Maintaining weight loss: how to avoid rebound phenomenon

Author: Nicola Ackerman

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In many weight loss programmes, the most difficult stage is once ideal/target bodyweight has been reached (Panel 1).

Many pet owners will wish to change to a maintenance life stage diet, but some will be exceptionally hesitant to change. In the author’s opinion there is less rebound of bodyweight when more of the weight loss diet is fed compared with changing to a life stage diet. This was also seen in German et al (2012).

Rebound after successful weight loss is a well-known phenomenon in humans and dogs, possibly due to the fact energy restriction improves metabolic efficiency, reducing post-weight-loss maintenance energy requirements (MER; German et al, 2011). When we are not exercising, more toned (exercised) muscle uses more calories. This is due to more muscle being present (larger bulk) and the body’s overall metabolism being higher.

As we diet, our bodies become more adept at using the calories we consume. This is why we always hit a plateau during dieting; our bodies have adapted to the lower calorie intake and have reduced our body’s metabolic rate. Maintaining a normal metabolic rate can be achieved by exercising, but also through diets that use nutrigenomics (Yin, 2009).

Metabolism changes are also why repetitive dieting becomes more and more difficult. Each time we diet, our bodies become better at working at a reduced calorific level. When the dieting period has come to an end, our bodies just don’t go back to a normal metabolism.

Panel 1. Definitions

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<th>Definition</th>
<th>Description</th>
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<td>Ideal (lean) bodyweight</td>
<td>the animal’s correct weight in accordance with its body condition score. With diets, the ideal bodyweight is the value you need to feed to.</td>
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<tr>
<td>Target bodyweight</td>
<td>the bodyweight you (and the owner) are trying to diet the animal to.</td>
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So, even though we are looking at maintenance diets, the animal may still require fewer calories.
than one of the same species, or same size, because they are geared up to the potential of fewer calories.

The gene expression profiles of overweight and obese dogs (even those that have gone on to reach their ideal weight) have been compared to the profiles of lean dogs. Obese dogs possess genes that make them efficient in storing fat in adipose tissue, whereas gene expression in lean dogs results in a greater ability to burn fat for energy rather than storing it (Yin, 2009).

Nutrition in the proper form can alter this genetic expression, allowing overweight dogs to lose weight by changing their basic metabolism. MER are low after weight loss in obese pet dogs (typically only 10 per cent more than required during weight loss), which has implications for what should constitute the optimal diet during this period (German et al, 2011).

Serisier et al (2013) looked at the energy requirements for miniature dog breeds, on average, 260 days (28 to 319 days) after weight loss. The study found it is unclear what the likely effect of time after weight loss will have on long-term MER, but does imply the decrease as a result of weight loss is maintained.

This has implications for any miniature dog undergoing weight loss and implies the post-weight loss decrease in MER may be a long-term energy requirement.

Any adjustment in food intake to maintain lean weight will likely need to remain in place long term. Although ideal feeding strategies for dogs post-weight loss have not yet been determined, they should take account of the expected MER in this group and the challenges they may produce.

**Which diet for maintenance?**

If appropriate, use the weight loss diet, slowly increasing the volumes by 10 per cent every 7 to 10 days until weight loss has stopped and the animal’s weight is stable. Some clients are happy to remain on the weight loss diet, but at a higher volume; some will wish to change.

If the client does wish to change, it is not as simple as swapping from feeding the same amount of calories from diet x to the same amount of calories from diet y. This is the correct starting point to make, but remember weight loss diets have a nutrient profile that aids certain traits (like increasing satiety through increases in fibre), whereas the life stage diet may not.

Metabolic pathways up-regulated by weight loss diets will return to the animal’s norm once they are removed from the diet, unless the maintenance diet also has a nutrient profile that aids this up-regulation.

Life stage diets that are lower in calories, such as light or neutered, are specifically designed to maintain an ideal bodyweight; they are not for weight loss. If fed for weight loss, animals become
deficient in essential nutrients.

German et al (2012) found dogs fed a purpose-formulated weight loss diet regained less weight than those switched on to a standard maintenance diet ($P = 0.0016$). The energy intake at the time of follow-up was significantly higher in those dogs fed a standard maintenance diet, compared with those that remained on a purpose-formulated weight loss diet ($P = 0.017$).

The results suggest weight regain occurs in about half of dogs after successful weight loss. Long-term use of a purpose-formulated weight management diet can significantly limit regain in the follow-up period, likely by limiting food intake.

**Monitoring maintenance**

Close monitoring of these animals when transitioning the diet is important. Compliance from the owner is exceptionally important at this stage, as there is always the temptation that a few food rewards won’t hurt as we have reached target or ideal bodyweight.

Don’t forget our metabolism is still “geared” to be exceptionally metabolic efficient, so feeding just one small treat can be as fattening as a lean dog eating several treats.

This may be an exaggeration, but this is what I tell clients to reinforce the concept of how our metabolism and genetic make-up affects how we use the food we eat.

Managing bodyweight is a lifelong requirement. Owner education is really required in this aspect; owners who have experienced this issue themselves will be very aware of this. I find talking to obese owners easier than those who have never experienced being overweight, as they are more empathetic to the situation and more careful with diet at this stage.

There are many initiatives we can start in practice to help owners maintain their pet’s ideal bodyweight. Access to weighing scales and staff who can give guidance are the most important points. Some veterinary practices run clubs for past weight clinic participants, who visit for a weigh-in and meet other pet owners who have been in similar situations.

Weight clinic reunions can also help to actively encourage owners to keep coming back to the practice. Certificates to congratulate weight loss are commonly used, but what about rewards for those who can keep at their ideal bodyweight?

**References**

