

Half-Time Strategies: Preparing for the Second Period

Jay H. Williams, Ph.D.

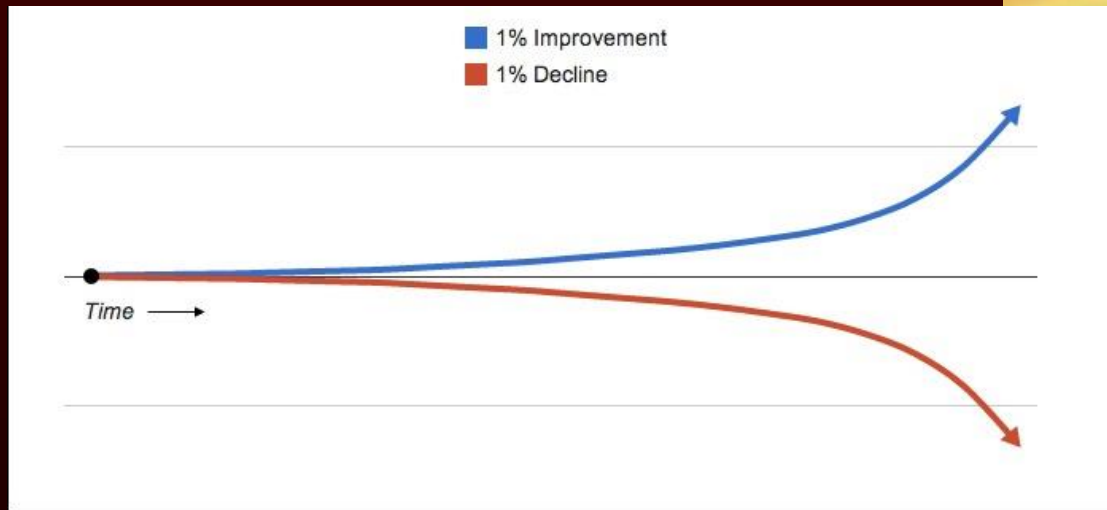
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Virginia Tech
Blacksburg, VA 24061



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Aggregation of Marginal Gains

Dave
Brailsford
GB Cycling



The Half-Time Routine

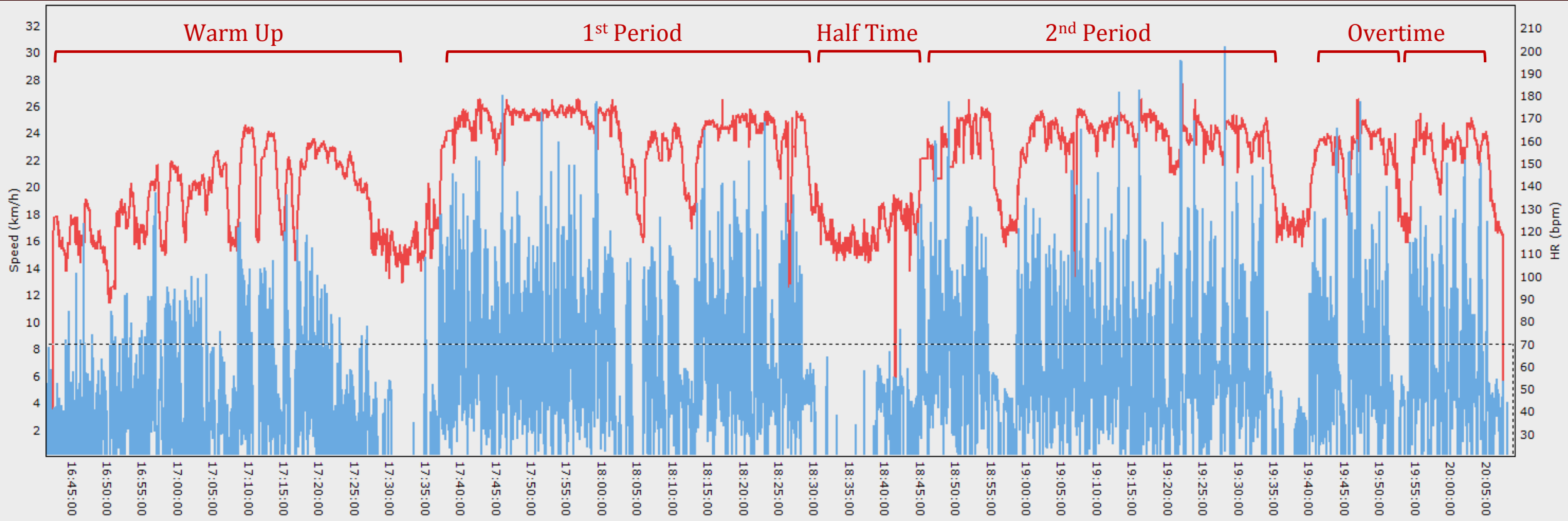


Can We Better Prepare Players for the Start of the Second Period?

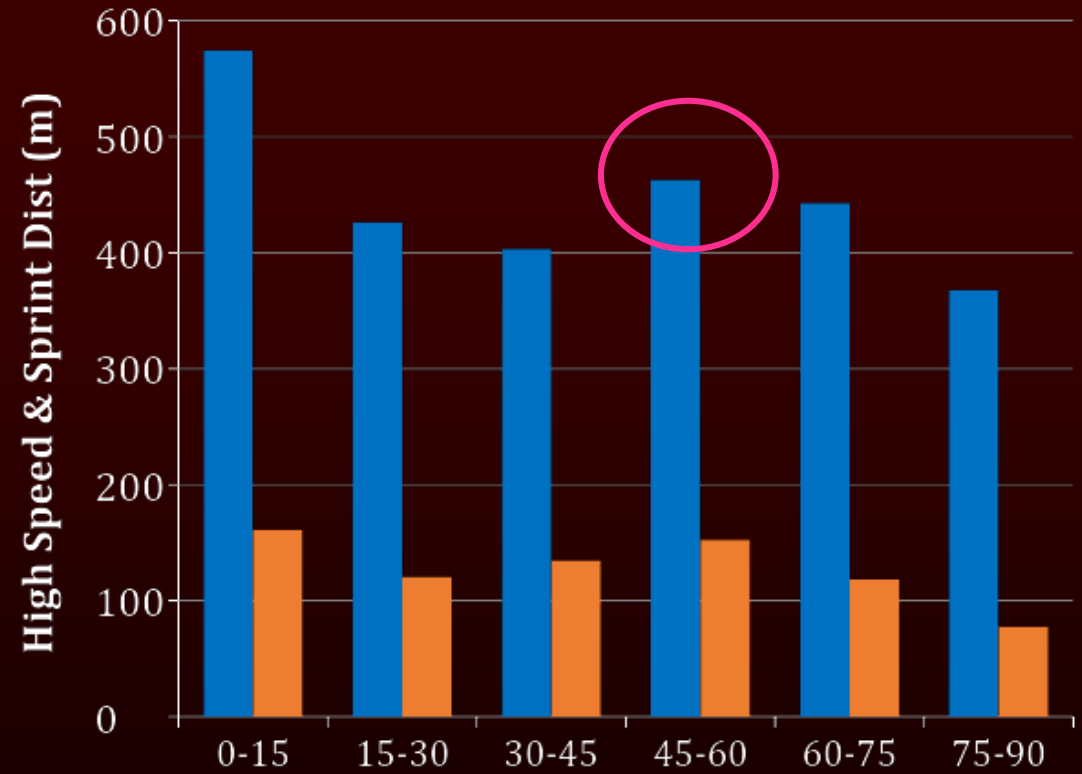
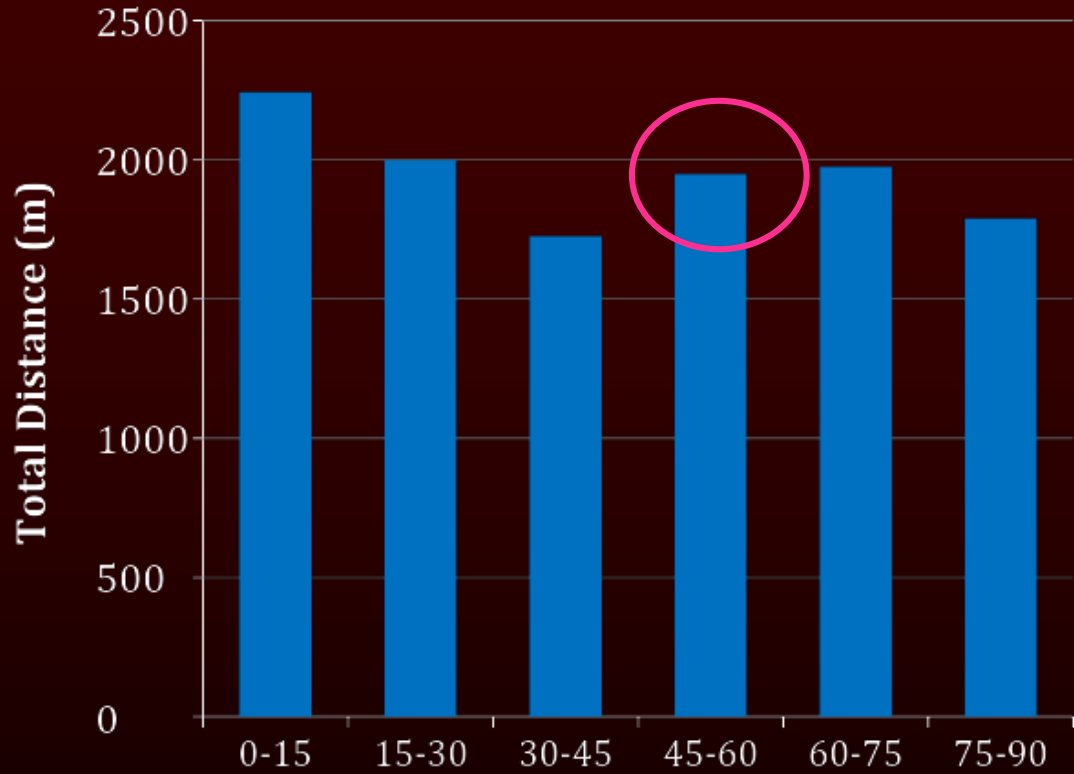


