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More than just turning left: Physiological responses of motorsports drivers

Heat strain experienced by motorsport athletes competing in National Association for Stock Car Automobile Racing (NASCAR) may be significant enough to impair performance or even result in a life-threatening accident. Unfortunately, heat strain during actual NASCAR race competitions has not been carefully quantified. The purpose of this investigation was to quantify the thermoregulatory and physiological strain associated with competitive stock car driving. Eight male stock car drivers (29+10 years; 176.2+3.3 cm, 80.6±15.7 kg, 17.5±5.1% fat) participated in sanctioned stock car races. Physiological measurements included intestinal core (T_c) and skin (T_{sk}) temperatures, heart rate (HR), blood pressure and body mass before and after completion of the race. Pre-race T_c was 38.1±0.1 °C which increased to 38.6±0.2 °C post-race (p<0.05). T_{sk} increased from 36.1±0.2 °C pre-race to 37.3±0.3 °C post-race (p<0.05) whereas the core-to-skin temperature gradient decreased from a pre-race value of 1.96±0.3 °C to 1.28±0.3 °C post-race (p<0.05). HR's post-race were 80±0.1% of the drivers' age-predicted maximum HR. Heat strain associated with driving a stock car is significant. These findings suggest the need for heat mitigation practices and provide evidence that motorsport should consider strategies to improve cardiovascular fitness and acclimatization to better meet the thermoregulatory and cardiovascular challenges of motorsport competition.

Biography

Lara A Carlson is an Associate Professor at the University of New England and has a Faculty appointment with the U.S. Department of Veterans Affairs. Outside the classroom, she was an U.S. ranked Hammer Thrower qualifying and competing in four USA Outdoor Track and Field National Championships. She is a Fellow of the American College of Sports Medicine, a 2011 recipient of the American College of Sports Medicine New England Chapter (NEACSM) Honor Award and has recently been elected President of the NEACSM for an unprecedented second term. Her primary research interests include resistance exercise and she has a special interest in the physiological challenges observed in automobile racing.

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