DOI: 10.1080/02640414.2014.968386

Motorcycle speedway requires physical and mental fitness as well as technical skill. A speedway heat consists of four laps, lasting approximately 60 seconds in duration. The ability and composure of the rider to achieve a rapid acceleration from the start gates and maintain a top speed for the duration of the heat is essential for peak performance. Increases in sympathetic nervous system output deriving from anxiety, anticipation and the competitive nature of other motorsports have been established (Potkanawicz and Mendel [2013]. *Sports Medicine, 43,* 565-574). To our knowledge no research has examined the physiological profiles of speedway riders during competition.

The purpose of this study was to examine the relationships between heart rate intensity and rider positioning at the first corner and overall position.

Upon University ethical approval, heart rate (Activio Sport System 2010, Activio AB, Stockholm) was recorded during 35 Premier league home heats in the 2013 season for seven male professional speedway riders (age 26.3 ± 6.9 years). Percentage of heart rate maximum (%HRMax, calculated using the Tanaka formula) and scoring position (1^{st}, 2^{nd}, 3^{rd}, 4^{th}) was noted upon entry to the first corner from the gates and upon crossing the finish line. A Pearson's *r* correlation was used to identify relationships between the scoring position of the rider and their %HRMax levels at the first corner and on crossing the finish line.

A significant positive correlation ($r = 0.833$, $P = 0.020$) was observed between the scoring position of the rider at the first corner and their finish position for the heat. Therefore 69.4% of the variability of maintaining the position from the first corner to the finish line is accounted for ($r^2 = 0.694$). Percentage HRMax and position at the first corner ($r = -0.739$, $P = 0.155$) and %HRMax and position when crossing the finish line ($r = -0.372$, $P = 0.411$) indicate no significant relationship between %HRMax and performance.

In conclusion there appears to be no evidence of any relationship between heart rate and final position. It is apparent that rapid acceleration and good positioning from the start gates has a strong relationship with the final position in the heat but the riders' heart rate levels have no bearing on performance. Further research is needed to explain positional changes in a heat, and establish strategies to improve first corner positioning (e.g. reaction time).