

Role of rehabilitation in managing canine obesity

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1. Introduction

Obesity is a significant health concern in animals and human alike. It is defined as exceeding optimal body weight by over 10-25%. In Australia, nearly half of dogs and a third of cats are classified as overweight or obese[1]. This condition poses significant health risks, including metabolic disorders, respiratory issues, and orthopedic problems, as excess weight increases the risk of musculoskeletal injuries, given the increased loading forces on limbs. It also complicates the mobility and rehabilitation effort of conditions such as chronic lameness, osteoarthritis, digit laxity, neurological condition such as spinal walking. Thus, weight loss is crucial for effective rehabilitation.

Factors contributing to obesity can be divided into three categories: genetic predisposition, reproductive status, and dietary/exercise management[2]. The latter is where we can make the most significant daily changes. This requires strategic planning that encompasses all aspects, including calorie intake management, physical activity—such as hydrotherapy—and motivating owners to adhere to weight loss plans[3].

2. Strategies for weight management

2.1 Physical activity – Therapeutic exercise and underwater treadmill

Physical activity improves the outcome of weight loss in obese humans, but there is limited information available for dogs.[4] Incorporating physical activity into weight loss management in various forms and intensities—such as increasing the distance of daily walks, engaging in interactive play activities like tag or fetch, or utilizing methods like underwater treadmills—has been shown to be beneficial for weight loss.

One study demonstrated that underwater treadmill therapy effectively reduced the body condition score during a three-month weight loss program[5]. However, it is important to note that this study lacked a control group and included only a small sample size, focusing on exercises involving leashed walks and underwater treadmill sessions.

Another study indicated that using an underwater treadmill resulted in only a slight increase in energy expenditure compared to walking at the same speed on a dry treadmill. Additionally, another research shows that the energy cost of horizontal motion (whether on an underwater or dry treadmill) for dogs, regardless of speed, ranges from 0.8 to 1.9 kcal/kg of body weight per kilometer, with an average of 1.2 kcal/kg per kilometer. For example, a 30 kg dog with an ideal body weight of 25 kg typically maintains its weight on a daily intake of 1000 kcal. If this dog is walked 2 km each day, it would expend only an additional 60 calories. Therefore, significant caloric restriction is still necessary unless dogs are walked over extremely long distances, which may be challenging for obese dogs to tolerate[6].

2.2 Calorie restrictions

Calorie restriction is one of the most important tools for managing weight loss, often more effective than physical activity alone[4, 7]. Research has shown measurable benefits of weight loss, even with just a 6% reduction in body weight, as observed in force plate analysis. First, it's essential to calculate the ideal body weight (IBW) for dogs to determine whether they are overweight or underweight. Next, assess if the dog is consuming the appropriate amount of food by calculating its resting energy requirement (RER). The formula for RER is as follows: For dogs weighing more than 2 kg and less than 45 kg, use $30 \times (\text{BW in kg}) + 70 = \text{RER}$. For those weighing less than 2 kg or more than 45 kg, use: $70 \times (\text{BW in kg})^{0.75} = \text{RER}$. Once you determine the RER, the next step is to calculate the daily energy requirement (DER) by multiplying the RER by a coefficient based on the dog's life stage and body condition. Typically, it is 1x DER for weight loss and 1.4x DER for obese-prone animals. Finally, estimate the weekly weight loss for the next 3–6 months to achieve a gradual weight reduction of 0.5% to 2% of body weight per week. Research indicates that reaching the target weight can take around 9 to more than 12 months[8].

In addition, protein should not be restricted along with calorie restriction. Providing a higher protein diet (greater than 75 g per 1000 kcal) promotes dietary thermogenesis and prevents the loss of lean body mass[9]. Studies suggest that a higher protein-to-calorie is necessary to maintain lean body mass during weight loss which is crucial as preserving lean body mass helps sustain energy expenditure and reduces the risk of weight rebound[6]. Additionally, begging for food may strain the bond between the owner and the pet, leading to noncompliance or even abandonment of the weight loss program. Supplementing dietary protein may improve satiety in dogs. Another effective strategy for enhancing satiety is to increase fibre in the diet.

3. Anticipating and overcoming setbacks

Overcoming setbacks in weight loss management for dogs is a common challenge faced by veterinary professionals, particularly when it comes to maintaining owner compliance. A study revealed that 37% of dogs enrolled in weight loss trials did not complete the program due to non-compliance with individualised programmes or for failure to return for visits[10]. Therefore, veterinarians need to engage clients in the decision-making process to create realistic feeding strategies.

Start by assessing the owner's willingness to discuss nutrition[11]. Clients often accept the invitation, but if they show apprehension, take the time to understand their concerns. If they decline, that's okay; it gives you a chance to approach it again later. Use broad, open-ended questions to gather valuable information about the pet's daily activities and diet. Use phrases like "Tell me..." to gather valuable information about the pet's daily activities and diet[12].

Rather than eliminating treats—which are important for the pet-owner bond—suggest low-calorie options and advise limiting treats to less than 10% of the pet's total caloric intake, as energy restrictions can increase hunger and food-seeking behaviour. Additionally, provide a printed daily food list, calorie counts, and expected weight loss goals to keep the entire household informed. Finally, schedule follow-ups within a few days, as well as at 4 weeks and 8 weeks after implementing dietary changes. During these follow-ups, address any questions, reinforce recommendations, and celebrate the client's progress, no matter how small the weight loss might be, as long as the patient are not experiencing a plateau. This encouragement will help the client feel supported on their pet's successful weight loss journey.

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