Match Load

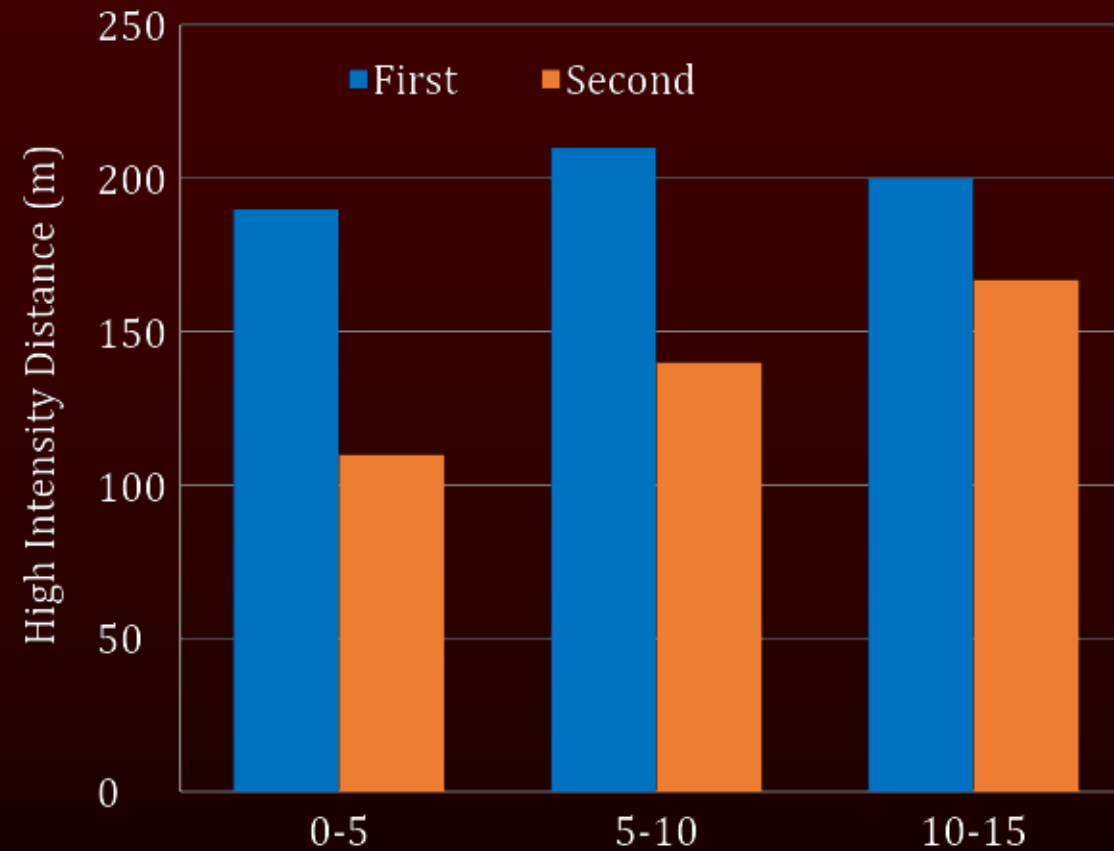
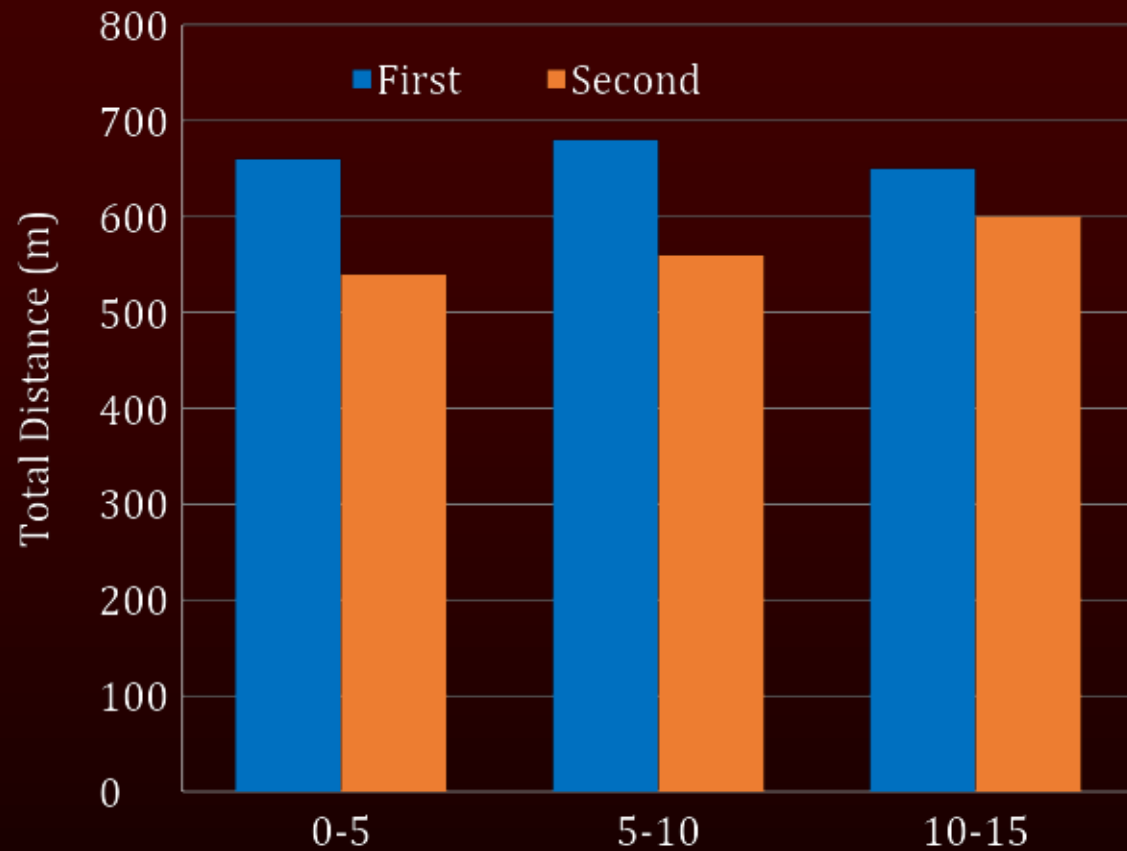
| | 1 st | 2 nd | OT | TOTAL |
|----------------|-----------------|-----------------|------|--------|
| Total Dist (m) | 6664 | 6296 | 2757 | 15,717 |
| Energy (kcal) | 653 | 610 | 266 | 1529 |



