

Obesity and Weight Loss

Obesity is a tricky topic. No one wants to hear that their pet is overweight, or that they have been overfeeding their pet. But understand that no one is judging you—our staff truly wants to adequately assess your pet's risk for surgery, help get your pet healthy, and make their life as good as it can be!

Obesity is defined as A DISEASE where excess body fat is accumulated such that health may be adversely affected. It has been scientifically proven that dogs fed a restricted calorie diet compared with dogs allowed to eat as much as they wanted decreased both appearance and progression of arthritis in hip, elbow and shoulder joints. It is thought that obesity may alter the proper alignment of joints, leading to abnormal forces in joints. Obesity is also inflammatory in nature, as increased inflammatory factors caused by fat are produced, which directly cause cartilage cell damage. Simply having more weight to carry also overloads joints.

Is my pet overweight? You may be bringing your pet in for a surgery, and during discussion about the surgery, we may inform you that your pet is not at an ideal body weight. Where do we go from there?

First, we will weigh your pet and evaluate your pet's Body Condition Score (BCS) on a scale of 1-9. Many published charts exist to help us determine the BCS (figure 1). The chart helps us put a number to measurements that otherwise are a bit subjective.

We assign each patient a BCS to help with current treatments and future recommendations. For instance, if we have a dog that weighs 90 pounds, we have to determine if that is an appropriate or inappropriate weight for that particular pet. If that patient is a Great Dane, she may have a BCS of 3/9 at 90 pounds. But if that patient is a Boxer, it is possible that patient may be a BCS 9/9 and considered obese. To help the second patient achieve a more optimal BCS, we need to estimate the weight that would be associated with a BCS of 4-5/9. So, we are kind of guessing based on the current weight and the chart as to what the optimum weight would be. We might decide that if the Boxer is a 9+, then ideal body weight may be closer to 55-60 pounds. That is a decrease in weight of 30-35 pounds.

Why is this important immediately from a surgical view? Well, if that Boxer *should* weigh closer to 55 pounds, this drastically changes how we look at everything from drug dosages to fluid requirements to anesthetic risk. The conversation we have with you will be much different than if your dog was closer to a BCS of 5. For one, fat decreases your pet's ability to easily recover from anesthesia because the anesthetics are transferred to the fat. The fat does not have a very good blood supply, so the drugs get trapped in the fat and cannot be further metabolized to exit the body in a timely fashion, and your obese pet takes significantly longer to recover from anesthesia, leading to more physiological stress on internal organs. Second, the weight on the dog's chest is significantly greater, and breathing even while conscious is more difficult than if they were at an ideal weight. There is also more fat that accumulates inside the abdomen and the chest, making it more difficult for the diaphragm and the ribcage to move and decreasing the space for the lungs to expand. Once the patient is under anesthesia, all of this weight is like having 35 extra pounds in dumbbells constricting their chest. We often have to manually breathe for these patients the entire time they are under anesthesia because they cannot physically move their chest against the extra weight while they are unconscious, and they cannot keep their oxygen saturation levels in a place consistent with life. Third, because fat does not play a helpful part of drug metabolism, if an obese patient is dosed with drugs based on their actual weight, it can lead to an overdose of medications and fluids. We prefer to dose patients based on their lean body weight to prevent this from happening.

Why is this important for the future of your pet? Sometimes for orthopedic problems, especially hip dysplasia and elbow dysplasia, losing weight can dramatically affect their quality of life. Several wonderful studies have shown that dogs that were prone to hip dysplasia that were kept on a restricted calorie diet had significantly less lameness, less development of arthritis, less progression of arthritis over years, and required significantly less medication. And, they lived longer! So really, regardless of your pet's orthopedic status, it makes sense to keep them at their ideal weight!

So, we have determined that your pet needs to lose weight. If your pet needs to lose weight, we follow a specific process to achieve this. First, we rule out any metabolic reasons that your pet might be obese, like adrenal or thyroid disease, with blood work. If underlying disease is found,

then we start by treating your pet for it. This might be what your pet needs to get onto the right track to lose excess weight.

If blood work is normal, then it's time to do some math. We start by estimating what your pet SHOULD weigh. This is not something that is always easy to do. We might make a guess based on history—maybe your pet was at their ideal weight a year or two ago and we want them to get back to that number. Or maybe we just kind of guess what numerically sounds reasonable and start there. Once we have that number, we find the **RER**, or **resting energy requirement**. This is the amount of energy that your pet needs to physiologically survive.

