Πώς θα είναι η επιστημονική υποστήριξη στο ποδόσφαιρο στο μέλλον; Είμαστε έτοιμοι;

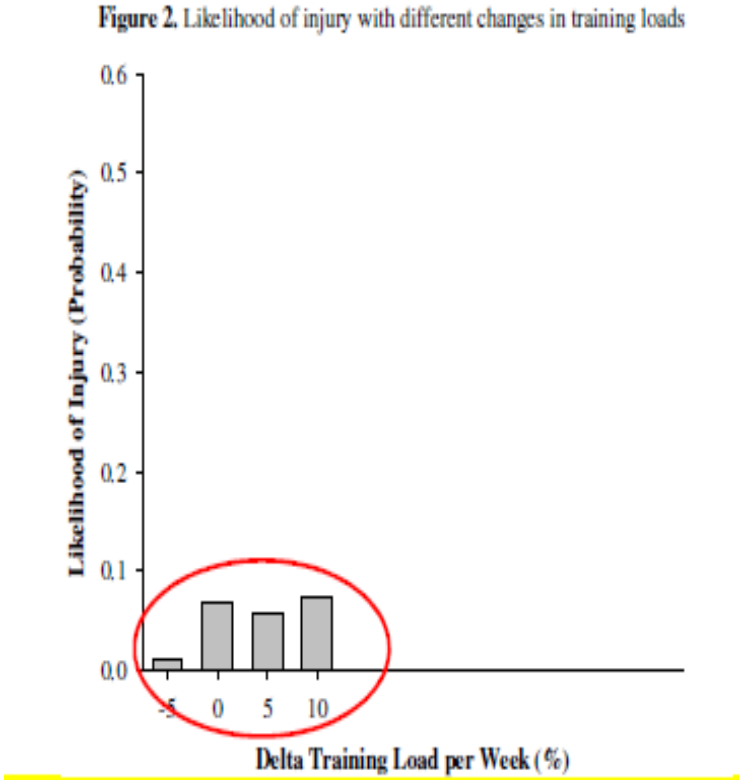
Γιώργος Νάσσης, PhD

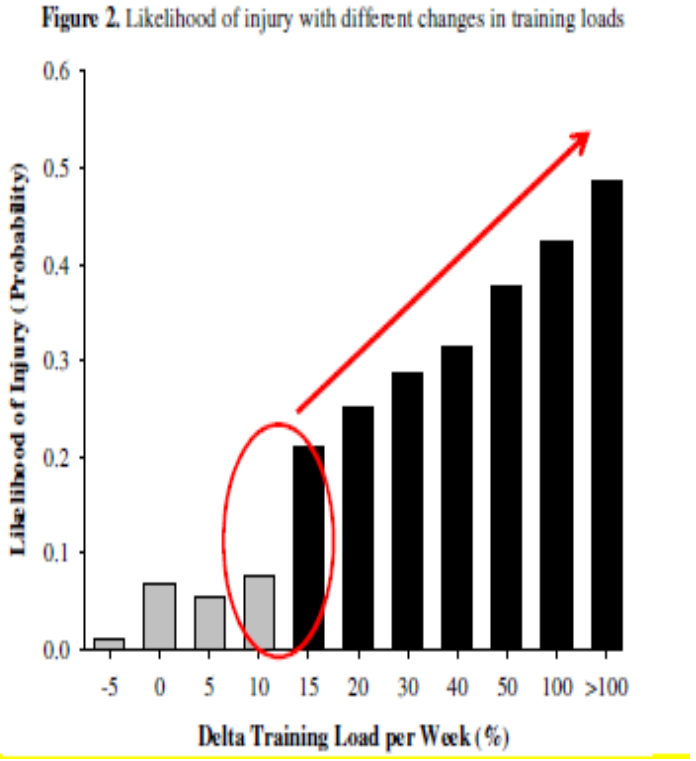
Ποιά είναι η πρόκληση;

- Να βελτιώσουμε την απόδοση χωρίς να αυξήσουμε τον κίνδυνο μυικού τραυματισμού και κόπωσης

What we need?
1)Training (load) monitoring
2)An injury “prediction” model
3)Training methods to speed up adaptations to training

