

London 2012

The Science Behind the Medals

Dr Ken van Someren

Director of R&D, GSK Human Performance Lab.



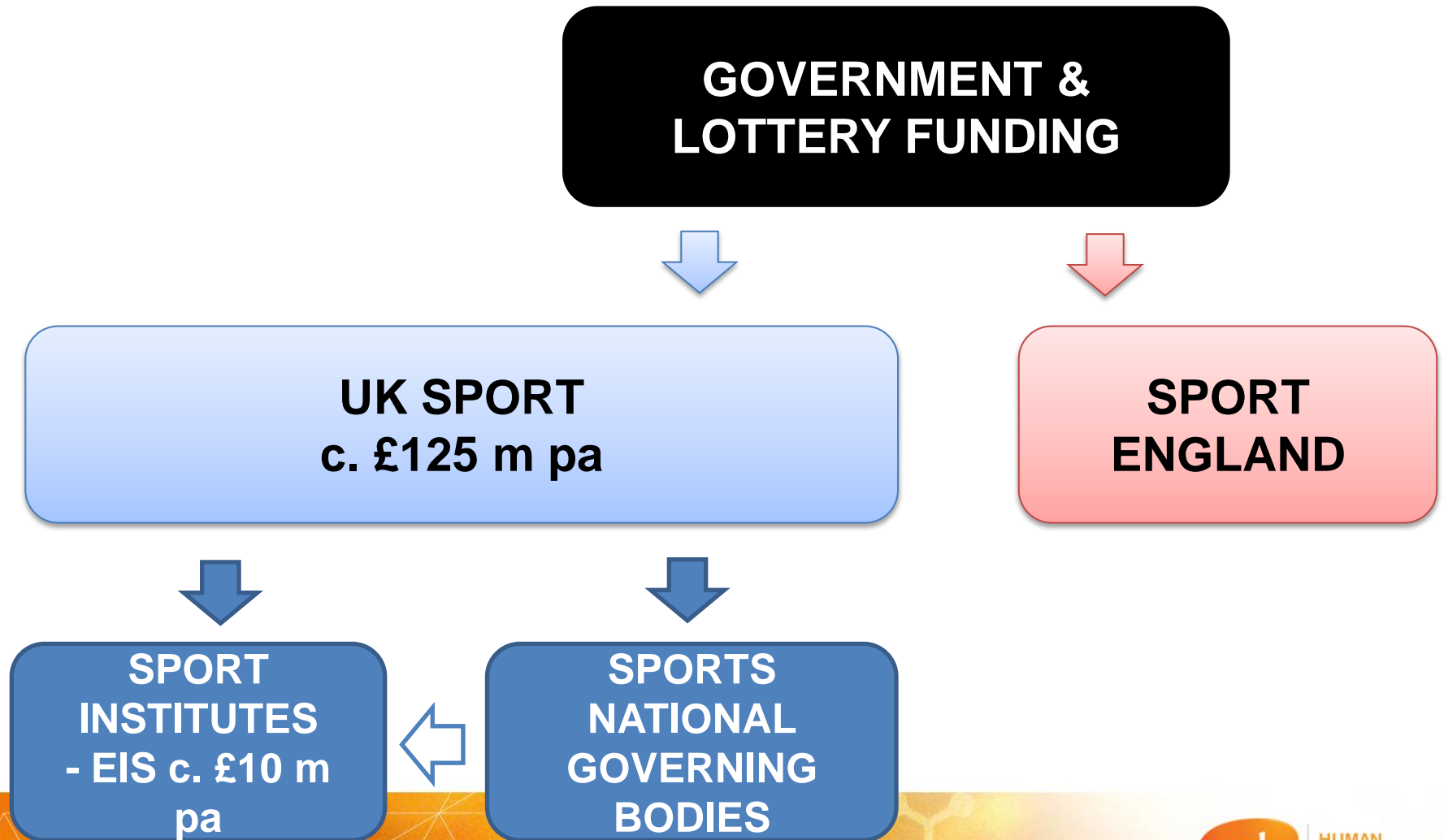


July 2005: London bid for 2012

7 years of increased investment, focus
and development

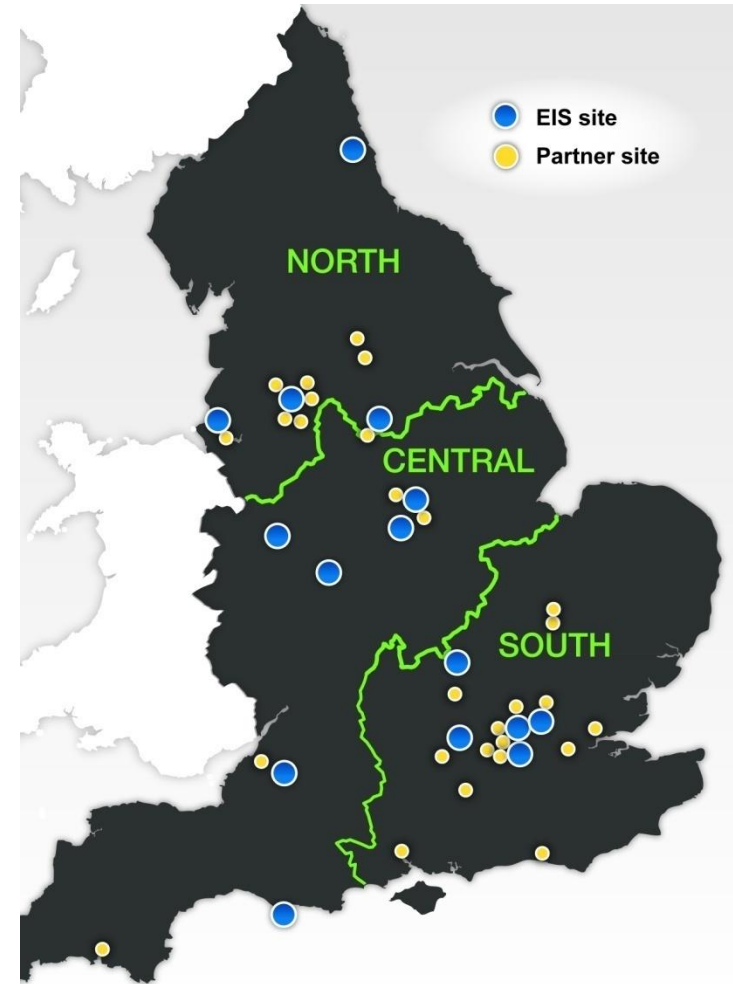


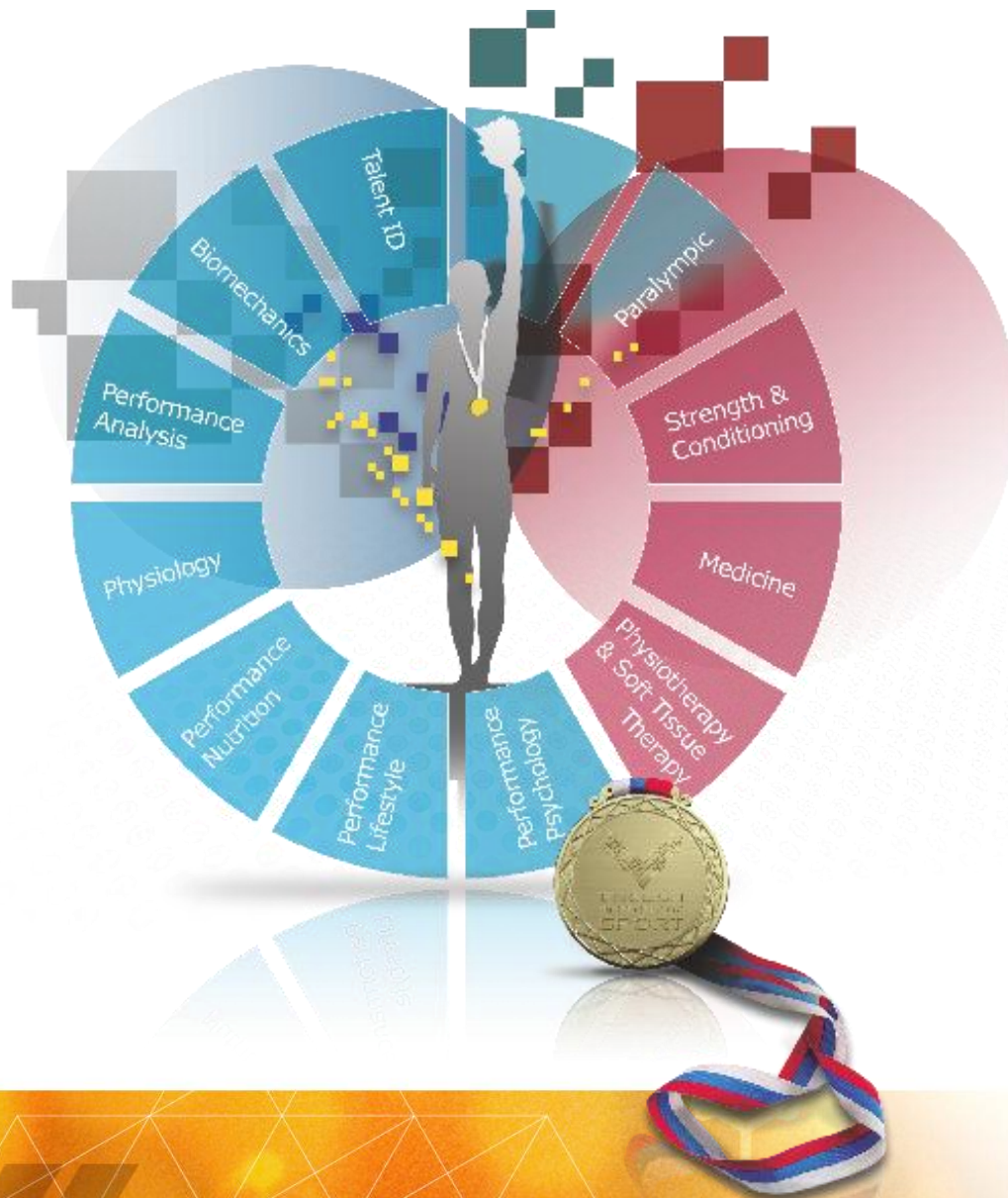
High Performance Sport in the UK





- Supporting 1,500 elite athletes from over 40 sports
- 4,000 hours per week of service delivery
- Nearly 250 employees across the network
- Delivering out of 15 EIS High Performance Centres and additional partner sites
- In collaboration with UK Sport and HCSIs







