Fluid Balance and Hydration Practices of High-Performance Singaporean Youth Athletes

Ee Ling NG (MDiet.), Haresh T SUPPIAH (Ph.D), Chee Yong LOW, Ph.D, Jason Kai Wei LEE, Ph.D,
Michael Yong Hwa CHIA, Ph.D, Jericho Faliang WEE, BSc.

1National Youth Sports Institute, Singapore
2National Youth Sports Institute, Singapore
3National Youth Sports Institute, Singapore
4National University of Singapore, Singapore
5National Institute of Education, Physical Education & Sports Science, Singapore
6Nanyang Technological University, Singapore

*Corresponding author: Haresh T Suppiah, E-mail: haresh_suppiah@nysi.org.sg

Abstract

Introduction: This study provides insights on fluid balance amongst high-level Singaporean youth athletes and their fluid replenishment behaviours during training.

Methods: A total of 199 Singaporean youth athletes (M: 100, F: 99), 13–18 years old from nine different sports were recruited from a high-performance sports academy. Investigation was conducted during low (L) and high (H) intensity sessions (mean: 384.71 ±22.90UA (L), 519.19 ±23.65UA (H)), overall mean temperature and humidity of 27.1 ±3.8°C and 65 ±8% respectively. Morning and pre-training urine samples were analysed using an Urine Specific-Gravity (USG) refractometer. Pre- and post-training perceived thirst was rated against a nine-point scale. Percentage body mass (%BM) changes during training were recorded along with training load as measured by session RPE and duration.

Results: Results showed 43% and 45% youth athletes with USG ≥ 1.020 for morning (mean: 1.018 ±0.008) and pre-training USG (mean: 1.017 ±0.009), with higher morning USG (p = 0.024) observed for male athletes. Changes in %BM was higher (p = 0.002; range -2.24–1.24%) for male than female athletes across all intensities, with no significant difference between intensities. Training load was correlated with overall fluid intake (p < 0.001; r = 0.481) and sweat loss (p < 0.001; r = 0.405).

Conclusions: Hypohydration may be prevalent amongst Singaporean youth athletes if indicated by USG ≥ 1.020. Increased training load also resulted in higher fluid intake and sweat loss. Future studies to measure if this degree of hypohydration has a negative effect on their performance may be warranted.

Keywords: Hydration, Youth, Athletes, Asian