Training load and injuries in team sports



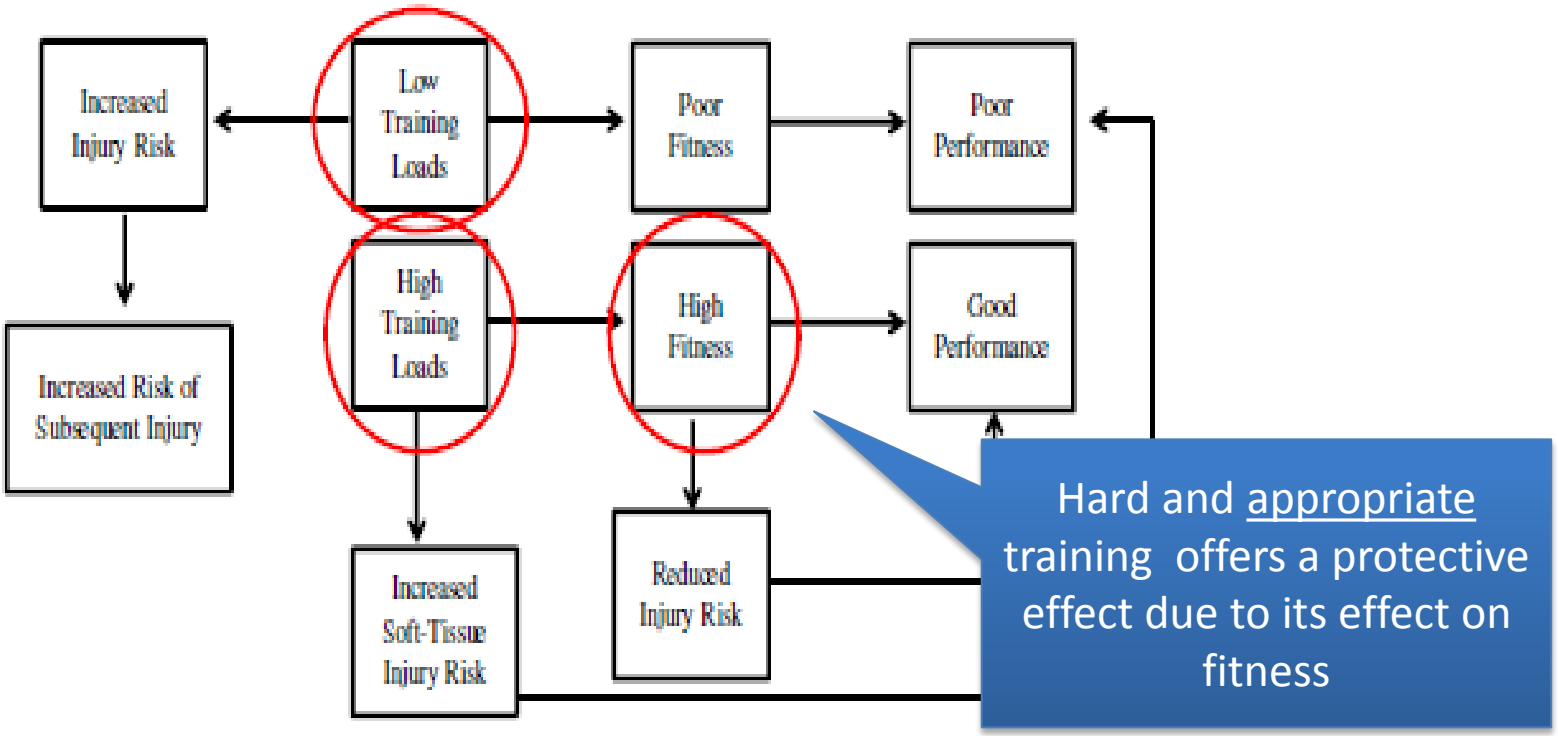


Gabbett et al., 2010

Θα πρέπει δηλαδή να σταματήσουμε την προπόνηση?

- Ασφαλώς όχι!
- Μάλλον πρέπει να προπονούμαστε εξυπνότερα και αποτελεσματικότερα

Is training causing injuries or is protecting from injuries?



Gabbett. Br J Sports Med, 2016

Πως θα βελτιώσουμε την φυσική κατάσταση
Μερικά παραδείγματα

- Make better use of the transition period
- Implement blocks of intensified training

