The wet bulb globe temperature index and performance
in competitive distance runners

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In 1974 two sets of heat stress guidelines, each based on the wet bulb globe temperature (WBGT) index, were designed for men’s National Collegiate Athletic Association (NCAA) Championship Division I distance running competitions. One set of guidelines was established to minimize the chance of heat injury during distance running events. A second set was designed to predict heat stress related performance decrements. During the time the heat injury guidelines were used (1974-1993), no heat injuries were reported. The purpose of this study was to assess the accuracy of the performance decrement guidelines and determine if the WBGT indices were linearly related to men’s championship distance running performance. WBGT index data were collected during the 1500, 3000 steeplechase (SC), 5000 and 10000 m events at men’s NCAA Division I Track and Field Championships held from 1974 to 1981 (excluding 1975). These data were compared to the average running performance of the top six finishers in each event. Analysis of the accuracy of the NCAA performance decrement guidelines revealed four unexpected performances out of twenty-eight predictions. Pearson product-moment correlation and linear regression analyses between the WBGT indices and performance revealed statistically significant linear relationships for the 3000 SC and 10000 m events (P< 0.05). A significant linear relationship was also found when the 1500, 3000 SC, 5000 and 10000 m results were pooled (P< 0.05). In conclusion, the NCAA guidelines were effective in preventing heat injury and fairly successful in predicting performance. However, a linear relationship between WBGT indices and distance running performance did not exist for all running events.