**In-season Changes In Heart Rate Recovery Are Related To Time To Exhaustion, But Not Aerobic Capacity In Collegiate Rowers**

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While maximal aerobic capacity (VO\textsubscript{2max}) is the gold standard in assessing aerobic fitness, heart rate recovery (HRR) has been suggested as a simple, noninvasive measure to monitor fitness. The relationship between in-season changes in VO\textsubscript{2max} and HRR in athletes remains unclear, however, and may be influenced by body composition.

**Purpose**: To determine if in-season changes in HRR are related to aerobic fitness in collegiate rowers and whether this relationship is influenced by body composition.

**Methods**: 22 female collegiate varsity rowers completed testing immediately before and after their competitive fall season. Lean body mass (LBM) and body fat percentage (BF%) were determined by dual energy xray absorptiometry (DXA). VO\textsubscript{2max} and time to exhaustion (T\textsubscript{max}) were determined during maximal rowing ergometer testing followed by 3 minutes of active recovery at 70W. Heart rate was measured continuously and HRR was expressed absolutely at 1, 2 and 3 minutes after test completion (HRR\textsubscript{1min}, HRR\textsubscript{2min}, HRR\textsubscript{3min}, respectively). Pre and postseason variables were compared using paired t-tests. Multivariable regression models were used to predict in-season changes in HRR at each time point using in-season changes in 1) VO\textsubscript{2max} and BF% and 2) T\textsubscript{max} and BF% as covariates.

**Results**: Compared to pre-season, post-season VO\textsubscript{2max} (3.98±0.42 v 3.78±0.35 ml/kg/min, p=0.002) and BF% (23.8±3.4 v 21.3±3.9%, p<0.001) decreased, while increases were noted in T\textsubscript{max} (11.7±1.3 v 12.6±1.3 minutes p=0.002) and LBM (50.6±5.5 v 52.3±6.0kg, p<0.001). There were increases in HRR\textsubscript{1min} (22.0±5.6 v 25.4±7.0bpm, p=0.008), HRR\textsubscript{2min} (32.1±5.8 v 44.8±7.3bpm, p<0.001) and HRR\textsubscript{3min} (37.7±5.8 v 51.3±5.7bpm p<0.001). After inclusion in the multivariable model, VO\textsubscript{2max} was not independently associated with HRR\textsubscript{1min} (p=0.40), HRR\textsubscript{2min} (p=0.31), or HRR\textsubscript{3min} (p=0.21). Tmax was independently related to HRR\textsubscript{1min} (p= 0.007), but not HRR\textsubscript{2min} (p= 0.56) or HRR\textsubscript{3min} (p= 0.99). BF% was independently related to HRR\textsubscript{3min} in both models (p=0.041 and p=0.023, respectively), but not HRR\textsubscript{1min} or HRR\textsubscript{2min} in either model (p>0.05 for all).

**Conclusion**: HRR is faster post-season and HRR\textsubscript{1min} is related to increases in Tmax. On the other hand, in-season changes in HRR do not reflect changes in VO\textsubscript{2max} and should not be used as an indirect measure of aerobic capacity in collegiate rowers.