Sports Med
DOI 10.1007/s40279-015-0419-3

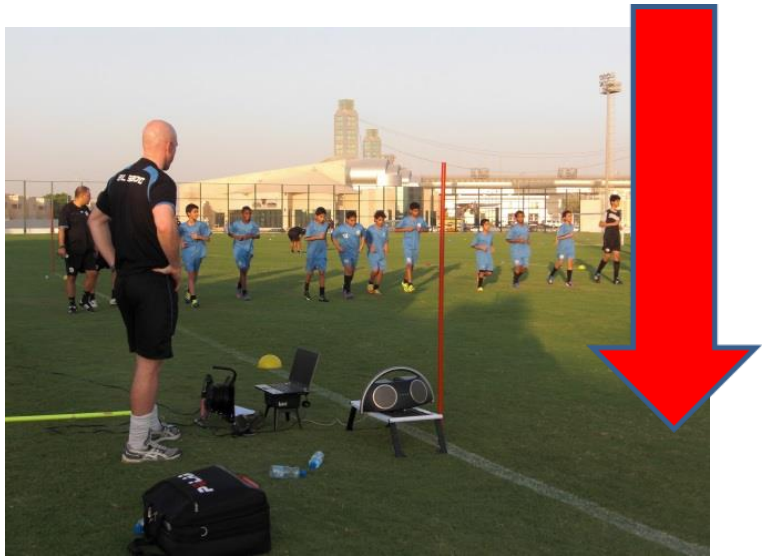
CrossMark

CURRENT OPINION

The Transition Period in Soccer: A Window of Opportunity

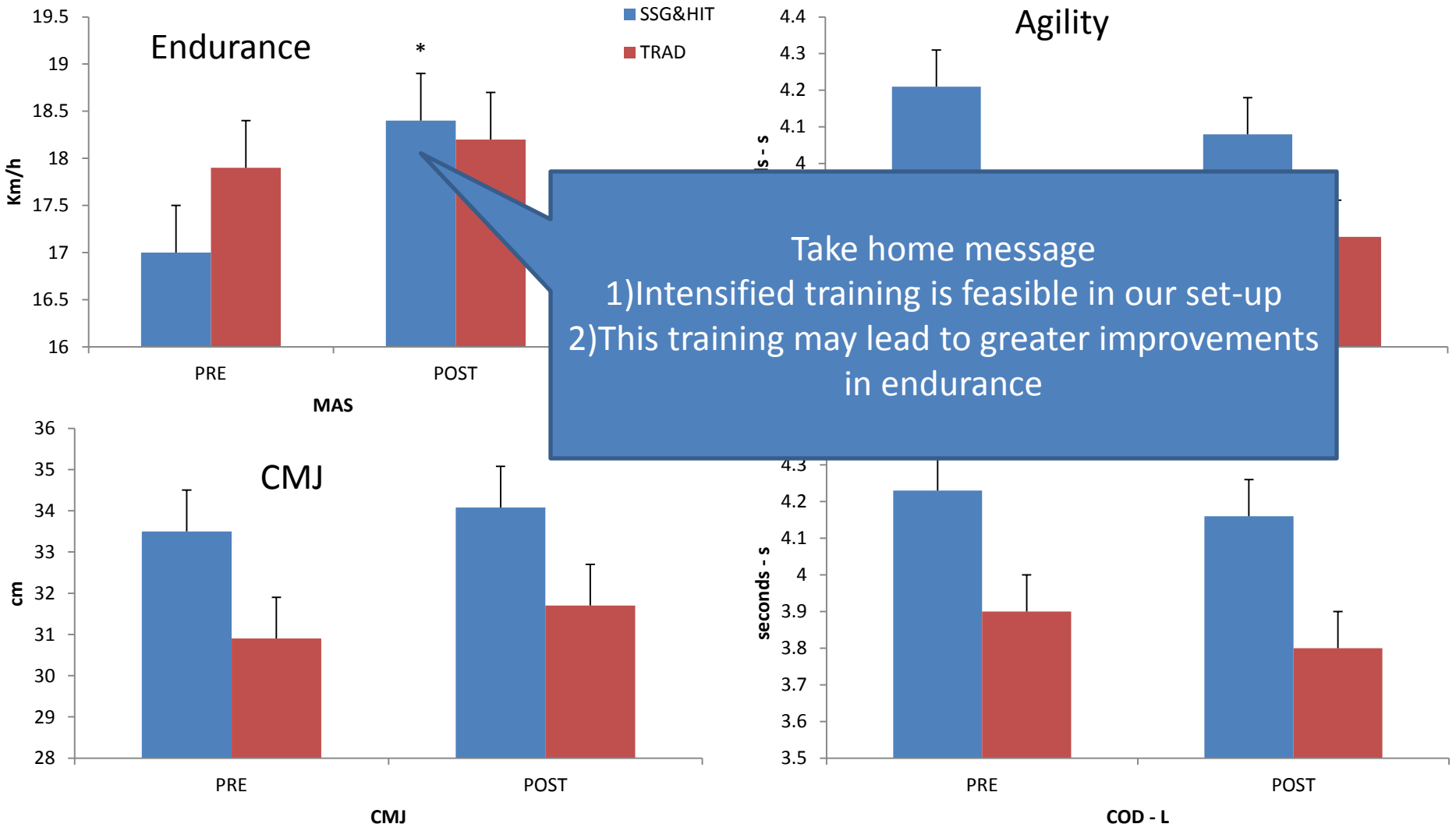
Joao Renato Silva[1,2] · Joao Brito[3] · Richard Akenhead[1] · George P. Nassis[1]

Sprint: 3-7% decline



Endurance: 10-28% decline

Προπόνηση υψηλής έντασης



Take home message
1)Intensified training is feasible in our set-up
2)This training may lead to greater improvements in endurance

