Physical & psychological factors affecting the female collegiate lacrosse athlete & performance

Paula Parker, EdD, CMPC®

Department of Exercise Science

Abby Cooley, MSPH Candidate

Campbell University School of Osteopathic Medicine, Class of 2028

Behavioral Health & Wellness Manager: Campbell Community Care Clinic

Purpose

To discuss the influencing factors for sport performance in Division I female athletes

- **Objective data**
- **Subjective data**

Why this population?

Small portion of the literature devoted to collegiate athletes & even less devoted to female athletes.

Collegiate athletes are unique due to the academic demands of the student-athlete.

Female athletes are different from their male counterparts physiologically and psychologically.

Longitudinal assessment of 7 years and counting

THANK YOU!

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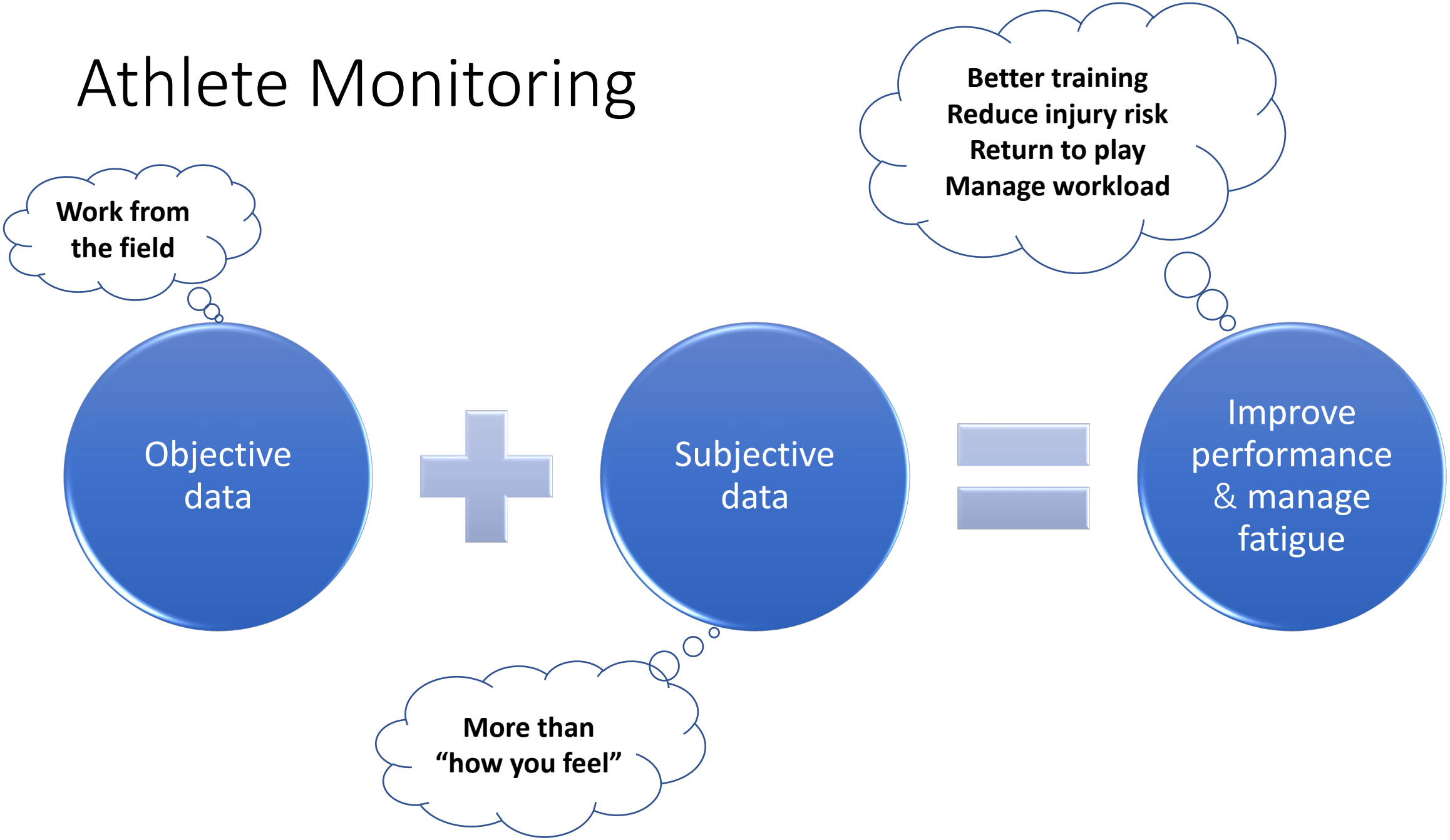
Athlete Monitoring



Objective Data: Microtechnology

- Sport microtechnology companies measure variables through global positioning systems (GPS), accelerometry, & heart rate
- They have created an “all-in-one” variable (A1M) to provide a composite score for external load
- VX Sport – Athlete Load (AL)

Athlete Training Load: The Big 5 Metrics

Total distance

- For a session, drill, game, etc.
- Meters or yards

High-intensity distance (HID)

- Distance run that exceeds a given speed threshold (>60% max speed)
- Meters or yards