Total and High Intensity Distances

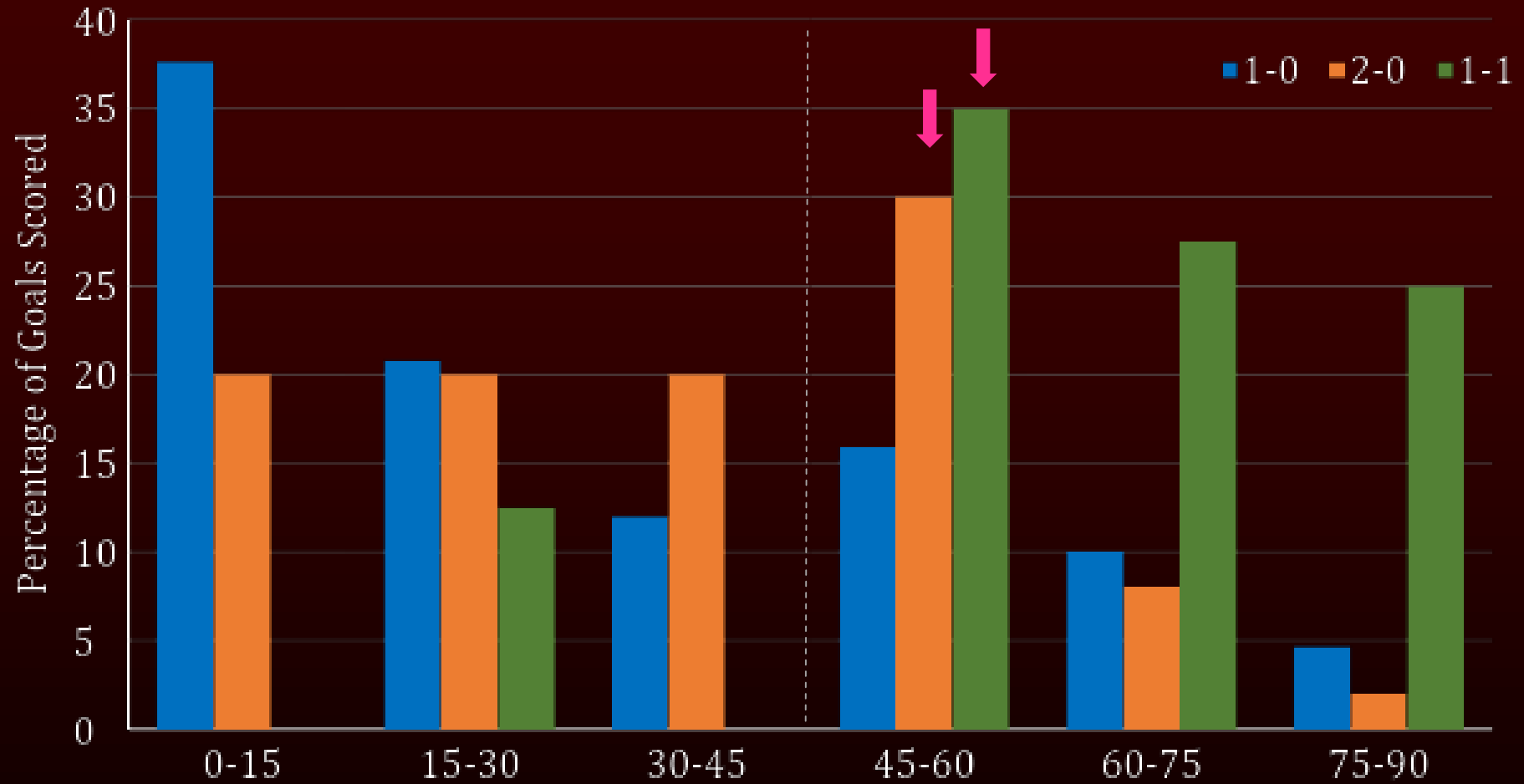


Total and High Intensity Distances



Goals Scored

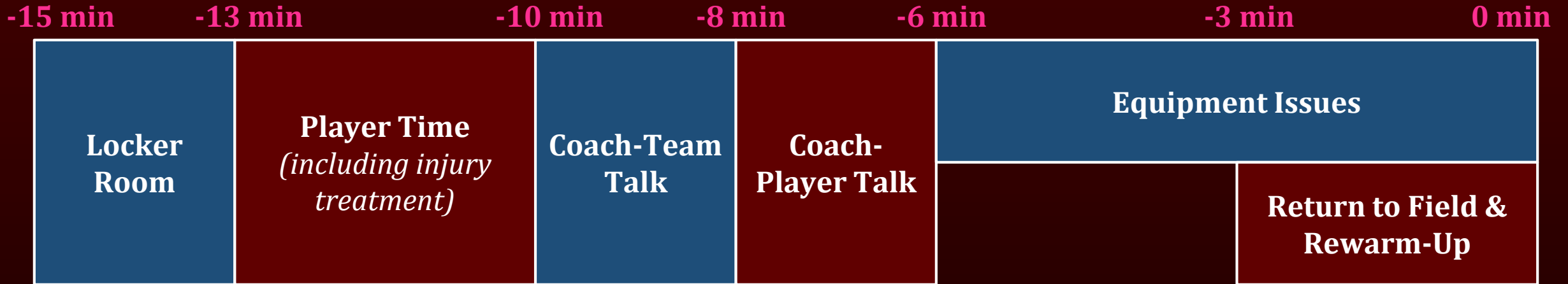
2014-15 NCAA Women's Soccer



Can Half-Time Be Used as a Marginal Gain?

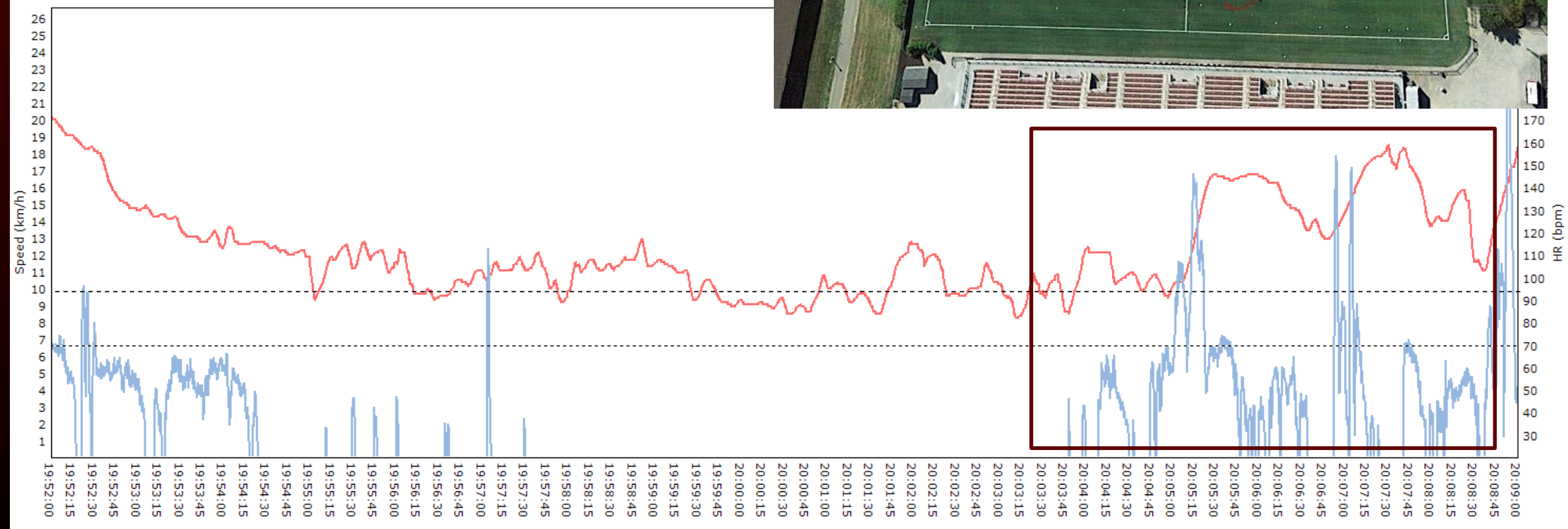


Typical Halftime Strategy



Typical Half Time Activity

Total Distance: 558.1 m
Avg Heart Rate: 113 bpm

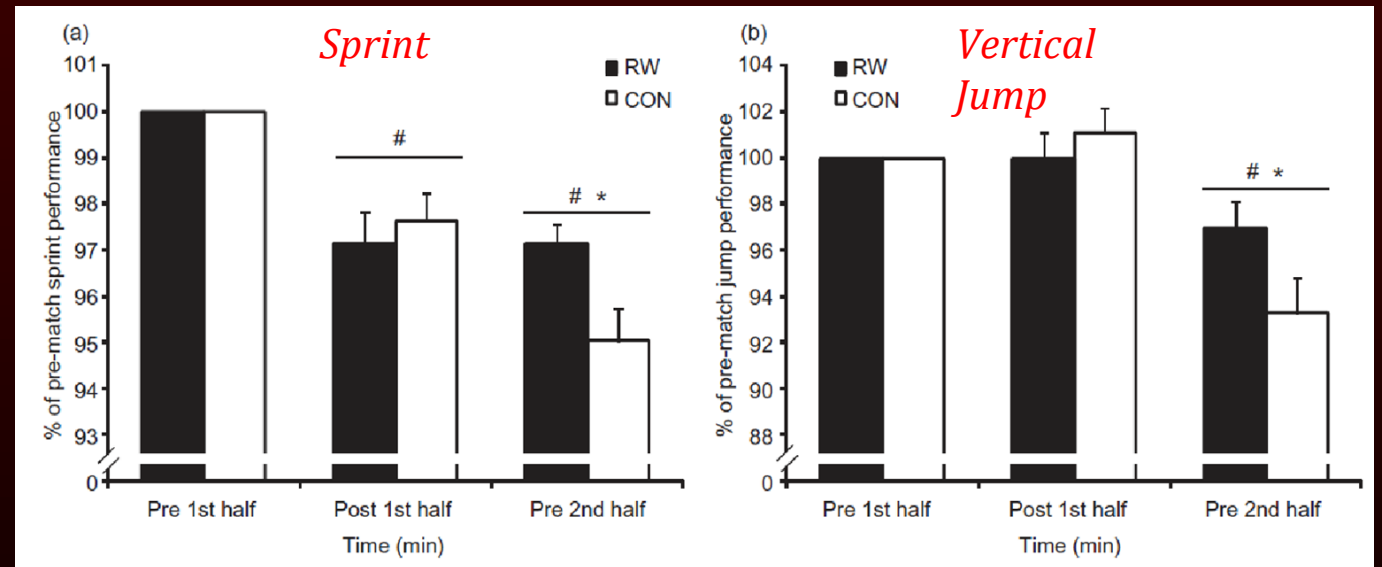
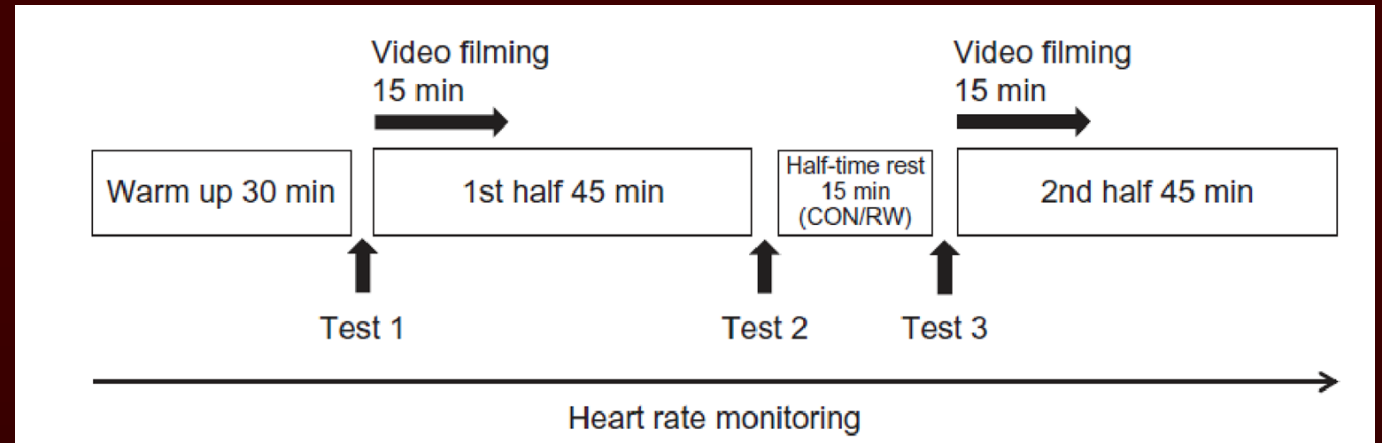


Is the Re-Warm Up Important?