*** p < 0.05**

Paul et al, under review

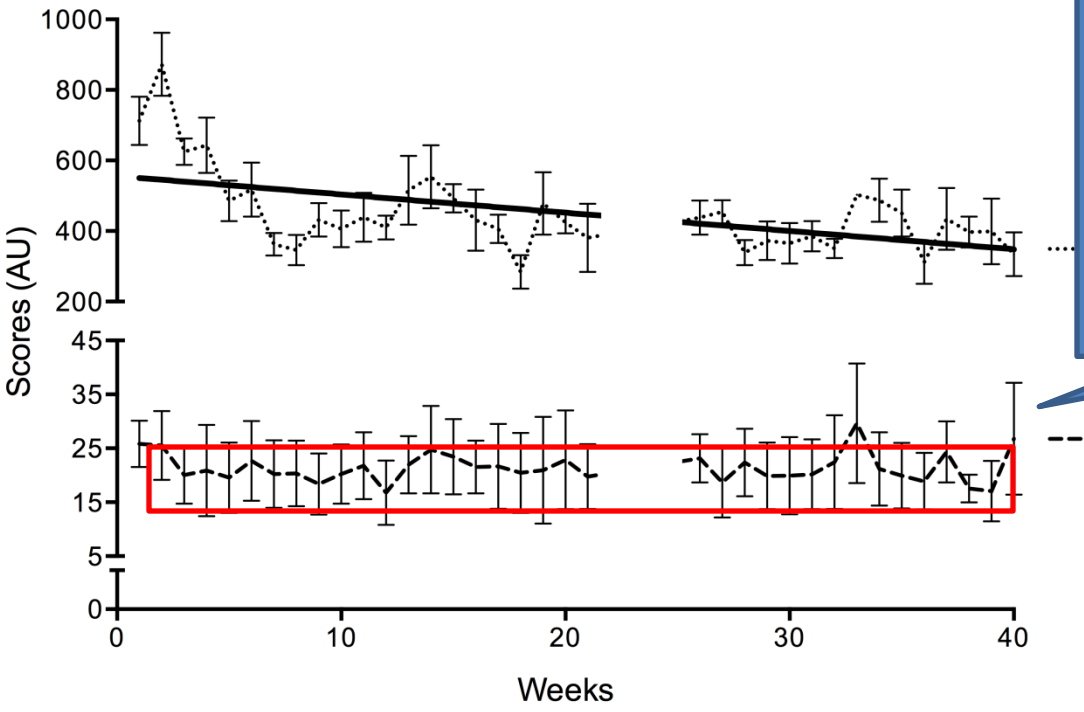
Προπονητικό φορτίο και τραυματισμοί
Αλήθεια, μετράμε ό,τι νομίζουμε ότι μετράμε

DO WE MEASURE WHAT WE CLAIM TO MEASURE?

Despite the introduction of new technologies and methods to monitor training load, there has been no reduction in the incidence of muscle injuries over the period 2001–2012 in high level footballers. Moreover, the number of training hamstring injuries increased by 4% annually between 2001 and 2014.[6] Part of the confusion might be owing to the tools we use for monitoring training load.

Η χρήση του RPE

Do highly-trained football players become "fatigued"?



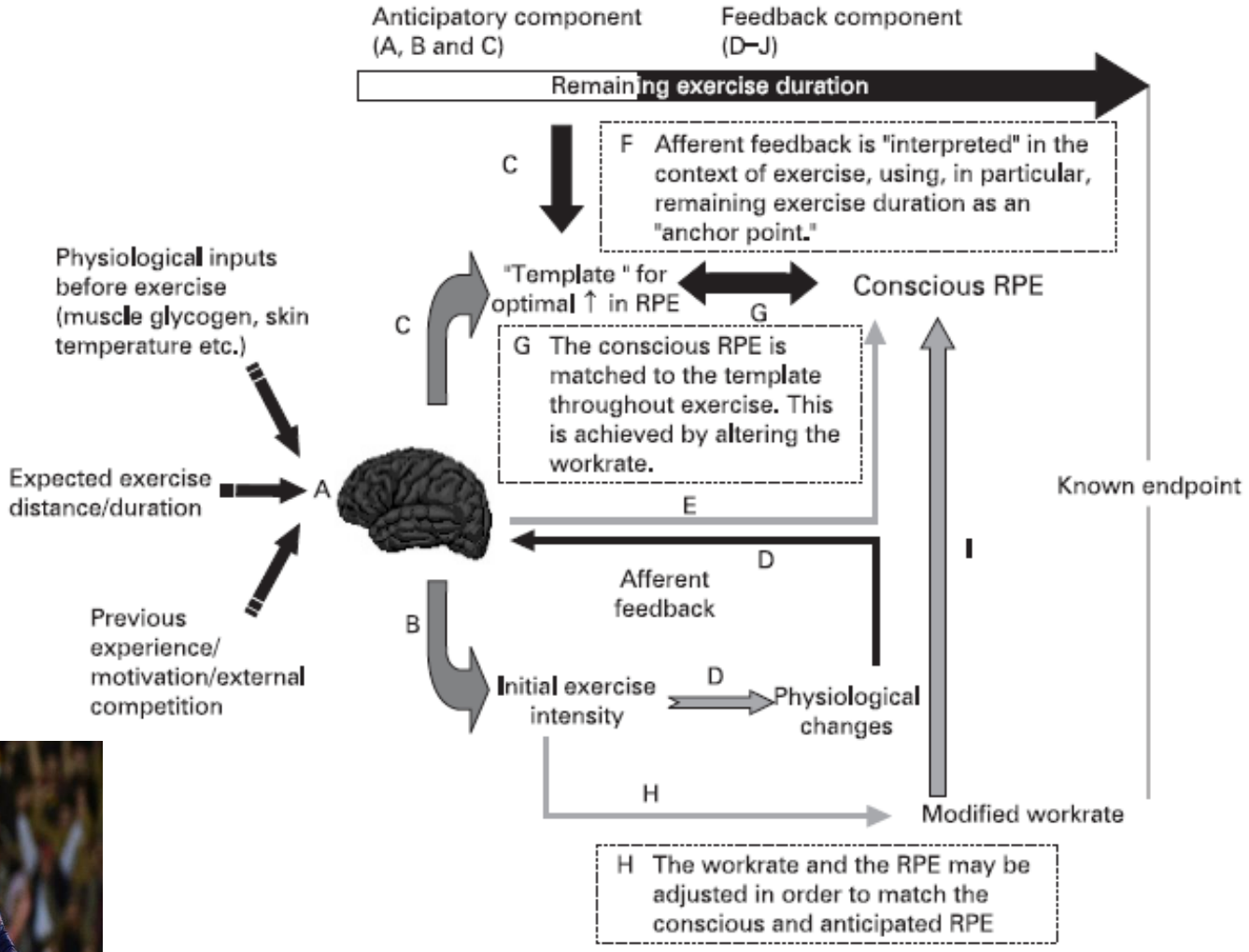
Either elite players pace themselves or the tools we use to capture fatigue & load are not sensitive enough

