



L/C	INTERNAL
I/H	
B	
1	EXTERNAL
2	
3	
4	
5	

## CRITICALLY APPRAISED TOPIC:

# Effectiveness of Exercise and Its Role in Treating Overweight/Obesity

Some evidence exists that exercise has a positive influence on the weight of dogs and cats, but there is limited evidence about the exact efficacy, and specific benefits are uncertain.

BY ASHLEE ADDLEMAN, MPH  
CONTRIBUTING AUTHOR

### CLINICAL QUESTION

Is there evidence that exercise makes a difference when treating overweight/obesity in both dogs and cats? If so, how much do I prescribe?

### CLINICAL BOTTOM LINE

There is evidence to suggest that exercise is beneficial in promoting weight loss, although there is a lack of strong and recent evidence to support this assumption.

The effectiveness of exercise and its role in treating overweight/obesity in dogs and cats is understudied. Randomized controlled studies, with robust sample sizes, are essentially nonexistent.

Several recent studies have shown promising advances in the ability to accurately record physical activity in dogs using accelerometers and/or pedometers. These developments will facilitate research into whether physical activity, either alone or as part of a dietary weight loss program, is a beneficial exercise strategy for dogs and cats.

### EVIDENCE SUMMARY

#### PubMed database search details

- (“dogs”[MeSH Terms] OR “dogs”[All Fields] OR “canine”[All Fields]) AND (“obesity”[MeSH Terms] OR “obesity”[All Fields]) AND (“exercise”[MeSH Terms] OR “exercise”[All Fields])
- (“exercise”[MeSH Terms] OR “exercise”[All Fields]) AND (“obesity”[MeSH Terms] OR “obesity”[All Fields] OR “obese”[All Fields]) AND (“cats”[MeSH Terms] OR “cats”[All Fields])
- (“exercise”[MeSH Terms] OR “exercise”[All Fields]) AND (“obesity”[MeSH Terms] OR “obesity”[All Fields]) + veterinary subset filter

#### Main results

- No evidence exists on how much exercise to prescribe

(e.g., frequency, duration, intensity) to achieve weight loss in overweight/obese dogs or cats.<sup>1,2</sup>

- There is limited but good evidence that dogs reported by their owners as “normal” weight undertook a greater number of exercise hours than dogs reported by their owners as overweight/obese.<sup>2,3</sup>
- Some evidence exists showing that the risk of overweight/obesity in dogs decreases for every hour of exercise per week.<sup>2,4</sup>
- There is some evidence that exercise (e.g., regular treadmill sessions, walks on leads) is beneficial when included as part of a weight management/weight loss program for dogs.<sup>5,6</sup>
- Limited evidence of moderate quality exists that play and environmental enrichment are beneficial as part of a feline weight management program.<sup>6,7</sup>

### STRENGTH OF EVIDENCE (FIGURE 1, PAGE 4)

#### Comments

- Studies of the highest quality, such as meta-analysis or randomized controlled trials, have not been published to date. However, given the demand for recommendations on the amount of exercise to prescribe as part of a weight-loss program, studies of this rigor, using dogs and cats, are encouraged.
- The studies reviewed for this report mainly included dogs as study participants; very few clinical reports involved cats as study participants.
- Most exercise recommendations are based on controlled studies using rodents or humans.<sup>1</sup>
- Previously, not having a way to measure physical activity in Pets has been a limitation in determining how much exercise a Pet requires. However, several studies have been published demonstrating that certain modalities, such as accelerometers and pedometers, are useful in objectively detecting physical activity in dogs.<sup>8,9</sup>

