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Metabolic Cost and Perceived Exertion during Progressive and Randomized Walking Protocols

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Abstract : This study investigated whether selected metabolic responses and the perception of effort varied during four different walk protocols where speed increased progressively 3, 4, 5, 6, and 7 km/hr (progressive treadmill walk (PTW); and progressive land walk (PLW); or where the participant adjusted to random changes of speed e.g. 6, 3, 7, 4, and 5 km/hr during a randomized treadmill walk (RTW); and a randomized land walk (RLW). Mean stature and mass of the seven participants was 1.75m and 70kg respectively, with a mean body fat of 15%. Metabolic measures including heart rate, relative oxygen uptake, ventilation, increased in a linear fashion up to 6 km/hr, however at 7 km/hr there was a significant increase in metabolic response notably during the PLW, and to a similar, although lesser extent in RLW, probably as a consequence of the loss of kinetic energy when turning at each cone in order to maintain the speed during each shuttle. Respiration frequency appeared to be a more sensitive indicator of physical exertion, exhibiting a rapid elevation at 5 km/hr. The perception of effort during each mode and at each speed was largely congruent during each walk protocol.

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