The Salivary Alpha-Amylase Response to Moderate-Intensity Trap Bar Deadlift

Asher L Flynn, Gentles, J., Langford, T. (2022) The Salivary Alpha-Amylase Response to Moderate Intensity Trap Bar Deadlift. *The Sport Journal*, 54(34.7), 100-6.

What is Salivary Alpha-Amylase?

- Enzyme that initiates digestion of starch in the mouth¹
- sAAslso responds to stress
 - \circ Social²
 - Psychological³
 - Aerobic exercise⁴
 - Intensity threshold
- Over stressing in any of these categories can lead to an altered circadian rhythm
 - PTSD

This sounds like Cortisol

- Salivary Alpha-Amylase is similar to cortisol
 - Both respond to stressors
- sAA is nearly immediate, Cortisol is delayed ~20minutes⁵
- Cortisol response can be altered during the 20-minute delay⁶
 - Meditation
 - Yoga
 - Music

Salivary Alpha-Amylase in Sport

- Normal sport training involves multiple stressors
 - Aerobic stress
 - Psychological stress
 - Team dynamics / Technical demands / Tactical demands
 - Resistance Training stress

What is the sAA response to different RT protocols?

- Previous research on a high-volume high-intensity (5 x 10 failure) back squat & bench press males only⁷
 - sAA increased significantly (50%+ increase)

• The purpose of this research was to determine if a moderate-volume moderate intensity RT protocol would elicit a sAA response.

Methods: Participants

- 16 female soccer athletes
 - 20.1 ± 1.7 yr., 166.44 ± 7.91 cm, 62.51 ± 8.18 kg
- All participants were actively participating in full sport training
 - No injuries that limit training capabilities
- Athlete Instructions
 - No caffeine 6 hours prior to training
 - No food / drink (except water) 1 hour prior to / during training

Methods: Study Protocol

- 1. 10 minutes before the warm-up
 - Resting sAA sample
 - Passive drool-synthetic absorbance swab (Salimetrics, Carlsbad, CA)
- 2. Normal warm-up with their team S&C coach
 - First lift of their training session was 5 sets of 5 repetitions of trap bar dead lift
 - 60%, 70%, 75%, 80%, 80% of 1 repetition maximum
- 3. Post training sAA sample
 - Within 2-minutes of the last repetition of the last set.

Results

• A paired samples t-test was used to determine if there was a statistically significant increase in sAA concentrations due to RT.

- PRE: $54.7 \pm 34.7 \text{ U/mL}$
 - Range: 10.3 135.8
- POST: $100.6 \pm 55.1 \text{ U/mL}$
 - Range: 11.2 190.6
- p = 0.002



[■] PRE ■ POST

Why is this important?

• In order to accurately monitor the stress an athlete is experiencing and therefore not over stress them, a practical method of monitoring all stressors is necessary.

- Salivary Alpha-Amylase is likely a biomarker that responds to all stressors
 - Similar to Cortisol-but better
- Since sAA responds to all stressors, it is likely useful as a global stress marker for athletes.

Why is this important?

- sAA may be able to determine a more specific value for stressor for different common RT protocols
- May be able to identify the dose of stress applied by a RT session
 - To little for adaptation or to much for adaptation
- sAAmay be more sensitive to stress than cortisol
 - Changes in circadian rhythm may happen earlier in a chronic stress situation

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