A comparison of different recovery practices during the half-time of a simulated team sport match on subsequent repeated sprint ability

The purpose of this study was to examine the influence of different 10 min 'half-time' recovery practices on subsequent repeated sprint ability (RSA) performance following a 30 min team sport-specific running protocol on a non-motorised treadmill (NMT). After completing a 30 min team sport simulation, 10 trained team sport athletes (VO_2max = 52.6±4.5 mL·kg^{-1}·min^{-1}) completed three different 10 min recovery interventions: 1) passive recovery (PR) [seated rest], 2) active recovery (AR) [cycling at 0.7 W·kg^{-1}] or 3) combined cooling and active recovery (CR) [ice vest and cycling at 0.7 W·kg^{-1}], using a randomly allocated, crossover experimental design. Following the recovery intervention, subjects performed a repeated 5 x 6 s RSA test (departing every 30 s) on a NMT. Blood lactate concentrations [BLa^-], blood pH, blood bicarbonate, blood base excess (BECF), tympanic and skin temperature and heart rate were recorded throughout testing. Perception of effort and total quality of recovery were also measured during the recovery period and subsequent RSA bout. Results showed that despite seven of ten subjects performing best following CR, there were no significant differences in RSA performances between the three recovery groups. Whilst no performance differences were present, CR resulted in a significantly greater rate of [BLa^-] reduction ($p<0.05$) and a lower change in BECF ($p<0.05$) during the 10 min recovery period, when compared to PR. The most likely explanation for this response is that CR caused an increased blood flow to the working muscle that may assist in removal of intramuscular [H^+].

The reliability of a prolonged high-intensity intermittent running protocol on a non-motorised treadmill for assessing team sport performance

At present there are no laboratory tests to assess or monitor team sport-specific running performance. The purpose of this study was to report on the reliability of a new test and method for measuring team sport running performance in a laboratory. Following familiarisation, 11 moderately-trained male team sport athletes (VO_2max = 52.6±4.5 mL·kg^{-1}·min^{-1} Mass = 77.5±8.2 kg) completed three 30 min high-intensity intermittent running protocols on a non-motorised treadmill (NMT) separated by 6 days. The protocol was designed to mimic the work profile of most team sports and was based on time and motion data of various team sports. The data was analysed for reliability using Typical Error (TE), Typical Error Expressed as a Coefficient of Variation (CV), and Intraclass Correlation Coefficient (ICC). A one-way ANOVA was used to identify any significant differences between the three trials. There were no significant differences in any of the important performance measures between the three trials ($P>0.05$). The CV for key performance measures was lowest between trials 2 to 3 with 30 min NMT distance, peak speeds and individual 6 s and 3 s sprint distance were 1.91, 2.01, 0.87 and 1.29%, respectively. The ICCs ranged between 0.74-0.97. These results show that the 30 min high-intensity intermittent running protocol on a non-motorised treadmill has good reliability. We suggest that this prolonged high-intensity running protocol can be reliably used to measure and monitor performance in team sport athletes. The present data also shows that two familiarisation sessions should be completed prior to testing.