		Gold	Silver	Bronze
Olympic	3rd	29	17	19
Paralympic	3rd	34	43	43



		Gold	Silver	Bronze
Olympic	4 th	19	13	15
Paralympic	2 nd	42	29	31



		Gold	Silver	Bronze
Olympic	10 th	9	9	12
Paralympic	2 nd	35	30	29



		Gold	Silver	Bronze
Olympic	10 th	11	10	7
Paralympic	2 nd	41	43	47

Pathway to Podium

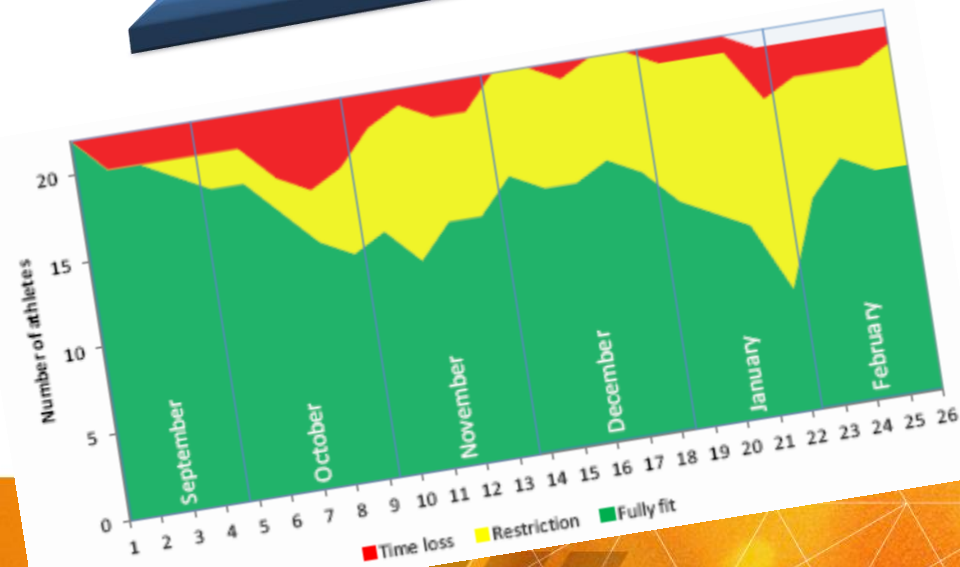
**Competition
Strategies**

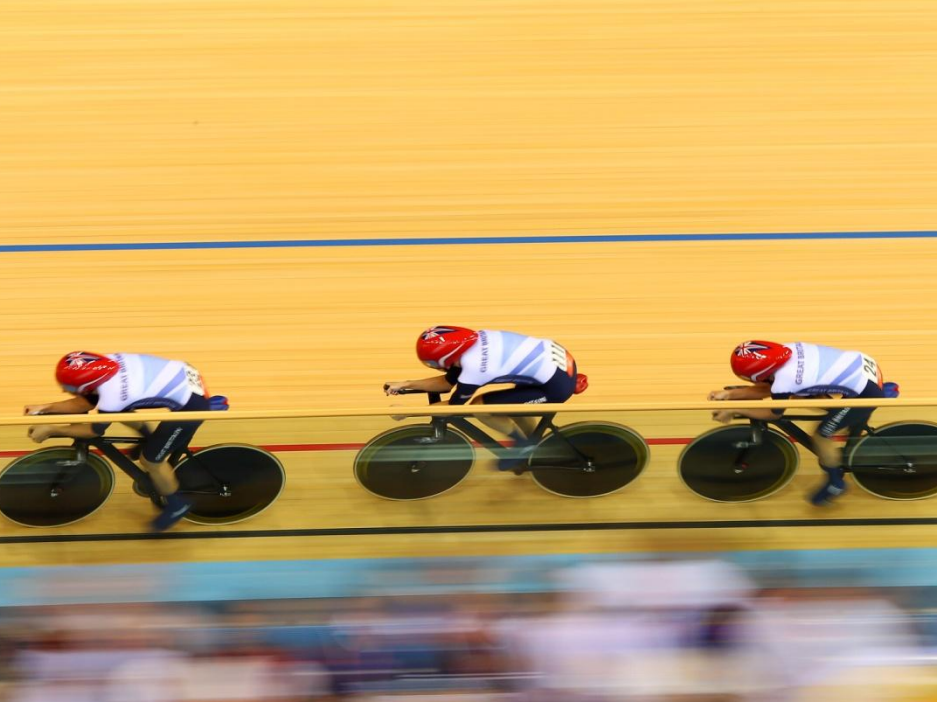
**Training &
Preparation**

**Health &
Robustness**



Health & Robustness





Health & Robustness



Health & Robustness

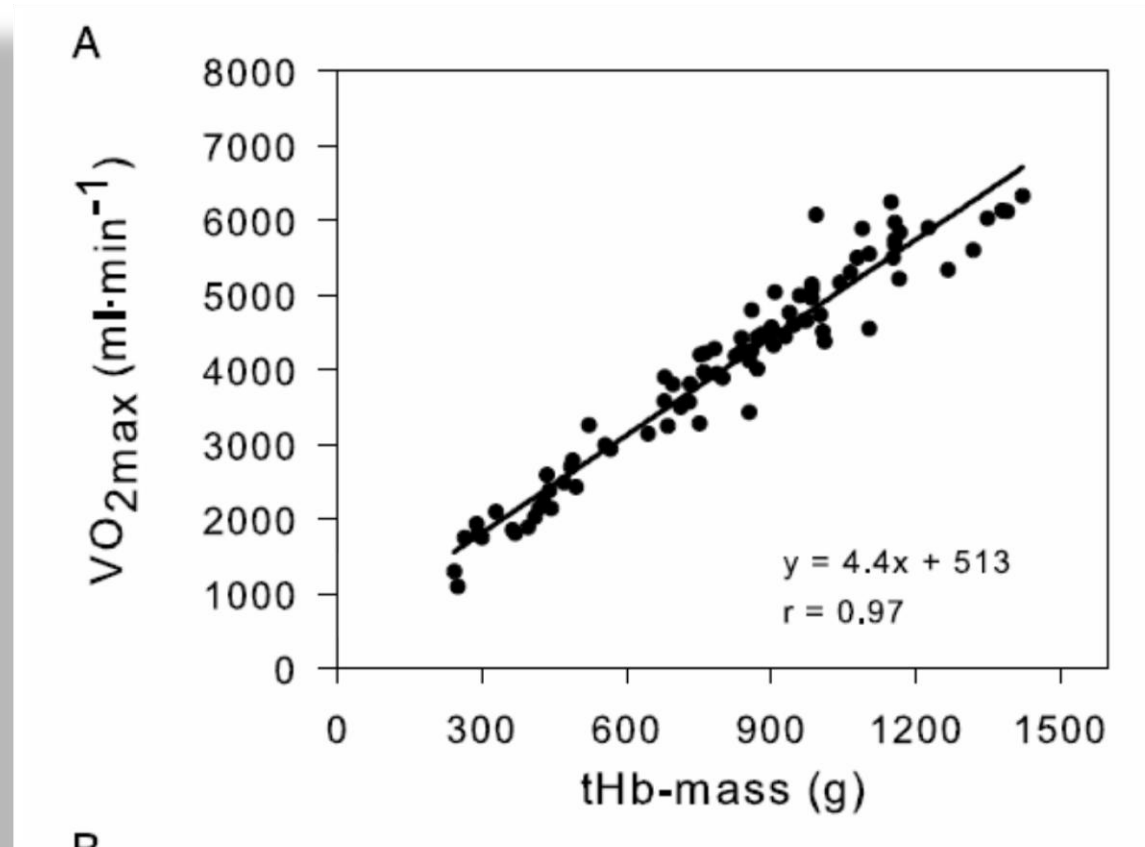


Training & Preparation

- Training quantification
- Athlete 'readiness'
- Skill acquisition – visual tracking
- Occlusion
- Hypoxia and altitude
- Recovery and adaptation

