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In-season Heart Rate and Session Rate of Perceived Exertion in Collegiate Softball Athletes

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INTRODUCTION

- Monitoring of workload is vital to minimize risk of overuse musculoskeletal injuries in athletes while optimizing performance
- Heart rate (HR) and session rate of perceived exertion (sRPE) have been shown to be reliable measures of training intensity in steady state and interval exercise
- Relationship between training load and injury in running-based team sports has been established
- Limited studies have investigated internal load in throwing-dominant athletes despite rigorous competition season

PURPOSE: The purpose of this study was to monitor and assess the relationship between HR and sRPE during a collegiate softball season.



- Both average %HR and RPE fell below moderate intensity**
- %HR was lower than values published in other sports**
- No significant relationship was seen between HR and sRPE ($r = .073$, $p = .510$)**

Description of percent of maximum heart rate and rate of perceived exertion (*mean ± standard deviation*)

	%HR	RPE
Pitcher (n=4)	58.47 ± 2.47	3.9 ± 1.4
Catcher (n=2)	59.27 ± 4.28	4.4 ± 1.4
Infield (n=6)	63.14 ± 5.85	3.1 ± 1.3
Outfield (n=7)	59.88 ± 3.88	4.1 ± 1.8
Utility (n=1)	59.56 ± 3.38	4.4 ± 2.2
Total (n=20)	60.30 ± 3.97	3.9 ± 1.6

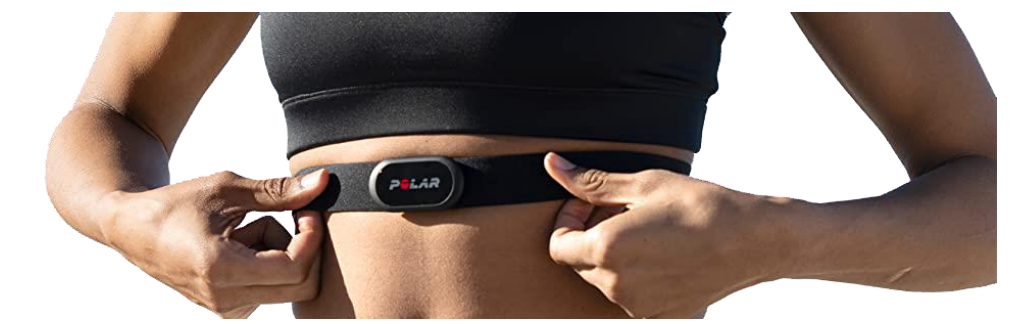
METHODS

DESIGN: Prospective longitudinal study

- 8 weeks of competition season

SUBJECTS: 20 varsity softball student-athletes (20.5 ± 1.2 yrs)

- HR collected with Polar H10 chest strap
 - Average HR recorded with Team Flow app
 - Calculated as percentage of age-predicted maximum HR (%HR)



- Measure of RPE (revised Borg category ratio scale) taken within 30 minutes following each training session
 - sRPE calculated by multiplying practice RPE by session duration in minutes

10	Max Effort Activity Feels almost impossible to keep going. Completely out of breath, unable to talk. Cannot maintain for more than a very short time.
9	Very Hard Activity Very difficult to maintain exercise intensity. Can barely breathe and speak only a few words.
7-8	Vigorous Activity Borderline uncomfortable. Short of breath, can speak a sentence.
4-6	Moderate Activity Breathing heavily, can hold short conversation. Still somewhat comfortable, but becoming noticeably more challenging.
2-3	Light Activity Feels like you can maintain for hours. Easy to breathe and carry a conversation.
1	Very Light Activity Hardly any exertion, but more than sleeping, watching TV, etc.

- Pearson's correlation coefficients used to determine relationship between %HR and sRPE

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