Validation and application of a routine methodology for the accurate assessment of pony body composition in vivo.

Project description
The prevalence of obesity among domestic horses and ponies is a major welfare issue. The routine measurement of body fat content would allow the prompt identification of animals in need of corrective management, but the method chosen to evaluate body fat should be simple and robust.

Progression
Findings
• For ponies, appetite, weight gain and fat deposition are influenced by season and body condition.
• Safe dietary protocols have been developed to manage weight-loss in obese ponies.
• The relationships between body fat content, fat distribution throughout the body and body condition score have been characterised for ponies.

Current studies
Body fat can be measured accurately using deuterium oxide dilution but this method is not readily applied in the field. By contrast, body condition scores (BCS) are readily determined and our recent work combined both methods to show that BCS was a good predictor of body fat % in ponies of BCS<7/9 (thin or moderate condition). However, while BCS correctly identify overweight or obese ponies (above BCS 7/9) in need of weight loss management, BCS alone was not sensitive enough to accurately measure or monitor body fat content in these fatter animals. Similarly, ultrasound-derived measures of superficial fat deposits have also proved to be inaccurate in the estimation of body fat %.

Ongoing studies
A new BCS system is currently under trial. This system will attempt to both simplify and improve the accuracy of BCS recording by including new and less ‘subjective’ descriptors, especially for obese animals.

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Publications

Figure 1. (above) Examples of some of the more detailed and novel descriptors used to define very obese animals.

Figure 2. (right) When data describing the body fat % and BCS of 48 ponies are considered, it becomes clear that for fatter animals, BCS is a poor predictor of actual body fat content. This may be partly due to differences between animals in the distribution of body fat and differences in the BCS score given to an animal on the basis of the very ‘subjective’ descriptors used.

Figure 3. (left) The relationships between the depth of subcutaneous fat at the rib and rump sites and retroperitoneal fat in the abdomen (belly) are not useful predictors of total body fat content in ponies.