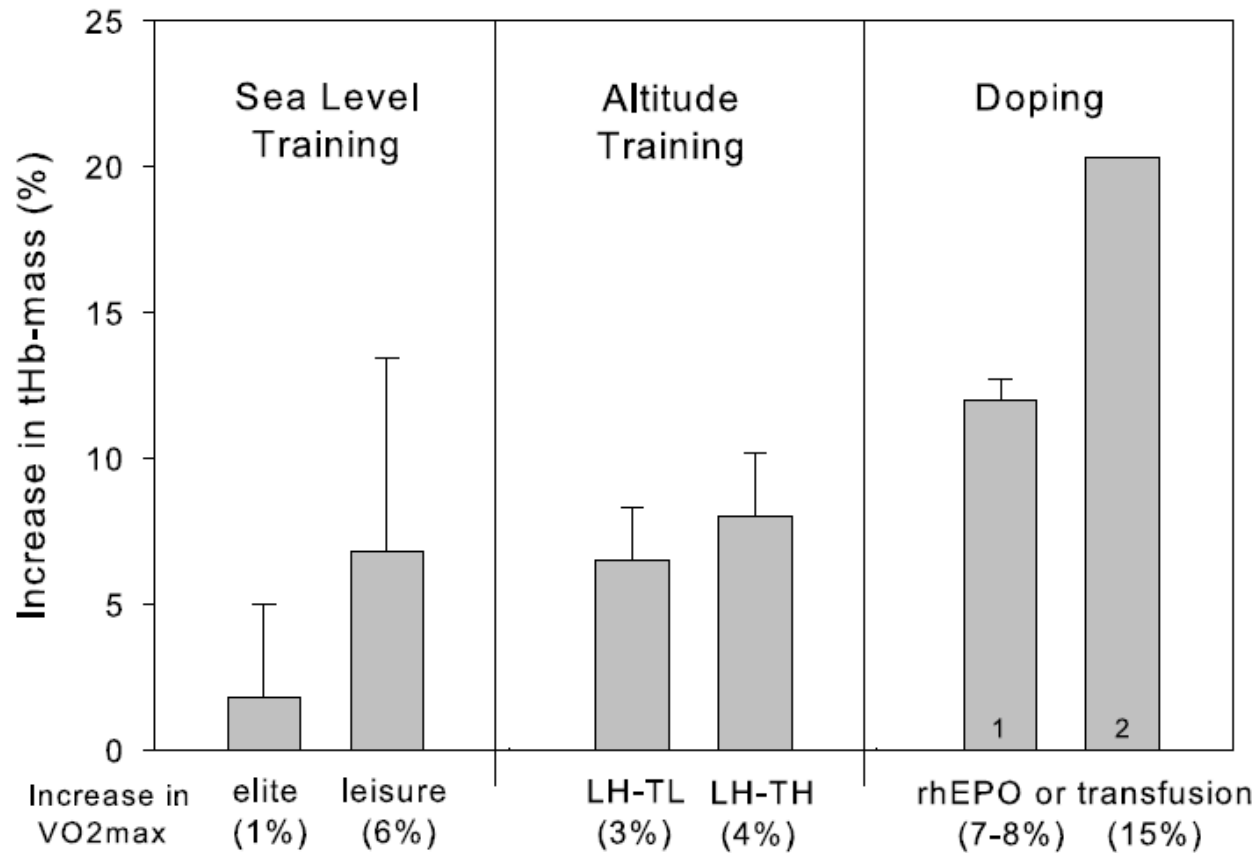


Haemoglobin Mass



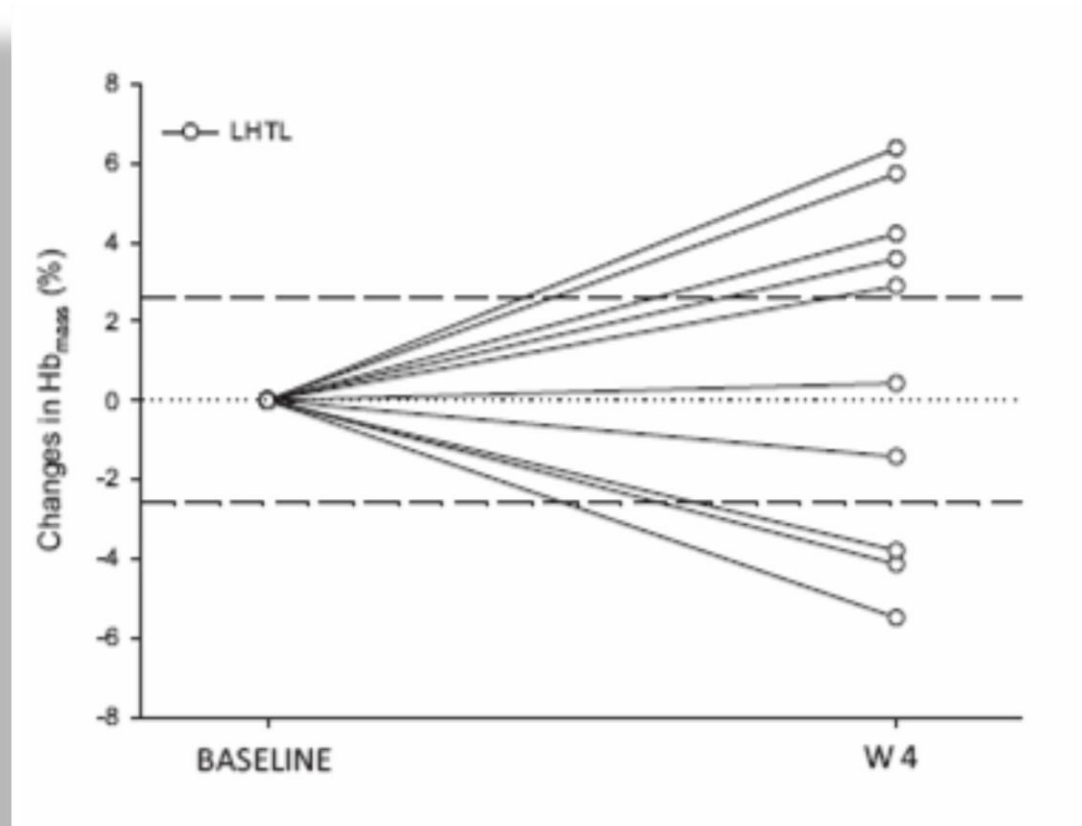
Schmidt & Prommer (2010) Impact of Alterations in Total Hemoglobin Mass on VO₂max. *Exerc Sport Sci Rev.* Apr;38(2):41.

Increasing Hb Mass



Schmidt & Prommer (2010) Impact of Alterations in Total Hemoglobin Mass on VO₂max. Exerc Sport Sci Rev. Apr;38(2):41.

