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The Future of Football Medicine

Camp Nou, Barcelona • 13th -15th May, 2017



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Relationships of internal and external training load in elite-level adolescent soccer

Jamie Salter, Dr Matthew Weston and Peter Hood



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Background...

GPS research is dominated by locomotor focussed metrics such as total distance and high intensity running - may be affected by tactical approach



Tri-axial accelerometer-derived data is based on instantaneous rate of change in acceleration in each of the three vectors and infers extent of mechanical loading



Combining external load metrics with internal variables such as RPE has been well researched and verified as a method of calculating the physiological dose-response between individuals



Aim: To observe the magnitude of associations between internal and external training load amongst elite-level adolescent soccer players

(Barrett *et al*, 2014; Buchheit and Simpson, 2017; Castillo *et al*, 2016; Halson, 2014; Malone *et al*, 2017; Vanrenterghem *et al*, 2017)

Experimental Approach...

Participants



n = 34
Male Elite Academy
Football Players

Age 13.84 yrs
Weight 55.1 kg
Height 166.9 cm

External Load

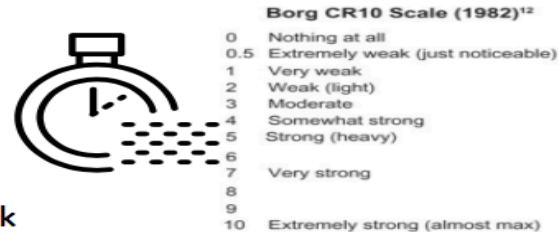


3 x unaltered training sessions within a two-week
period delivered by technical age-group coaches

Catapult S4 (GPS 10Hz & 100Hz accelerometer) to
observe High Speed Running & PlayerLoad

Individualised speed thresholds were calculated on
Mendez-Villaneuva et al (2012) to consider slower
relative speeds for maturing players

Internal Load

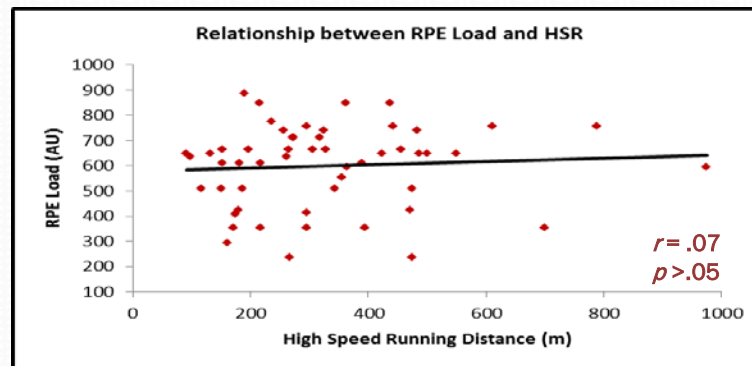
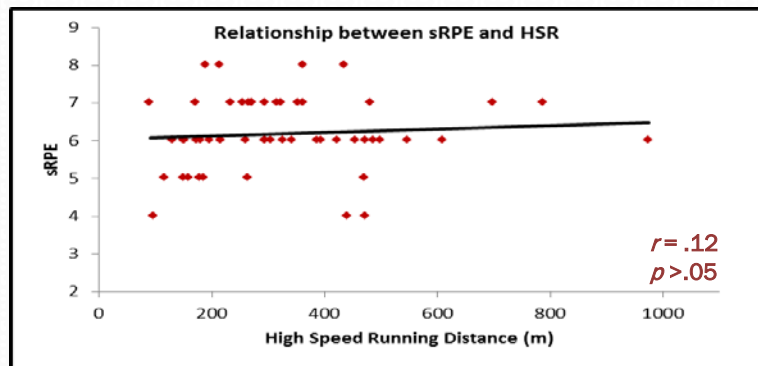
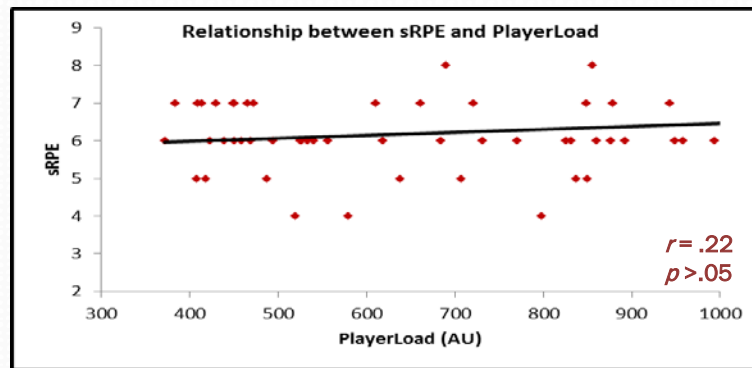
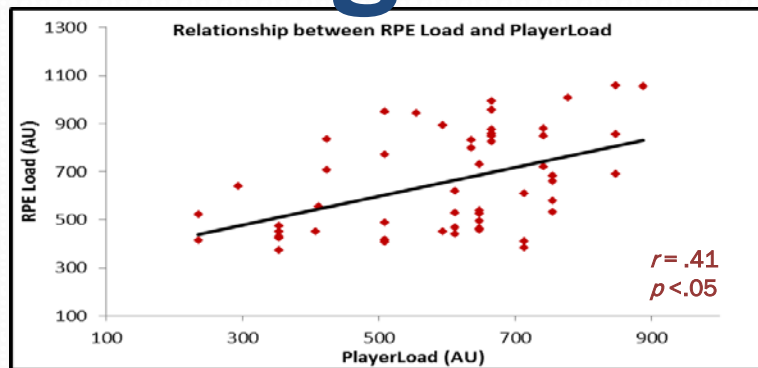


Habitually used sRPE
(CR10) within 15 mins
post session

sRPE x Duration (mins)
provided Training Load
(RPE Load) (AU)
(Foster, 1996)

Between subjects correlations were calculated to determine relationships using
standardised correlation (Pearson r) thresholds (Cohen, 1988)

Findings...



Take Away Messages...

Strongest relationships exist between RPE Load and Tri-axial accelerometer-derived data

Suggests the more energetically demanding, rapid changes in speed are more indicative of how young footballers perceive training intensity than HSR

1

Relatively small relationships between internal and external variables outline the importance of combining approaches where possible

Basing training load monitoring on accessible surrogate of external GPS data may provide poor indication of dose-response experienced

2

Further work is needed to establish solid relationships between internal and external load in adolescent footballers

Evidence suggests that RPE based data is a suitable method to routinely monitor load, however relationships with external load metrics is currently weak

3

Castillo et al, 2016; Halson, 2014; Malone et al, 2017; Robertson et al. 2016



Thank You for listening

‘Gracias por escuchar’

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