

Recent advances in the understanding of dog obesity: Implications for clinical practice

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Food intake and energy status are subject to homeostatic control

Overweight and obesity are defined as excessive fat accumulation, due to a chronic **excess of energy intake compared to expenditure**, that may impair health and shorten lifespan in cats and dogs¹.

Although maintaining energy intake and energy reserves in the form of fat is essential to life, the drives which determine the **sensations of hunger, satiety, and energy expenditure** are lead by **unconscious homeostatic processes (Figure 1)**.

If energy status is homeostatically controlled, why does obesity develop? Neurological inputs related to food availability, palatability, and genetic factors can promote food intake beyond maintenance requirements².

The body defends a set point of fat mass

The **adipose tissue is an endocrine organ** which secretes different types of hormones called **'adipokines'** which can activate receptors on neurons in the hypothalamus that regulate **food intake and energy expenditure**.

There is a wealth of evidence that **mammals regulate fat mass to a set point**. Increases or reductions in adipose tissue mass activate responses that favour a return to their original weight.

After weight loss, resting energy expenditure is lower, whilst the drive to eat increases. These combined risk factors can predispose patients to a **rebound in weight gain** if the balance of food and exercise isn't carefully managed³.

Why are some individuals particularly susceptible to obesity?

In recent years, the lifestyle of pets has changed so most live relatively **inactive lives with regular access to calorie-dense food**. But, this lifestyle is not the only cause of overweight pets - **modern lifestyles combined with genetics cause some pets to be more prone**.

Certain **breed predispositions**, in part explains that variability⁴. **Obesity-prone dogs have a genetically hard-wired tendency to be highly food-motivated⁵**.

Understanding how genetics and physiology intertwine to affect susceptibility to weight gain has practical implications for how we can better improve weight management.

Whilst a lack of exercise has been associated with pet obesity⁶, losing weight by increasing exercise levels only can be unrealistic. **This is because only <30% of daily total energy expenditure can be attributable to exercise encouraged by pet owners⁷**.

Therefore, **caloric restriction is key** to manage weight loss successfully. However, maintaining or increasing exercise during weight loss can help retain lean mass whilst losing fat mass⁸.

To **calorically restrict a dogs food intake effectively**, regular nutritious meals – accurately portioned and formulated for weight loss – are required.

Diets designed for weight loss are formulated to reduce food seeking behaviour by regulating the **post meal satiety** signals thanks to a **high fibre content**, while providing balanced nutrients and high-quality protein to promote the **maintenance of lean muscle mass** during weight loss⁹.

Improving owner effectiveness

The essence of **'feed less; do more exercise'** is simple. But for owners of overweight dogs, that often means many small changes to their daily routines – which can be very difficult.

Overweight dogs are more likely to receive human food, titbits, and other food outside of regular meals⁶, which can have a major impact on their weight and contribute to unwanted begging behaviour.

Behavioural science can help pet parents overcome barriers related to feeding patterns and exercise and help their pets stay at a healthy weight. Research on human psychology has lead to the development of the **COM-B model¹⁰**. This model defines the central pillars required to promote behavioural change as **'Motivation, Capability, and Opportunity'** (Figure 2).



Supporting human behaviour change requires motivation, capability, and opportunity.



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