

RESULTS: Among 2,109 runners (male: n= 1,252, female: n= 857; age 13.2 +/- 0.9y), 1.5% (n= 31) reported history of a clinical eating disorder (n= 22) or met criteria for elevated dietary restraint (no eating disorder history, n= 9). A portion of runners not meeting criteria for DE, reported weight loss in the past year (n= 30, 1.4%) or currently attempting to lose weight (n= 138, n= 6.5%). A higher proportion of female, compared to male, runners met criteria for DE (2.9% vs. 0.5%, p<0.001), clinical eating disorder history (2.6% vs. 0%, p<0.001), and reported currently attempting to lose weight (8.4% vs. 5.3%, p=0.004). Runners with DE were older (13.9 ± 0.8 y vs. 13.2 ± 0.9 y, p<0.001), had a lower BMI (17.8 ± 2.8 kg/m² vs. 19.2 ± 1.7 kg/m², p=0.02) and were more likely to skip meals (67.7% vs. 6.2%, p<0.001), follow a vegetarian diet (54.8% vs. 12.8%, p<0.001), and report use of dietary supplements (83.9% vs. 25.1%, p<0.001) compared to runners without DE. Runners with DE were more likely to report the perception of decreased endurance or muscle strength (54.8% vs. 7.1%, p<0.001), reduced performance (22.6% vs. 2.6%, p<0.001), and longer recovery (48.4 vs. 8.4%, p<0.001).

CONCLUSIONS: Middle school endurance runners with DE exhibited lower BMI and eating patterns limiting food intake, including skipping meals and following a vegetarian diet, and perceptions of reduced running performance and recovery.

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Firefighter Calcium Intake Influences The Blood Pressure Response To Strenuous Physical Exertion

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Previously we found high calcium intake (CA) negatively impacted the immediate blood pressure (BP) reductions that occur after a single bout of exercise, or *post-exercise hypotension* (PEH), among overweight, middle-aged men with hypertension. Firefighters (FF) have a disproportionately high risk of sudden cardiac death on the job partially due to a high prevalence of hypertension and poor nutrition.

PURPOSE: To examine the influence of CA on PEH following a bout of vigorous intensity exercise in FF.

METHODS: FF (n=15) completed a non-exercise control (CONTROL) and peak graded exercise stress test (GEST) in random order on different non-work days. FF left the laboratory attached to an ambulatory BP (ABP) monitor for 19hr. CA was assessed with the National Health and Nutrition Examination Survey food-frequency questionnaire. Repeated measures ANCOVA tested if ABP differed after GEST vs CONTROL by CA group divided by the median as high (1087.9±325.9mg) and low (558.1±143.4mg) with baseline BP as a covariate. Mixed models examined the relationships between CA and the ABP response after GEST vs CONTROL.

RESULTS: FF were overweight (29.0±3.9kg/m²), middle-aged (40.2±9.5yr) men with elevated resting BP (124.1±10.3/79.6±11.5mmHg). Among the total sample, systolic ABP (ASBP) (18.0±6.7mmHg, p=0.001) and diastolic ABP (ADBP) (9.1±5.4mmHg, p=0.003) increased after the GEST vs CONTROL over 19hr, with trending interactions for CA group*condition for ASBP (p=0.088) and ADBP (p=0.059). The interactions revealed ASBP increased 26.3±12.2mmHg in HighCA after GEST vs CONTROL (p=0.010) over 19hr, but was not different in LowCA (p>0.05). In contrast, ADBP increased 11.9±6.8mmHg in LowCA after GEST versus CONTROL (p=0.025) over 19hr, but was not different in HighCA (p>0.05). CA accounted for 23.7% (p=0.0005) and 22.8% (p=0.001) of the variance in the ASBP and ADBP response, respectively.

DISCUSSION: CA explained up to 24% of the increase in the ABP response after GEST vs CONTROL. HighCA augmented the increase in ASBP by 17.0±15.0 mmHg versus LowCA; whereas LowCA augmented the increase in ADBP by 5.2±11.0 mmHg versus HighCA. Further investigation is needed in a larger sample of FF to better establish the influence CA has on their adverse ABP response to vigorous physical exertion.

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Serial Testing Of Blood And Breath Ketones: A Validation Study

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Ketogenic dieting is an increasingly popular mode of weight management. As instruments designed to measure ketone levels become more available, there is a need to validate their accuracy and applicability.

