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Using a Urinal Screen Color Assessment Apparatus as a Predictor of Hydration Status

Nicholas Corbi, Emily Turner, Emily Besecker, Daniel Drury. Gettysburg College, Gettysburg, PA

Hypohydration is a common issue among athletes, manual laborers and the elderly. Adequate daily hydration is essential to maintain and promote optimal health. However, a reliable and accessible method for diagnosing this multivariate health concern is not readily available to the average person at risk.

PURPOSE: To determine the relative accuracy of a new hypohydration detection device using Urine Color (UC) to a previously validated method of UC assessment. **METHODS:** Urine samples were collected from college aged students (n=54) under free living conditions. Each sample was analyzed three times to determine a UC scores and USG scores by two independent researchers. USG analysis was conducted to establish a criterion baseline for the clinical determination of the subject's hydration status (< 1.020 = euhydrated; > 1.020 = hyohydrated). UC was determined using an 8 shade color scale that has been previously validated by Armstrong and others as a practical means to estimate hydration status. However, in this investigation UC was also assessed using a new Urinal Screen Color Assessment Apparatus (USCAA) which utilized a 6 shade color scale, a consistent sample quantity (23ml) and sample thickness (4 mm) as well as standardized receptacle background color (cream) for visual analysis. **RESULTS:** The Armstrong Method (AM) and the USCAA methods of estimating hydration status revealed a positive and significant statistical relationship ($p < .05$) when comparing USG and UC (AM, $r = .81$; USCAA, $r = .77$). When urine color was used to predict a simple binary state of either euhydration or hypohydration, the AM was able to accurately predict hydration status 77.36% of the time as compared to 81.13% using the USCAA. A proportional Z-test analysis revealed there was no significant difference in the predictive accuracy of the two methods ($z = .46$; $p = .67$). **CONCLUSIONS:** The USCAA tested in this investigation appears to be comparable in accuracy to the AM of urine color assessment. A non-clinical and user friendly method of self-determining one's hydration status may be useful for those who may be at risk of heat related injury. Further analysis of this USCAA appears to be warranted.