Do Match-Related Contextual Variables Influence Training Load in Highly Trained Soccer Players?

Joao Brito,[1,2] Maxime Hertzog,[1] and George P. Nassis[1]

[1]*National Sports Medicine Programme, Excellence in Football Project, Aspetar–Qatar Orthopaedic and Sports Medicine Hospital, Qatar; and* [2]*Health and Performance Unit, Portugese Football Federation, Lisbon, Portugal*

The Central Governor Model of Exercise Regulation and RPE regulation



Tucker 2009

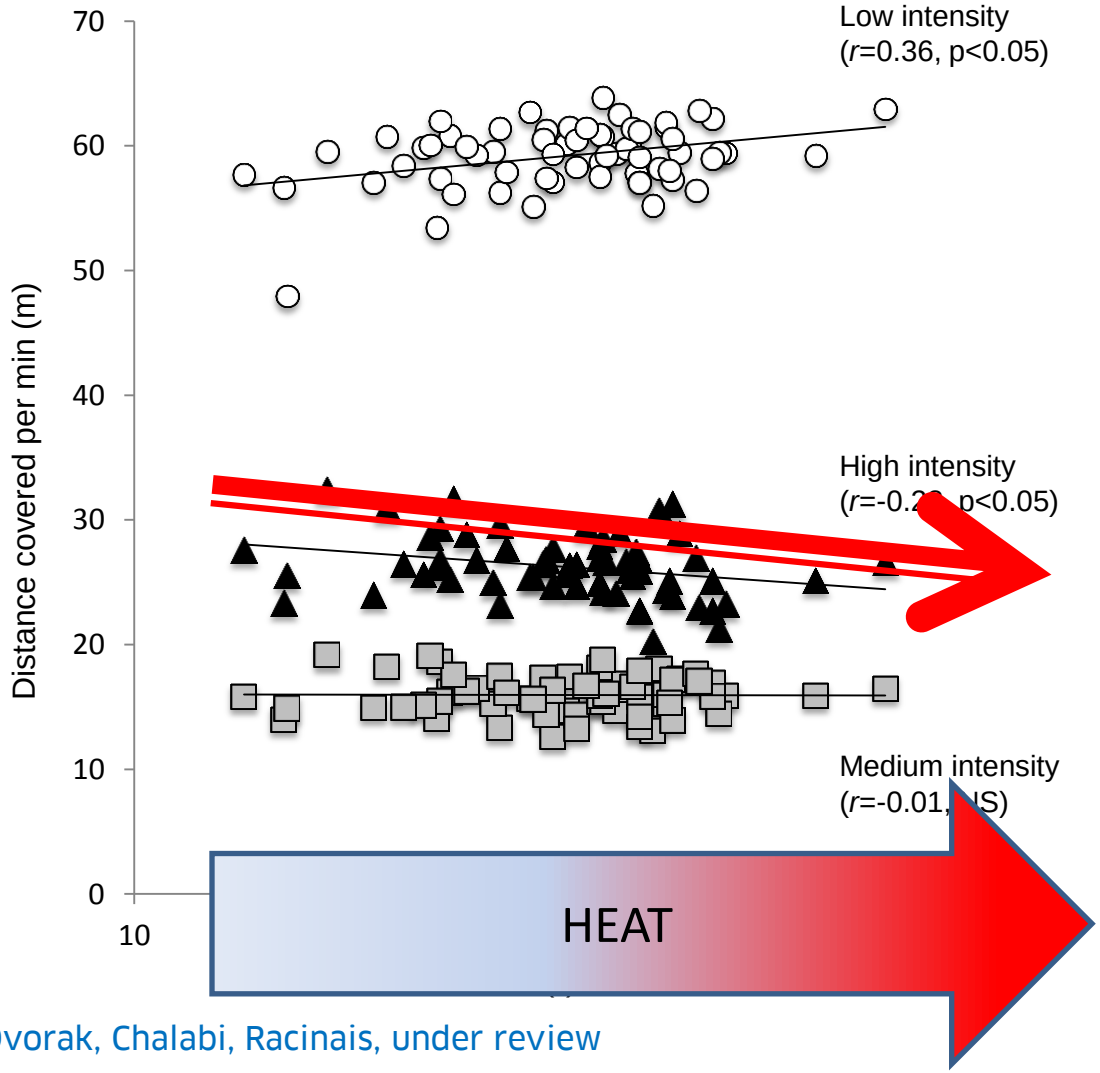
BJSM

The association of environmental heat stress with performance: analysis of the 2014 FIFA World Cup Brazil

George P Nassis, Joao Brito, Jiri Dvorak, Hakim Chalabi and Sebastien Racinais

Br J Sports Med 2015 49: 609-613 originally published online February 17, 2015

Physical performance as a function of environmental heat stress