Sprints

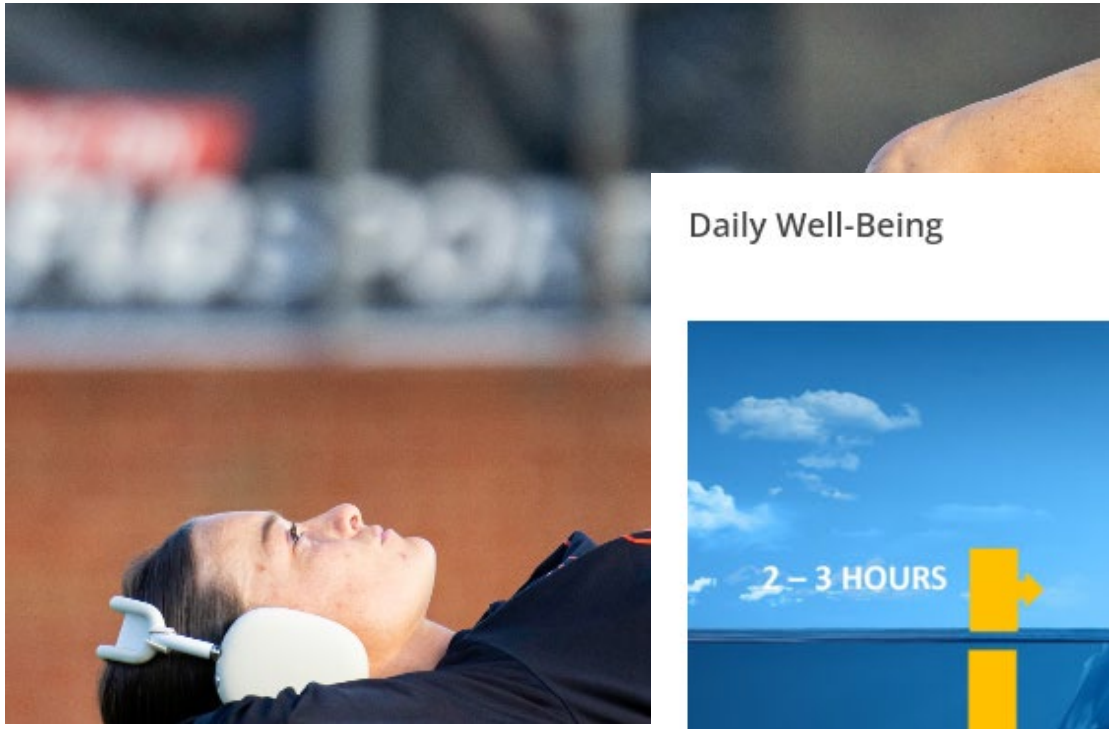
- # of sprint efforts above a given speed threshold
- Count

Accelerations

- # of fast starts above a given threshold
- Count

Decelerations

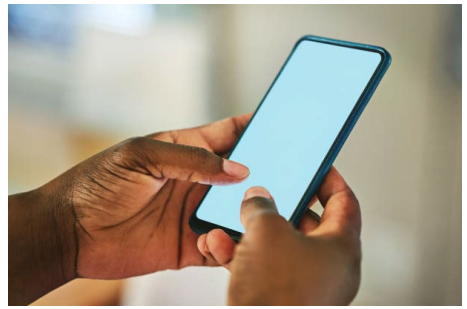
- # of quick stops above a given threshold
- Count