So, for our 90 pound boxer:

$$\text{RER} = 70(\text{Body Weight in kg})^{3/4}$$

$$\text{Weight in kilograms} = 90 \text{ pounds} / 2.2 \text{ pounds per kg} = 40.9 \text{ kg}$$

$$\text{So, RER} = 70(40.9)^{3/4}$$

$$\text{RER} = 70(16.17)$$

$$\text{RER} = 1132 \text{ kcal}$$

This is the calorie requirement if your pet does not do anything but breathe. We need to correct this for your pet's daily activity, so we multiply it by a constant to help estimate how many calories are needed for your pet to do their daily activities (aka the **Metabolic Energy Requirement**, or **MER**):

The constant for a normal activity neutered adult dog is 1.6; normal activity intact dog is 1.8; sedentary dog is 1.2-1.4. Let's say our dog is a normal activity neutered dog, so our constant is 1.6

$$\text{MER} = 1132 \text{ kcal} \times 1.6$$

$$\text{MER} = 1811 \text{ kcal}$$

Let's decrease the amount of calories by about a quarter for weight loss:

MER for weight loss = 1811 kcal X 0.25 = 1358 kcal

Normally, we break the feedings into breakfast and dinner. If treats are important, the calories must be allotted from the daily calorie allowance.

Kcal per meal = $1358/2 = 679$ kcal.

Let's say our dog eats a diet that has 407 kcal/cup. How many cups should this be?

$679 \text{ kcal}/407 \text{ kcal per cup} = \mathbf{1.6 \text{ cups twice a day.}}$

When we say cup, we mean an actual measured out 1 cup container that you would use in the kitchen while baking. This doesn't mean what ever random "cup" you are using to scoop out the food! And this amount is if your pet is getting zero treats.

Let's say you want to give milk bones 4 times a day as treats. Your dog likes the large size. Each large size dog milk bone has 125 kcal. So, 4 per day is 500 calories. We have to subtract this from your dog's total daily allowance.

Adjusted daily calories in food after treats allowance = $1358 \text{ kcal} - 500 \text{ kcal} = 858 \text{ kcal}$

Divided into 2 feedings = $858 \text{ kcal} / 2 = 429 \text{ kcal}$

Remember, the food is 407kcal/cup, so this means that instead of getting 1.6 cups every feeding, the food is decreased to just barely over 1 cup twice a day.

You can see that if you don't allot for treat calories, your pet will eat an extra cup of food per day, which is an extra 407 calories a day. This is almost 3000 extra calories a week! Your pet's weight loss will be easily sabotaged.

Some people opt to feed a diet that is designed to encourage weight loss. Every major food brand has one or more available. These diets may allow you to feed a larger volume of food so that your pet feels more "full" because they contain extra fiber. It is important to remember that even if

you are feeding one of these diets, it is not a free pass to overcompensate with more food or treats!

It is also very important that everyone who feeds the pet in your household is on board with this process. If your spouse or your kids continue to give your pet treats, or do not adhere to the amount of food required, then this will obviously not work. The majority of people whose pets do not lose weight have a family member either consciously or unconsciously undermining the efforts. Remember, in most cases, dogs eat **WHAT THEY ARE FED**. If you're not feeding them extra, they aren't going to get it unless you are unintentionally leaving out food sources that your pet could covertly access, like cat food (very high in calories and fat), discarded table scraps, or unsecured pet food bags to name a few.

Getting a weight on the **SAME SCALE** every 2-4 weeks will help drive the weight loss recommendations. This can be done at home if you have the ability to weigh your pet, or at your veterinarian's office.

It's possible that we might over or under estimate the ideal body weight. That is why we also evaluate with the BCS. If the Boxer hits a weight of 64 and looks like a BCS 5/9, we are ready to head into a maintenance amount of calories at an earlier time.

Remember that moderate consistent physical activity is also very important for your pet's health. In the post operative period, it is likely that your pet will have activity restrictions and specific instructions for activity to increase over a period of time, dependent on what type of surgery your pet had. Please adhere to the post operative instructions! Once your pet has been released from restrictions, start or return to moderate consistent physical activity.

Every weight loss journey is different. We are here to help you and your pet along the way!

Information adapted from Veterinary Surgery: Small Animal, Second Edition, Elsevier Inc, 2018.