Nassis, Brito, Dvorak, Chalabi, Racinais, under review

Summary of results

Variable	Index	Finding
Nature of game	TD, active match time, # cards	
Physical performance	HI, number of sprints	
	Peak speed	
Technical performance	Number of passes	
	Rate of successful passes	

International Journal of Sports Physiology and Performance, 2016, 11, 587-593
http://dx.doi.org/10.1123/ijspp.2015-0331

Human Kinetics
ORIGINAL INVESTIGATION

Training Load and Player Monitoring in High-Level Football: Current Practice and Perceptions

Richard Akenhead and George P. Nassis

Το κονφούζιο συνεχίζεται!

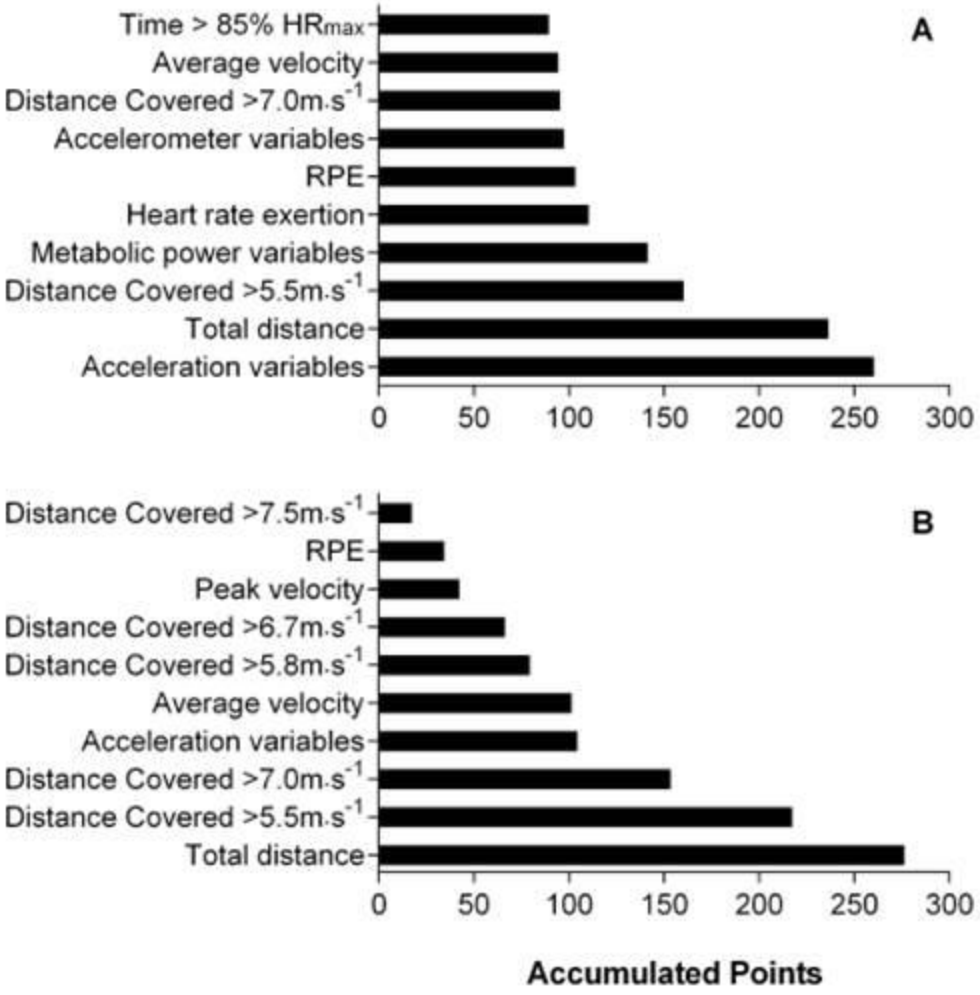


Figure 3 — The top-10-ranked variables used to quantify training load during (A) training practices and (B) competitive matches. Abbreviations: HR_{max}, maximal heart rate; RPE, rating of perceived exertion.