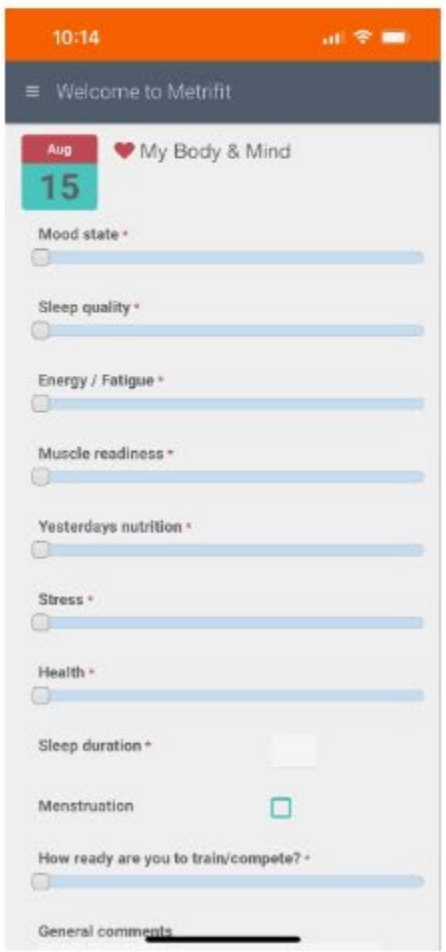


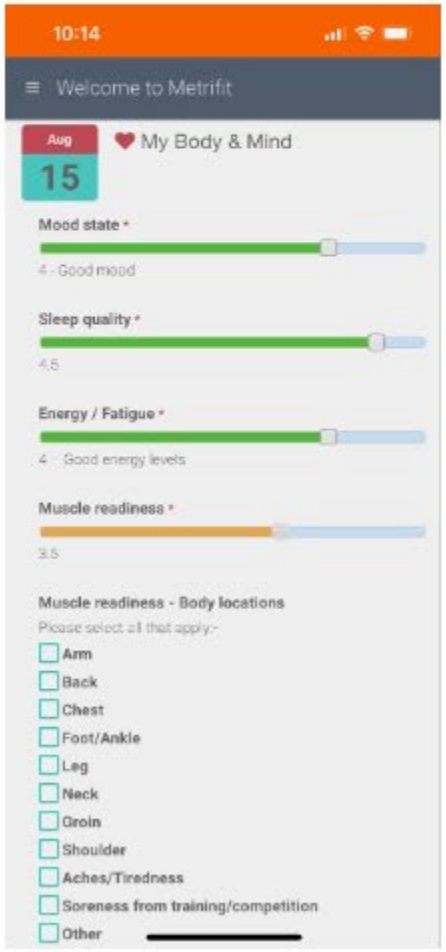
Daily Well-Being

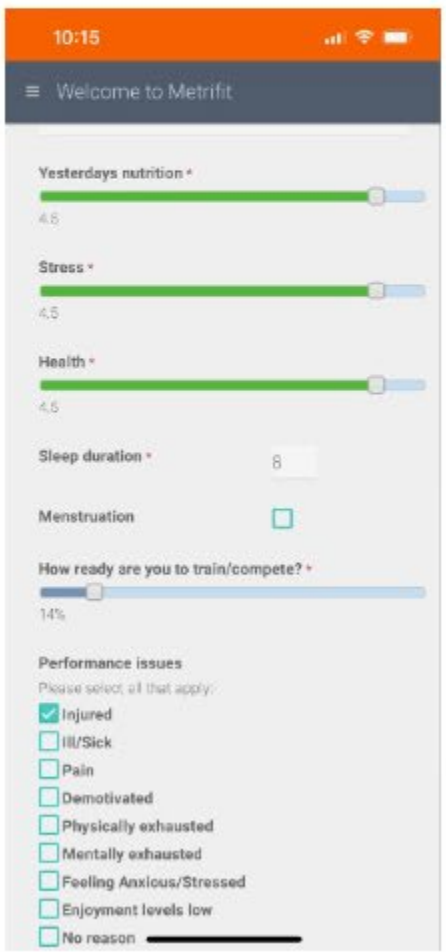
Subjective Data: Daily Wellness Survey

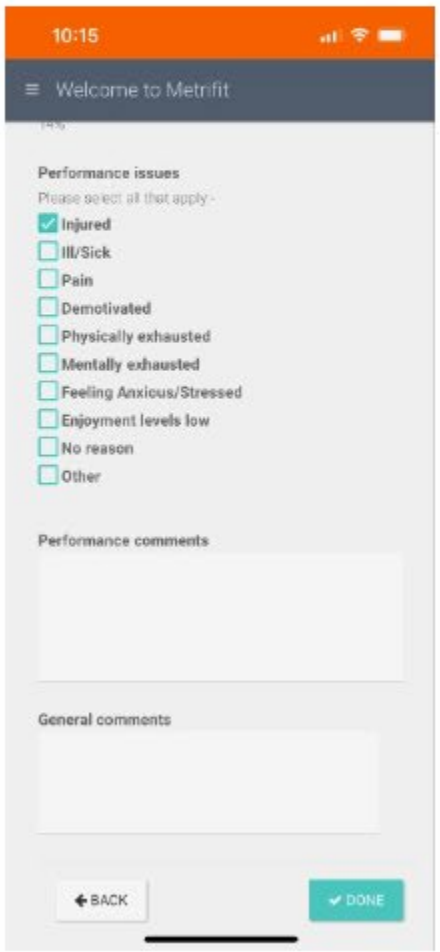
Logging Daily Wellness

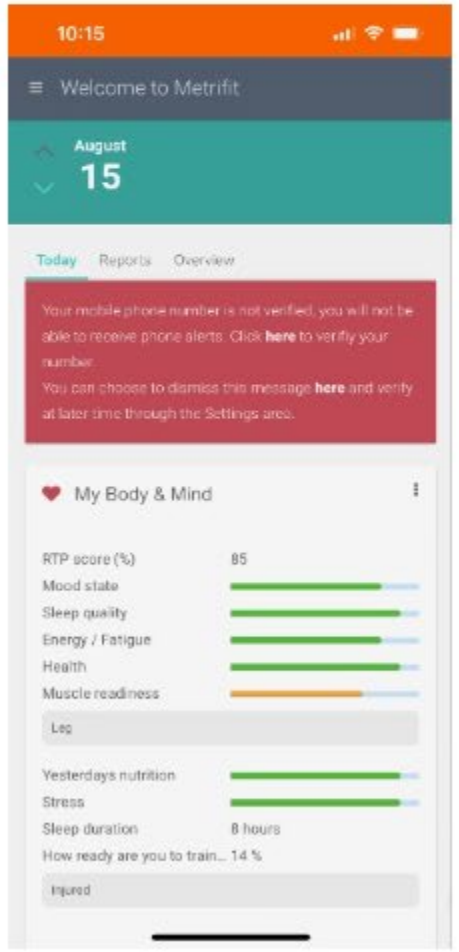








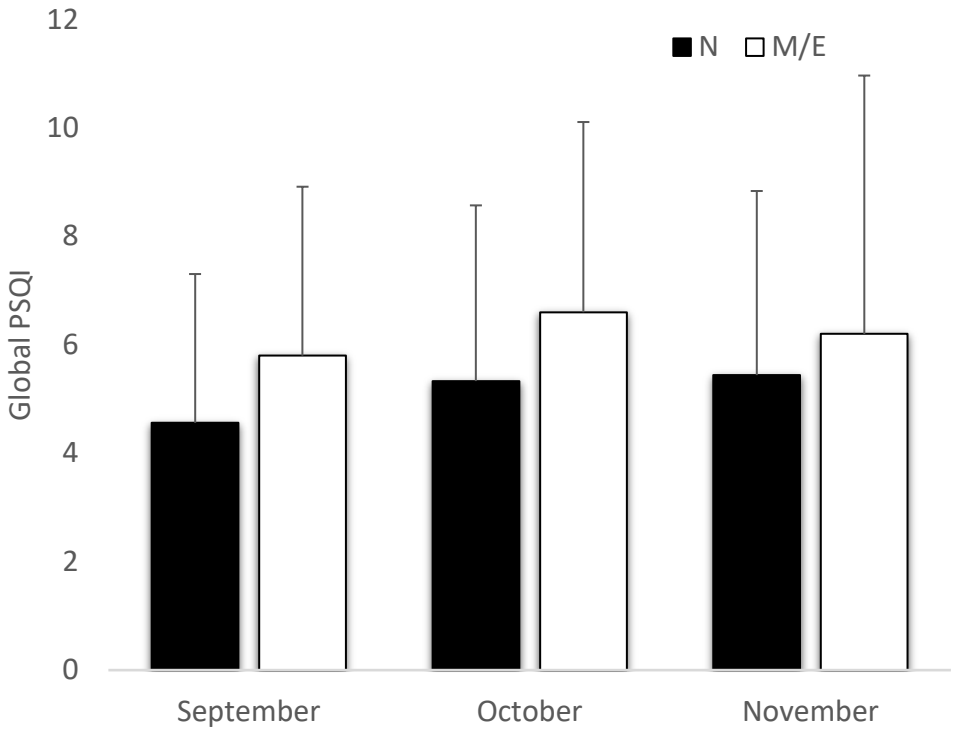


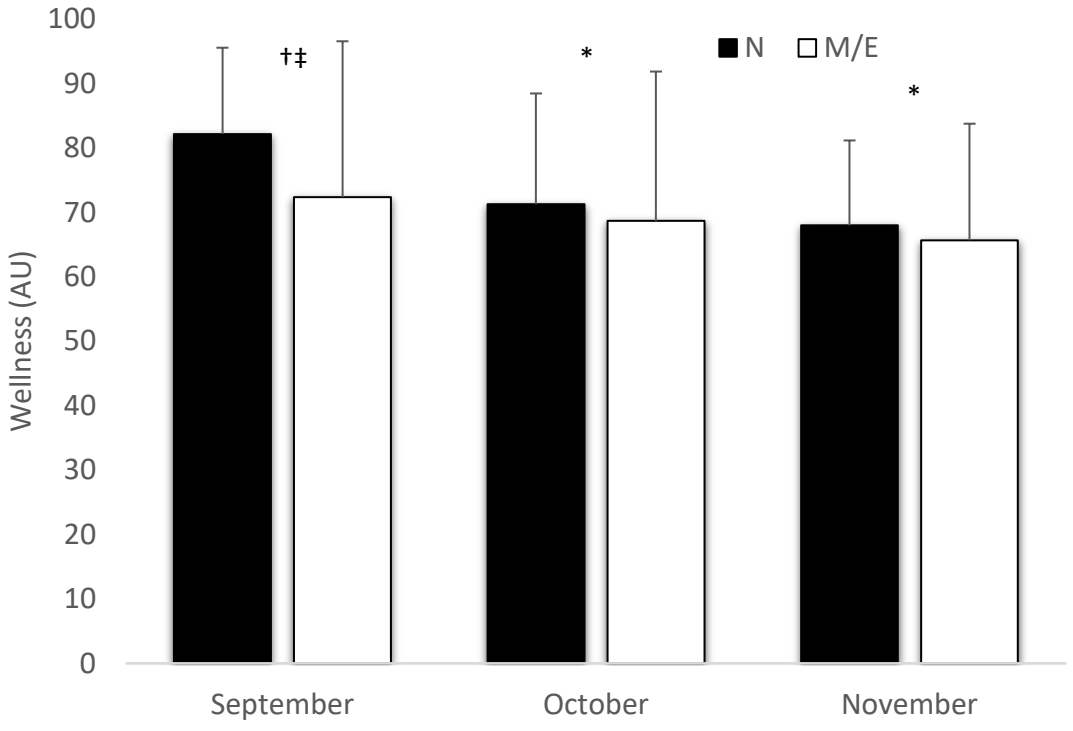


Crouch et al. (2021)		External Training Load Parameter Estimate (associated 95% CI); P-value			
Effect	**Subjective Wellness Score Comparison****	**Distance**	**HID**	**Distance Rate**	**Athlete Load**
Muscle Soreness	100 v. ≤50	-40.8 (-236.0, 154.4) 0.6820	-35.3 (-74.9, 4.3) 0.0806	-0.3 (-3.1, 2.5) 0.8494	0.7 (-2.8, 4.3) 0.6836
	75 v. ≤50	120.7 (-55.4, 296.8) 0.1790	-22.0 (-57.7, 13.7) 0.2262	0.0 (-2.5, 2.5) 0.9964	1.1 (-2.1, 4.3) 0.5094