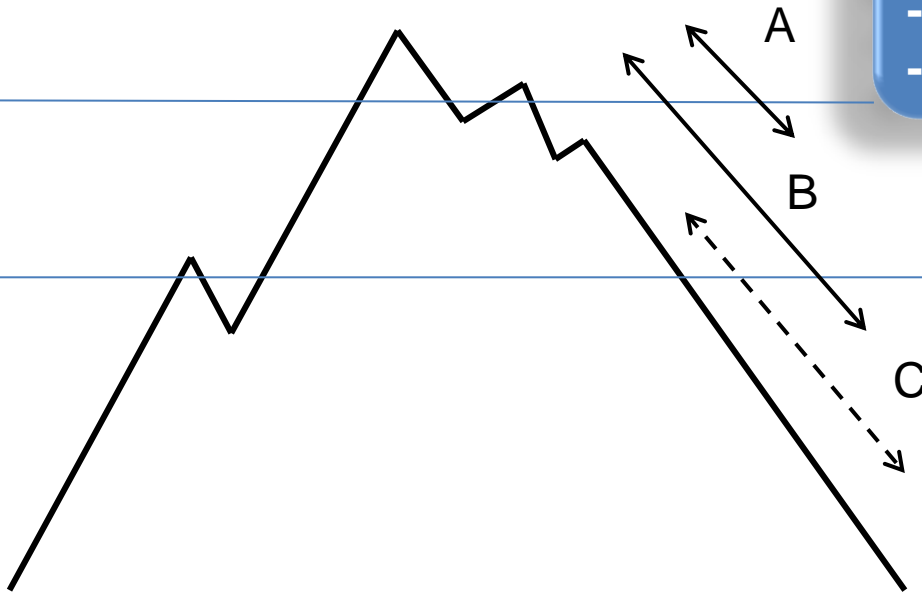
Responders and Non-responders



Siebenmann et al (2012) "Live high-train low" using normobaric hypoxia: a double-blinded, placebo-controlled study. J Appl Physiol Jan;112(1):106-17.



Optimal Camp Venues



Iten, Kenya
 2350m (8000ft)
 -Typically winter camp
 -Live high train high

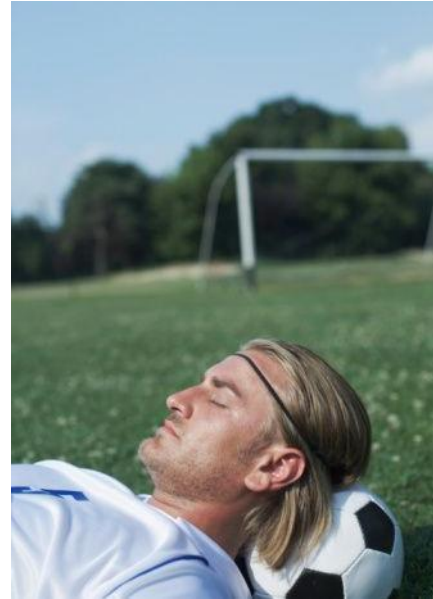


Font Romeu, France
 1800m (6000ft)
 -Typically spring/summer camp
 -Live high train high
 -Live high train low



Type	Aim	Duration
A	Improve general fitness – especially aerobic capabilities	21-28 days
B	To prepare for high intensity training following altitude	21-28 days
C	Improve competitive performance	17-21 days