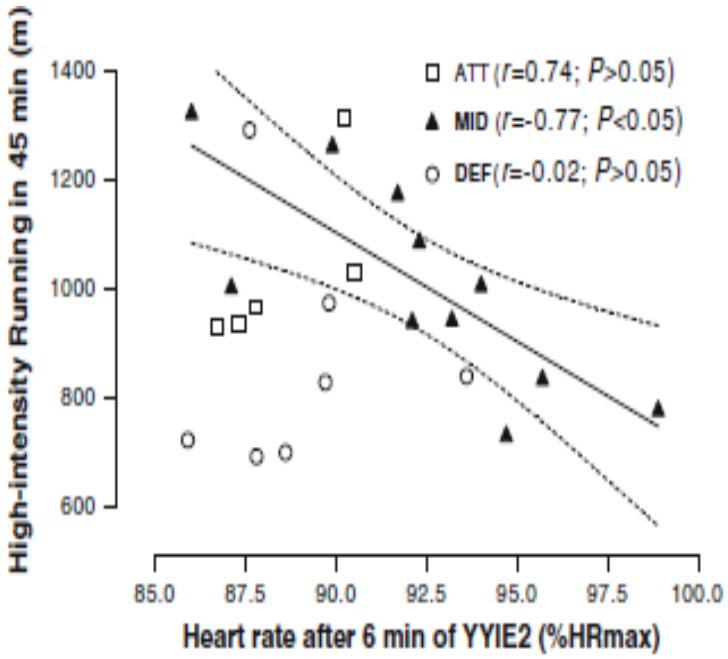
Future challenges-How to measure the outcome of training?

Eur J Appl Physiol (2011) 111:969–978
DOI 10.1007/s00421-010-1721-2

ORIGINAL ARTICLE

Sub-maximal and maximal Yo–Yo intermittent endurance test level 2: heart rate response, reproducibility and application to elite soccer

Paul S. Bradley · M. Mohr · M. Bendiksen · M. B. Randers · M. Flindt · C. Barnes · P. Hood · A. Gomez · Jesper L. Andersen · M. Di Mascio · J. Bangsbo · P. Krustrup



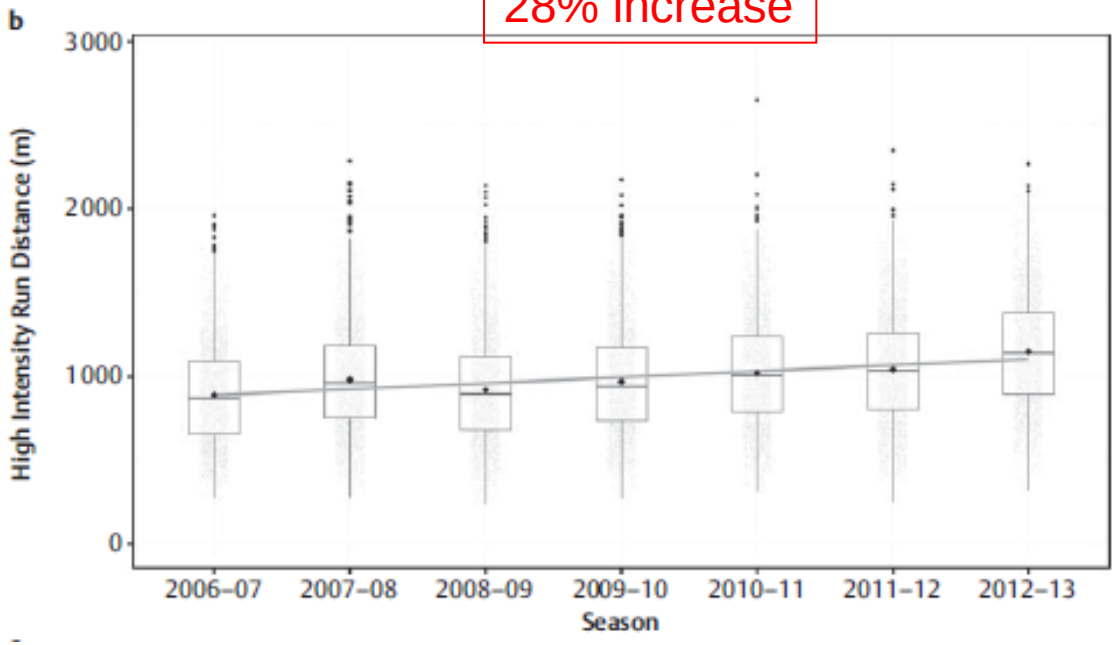
The future of the game

The Evolution of Physical and Technical Performance Parameters in the English Premier League