Sleep Quality	100 v. ≤50	303.8 (50.0, 557.6) 0.0190	64.2 (12.7, 115.7) 0.0147	3.4 (-0.3, 7.0) 0.0681	5.7 (1.1, 10.3) 0.0158
	75 v. ≤50	310.5 (36.7, 584.3) 0.0263	72.7 (17.2, 128.3) 0.0103	2.1 (-1.8, 6.0) 0.2961	6.8 (1.8, 11.8) 0.0077
Fatigue	100 v. ≤50	323.6 (52.2, 594.9) 0.0195	49.7 (-5.4, 104.8) 0.0773	2.3 (-1.6, 6.1) 0.2532	5.6 (0.6, 10.5) 0.0271
	75 v. ≤50	141.5 (-137.3, 420.3) 0.3195	13.8 (-42.9, 70.4) 0.6339	0.0 (-4.0, 4.0) 0.9969	2.7 (-2.4, 7.7) 0.3014
Stress	100 v. ≤50	49.6 (-161.8, 261.0) 0.6452	14.0 (-28.8, 56.9) 0.5206	-3.9 (-6.9, -0.9) 0.0116	1.5 (-2.3, 5.4) 0.4416
	75 v. ≤50	-22.6 (-225.6, 180.4) 0.8269	21.4 (-19.8, 62.6) 0.3081	-1.3 (-4.2, 1.5) 0.3616	2.3 (-1.3, 6.0) 0.2131
Overall Wellness†	-	3.5 (1.2, 15.1) 0.0213	0.8 (-0.6, 2.2) 0.2737	0.001 (-0.1, 0.1) 0.9793	0.2 (0.0, 0.3) 0.0132

