

Standard feed bucket vs Grad-Dual Feeder: A comparison of consumption time

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Introduction

Increased consumption speed (or bolting) of concentrate feed can cause common issues such as choke in the horse. This pilot study investigated whether the use of the Grad-Dual Feeder (GDF) would represent a significant extension of consumption time in comparison to feeding from a standard bucket (STB) and whether when used over a longer period of time these effects are maintained.

Method

Fifteen horses, eight geldings, five mares and 2 stallions, weighing 465.5kg (+/- 306.5kg) and of 13 (+/-6) years of age made up the sample population for this pilot trial. During the trial horses were housed in individual boxes, kept in a management routine they were accustomed to and had dental evaluations within four months of the trial starting. Each horse remained on a consistent type and weighed amount of concentrate feed throughout the trial, but feed type or amount was not controlled for. All horses were habituated to using a standard rubber bucket prior to the trial but none had encountered the Grad-Dual feeder previously. Horses were fed once a day according to condition (see below). Daily feeds were weighed throughout the trial period and forage intake and exercise and other management remained consistent to ensure a consistent motivation to feed. Feeding time also remained consistent and as per each horse's typical management throughout the trial (between 7.30-8.30am).

Measurements

Consumption time (CT) was measured using video data of each feeding session (n=210). Starting time was defined as 'when the horse had first contact with feed', a finished feed being defined as 'When the horse has finished the contents of the bucket' or 'when the horse loses interest in feed and walks away with no return within thirty seconds'. The time from feed presentation to completed consumption was measured for each daily feeding bout during the trial. An average was taken for each condition to establish a mean consumption time.

The extended use of the GDF was intended to investigate any potential learning effect from longer exposure and to see if the GDF extended overall CT whether this effect was sustained with continued use.

Results

Average Difference in Consumption Time Across Conditions

Consumption time (CT) was seen to increase between condition 1 and condition 2 with horses showing a mean increase in CT of 11.23 minutes \pm 6.16. While the average difference in CT between condition 2 and 3 was -3.67 minutes \pm 5.12. When comparing CT between condition 1 and 3, the mean increase in CT was 7.56 minutes \pm 4.36 (P<0.0005). Total average consumption time increased from 10.99 \pm 4.01 minutes for condition 1 to 21.92 \pm 6.45 minutes for condition 2 decreasing slightly to 18.38 \pm 5.67 minutes for condition 3.

Correlations

While moderate trends were observed for the entire sample population, when feed type and meal size were controlled for, horse height (cm) was moderately associated with a decrease in consumption time for condition 1 ($r_s(8)=-0.472$) and conversely for condition 3 there was a moderate positive association between horse height and CT; meaning that when using the standard bucket, greater horse height was associated with decreased CT and when using GDF, greater horse height was associated with an increase in CT.