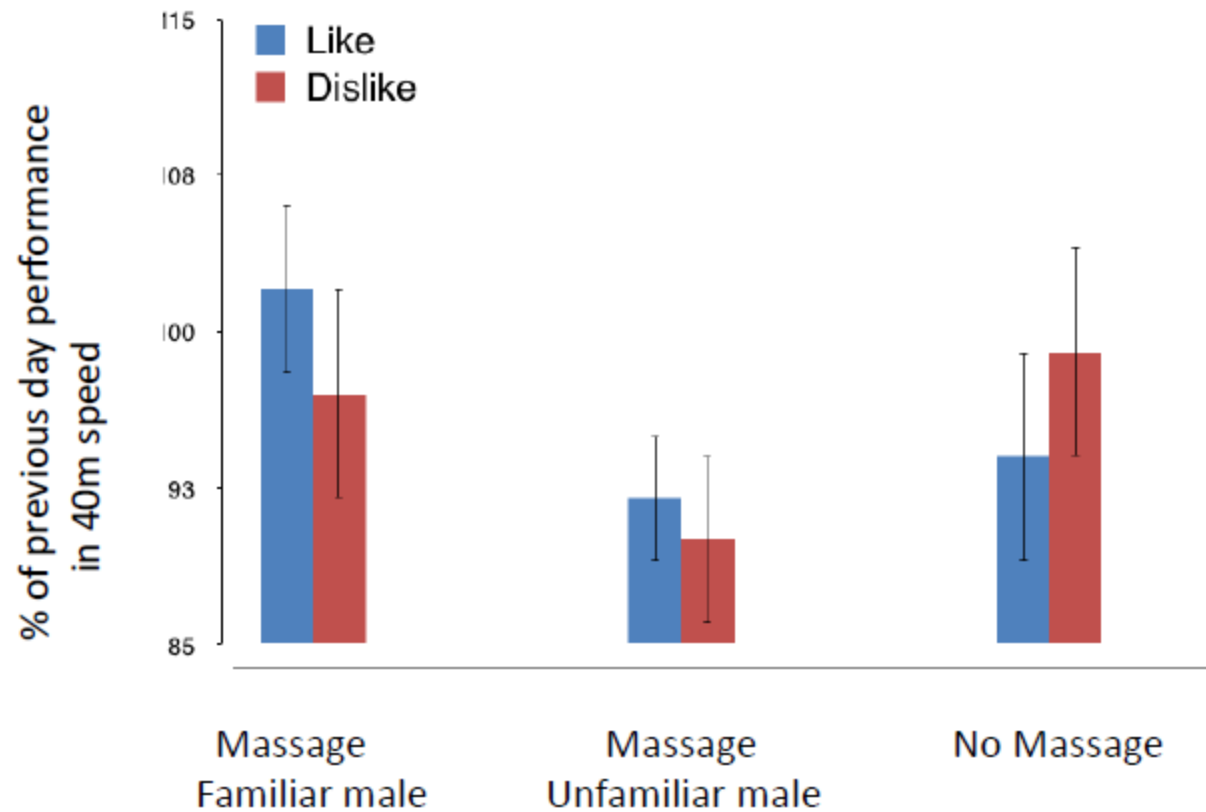
Recovery Strategies



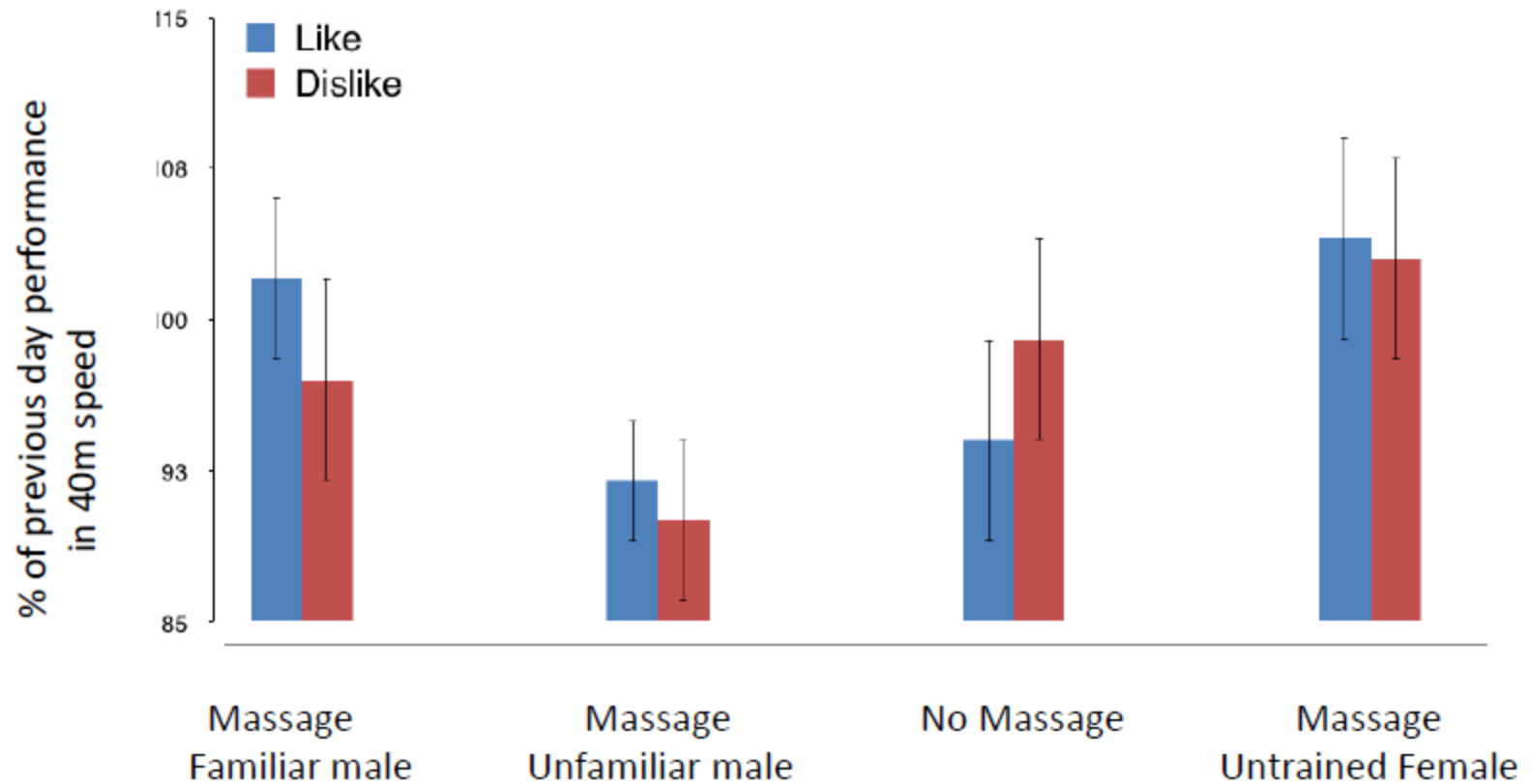
Recovery Strategies



Massage



Massage



Cook, C. Unpublished

Message

115

Like
Dislike

REVIEW ARTICLE

Sports Med 2009; 39 (4): 313-329
0112-1642/09/0004-0313/\$49.95/0

© 2009 Adis Data Information BV. All rights reserved.

The Placebo Effect in Sports Performance

A Brief Review