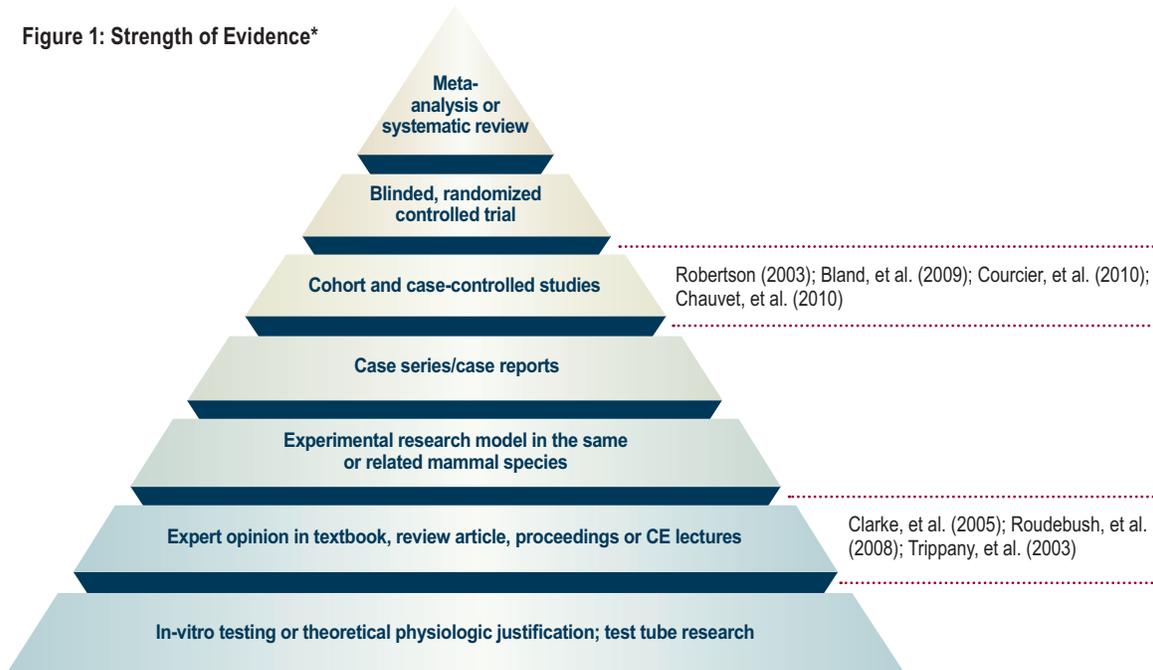
- Additionally, there seems to be little dispute that when dogs are classified as being obese by their owners, they were reported as receiving less exercise when compared to non-obese dogs.<sup>2</sup>
- It has been suggested that including exercise as part of a weight-loss program results in a faster rate of weight loss.<sup>5</sup> This is important to consider for obese Pets that are experiencing secondary conditions as a result of being overweight/obese, such as orthopedic disease or diabetes mellitus; therefore, this is an opportunity for future research.
- The studies presented in this report have numerous limitations. Most studies did not have adequate control groups and lacked scientific rigor. The findings

may not be applicable to the larger dog and cat populations due to their small sample sizes and lack of randomization.

- Moreover, no study performed a rigorous evaluation of the type, amount, duration, and frequency of physical activity that is required to achieve weight loss in overweight/obese dogs and cats. Additionally, no study evaluated whether exercise alone is effective enough to achieve weight loss; therefore, research opportunities are ample for this health topic.

**CAT Appraiser:** Ashlee Addleman, MPH  
**Date CAT was “born”/expiration date:** 08/6/2010

**Figure 1: Strength of Evidence\***



\*See corresponding Evidence Summary, Table 1, page 5.

**REFERENCES**

1. Roudebush P, Schoenherr W, Delaney S. An evidence-based review of the use of therapeutic foods, owner education, exercise, and drugs for the management of obese and overweight pets. *JAVMA*. 2008;233(5):717-725.
2. Courcier E, Thomson R, Mellor D, et al. An epidemiological study of environmental factors associated with canine obesity. *J Small Anim Pract*. 2010;51(7):362-367.
3. Bland I, Guthrie-Jones A, Taylor R, et al. Dog obesity: owner attitudes and behaviour. *Prev Vet Med*. 2009;92(4):333-340.
4. Robertson I. The association of exercise, diet and other factors with owner-perceived obesity in privately owned dogs from metropolitan Perth, Western Australia. *Prev Vet Med*. 2003;58(1-2):75-83.
5. Chauvet A, Laclair J, Elliott DA, et al. Incorporation of exercise, using an underwater treadmill, and active client education into a weight management program for obese dogs. *Can Vet J*. 2010 (in press).
6. Clarke DL, Wrigglesworth D, Holmes K, et al. Using environmental and feeding enrichment to facilitate feline weight loss. *J Anim Physiol Anim Nutr*. 2005;89(12):427.
7. Trippany J, Funk J, Buffington C. Effects of environmental enrichments on weight loss in cats. Abstract. Proceedings, ACVIM. 2003;430.
8. Hansen B, Lascelles B, Keene B, et al. Evaluation of an accelerometer for at-home monitoring of spontaneous activity in dogs. *Am J Vet Res*. 2007;68(5):468-475.
9. Chan C, Spierenburg M, Ihle S, et al. Use of pedometers to measure physical activity in dogs. *JAVMA*. 2005;226(12):2010-2015.