Figure 1: Average Consumption Time for each horse and all conditions

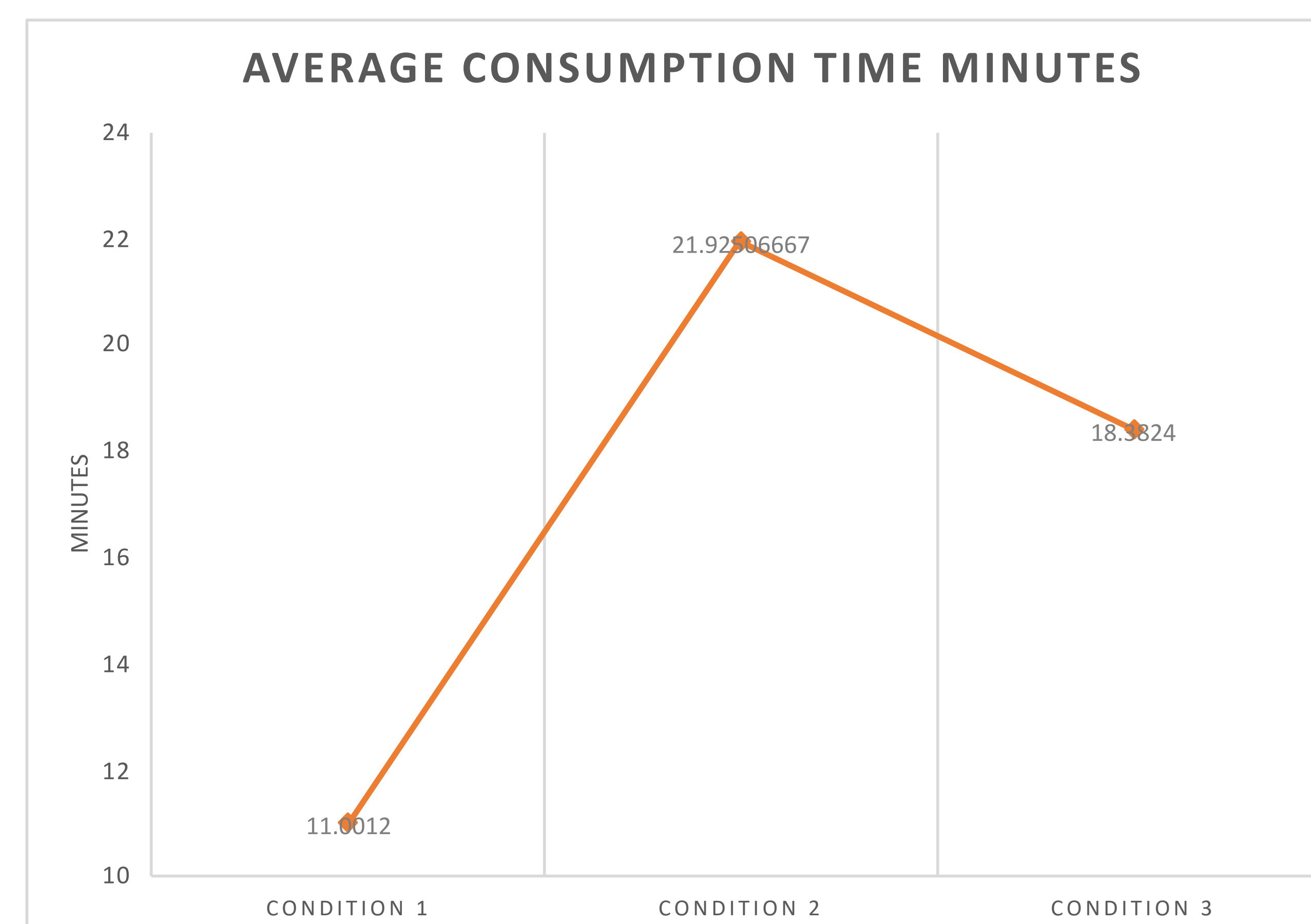
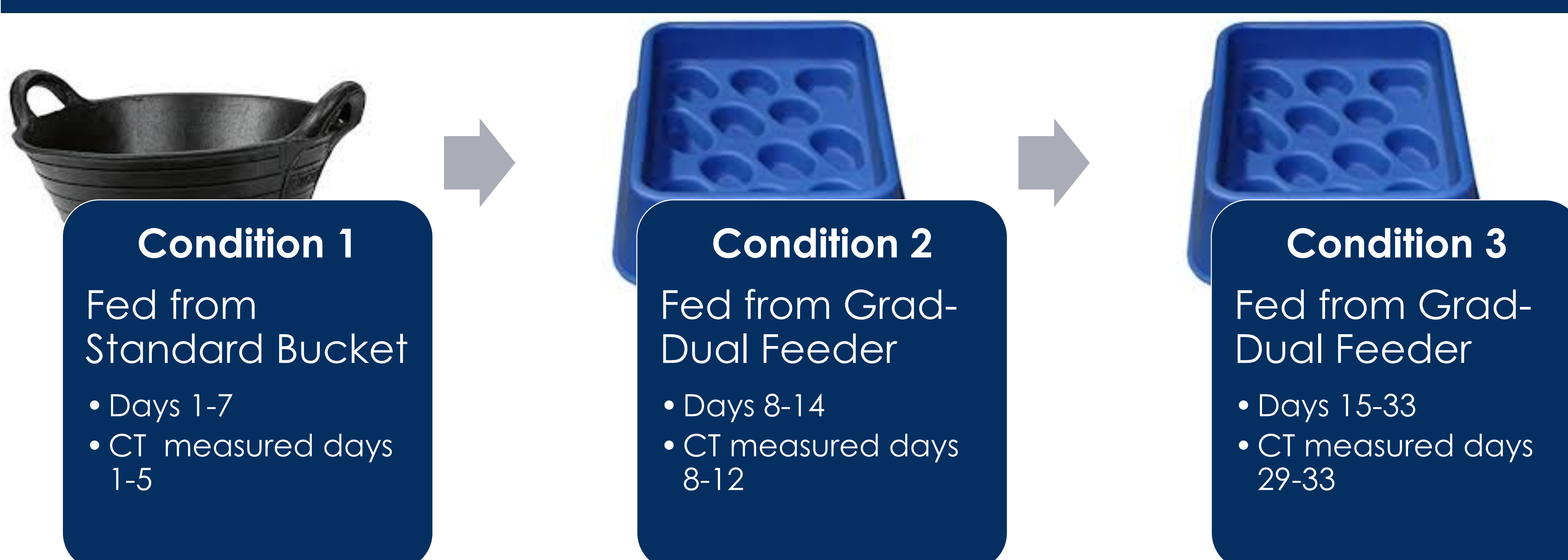


Figure 2: Average consumption time (minutes) of each condition

Conditions



Discussion

This study has indicated that by using the Grad-Dual Feeder in place of a standard feed bucket, consumption times can be significantly increased, both initially (condition 2) and at four weeks (condition 3). The significant difference between consumption times for condition 2 and 3 indicate that while there may be some adaptation through continued use of the Grad-Dual Feeder which enables horses to reduce consumption time, overall average consumption times were still increased by just under 8 minutes. There was some indication in the data that for the Grad-Dual Feeder, greater horse height was associated with greater consumption times; potentially indicating that for larger horses, with respectively larger muzzles, the Grad-Dual Feeder may have presented a greater challenge and subsequently, extended consumption time. Further research with a larger sample size is recommended to extend these initial findings.

Take home message

The Grad-Dual Feeder, which has been designed to slow concentrate feed intake, does achieve this goal. The Grad-Dual Feeder when compared to a standard feed bucket resulted in significant increases in consumption time. The use of the Grad-Dual Feeder may therefore help to slow consumption rate and be an effective tool for increasing chew time. This may be of particular use to those who bolt/rush their feed and those on a restricted ration who may benefit from an extended feeding time.

Further reading: Carter, M. J., Friend, T. H., Coverdale, J., Garey, S. M., Adams, A. L., and Terrill, C. L. (2012) A comparison of three conventional horse feeders with the Pre-Vent feeder. *Journal of Equine Veterinary Science*, 32:252-255; Kutzner-Milligan, J., Eisemann, J., Siciliano, P., Smith, J., Hewitt, K., Sharlette J., Pratt-Phillips, S. (2013) The effect of different feed delivery methods on time to consume feed and the resulting changes in postprandial metabolite concentrations in horses. *Journal of Animal Science*, 91 (8): 3772-3779
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