Control: Traditional 15 min passive

Re-WU: 7 min passive
7 min activity (70% max HR)

Enhanced Second Period Performance



Total Distance

High Speed Distance

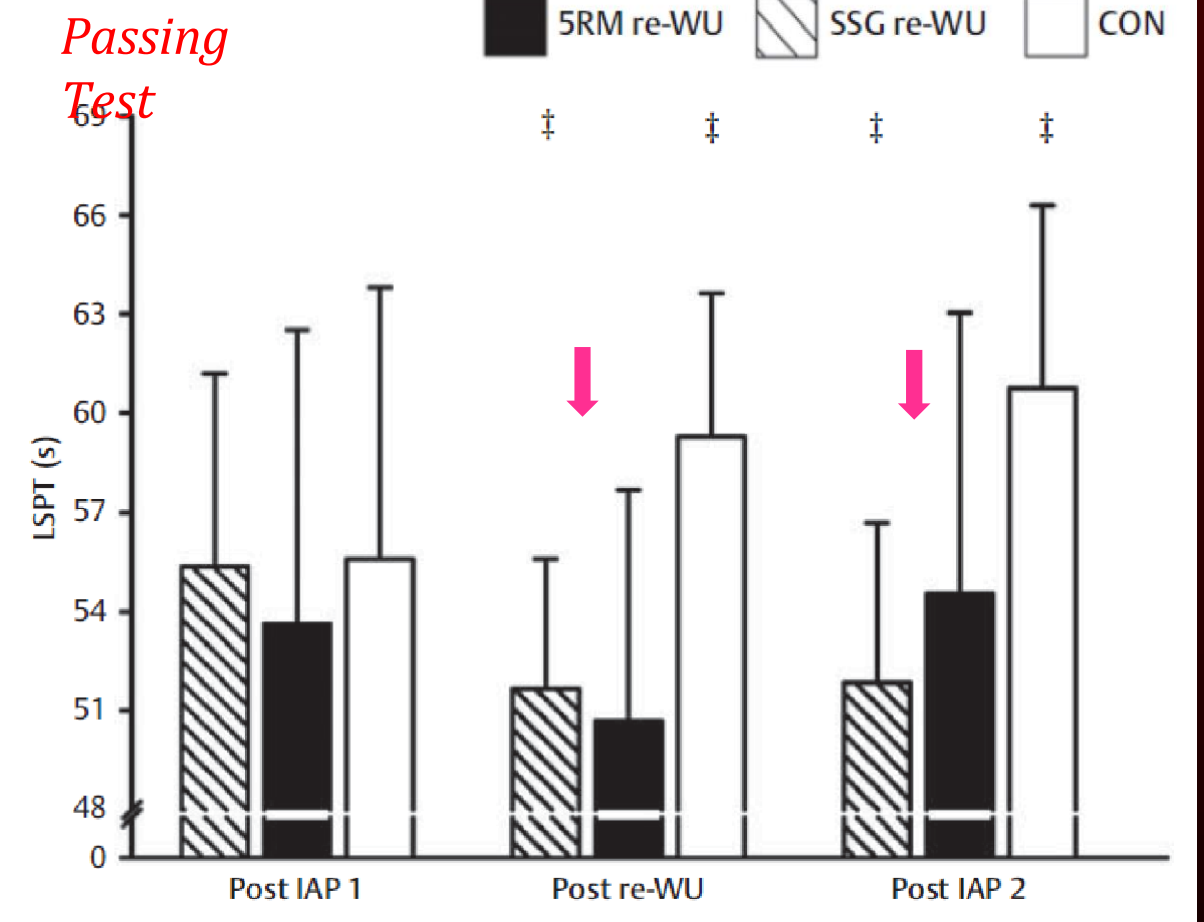
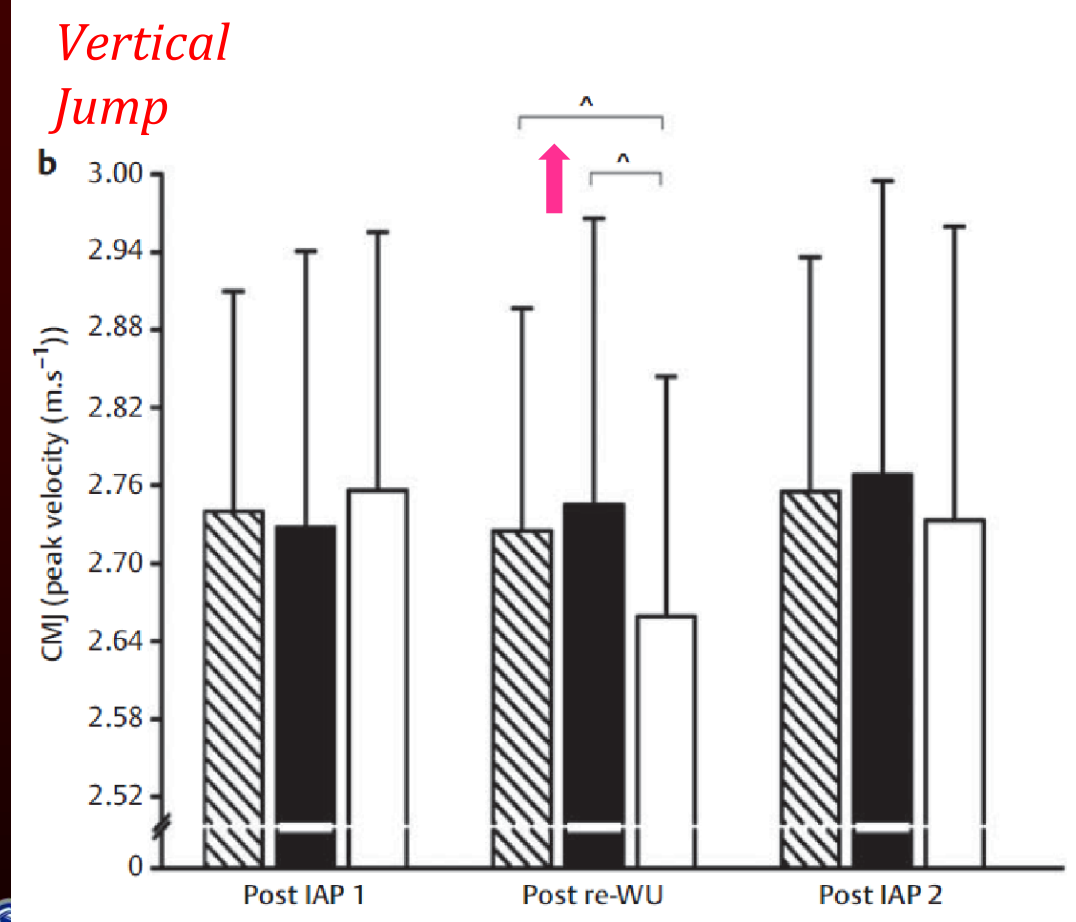
(Edholm et al. 2014)

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Power, Speed and Technical Skill

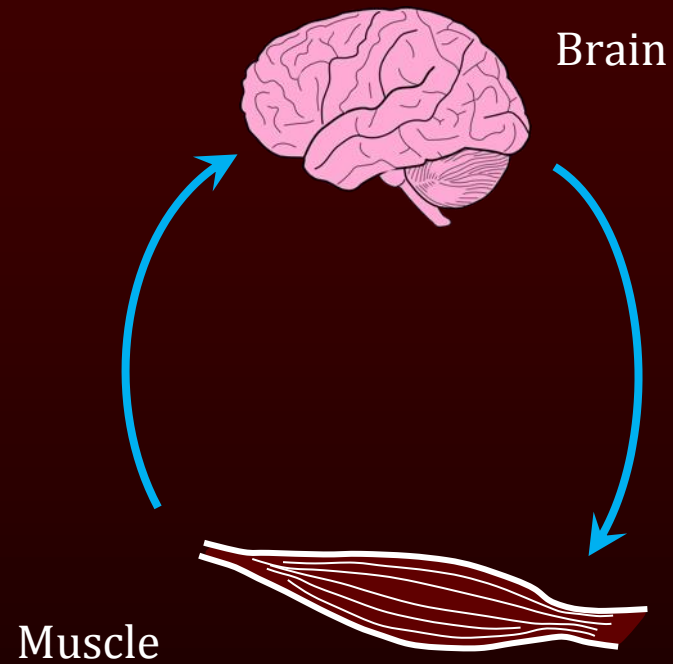
5min Leg Press 5min SS Games Passive



(Zois et al. 2012)