Chronotype & Sleep (Grace et al., 2023)

Lower scores = Better sleep





* indicates a difference from September ($p < .05$), † indicates a difference from October ($p < .05$), and ‡ indicates a difference from November ($p < .05$).

Psychological Hardiness (Cooley et al., 2023)

- Kobasa (1979)
- Bartone et al. (1989)
  Dispositional Resilience Scale-15

Wellness Following Wins & Losses Based on Psychological Hardiness in Division I Women's Lacrosse (Cooley et al., 2023)

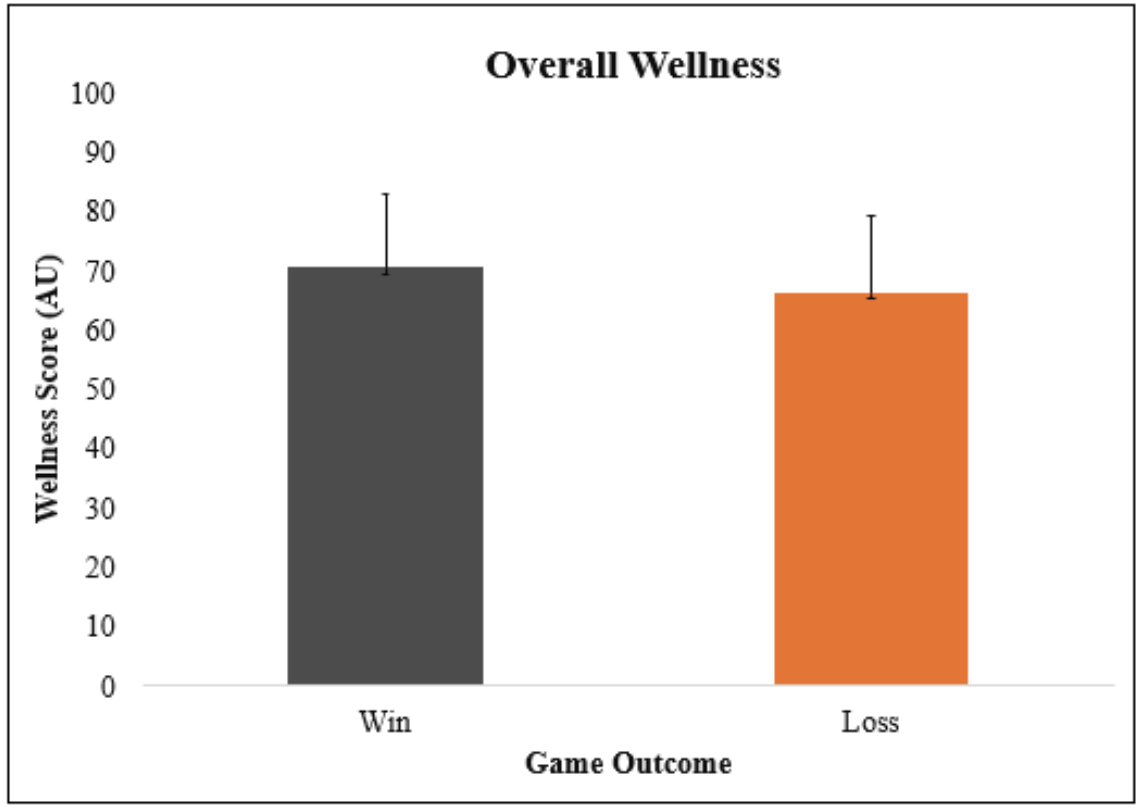


Figure 1: Total mean scores for overall wellness following win & loss based on wellness survey ($p = 0.015$)

