

Salter, Jamie ORCID logoORCID:

<https://orcid.org/0000-0002-7375-1476>, Weston, Matthew,

Cresswell, Richard and Forsdyke, Dale ORCID logoORCID:

<https://orcid.org/0000-0003-4283-4356> (2018) Limited accuracy of the SAFT to adequately replicate soccer-specific match demands.

In: Isokinetic Medical Group Conference, 2nd-4th June 2018, Camp Nou, Barcelona.

Downloaded from: <https://ray.yorks.ac.uk/id/eprint/3763/>

Research at York St John (RaY) is an institutional repository. It supports the principles of open access by making the research outputs of the University available in digital form.

Copyright of the items stored in RaY reside with the authors and/or other copyright owners. Users may access full text items free of charge, and may download a copy for private study or non-commercial research. For further reuse terms, see licence terms governing individual outputs. [Institutional Repository Policy Statement](#)

# RaY

Research at the University of York St John

For more information please contact RaY at [ray@yorks.ac.uk](mailto:ray@yorks.ac.uk)

XXVII Isokinetic Medical Group Conference



**ISOKINETIC  
MEDICAL  
GROUP**



Hosted by:



**BARÇA  
INNOVATION HUB**

Camp Nou, Barcelona  
2<sup>nd</sup> 3<sup>rd</sup> 4<sup>th</sup> June, 2018



# Limited accuracy of the SAFT<sup>90</sup> to adequately replicate soccer-specific match demands

*Jamie Salter, Matthew Weston, Richard Cresswell and Dale Forsdyke*



**ISOKINETIC  
MEDICAL  
GROUP**



Hosted by:



**BARÇA  
INNOVATION HUB**

# Background

- There is currently a lack of evidence to support RtS decisions and what 'readiness' looks like for a player (Drust *et al*, 2014; Fanchini *et al*, 2018)
- Practitioners often aim to replicate the cognitive, physiological and biomechanical match demands utilising various approaches (e.g. SSG, conditioning drills and laboratory controlled tests) depending on specific targets
- A range of soccer match-play simulations have been used within both applied and research environments to mimic match demands
  - Ecological validity of these simulations are questionable based on the variability, cognitive processing and situational factors involved in match-play performance. Caution should also be taken as these often replicate average demands which may increase the risk of re-injury as players will likely have to exceed these (Gabbett, 2016)
- SAFT<sup>90</sup> was devised from a multi-camera, semi-automatic system (Prozone) from Championship match-play in 2007, includes 1269 changes in speed and 130 changes in direction and was validated with semi-professional footballers ( $n = 8$ ; Lovell, Knapper & Small, 2008)
- To date, no evidence has reported the external locomotor metrics of SAFT<sup>90</sup> in-light of technological advances in recent

Available soccer match-play simulations

**SAFT90**

(Lovell, Knapper and Small, 2008)

**Loughborough  
Intermittent Shuttle  
Test (LIST)**

(Nicholas *et al*, 2000)

**Soccer-specific treadmill  
protocol** (Page *et al*, 2015)

**Soccer match simulation  
(SMS)**

(Russell, Rees, Benton, Kingsley, 2011)

# Experimental Approach

- 47 male international soccer players (Age  $19.2 \pm 0.9$  yrs; Weight  $73 \pm 8.2$  kg; Height  $175.9 \pm 5.8$  cm)
- Soccer-specific Aerobic Field Test (6 x 15mins; 15mins HT) – monitored by researchers throughout
- Catapult X5 (10Hz) utilised with excellent fidelity (mean 13.8 satellites and 0.59 HDOP) and Polar heart rate (HR) belt
- Magnitude Based Inferences approach to identify magnitude of differences (Hopkins, 2009)

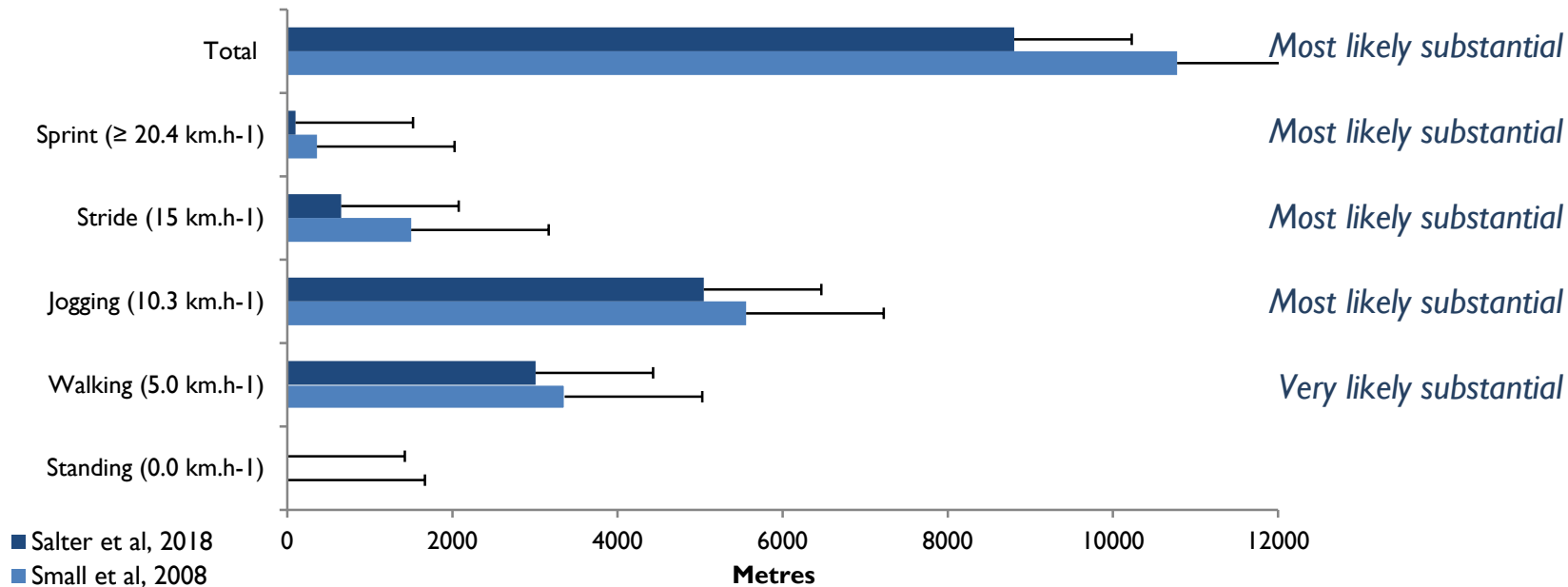
Table 1. Speed zone thresholds (Small et al, 2008)