Christopher J. Beedie and Abigail J. Foad

Canterbury Christ Church University, Canterbury, UK

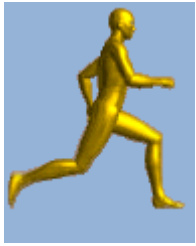
Cook, C. Unpublished

Competition Strategies

- Warm-up
- Pacing
- Nutritional
- In-competition recovery
- Psychological / motivational



Effect of an Intense, Prolonged Warm-up

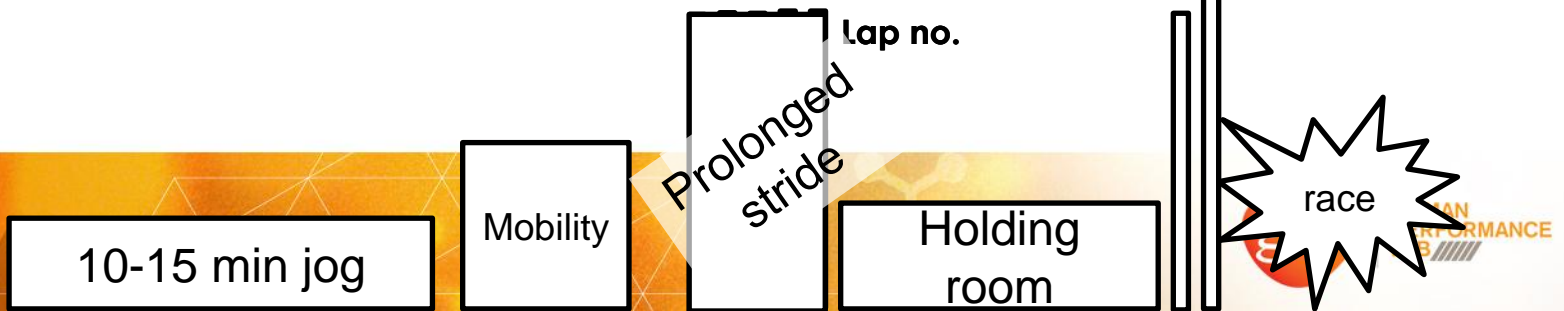
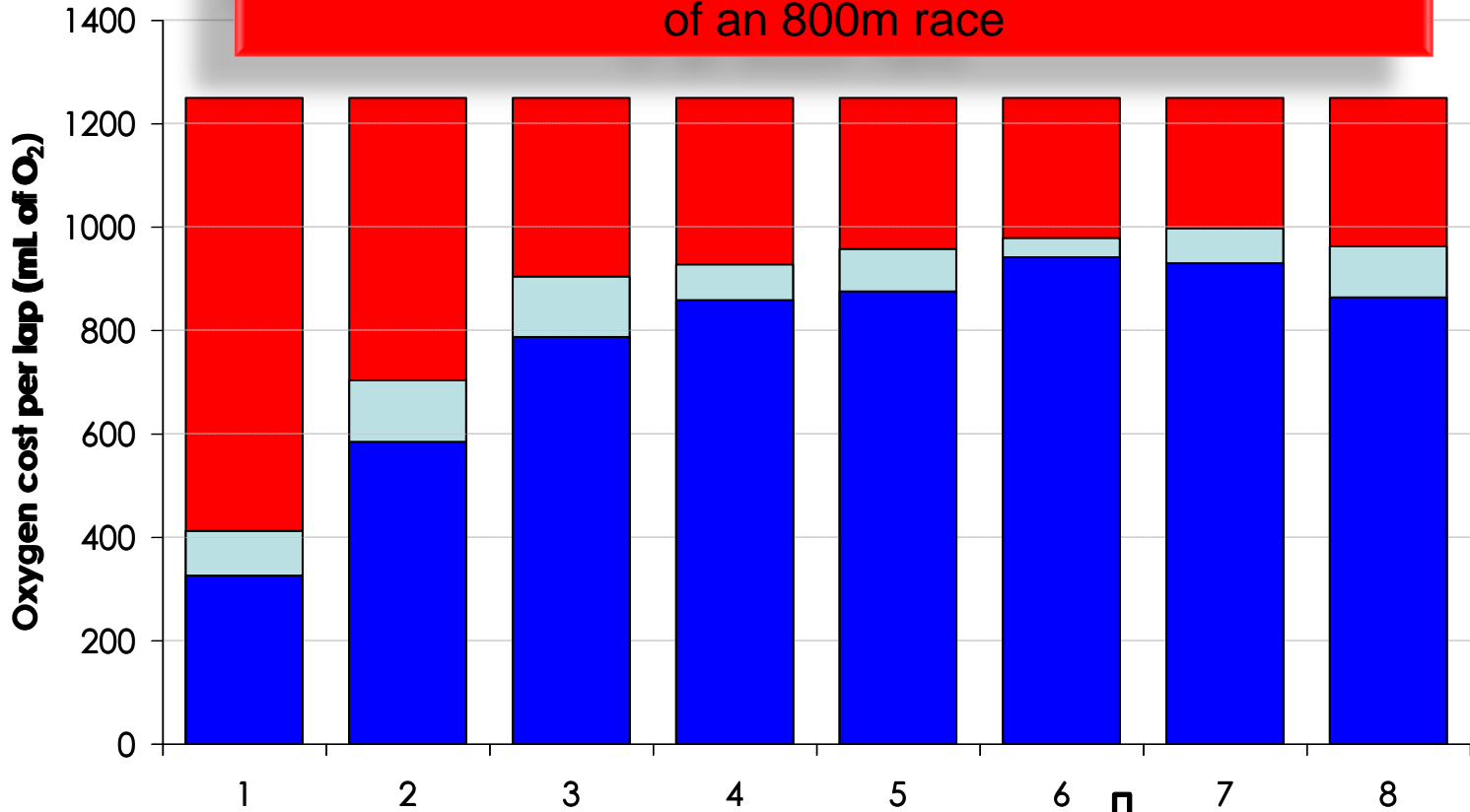


