Washington State University

College of Education

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Will defend the Thesis on

Date: April 13, 2023

Time: 3:00 P.M.
Pullman Campus – PEB 103

Faculty, students and the general public are encouraged to attend

EVALUATION OF ENVIRONMENTAL CONDITIONS ON HYDRATION-RELATED ILLNESSES AND MEDICAL CONDITION DIAGNOSES FOR VARYING STAGES OF THE IRONMAN-DISTANCE TRIATHLON

Chair: Christopher Connolly

Purpose: To determine differences in occurrence of hydration-related illness (HRI) (Dehydration, Electrolyte Imbalance, Hyponatremia) by age groups (18-29, 30-49, ≥50) at variable apparent temperatures (AT) (Low: 31.75-37.19, Mid: 37.19-38.59, and High: 38.59-45.68). A secondary purpose was to determine if length of stay (LOS) in the medical tent for HRI treatment differs by professional standing, age, and sex. Additionally, the relationship between AT and not completing the race (DNF) was examined. Further, we aimed to determine the relative frequencies of adverse medical occurrences during the swim, cycle, and run legs of the competition and examine the likelihood of hospitalization as a result of DNF due to adverse medical occurrences. Methods: Of all athletes who checked into the medical tent for treatment in this competition (n=10,494), medical data for individuals diagnosed with HRI from the years 1997-2019 (n=2,482) were examined to determine the impact of environmental conditions on HRI and DNF. Differences among age and sex were examined for LOS of athletes with HRI (n=3,377) was via two-way measures ANOVA with homogeneity tests for variance and post-hoc tests with Bonferroni adjustments. Individuals diagnosed with an adverse medical occurrence (n=9,783) within an individual leg of the race were included for analysis using frequency counts and a binary logistic regression. Data were analyzed with statistical significance set at a<0.05. Results: The moderate age category had a greater occurrence of HRI (1,638/2,482) compared to low (434) and high (410) age. Dehydration accounted for 86% of HRI occurrences. LOS in the medical tent for treatment of HRI differed significantly between male (59±42.0) and female (67±53.8) athletes (p<.001). Logistic regressions found significance as low AT athletes having 1.6 times the odds (1.16-2.44) of race completion compared to high AT. Moderate AT had 1.7 times the odds (1.34-2.37) of race completion compared to high AT. Likelihood of hospitalization following DNF from a medical occurrence within the swim leg had 2.36 times the odds (CI: 1.26-4.42) compared to athletes completing the race. Athletes who DNF during the cycle had 3.04 times the odds (CI: 2.08-4.45) of hospitalization. Athletes who DNF during the run had 1.45 times the odds (CI: 1.01-2.08) of hospitalization. Conclusion: Middle aged athletes have the highest occurrences of HRI. LOS for HRI was shorter for males compared to females. High AT and age resulted in a greater likelihood of DNF as a result of HRI. Dehydration and exhaustion accounted for the majority of adverse medical occurrences. Athletes diagnosed with an adverse medical occurrence during individual legs of competition were more likely to require hospitalization compared to race finishers.