PURPOSE: To validate common devices of blood and breath ketone monitoring in dieting adults.

METHODS: A 29-year-old female IFBB professional bodybuilder on a long-term ketogenic diet completed serial testing of blood glucose (BG), blood ketones (BK), and breath ketones (BrK) for 75 consecutive days. Subsequently, a 39-year-old male (non-bodybuilder) on a long-term ketogenic diet completed 41 consecutive days of testing. Each assessment was performed immediately upon waking in a fasted state. BG and BK were measured using the Keto-Mojo Dual Monitoring System; BrK levels were measured using the Ketonix Professional Breath Ketone Analyzer. Descriptive statistics characterized means and standard deviations of each subject. Pearson correlation coefficients and linear regression analyses measured relationships between assessments.

RESULTS: Testing occurred 11.6 ± 9.8 min after waking. For the female subject, BG was 79.8 ± 5.8 mg/dL (range: 69.0 to 98.0 mg/dL), BK was 1.0 ± 0.3 mM (range: 0.4 to 1.8 mM), and BrK was 148.8 ± 62.6 ppm (range: 50.5 to 329.5 ppm). For the male subject, BG was 87.3 ± 4.5 mg/dL (range: 75.0 to 97.0 mg/dL), BK was 0.7 ± 0.4 mM (range: 0.2 to 2.1 mM), and BrK was 202.5 ± 88.0 ppm (range: 59.0 to 365.5 ppm). In the female subject, there was no relationship between BG and BK (r = -0.190; β = -0.015; p = 0.161), BG and BrK (r = 0.030; β = 0.319; p = 0.804), or BK and BrK (r = 0.025; β = 4.696; p = 0.860). In the male subject, a relationship was detected between BG and BK (r = -0.546; β = -0.048; p < 0.001) but not between BG and BrK (r = 0.031; β = 0.596; p = 0.853) or BK and BrK (r = 0.031; β = 7.242; p = 0.850). Multiple linear regression analysis, holding subject constant, showed BG to predict BK (p < 0.001; 95% CI: -0.046 to -0.014); the overall model was significant (R² = 0.228; p < 0.001). Holding subject constant, there was no relationship between BG and BrK (p = 0.725), nor was a relationship found between BK and BrK (p = 0.792).

CONCLUSIONS: Measurements of blood and breath ketones, assessed in a fasted state using common devices, were unrelated when tested serially in an adult male and female adhering to ketogenic diets.

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Sport Nutrition Knowledge And Perceptions Of Dietary Requirements Among A Diverse Cohort Of Collegiate Athletes.

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Previous research has indicated collegiate athletes commonly self-report deficient daily energy and macronutrient intakes per the requirements for their level of training. The current level of nutrition knowledge among collegiate athletes and their perceived nutritional requirements is currently unknown.

PURPOSE: To assess the nutrition knowledge and identify the discrepancies that exist between the perceived energy and macronutrient needs of collegiate athletes compared to calculated nutritional recommendations.

METHODS: Forty-two NCAA Division III female (height: 169.9 ± 6.9 cm; body mass: 67.1 ± 8.6 kg; fat-free mass: 51.3 ± 6.6 kg; body fat %: 24.2 ± 5.3%) and 25 male (height: 180.8 ± 7.2 cm; body mass: 89.2 ± 20.5 kg; fat-free mass: 75.9 ± 12.2 kg; body fat %: 13.5 ± 8.9%) athletes had body composition assessed via air displacement plethysmography and completed a validated questionnaire designed to assess sport nutrition knowledge. Athletes also answered questions about perceived dietary requirements based on the current level of training for their sport. Paired sample t-tests were used to compare differences between calculated and perceived dietary needs. One-way analysis of variance was used to assess differences in nutrition questionnaire scores between sexes. Data are presented as mean ± standard deviation.

RESULTS: Athletes answered 47.98 ± 11.29 % of questions correctly on the nutrition questionnaire with no differences observed between sexes (Males: 49.52 ± 11.76% vs. Females: 47.03 ± 11.04%; p = 0.40). All players significantly underestimated daily energy (-578 ± 104.9 kcal/d, p < 0.001) and carbohydrate (-283.7 ± 141.8 g/d, p < 0.001) requirements when compared to calculated daily values.