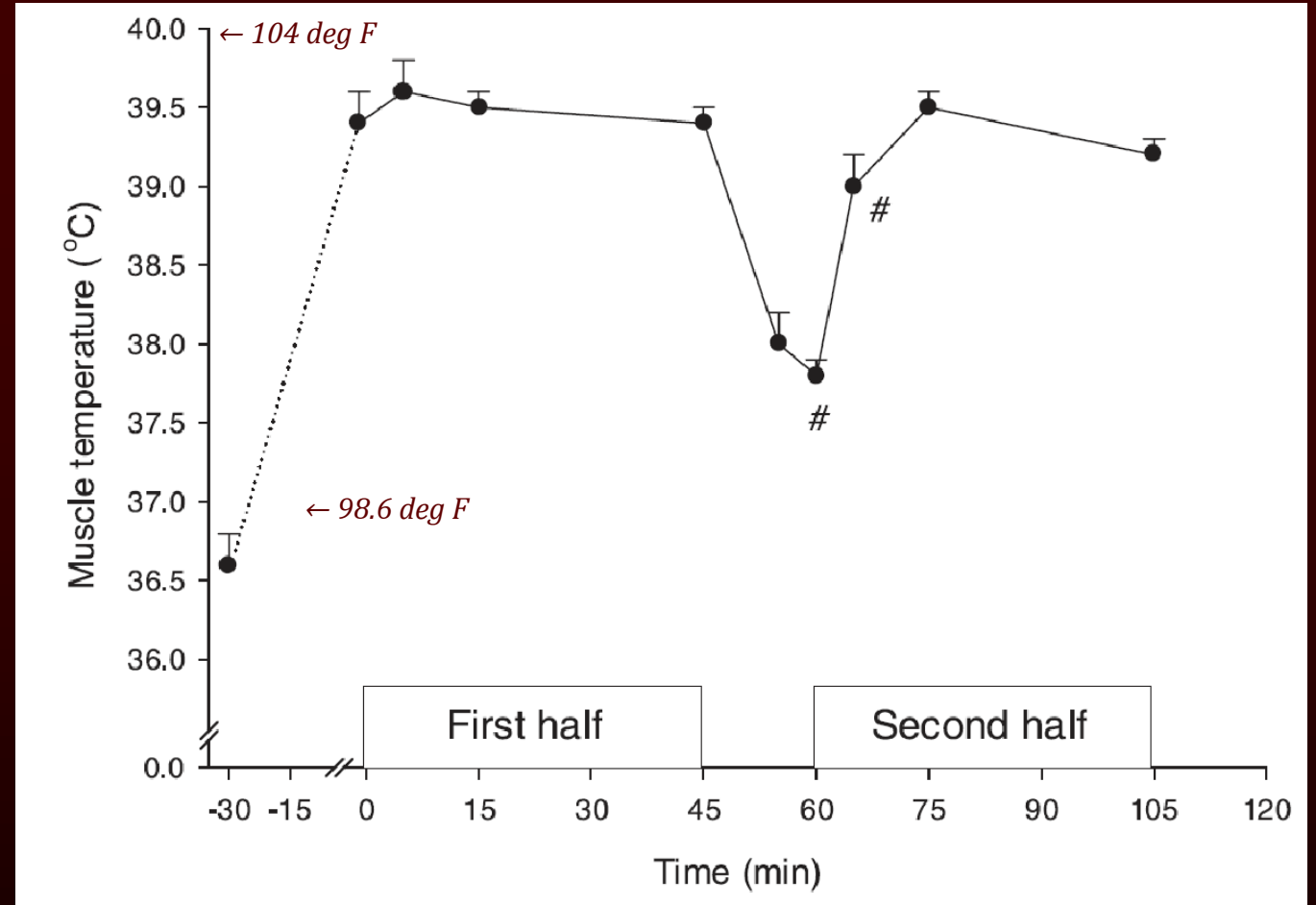
Why Is the Half-Time Re-Warm Up Important?



Muscle Temperature

Half Time

- Muscle temperature decreases at half time.
- Reductions in muscle temperature are linked to reduced performance

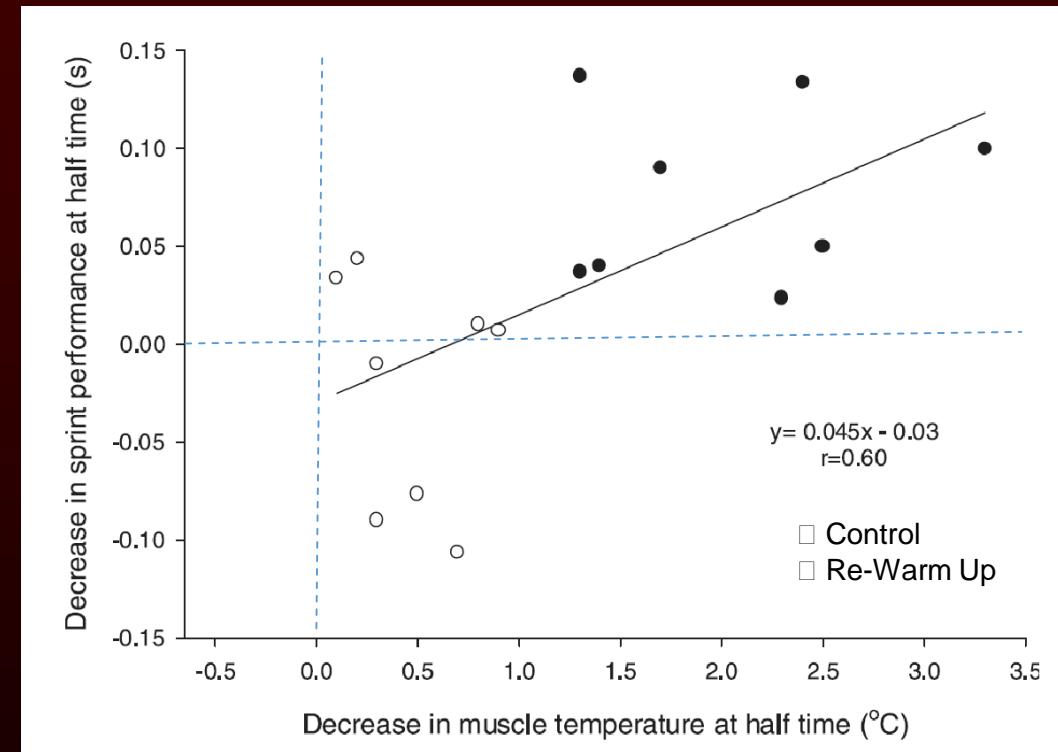
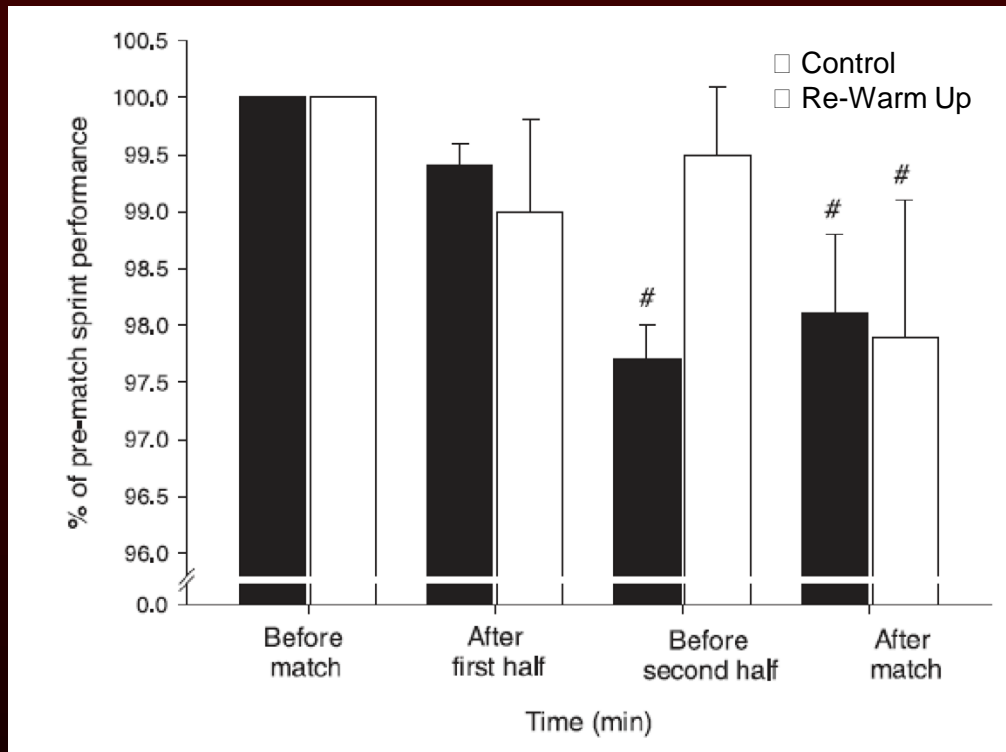


(Mohr et al. 2004)