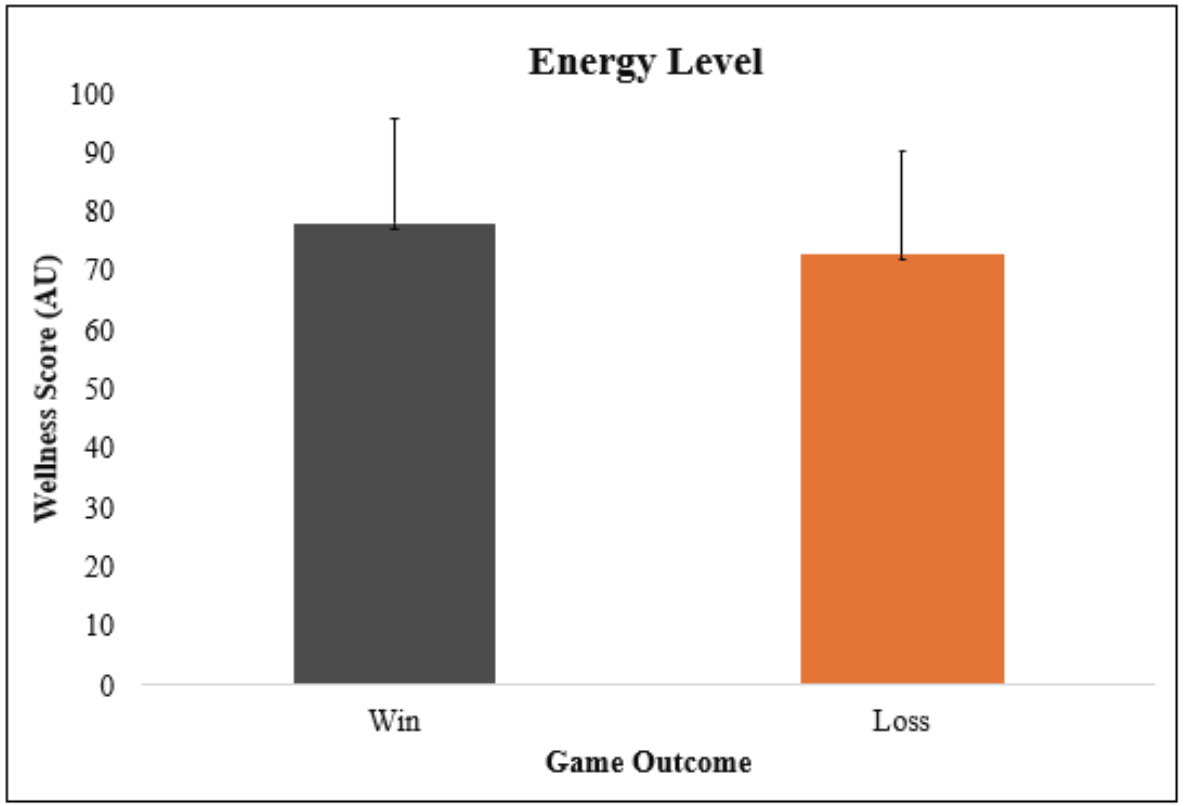
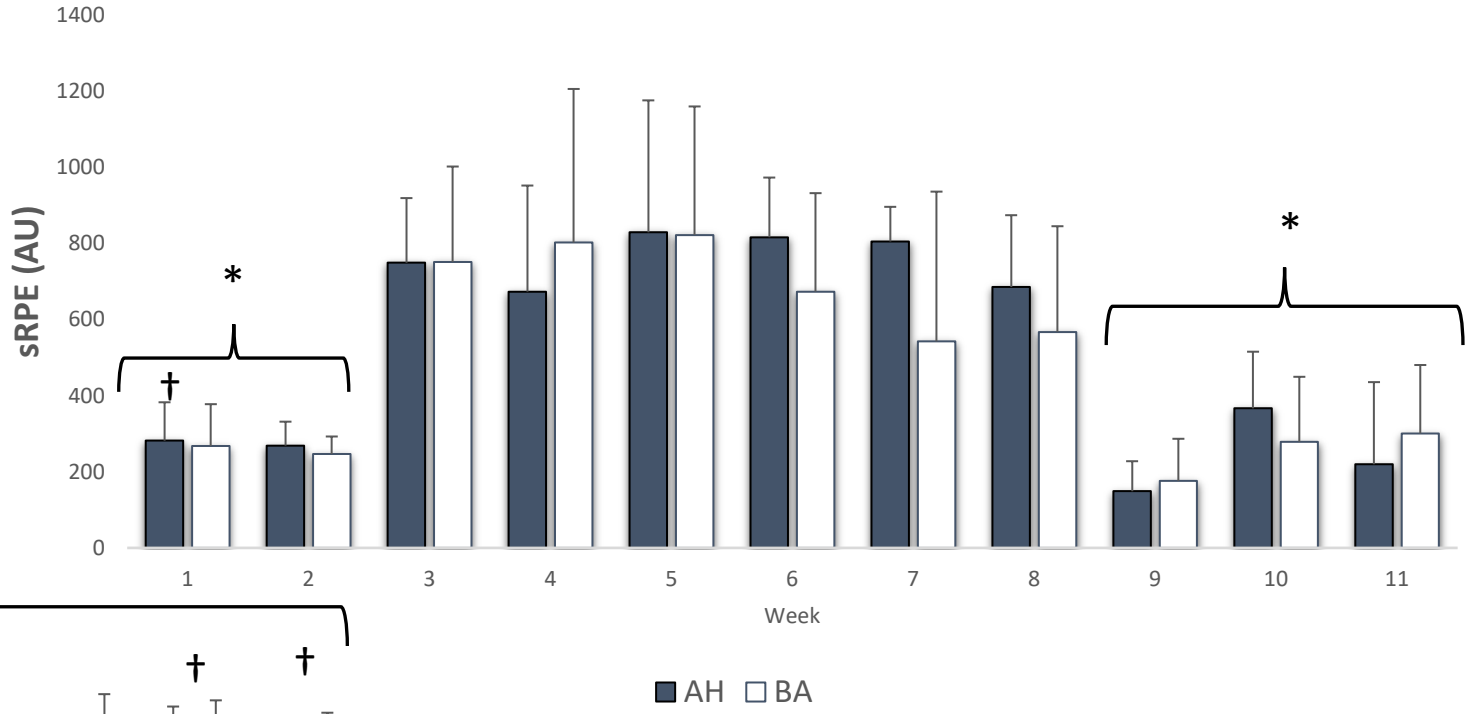
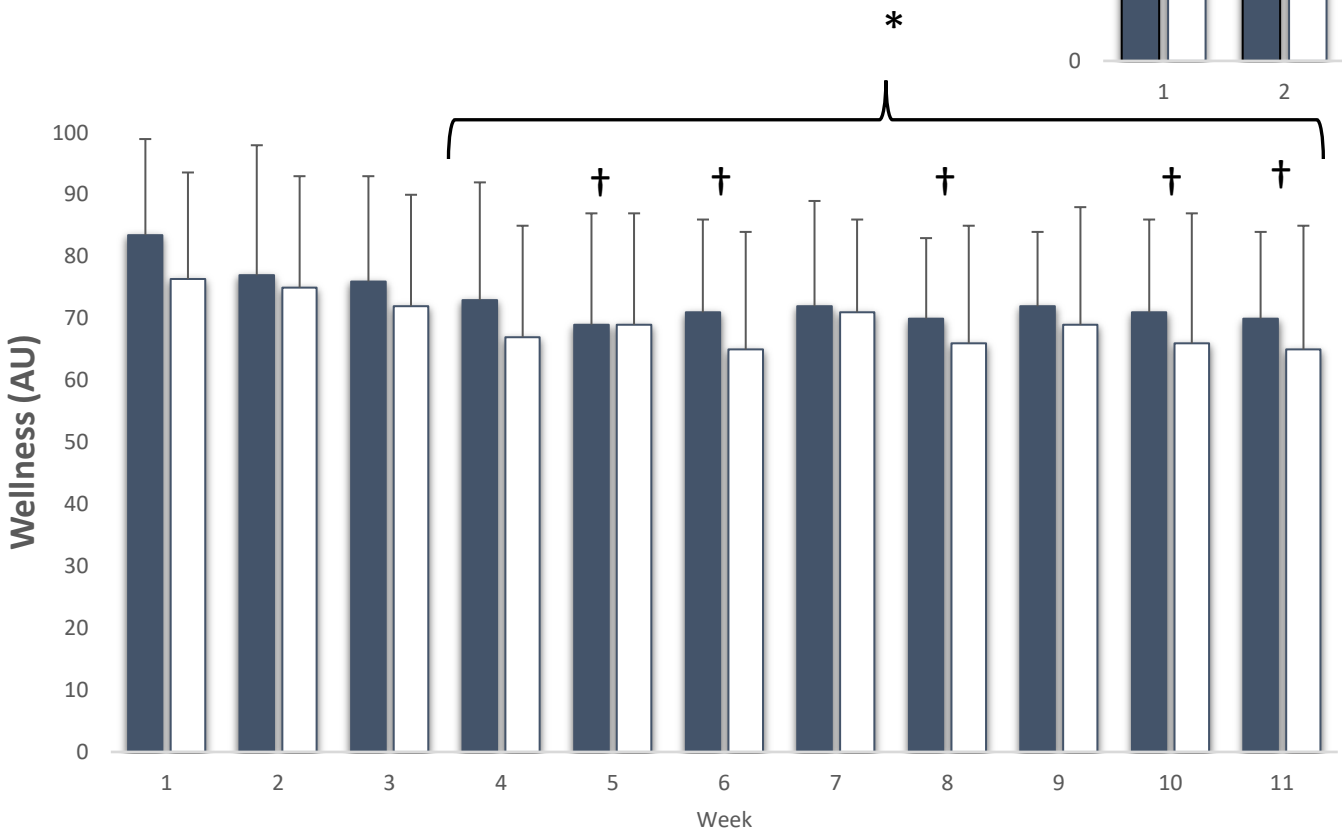


