ 86% using ≤ 8 variables (including BW) for both size groups. The best equations using body size data resulted in a $r^2 = 0.99$ and a predictability (± 10%) = 100% using ≤ 8 variables (including BW and age) for both size groups.
- Multiple regression analysis demonstrated that both methods could be used to predict LBM using a variety of regression equations. This approach shows great potential for the development of simple and accurate tools to be used in clinical practice. Further studies must be done to validate the equations in a population of dogs other than those used to develop the equations.

EFFECTIVENESS OF BCS FOR ESTIMATION OF IDEAL BODY WEIGHT AND ENERGY REQUIREMENTS IN OVERWEIGHT AND OBESE DOGS COMPARED TO DXA.

AL Lusby,[1] CA Kirk,[1] PW Toll,[2] I Paetau-Robinson[2] 1. University of Tennessee Department of Small Animal Clinical Sciences, Knoxville, TN 2. Hills Pet Nutrition, Topeka, KS

With an estimated 35-40% of pet dogs being overweight or obese, veterinarians must accurately assess energy needs to prescribe appropriate food doses. Body condition scoring (BCS) is the most popular and accessible method for estimating degrees of obesity in dogs, but these scales were designed to assess animals with body fat percentages below about 45%. Many obese dogs have body fat percentages of 50% and greater. This project compared the accuracy of using body fat percentages to the 5 and 9 point BCS systems for estimating ideal body weight and resting energy requirements (RER) in overweight dogs. Thirty-six healthy, client-owned dogs ranging from 5 to 73.6 kg underwent dual energy x-ray absorptiometry (DXA) scanning to assess their percentage of body fat (BF). BF percentage was then used to estimate ideal body weight, calculate RER, and classify each animal into the 5 and 9 point BCS system. Once a BCS was assigned, the median body fat percentage for each score was used to estimate ideal body weight and RER (5 point scale - 4=30%, 5=40%; 9 point scale - 6=30%, 7=35%, 8=40%, 9=45%). Based on DXA, body fat ranged from 28.3% to 63.7% with a mean of 45.9%. To assess the accuracy of BCS for moderately versus morbidly obese dogs, patients were divided into two groups: <45% body fat (n=15) and >45% body fat (n=21). Compared to DXA, estimations of ideal body weight were significantly higher using the 5 (23.0 vs. 19.2 kg) and 9 (21.1 vs. 19.2 kg) point BCS in dogs with BF >45% ($p<0.001$) but did not differ in dogs with <45% BF ($p>0.05$). DXA estimations of RER were also significantly lower than estimations using the 5 (709 vs. 616 Kcal/day) and 9 (665 vs. 616 Kcal/day) point scales in dogs with BF>45% ($p <0.001$), but did not differ in dogs with <45% BF ($p>0.05$). The results of this study demonstrate current BCS systems provide good estimates of ideal body weight and RER in dogs with less than 45% BF, but are inadequate for calculating RER and ideal body weight in morbidly obese dogs (BF>45%). As a result, food dose calculations will be overestimated and this may affect weight loss efficacy. As canine obesity rates climb, we must develop new methods to assess our most obese patients and provide better weight management.