Muscle Temperature

Re-Warm Up

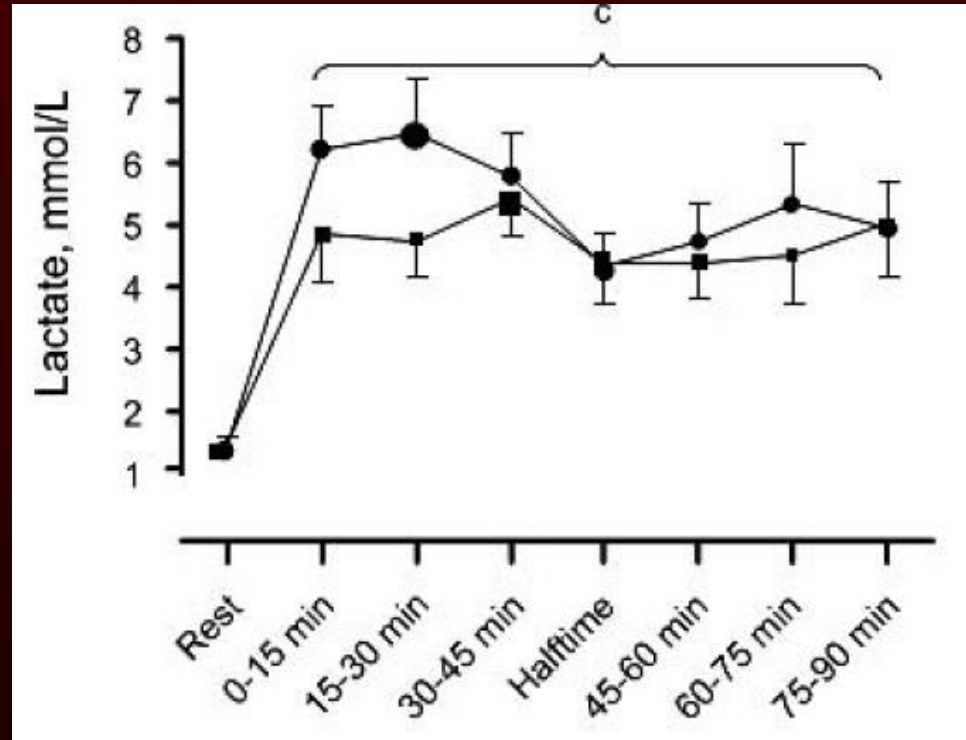
- Limit the drop in muscle temperature
- Limit the decrease in performance



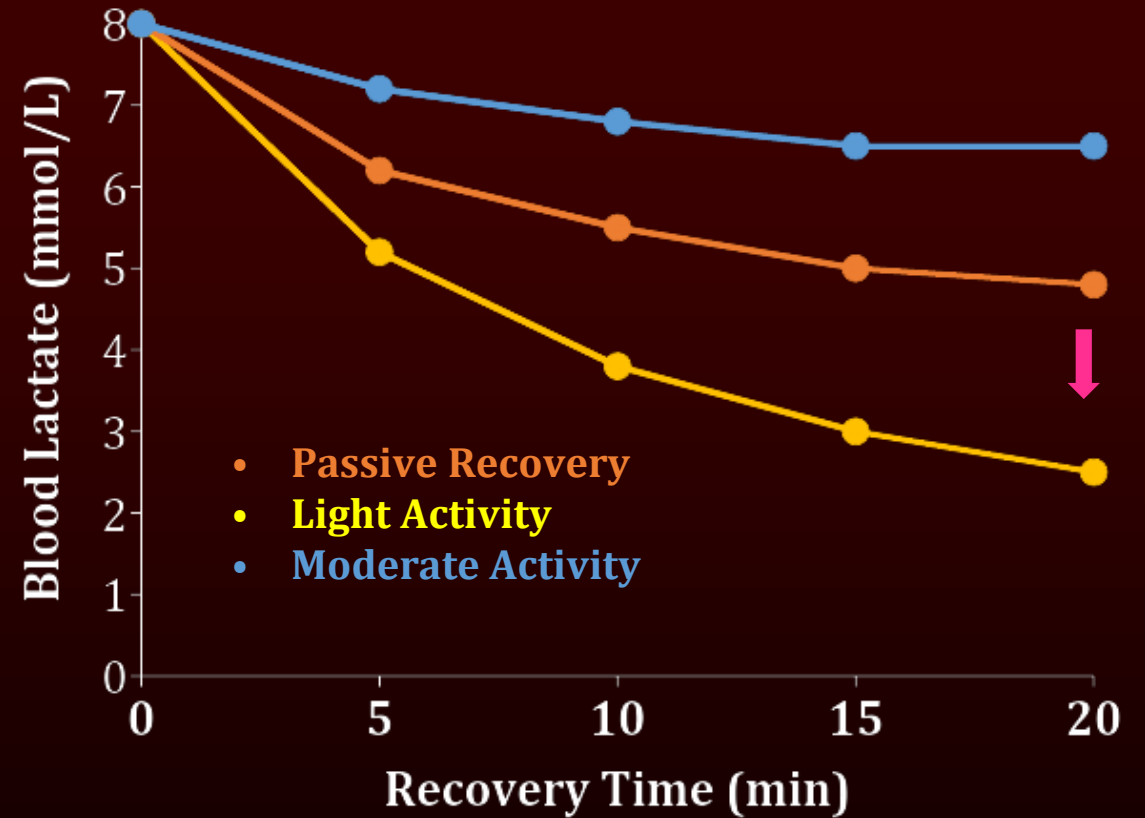
(Mohr et al. 2004)



A More Rapid Recovery of Metabolism



Russell et al., 2015



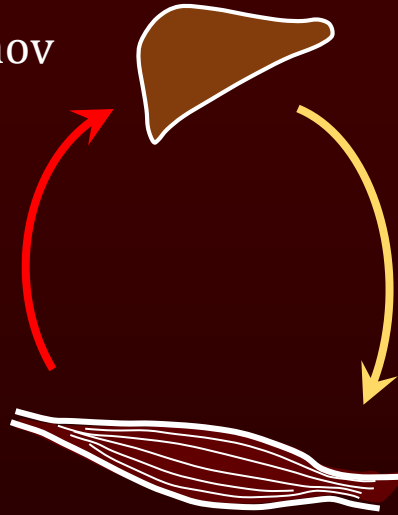
from Powers & Howley et al., 2015



Metabolism: Lactate and Recovery



Removal



Production

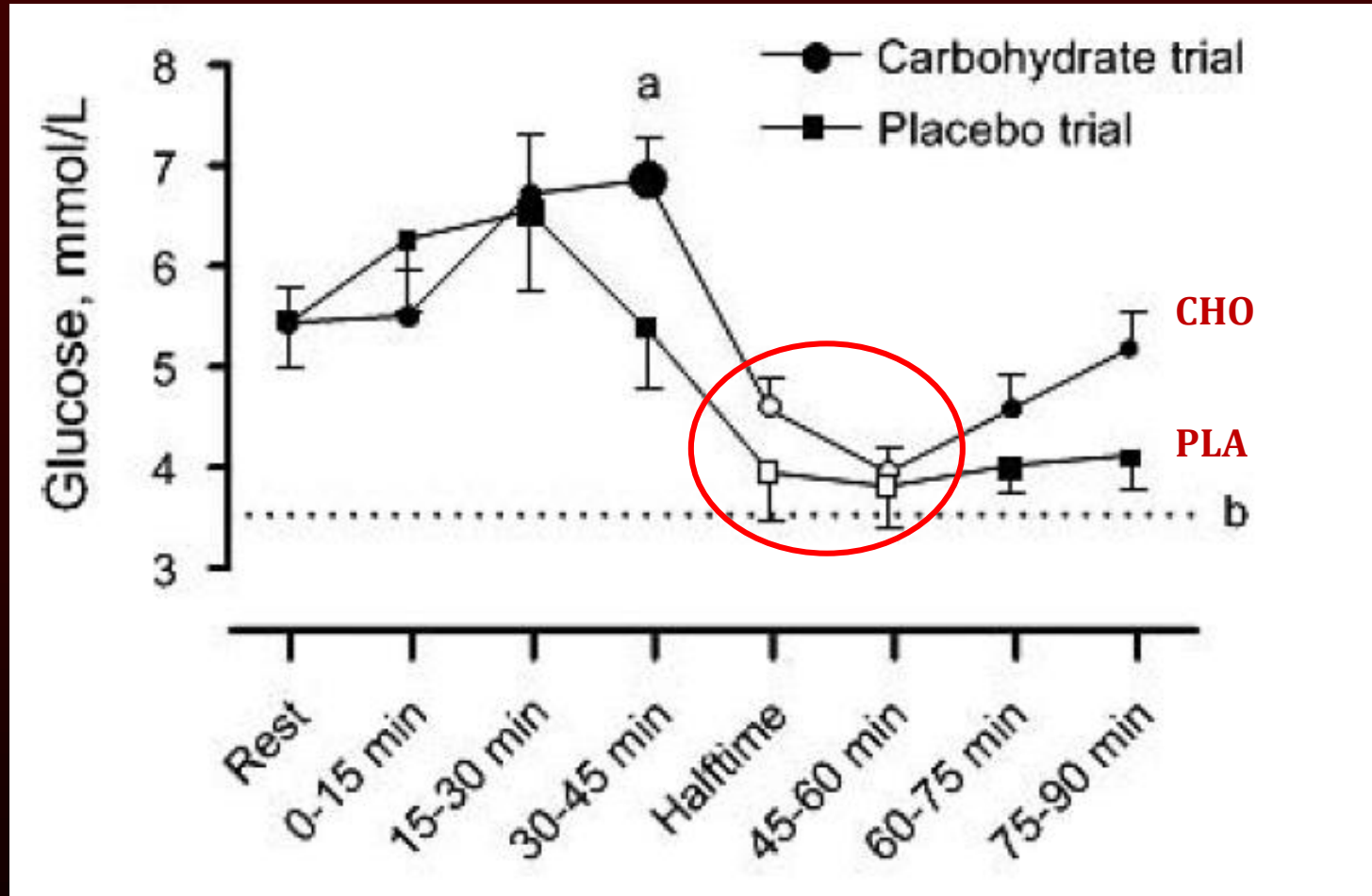
Re-Warm Up

- No Exercise
- **Light Exercise**
 - No lactate production
 - Increased removal
- **Moderate Exercise**
 - Some lactate production
 - Increased Removal