Speed Zone		Thresholds
1	Standing	0.0km.h <sup>-1</sup>
2	Walking	5.0km.h <sup>-1</sup>
3	Jogging	10.3km.h <sup>-1</sup>
4	Striding	15.0km.h <sup>-1</sup>
5	Sprinting	>20.4km.h <sup>-1</sup>



Hosted by:

# Analysis



# Take Home Messages

- There are *very-most likely substantial* differences between actual and reported distances covered on the SAFT<sup>90</sup>, across all speed zones - outlining limited accuracy of the validation process of the simulation and a need for a revised approach to simulation
- The largest differences were at the highest speed zones, which agrees with previous comparisons between semi-automatic camera and GPS methods of analysis (Buchheit *et al*, 2014; Harley *et al.*, 2011; Randers *et al*, 2010) – lowest speed zones do not appear to be collected (0-5km/h)
- *Likely substantial* differences observed for HR could be due to the simulation protocol, but also could be attributed to various other physiological factors (e.g. environmental considerations, participants training status, time of day)
- **HOW** athletes completes the SAFT<sup>90</sup> varied dramatically between speed zones – although audio controlled test and monitored by staff, players adopt varied approaches to completing protocol, which may have implications for RtS

Practitioners should be considerate of how they apply SAFT90 during RtS – are you getting what you think?



ISOKINETIC  
MEDICAL  
GROUP



Hosted by:



BARÇA  
INNOVATION HUB





**Thank You for listening**  
***‘Gracias por escuchar’***



**ISOKINETIC  
MEDICAL  
GROUP**



Hosted by:



**BARÇA  
INNOVATION HUB**

# References

- Buchheit, M., Allen, A., Tsz, K.P., Mattia, M., Gregson, W. and Di Salvo, V. (2014) Integrating different tracking systems in football: multiple semi-automatic system, local position measurements and GPS technologies. *J Sport Sci.*, **32**, 1844-1857.
- Bradley, P. and Ade, J. (2018). Are current physical match performance metrics in elite soccer fit for purpose or is the adoption of integrated approach needed? *Int. J. Sports Phys. Perf.* Online ahead of print.
- Drust, B., Impellizzeri, F. and Meyer, T. (2004). Return to play decisions – a highly important albeit unsolved issue. *J Sport Sci*, **32**, 1205.
- Fanchini, M., Impellizzeri, F., Silbernagel, K., Combi, F., Benazzo, F., and Bizzini, F. (2018). Return to competition after an achilles tendon rupture using both on and of the field load monitoring as guidance: A case report of a top-level soccer player. *Physical Therapy*, **29**, 70-78.
- Harley, J., Lovell, R., Barnes, C., Portas, M. Weston, M. (2011). The interchangeability of GPS system and semiautomated video-based performance data during elite soccer match play. *J Str. and Cond. Res.* **25**, 2334-2336.
- Hopkins, W., Batterham, A., Marshall, S. and Hanin, J. (2009). Progressive statistics. *Sportscience*, **13**, 55-70.
- Lovell, R.J., Knapper, B. and Small, K. (2008). Physiological responses to SAFT<sup>90</sup>: a new soccer-specific match simulation. *Coaching Sport Sci. J.*
- Nicholas, C.W., Nuttall, F.E. and Williams, C. (2000). The Loughborough Intermittent Shuttle Test: A field test that stimulates the activity pattern of soccer. *J Sport Sci*, **18**, 97-104.
- Page, R., Marrin, K., Brogden, C. and Greig, M. (2015). Biomechanical and physiological response to a contemporary soccer match-play simulation. *J Str. and Cond. Res.*, **29**, 2860-2866.
- Randers, M., Mujika, I., Hewitt, A., Santisteban, J., Bischoff, R., Solano, R., Zubillaga, A., Peltola, E. Krstrup, P. and Mohr, M. (2010). Application of four different football match analysis systems. *J Sport Sci*, **28**, 171-182.
- Russell, M., Rees, G. and Kingsley, M. (2011). An exercise protocol that replicates soccer match-play. *Int J Sports Med*, **32**, 511-518.
- Small, K., McNaughton, L., Greig, M. and Lovell, R. (2008). The effects of multidirectional soccer-specific fatigue on markers of hamstring injury risk. *J Sci. Med. Sport*, **13**, 120-125.

Hosted by:



**ISOKINETIC  
MEDICAL  
GROUP**



**BARÇA  
INNOVATION HUB**