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CAFFEINE TIMING AND CYCLING PERFORMANCE (78 pp.)

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PURPOSE: The purpose of the present investigation was to examine the effect of caffeine administration timing on cycling performance. We examined the effects of caffeine administered in chewing gum on metabolic, perceptual, and plasma β -endorphin responses during and after cycling exercise. **METHODS:** Eight male cyclists participated in five separate laboratory sessions. During the first visit, subjects underwent a graded exercise test to determine maximal oxygen consumption (VO_{2max}). During the next four visits, three pieces of chewing gum were administered at three time points (120 min pre-cycling, 60 min pre-cycling, and 5 min pre-cycling). Subjects were instructed to chew the gum for five min and then expectorate the gum. In three of the four visits, at one of the time points mentioned previously, 300 mg of caffeine (Stay Alert™ chewing gum) was administered. During the fourth visit, placebo gum was administered at all three time points. The experimental trials are defined as follows: Trial A (-120), Trial B (-60), Trial C (-5), and Trial D (Placebo). The order in which participants completed the experimental trials was randomized. Following baseline measurements, time allotted for gum administration, and a standard warm-up, participants cycled at 75% VO_{2max} for 15 min then completed a $7 \text{ kJ} \cdot \text{kg}^{-1}$ cycle time trial. Metabolic and perceptual data were collected at baseline and every three min during steady state cycling. Blood samples were obtained via venipuncture at baseline, 10 min pre-cycling, following steady state cycling, and at the end of the cycle time trial. **RESULTS:** Data were analyzed using a

repeated measures analysis of variance. Cycling performance was improved in Trial C (-5), but not in Trial A (-120) or Trial B (-60), relative to Trial D (Placebo). Caffeine did not impact metabolic, perceptual, or plasma β -endorphin responses to exercise.

CONCLUSIONS: Caffeine administered in chewing gum enhanced cycling performance when administered immediately prior, but not when administered one or two hr prior to cycling.