Energy: Blood Glucose and Halftime

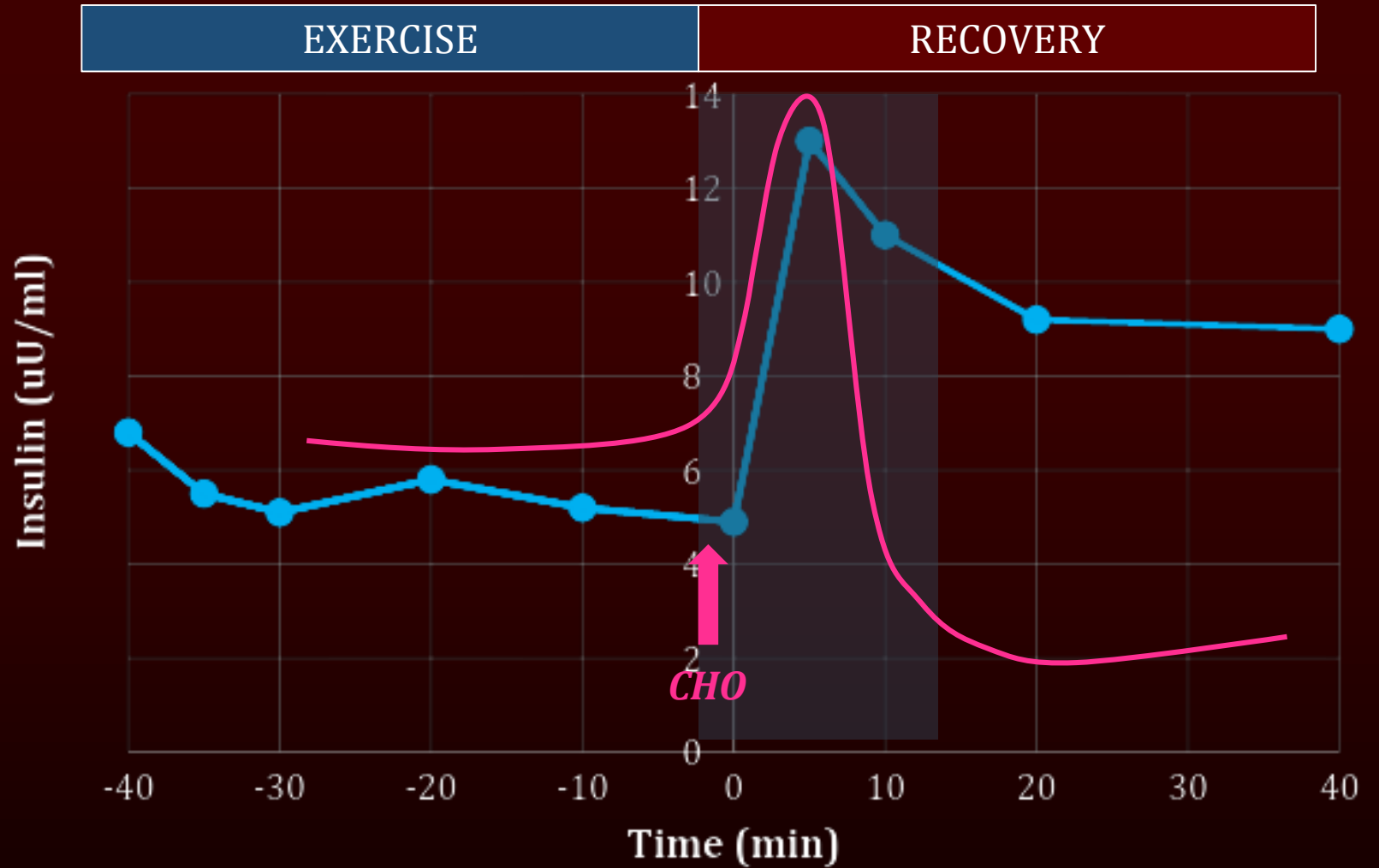
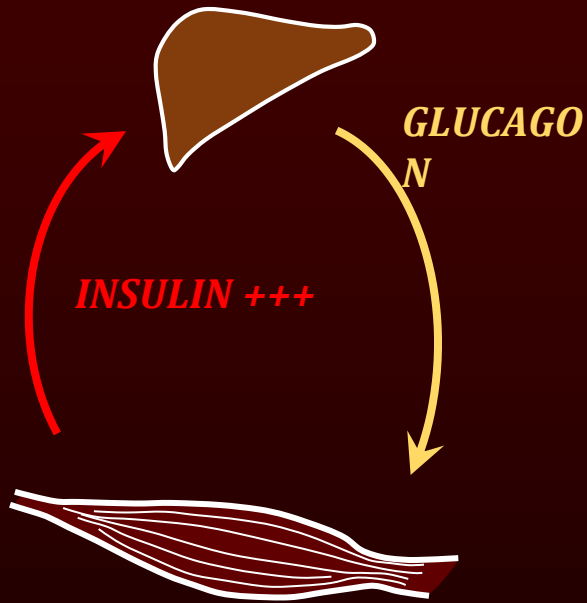
Passive Recovery



Russell et al., 2015

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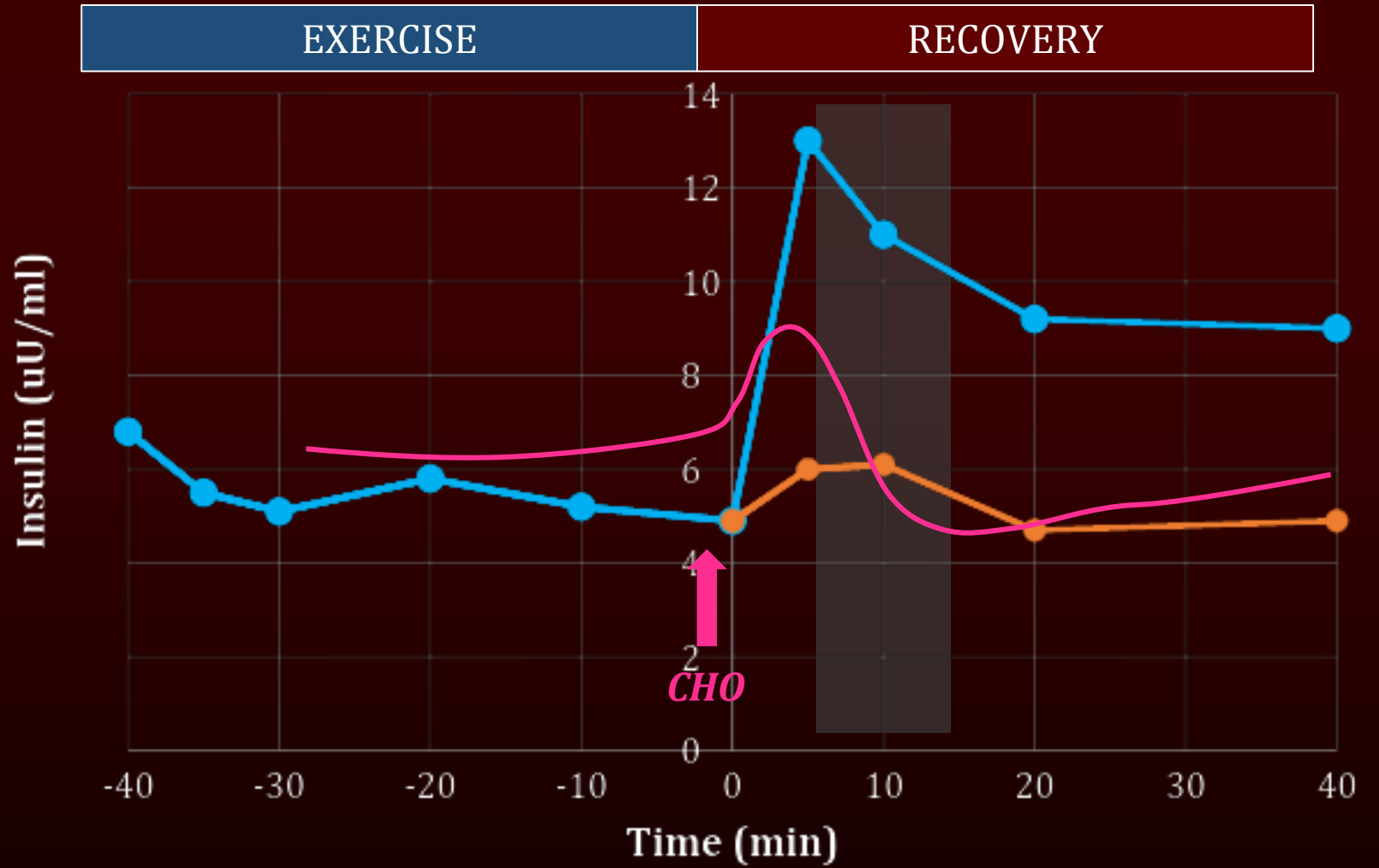
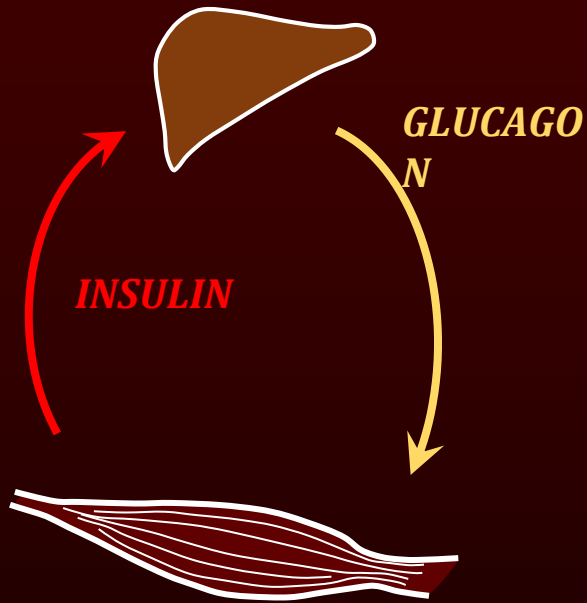
Insulin and Recovery