Figure 2: Total mean scores of total energy level following win & loss based on wellness survey ($p = 0.024$).

Psych hardiness

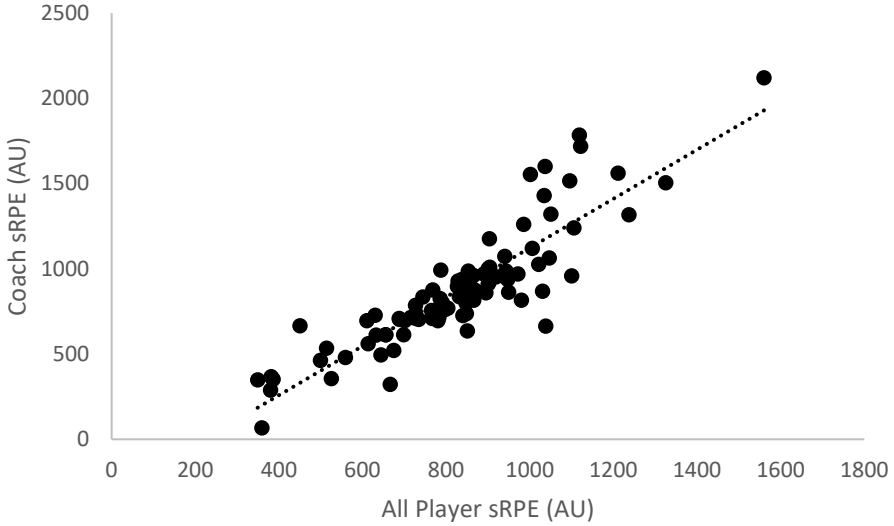
Weekly changes in sRPE for both groups.
* indicates a difference from weeks 3-8 ($p < .05$)
† indicates a difference from week 2 ($p < .05$)