**Table 1: Evidence Summary**

Author, Year	Participants (n)	Study Design & Measures	Intervention	Findings/Conclusions	Limitations
Clarke, et al. (2005) (conference proceeding, abstract only)	18 cats	Study design: a comparison between participants, each serving as own control	Group 1: fed weight-reduction dry formula  Group 2: fed feline maintenance canned diet. Both groups participated in exercise sessions 3x/daily, consisting of one 10 min session with food as motivation and one 15 min session of intense play.	Group 1 lost average of 62 +/- 26 g (p=0.0003)  Group 2 lost average of 64 +/- 106 g (p=0.09)	Differences in baseline characteristics; differences in interventions; short durations and completeness of follow-up.
Roudebush, et al. (2008)	Not explained	Study design: systematic review/review paper  Measures: weight loss	n/a	No well-controlled clinical studies exist in Pets. Exercise recommendations are based on studies using rodents and humans. Strong need for specific studies of physical activity requirements in weight management of cats and dogs.	No search strategy was mentioned or described; no criteria for inclusion/exclusion was defined; individual studies were not assessed for validity or quality.
Robertson (2003)	657 owners were interviewed (860 dogs)	Study design: randomized telephone survey	Interview	For every hour of exercise per week, the odds of obesity decreased by 0.9 times. Total duration of exercise for non-obese vs. obese dogs based on body condition score (BCS) graded by owners; intensity of exercise did not affect obesity (no p-value reported).	Risk factors were evaluated simultaneously; few purebred dogs; no follow-up survey was conducted; effectiveness of exercise not evaluated nor how much exercise is beneficial; owner assessment of BCS.
Bland, et al. (2009)	219 dog owners (302 dogs)	Study design: randomized questionnaire  Measures: overweight/obesity management	Survey	Households with normal weight dogs were more likely to exercise their Pets at least 3x/wk compared to 1x/wk for households with obese dogs (p<0.01); households that indicated that their dog was confined to a yard as its exercise regime, rather than walked, were also significantly more likely to have an overweight dog (p<0.001).	Potential sources and risk of bias characteristic of questionnaire-based studies were reported; owner assessment of BCS.
Courcier, et al. (2010)	829 dog owners (696 dogs ≥1 year old were included)	Study design: cross-sectional questionnaire  Measures: demographics; feeding habits; exercise; owner awareness; owner income and owner age	Survey	No significant difference in number of exercise hours/week between dogs with different body shapes (no p-value reported); no relationship between income and exercise (p=0.965); no relationship between owner age group and exercise (p=0.984); risk of a dog being obese decreased by 4 percent for each additional hour of exercise a dog received per week (predicted probabilities of body shape by hours of weekly exercise).	Potential sources and risk of bias characteristic of questionnaire-based studies were reported.

**Table 1: Evidence Summary (cont'd)**

Author, Year	Participants (n)	Study Design & Measures	Intervention	Findings/Conclusions	Limitations
Chauvet, et al. (2010)	8 dogs	<p>Study design: three-month time series, repeated measures with participants serving as own control</p> <p>Measures: diet characteristics; demographics; BCS; girth circumference; rate of weight loss; treadmill exercise—duration, distance, and speed</p>	<p>Baseline weight; BCS; dietary allocation; blood work; maintenance energy requirement (MER); thoracic and abdominal circumference measurements; measures were repeated at 33, 54 and 86 days.</p> <p>Intervention: All dogs participated in exercise sessions consisting of regular (frequency and duration were not pre-determined) underwater treadmill sessions; walked once/daily and attended weekly obedience classes for additional exercise. All dogs were placed on weight loss diet and were allowed low-calorie treats.</p>	<p>All dogs lost weight during the program (mean rate of weight loss for the three-month period was 1.5 +/- 0.37% SBW/week) (SBW=starting body weight). Over time treadmill speed, duration, and distance increased significantly (p=0.0023, p=0.0032, and p=0.001, respectively). Both thoracic and abdominal girth declined (p&lt;0.0001).</p>	<p>No control group; lack of standardization for exercise sessions on treadmill; small sample size.</p>
Trippany, et al. (2003) (conference proceeding, abstract only)	38 cats	<p>Study design: eight-week time series, repeated measures with a treatment and control group</p> <p>Measures: activity; weight loss; owner satisfaction</p>	<p>All households had two cats (one overweight; one normal weight). Ten households in treatment and nine in control group. Both groups received feeding guidelines with control group receiving exercise/enrichment guidelines.</p> <p>Weight measured every two weeks, activity monitored for both cats simultaneously at beginning and end of study; owners surveyed at end.</p>	<p>Cats with enrichment had increased activity (p=0.02) and non-significant trend toward increased percentage of weight loss (p=0.09) compared to controls. Owners of treatment cats indicated greater satisfaction when compared to controls (p&lt;0.5).</p>	<p>Short durations and completeness of follow-up; small sample size; treatments were not standardized nor were they measured objectively—owner satisfaction was measured. Unclear whether the owners or researchers provided baseline BCS—scores were not re-evaluated and compared to baseline at end of study or documentation of this was not provided.</p>

**Call for authors:** The Banfield Applied Research & Knowledge (BARK) team invites veterinary practitioners to author a critically appraised topic (CAT) for future issues of the *Banfield Journal*. If you are interested in contributing a CAT, please e-mail: [BARK@banfield.net](mailto:BARK@banfield.net).

Ashlee Addleman, MPH, graduated from Portland State University in 2004 with a Bachelor of Science degree in Community Health Studies and received her Master of Public Health degree from Walden University in 2010. Her master's practicum and dissertation focused on research synthesis, population-based research, and evidence-based medicine and practice. Ashlee joined the Banfield Applied Research & Knowledge team as a research project specialist in 2006 and has been with Banfield, The Pet Hospital, since 2002. 