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## MEASUREMENT OF RELATIVE ENERGY DEFICIENCY IN SPORT (RED-S) IN ELITE MALE ADOLESCENT ATHLETES

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Energy deficiency in adolescent athletes has been reported using energy availability calculations. More recently, the ratio of measured resting energy expenditure to predicted resting energy expenditure ( $REE/pREE < 0.09$ ) has been used to explore relative energy deficiency in sport (RED-S) in adult athletes, however has not been applied in adolescent athletes. The aim of this study was to assess the suitability of  $REE/pREE$  in elite male adolescent athletes. Measured REE was measured using indirect calorimetry (QUARK RMR unit) and predicted REE was calculated using the Harris-Benedict, Cunningham, Schofield and Mifflin St Jeor predictive equations. Energy status was calculated using  $REE/pREE$  with  $< 0.9$  deemed as energy deficient. No athletes presented with a relative energy ( $REE/pREE = 1.04$ ; IQR: 0.96:1.1). Schofield's equation was the closest predictor of measured REE (1,874 kcal (IQR: 1,515 kcal:1,989 kcal) vs. 1,965 kcal (IQR: 1,687 kcal:2,035 kcal). Harris-benedict, Cunningham and Mifflin St Jeor significantly underestimated measured REE at (mean  $\pm$  SD)  $-1016 \pm 1,045$ kJ,  $-1,249 \pm 1045$  kJ and  $-1,432 \pm 1256$  kJ, respectively ( $p = 0.001$ ). The Schofield equation is the most suitable equation to identify RED-S using the ratio of  $REE/pREE$  in male adolescent athletes. Further research is required to explore the necessity of pubertal stages in REE predictive equations in this group to ensure accurate identification of relative energy deficiency.

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