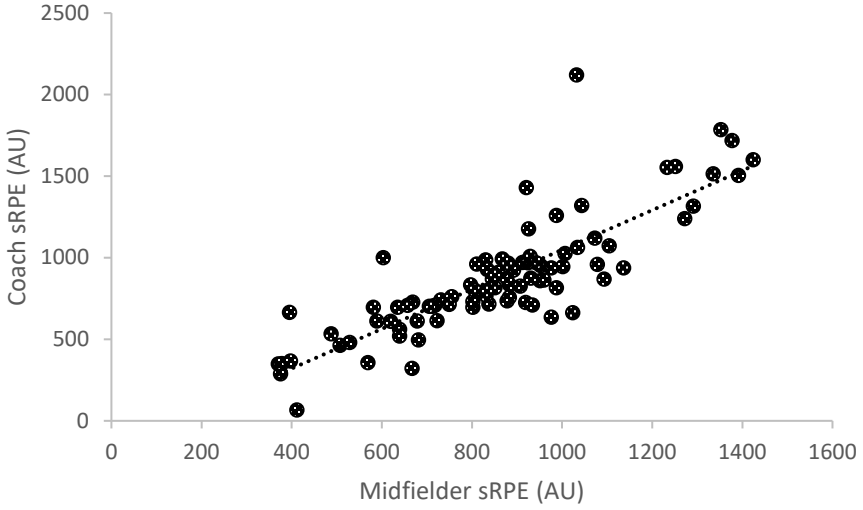


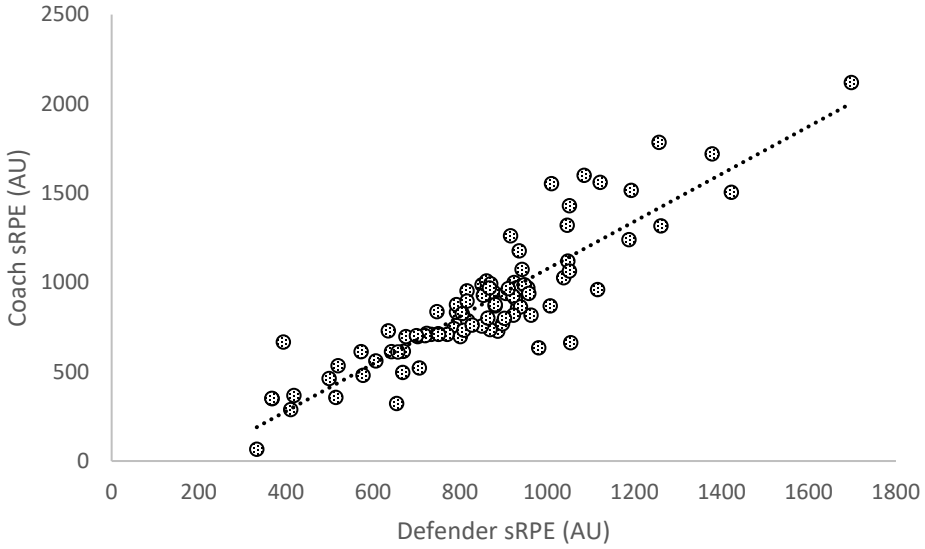


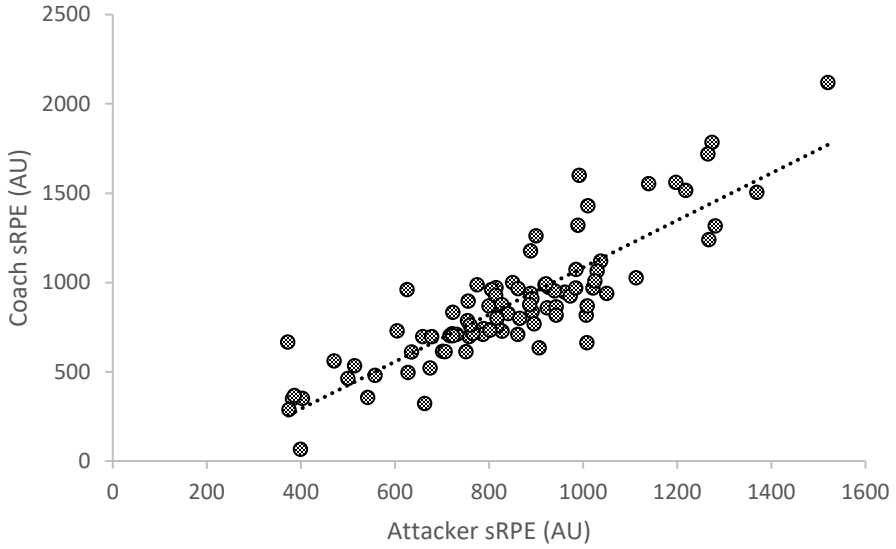
Changes over time in mean wellness for both groups.
* indicates a difference from week 1 ($p < .05$)
† a difference from week 2 ($p < .05$)

Comparisons of sRPE between coaches & players









Coaches overestimated sRPE for training (876 ± 349 AU) compared to:

- Players as a whole (829 ± 214 AU)
- Attackers (842 ± 229 AU)
- Midfielders (857 ± 240 AU)
- Defenders (849 ± 233 AU)

The correlations ranged r = .834-.888.

Help Coaches Plan Effective Practices & Manage Training Loads

- Assess psychosocial variables (e.g., psychological hardiness, burnout, wellness) & teach athletic coping skills
- Help athletes increase self-awareness
- Consider academic load when planning training sessions for all seasons
- Teach athletes both physical & mental recovery are essential to continued performance improvements
- Incorporate goal setting sessions focused on both mental & physical health throughout the training season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