C. Barnes[1,3], D. T. Archer[2], B. Hogg[2], M. Bush[2], P. S. Bradley[2]

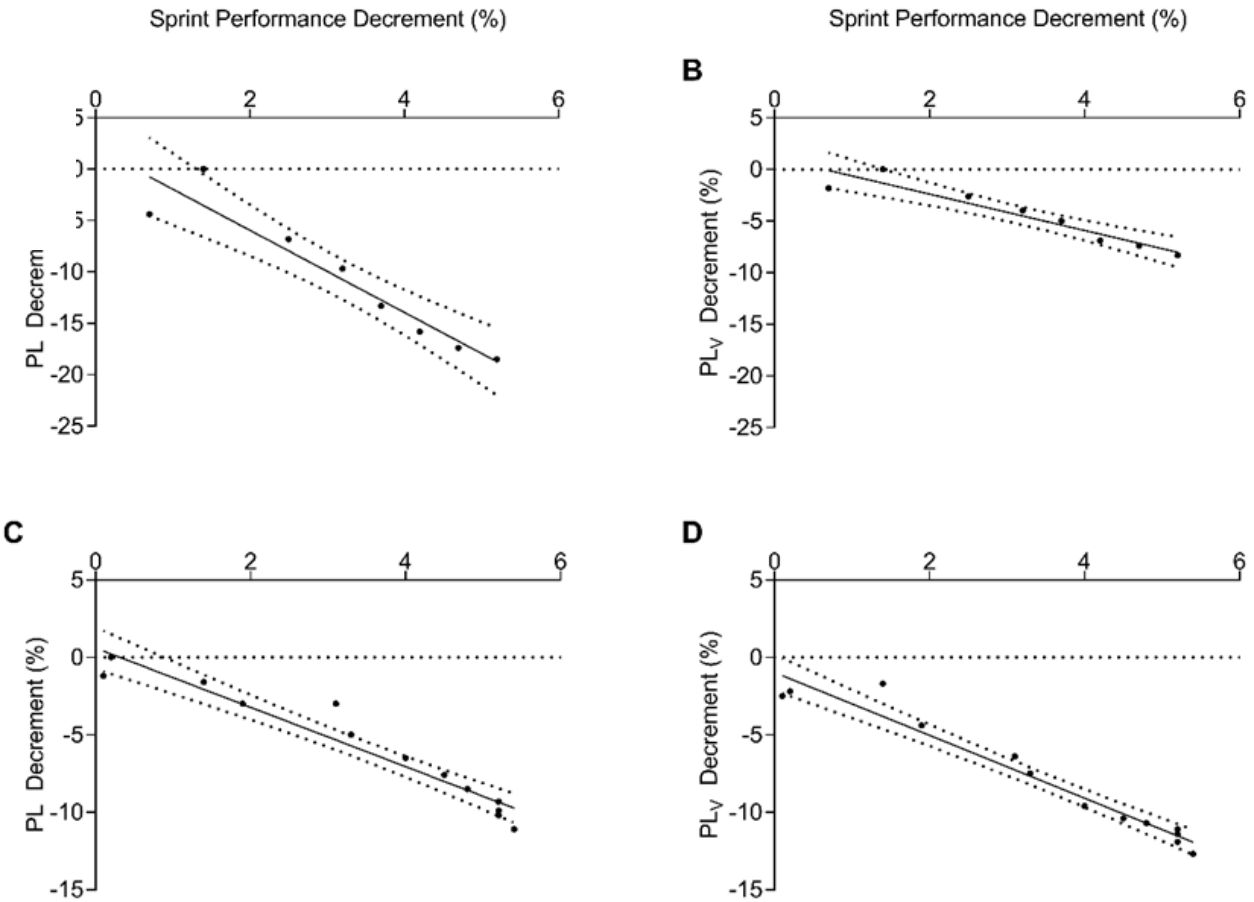
Int J Sports Med 2014; 35: 1095–1100

28% increase



EPL website

Νέες τεχνολογίες Ποιο ειναι το μέλλον



Akenhead et al (under review)

How to deal with big data?

INTEGRATE THE BIG DATA AND PROVIDE MEANINFUL RESULTS TO MANAGERS AND COACHES FOR BETTER DECISION MAKING

An integrated data management system in high level football

Examples of predictive analytics

Journal of Sports Sciences, 2013
http://dx.doi.org/10.1080/02640414.2013.853130

Routledge
Taylor & Francis Group

Analysis of football game-related statistics using multivariate techniques

FELIPE ARRUDA MOURA[1], LUIZ EDUARDO BARRETO MARTINS[2], & SERGIO AUGUSTO CUNHA[2]