

Poster Presentations: Session A - Obesity and Chronic Disease

Heart rate of pet dogs: effects of overweight and exercise

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Background - In Australia, about 40% of pet dogs are overweight.¹ High fat diets and obesity affect heart function of dogs.² In people, exercise has been shown to improve heart function. There is no information on body condition and level of exercise on heart rate in pet dogs.

Objective - To determine the effects of body condition and level of exercise on heart rate (HR) of pet dogs carrying out a three-stage exercise test.

Design - Owners of dogs in the Melbourne metropolitan area volunteered their pets for the study. The exercise test, carried out over a 21 m circuit of four ramps, consisted of three periods of 2 min exercise followed by 2 min rest. Circuit speeds varied with size: dogs less than 47 cm in height ran at 3, 4 and 5 km/h, those above 47 cm ran at 4, 6 and 8 km/h. A Polar heart rate monitor (Kempele, Finland) was used to record HR at rest, during exercise and during recovery. Body condition was assessed using the Purina body condition system.³

Outcomes - Resting HR of smaller dogs (n=16) was significantly ($P<0.05$) greater, 135.4 ± 25.7 beats/min (bpm), that of larger dogs, 103.3 ± 20.3 bpm (n=32). Although overweight large dogs (n=20) had a significantly ($P<0.05$) greater HR (111.8 ± 20.3 bpm) than lean dogs (96.4 ± 18.2 , n=28), recovery HR (average HR during recovery as a percentage of HR during exercise) of overweight dogs exercised every day was faster than that of lean dogs with limited exercise.

Conclusions - Heart function of pet dogs can be affected by body condition and exercise.

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2. Mizelle HL, Edwards TC, Montani, JP. Am J of Hypertension 1994; 7: 374-378.
3. Laflamme DVM. Canine Practice 1997; 22: 10-15

How effective are meal replacements for treating obesity?

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Background - Effective weight loss strategies are needed to reduce cardiovascular disease risk. Meal replacements as a weight loss strategy are widely used in the community however it is not known how effective they are outside a controlled clinical trial environment.

Objective - To compare the use of meal replacements (MR) twice a day with a structured low fat (C) weight loss diet on weight, lipids, inflammatory and thrombotic markers and vascular physiology.

Design - Randomised, parallel design in overweight volunteers with a triglyceride > 2 mmol/L.

Outcomes - Fifty-five subjects completed 3 and 6 months. After 3 months weight loss (Mean \pm SEM) was 6.0 ± 4.2 kg (MR) and 6.6 ± 3.4 kg (C group) ($P<0.001$) with no differences between the groups. At 6 months weight loss was 9.0 ± 6.9 kg (MR) and 9.2 ± 5.1 kg (C). At 12 weeks triglycerides fell significantly in C (0.48 mmol/L or 25%) but not in MR (4%) ($P<0.05$ between diets). There was no difference at 6 months. Inflammatory markers at 6 months: CRP decreased by 20% ($P<0.02$) in MR with no change in C ($P=0.002$ between diets), no change in IL6 was noted. Fibrinolytic factors at 6 months: tPA fell in both groups by 20-26% ($P<0.001$), PAI-1 fell only in the C group 28% ($P=0.001$), [$P=0.025$ between diets]. Adhesion molecules at 6 months: sICAM1 fell by 10% in both groups ($P<0.001$), no changes in sVCAM1. Flow mediated dilatation did not change in either group but pulse wave velocity improved from 7.52 ± 2.49 m/s to 6.25 ± 1.58 in MR ($P<0.05$). The change in C was similar 7.41 ± 3.22 to 6.32 ± 1.38 m/sec but was not significant because of greater baseline variation.

Conclusions - Meal replacements are as effective as a structured low fat weight diet for weight loss which is maintained to 6 months. Weight loss is associated with lower triglyceride, circulating adhesion molecules and pulse wave velocity.