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O.33 Comparison of laboratory versus field-based exercise tests to assess aerobic fitness in elite female soccer players.

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Introduction: Football involves frequent changes in direction and intensity, leading to demands placed on both aerobic and anaerobic energy systems. Despite the increased popularity of women’s football, there is limited scientific research into this cohort. Study aims: evaluate player characteristics and determine which field-based measure if any is the most valid in assessing football specific fitness in this cohort. Methods: 20 elite women players were recruited. Fitness was assessed through laboratory-based graded incremental test (GXT) and field-based Yo-YoIR1 and Hoff test. Results: Mean ($\pm$ SD) age 21 ± 3.59 years; height 1.67 ± 0.06 m; body mass 63.02 ± 4.59 kg; percentage body fat $23.88 \pm 3.41\%$. Mean ($\pm$ SEM) GXT: VO_2max 49.71 ± 1.06 $\text{mL.kg}^{-1}.\text{min}^{-1}$, HRmax 190.6 ± 2.86 beats.min^{-1} and velocity at TLac 11.79 ± 0.19 km.hr^{-1} . Mean ($\pm$ SEM) Hoff distance $1487 \pm 35.51\text{m}$ and Yo-YoIR1 distance $1133 \pm 66.4\text{m}$. The mean ($\pm$ SEM) predicted VO_2max from Yo-YoIR1 45.91 ± 0.56 $\text{mL.kg}^{-1}.\text{min}^{-1}$. Significance difference between VO_2max and predicted VO_2max ($p = 0.009$), the predicted underestimating VO_2max (difference between means -3.05 ± 1.09 $\text{mL.kg}^{-1}.\text{min}^{-1}$) with effect size of $r^2 = 0.22$ ($r = -0.453832$). Significant difference in rank between the Hoff vs Yo-Yo ($p = 0.0005$), Hoff vs GXT ($p = 0.0001$) and the Yo-Yo vs. GXT ($p < 0.0001$). Conclusions: Ranks from the field-based tests showed greatest correlation, Hoff test had greater correlation to rank of GXT than that of the Yo-YoIR1. Predicted VO_2max underestimate the true VO_2max but effect size was small.