Prolonged effort
~30-40s

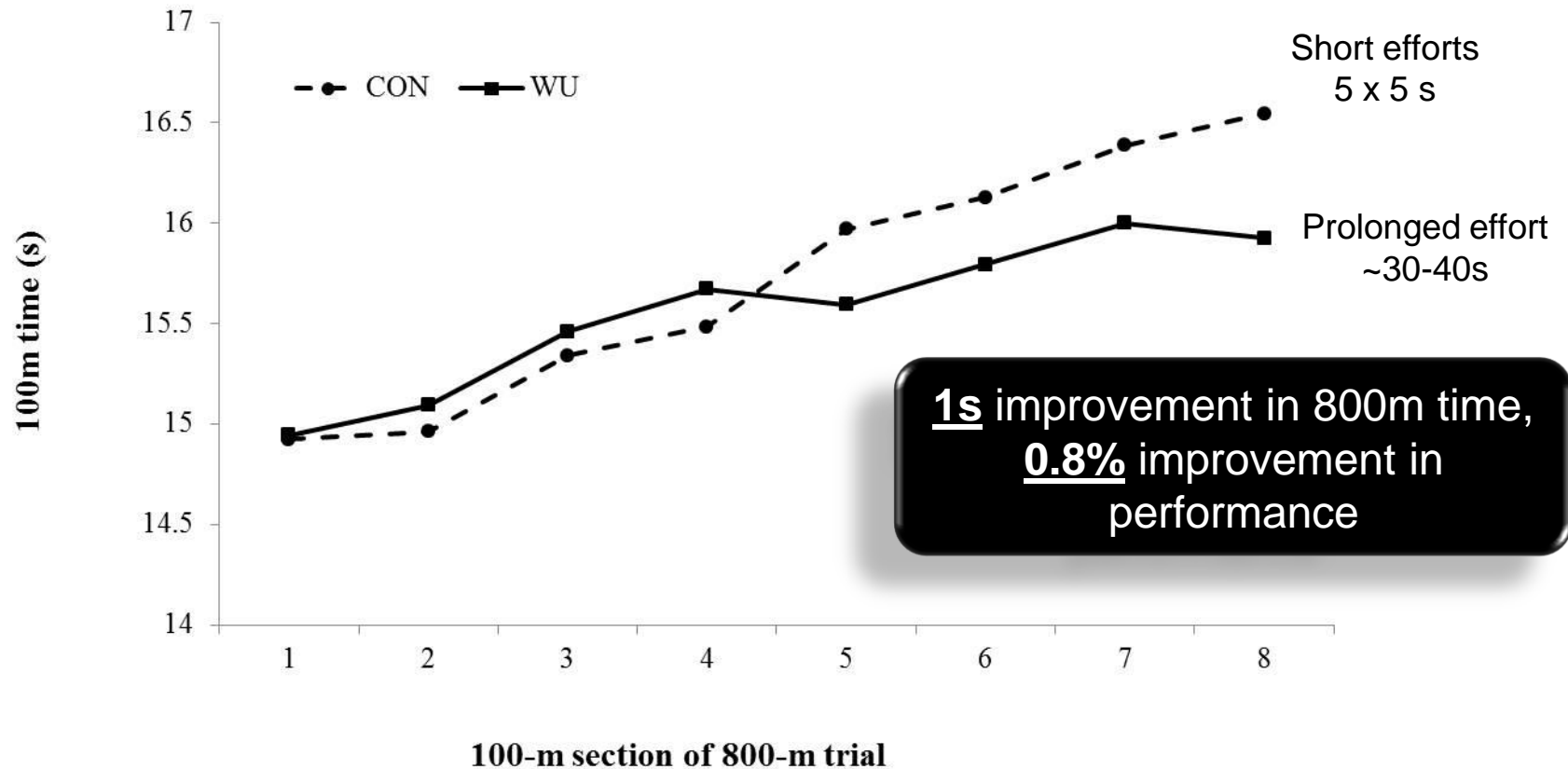


Short efforts
5 x 5 s

Each bar = energy requirement for each 100m section of an 800m race

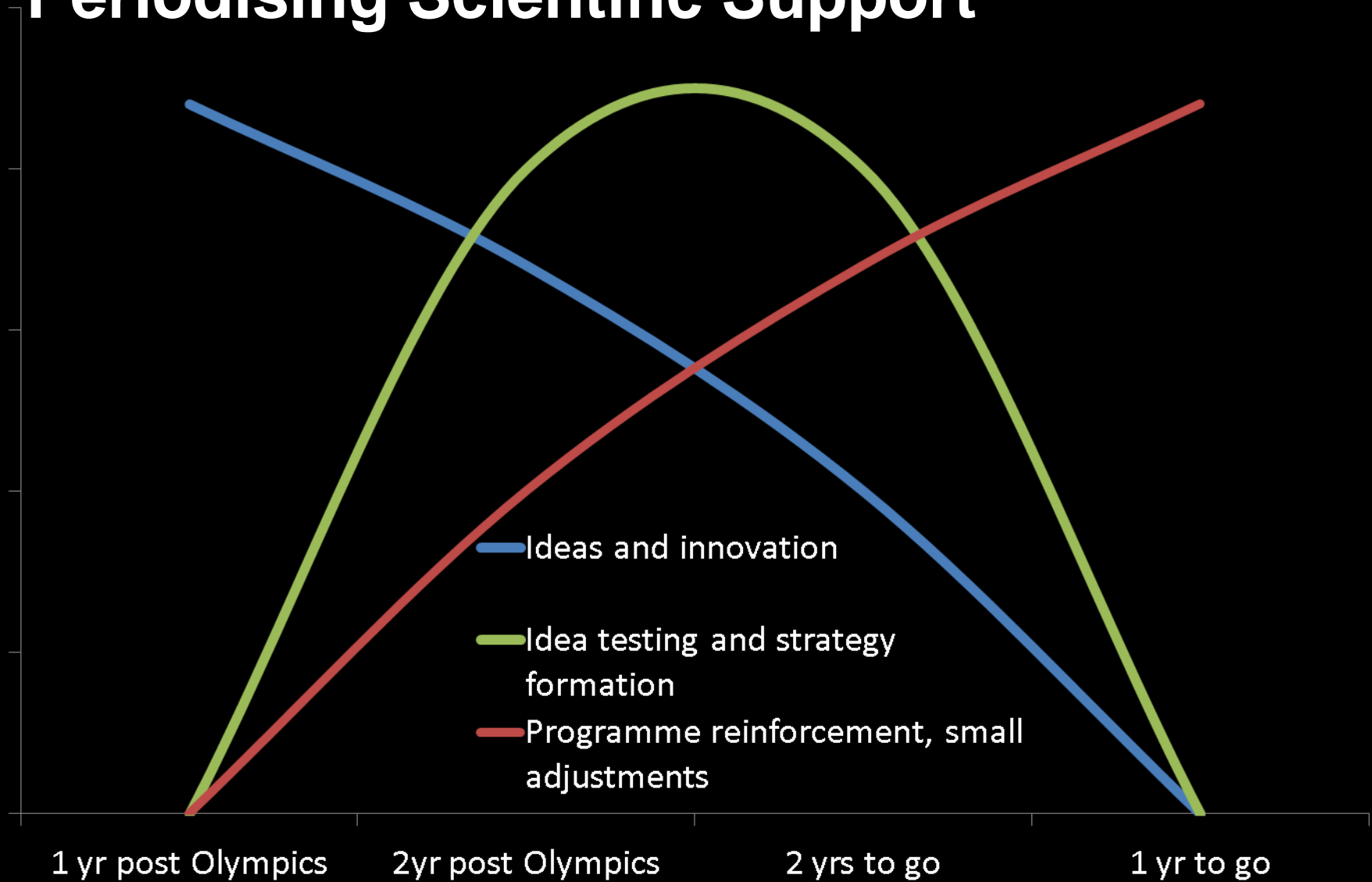


Effect on Performance



Ingham SA, Fudge BW, Pringle JS. & Jones AM (2013) Prior high-intensity exercise improves 800-m running performance. Int J Sports Physiol Perform.

Periodising Scientific Support



Coordinated Performance Solutions



Collaboration & Partnership

- London 2012 stimulated collaboration between high performance sport, industry and academia in the UK
- UK Sport invests c. £1.5million pa into collaborative projects
 - training science,
 - performance medicine,
 - equipment and coaching technologies



uk sport
innovation partner

'Best of British'

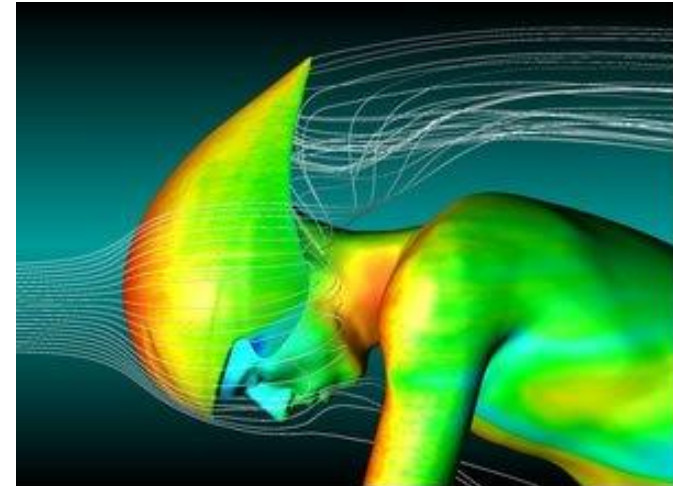


epm: technology group





Imperial College
London



BAE SYSTEMS

uk sport
innovation partner

Looking Ahead

- A sustainable system
- Government and lottery funding now confirmed until 2017
- Investment in athlete development pathways



Sports Science in the UK – The Future

HOUSE OF LORDS

Select Committee on Science and Technology

1st Report of Session 2012–13

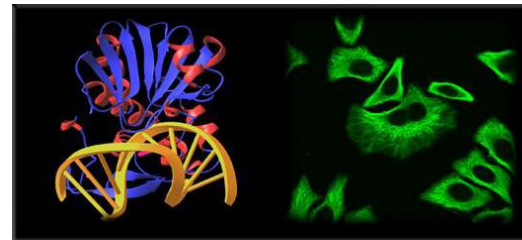
Sport and exercise science and medicine: building on the Olympic legacy to improve the nation's health

Report

Ordered to be printed 10 July 2012 and published 18 July 2012

Published by the Authority of the House of Lords
London : The Stationery Office Limited
£ price

HL Paper 33



Thank you