CONCLUSIONS: This study found hypohydration of ~3% body mass loss: 1) decreases intracranial volume and may reduce subcortical grey matter volume; 2) expands ventricle and cerebrospinal fluid volumes; and 3) induces similar changes in the brain structures of men and women. Moreover, after 1 h recovery from exertional heat stress with water replacement, brain structures differ from a control rest condition.
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2029 Board #181 June 2, 2:00 PM - 3:30 PM

Evaluation Of A Real Life Desire-to-drink Scale

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PURPOSE:to determine the strength of the association between the amount of fluid people say they want to drink after exercise and the actual amount of fluid intake within 30 min post-exercise.
METHODS:11 healthy males (1.77 ± 0.05 m, 71.64 ± 9.0 kg) completed a total of 27 sessions of stationary bike exercise at 75-85% HRmax in the heat (WBGT = 27.3 ± 1.2) to reach a dehydration of 1, 2, or 3% BM. Immediately before completing the exercise (D0), and 15 min after initiating rehydration (D15), participants chose from a real-life, 3D scale with 10 identical water-filled bottles (from 100 mL to 1000 mL), which one they would like to drink. Actual ad libitum water intake was recorded 15 min (I15) and 30 min (I30) post-exercise. Intake was completed in the same environment as the exercise.
RESULTS: Participants lost 1.42 kg (0.56 - 2.52 kg) and drank 1239 mL (490 - 1827 mL) of water (mean (range)). Water intake was different over time ($p < 0.001$) registering 966 (408 - 1445mL) and 274 (0 - 610mL) for I15 and I30, respectively. BM recovery was 86.5 ± 40.2% of BM loss. D0 was significantly associated with I30 ($r = 0.47$, $p = 0.016$) and with I15 ($r = 0.61$, $p = 0.001$). D15 was not significantly associated with I30 ($r = -0.10$, $p = 0.627$).
CONCLUSIONS: In the absence of fluid intake, the desire to drink water upon exercise termination is significantly associated with early actual drinking. However, the association weakens with time. The desire to drink water after some ingestion has taken place fails to drive further intake.

2030 Board #182 June 2, 2:00 PM - 3:30 PM

Hydration Potential of Commonly Consumed Drinks in an Office-Working Environment

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Several factors are known to influence the hydration potential of drinks such as: volume ingested, ingestion rate, macronutrient composition, water content, electrolyte and caffeine content. However, relatively little is known about the impact of fluid composition on fluid balance during normal daily living / office working situations.
PURPOSE: To investigate the effect of 4 different commonly consumed drinks on urine output and net fluid balance over 3 hours in office-workers.
METHODS: Twenty-three participants (euhydrated, males (n=7) and females (n=16), age: mean(SD) males 31.3(10.4) y; females 33.1(9.8) y, BMI: males 29.9(4.4); females 27.4 (3.7), arrived at work in a euhydrated state. After emptying their bladder and recording body mass they ingested 1 L of fluid over the following hour as either water, coffee, orange juice or semi-skimmed milk. Energy content of the drinks was 0 kcals/L (water), 4 kcals/L (coffee), 470 kcals/L (orange juice) and 500 kcals/L (milk). Urine output was collected immediately, and each hour for 2 hours, following fluid ingestion for volume and electrolyte analysis. On completion a final body mass was obtained.
RESULTS: Mean(SD) total urine mass loss over 2 hours for still water was 1007(108) g and was significantly different to milk 797(181) g ($P<0.05$). Urine losses with orange juice (953(246) g) and coffee (1067(164) g) were not different to water, but coffee was also different to milk ($p<0.05$). Net fluid balance was positive at 2 h after milk ingestion (+203(181) ml) and was significantly different ($p<0.05$) from water (-7(108) ml) and coffee (-67(164) ml) but not different from orange juice (+48(246) ml). Net Na+ balance was significantly different from water (-495(207) mg) after ingestion of orange juice (-973(298) mg) and milk (-295(253) mg). Net K+ balance was significantly different from water (-315(64) mg), after ingestion of orange juice (+576(171) mg) and milk (+901(118) mg).
CONCLUSIONS: A variety of drinks can be ingested during normal daily living / working to help maintain fluid balance. Ingestion of milk led to a reduced urine output compared with the other drinks, most likely due to its electrolyte content and casein protein content. The retention of fluid volume following milk ingestion may be important in situations where frequent work breaks need to be avoided.

2031 Board #183 June 2, 2:00 PM - 3:30 PM

The Validity Of Urine Color Self-assessment As An Index Of Hydration In Males

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Urine color (UC) has been suggested as a practical tool for hydration assessment. To date no study has found if adults can accurately assess their own UC.
PURPOSE: Therefore, the purpose of this study was to examine the accuracy of self-assessed UC as an index of hydration in males.
METHODS: Seventy six males (24±5 y; 83.9±16.0 kg; 1.79±0.76 m) participated in the study. Participants were instructed to provide a single void into a specially constructed urinal which drained into a dark, plastic urine container. Participants were asked to compare their urine to an eight-point color scale. Hydration status was assessed via urine osmolality (UOsm) and UC via the eight-point color scale.
RESULTS: Mean UC was 3±1 and UOsm 661±247 mmol/kg. UC displayed a positive relationship as a predictor of UOsm ($R^2 = 0.21$; $P < 0.001$). The diagnostic ability of self-assessed urine color for elevated urine osmolality was assessed via receiver operating curve. A cut-off point of ≥800 mmol/kg of urine osmolality was defined as high urine osmolality. UC had a poor overall diagnostic ability (area under the curve 65%), with excellent sensitivity (91%), and poor specificity (35%). Further threshold analysis indicated that the optimal self-assessed UC threshold for hypohydration was ≥3.
CONCLUSION: Even though self-assessed UC had “poor” overall diagnostic ability for assessing hydration, the diagnosis of hypohydration with a UC of ≥3 was excellent, but assessing euhydration was inaccurate.