Wahran et al., 1973



Insulin and Recovery



Psychological Effects

Caffeine

CNS Stimulant

- Arousal
- Focus
- Reaction time
- Decisions

Side Effects

Anxiety / Nervousness
Tremor

Fatty Acid Mobilization

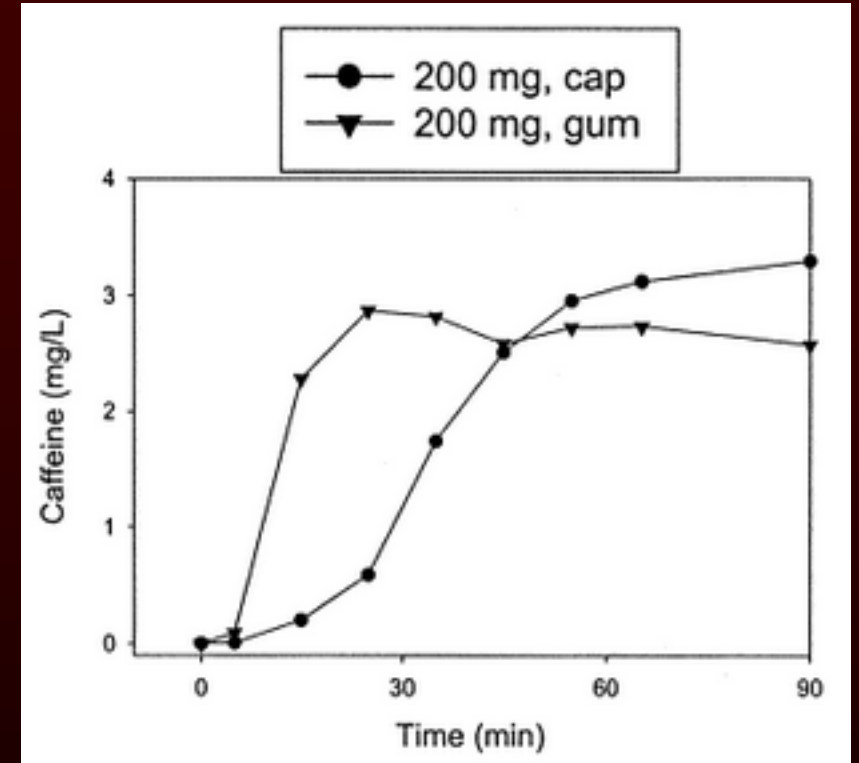
- Spares muscle glycogen
- Maintains blood glucose



Caffeine Gum

| Caffeine Provided | Time Trial (min) |
|-------------------|------------------|
| Placebo | 40.7 |
| 2 hrs Before | 42.6 |
| 1 hr Before | 41.8 |
| 5 min Before | 38.7 ** |

200 mg caffeine chewing gum



Psychological Effects

CHO “Rinse and Spit” or “Swilling”

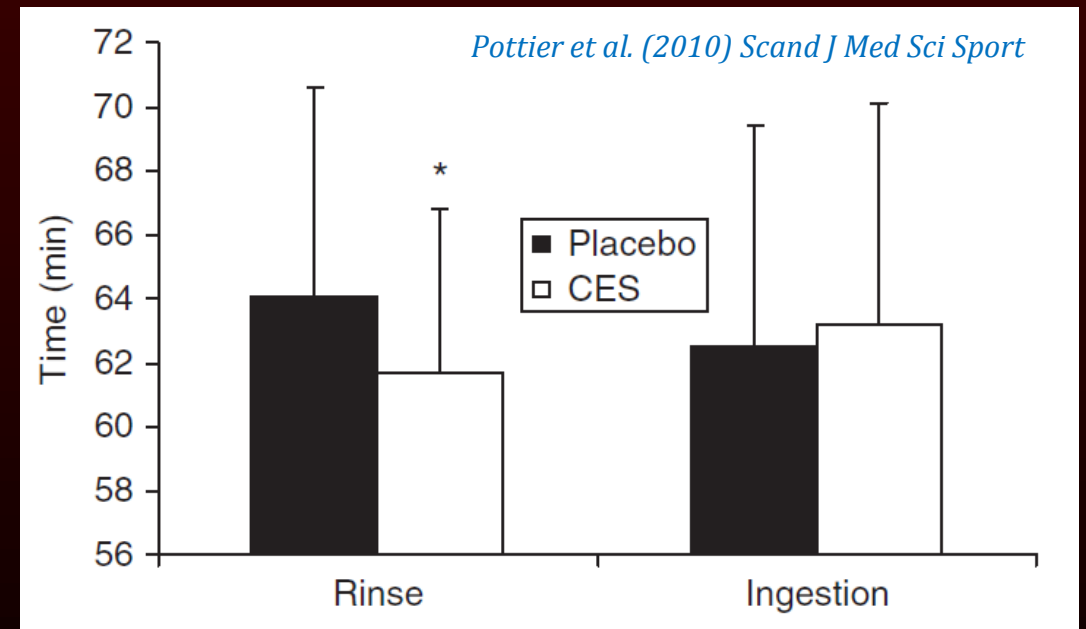
Carbohydrates in the mouth can improve exercise performance

Brain scans show increased activity

A “biological” link between the brain and mouth

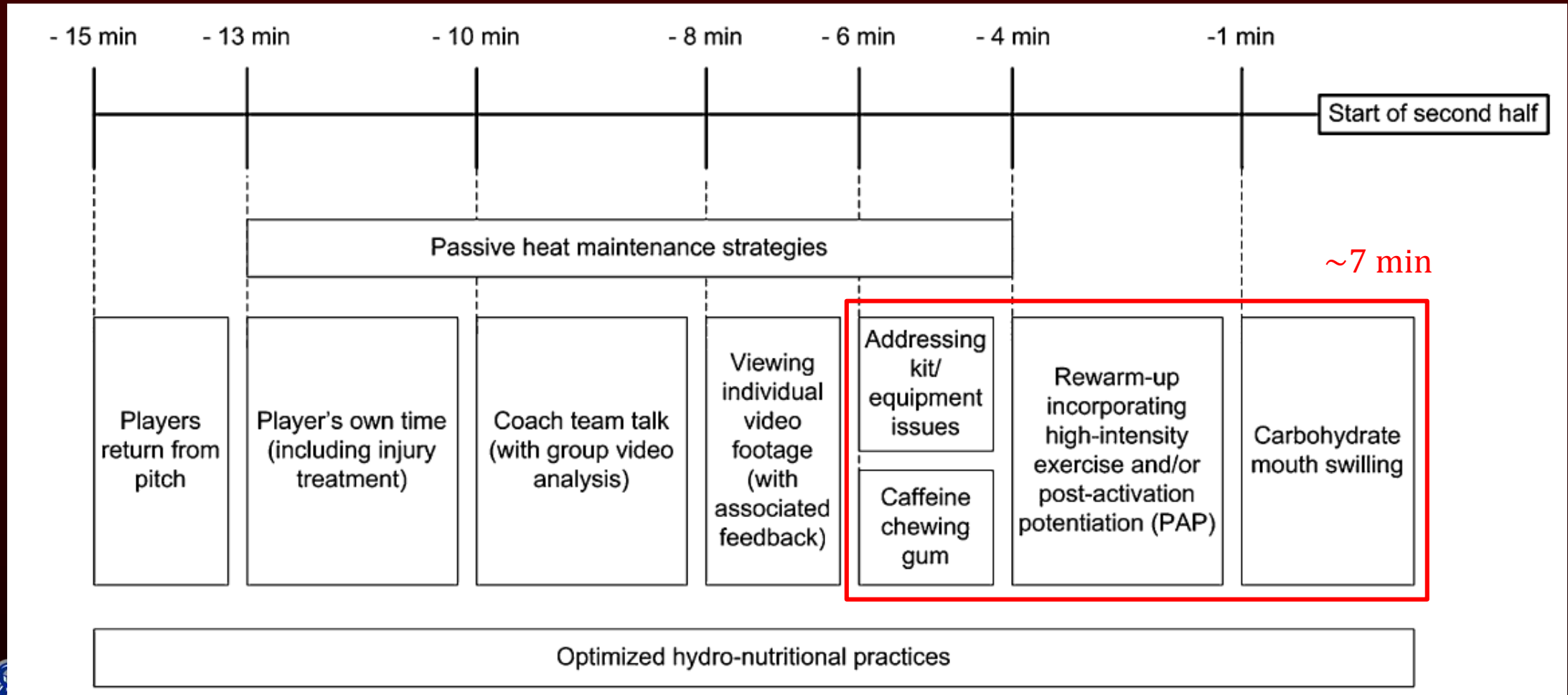
Hydration ??

Improved “Finish Time” →



Half-Time Strategy

Mark Russell, Northumbria University



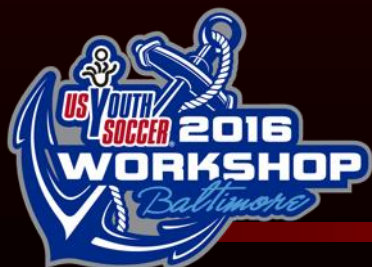
Russell et al., *Sport Medicine*, 2015

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Bottom Line

Half-Time and a Re-Warm Up

- A “marginal gain”
- Hydration and Carbohydrates
- Caffeine ??
- Some physical activity
 - Muscle Temperature
 - Blood Glucose
 - Mental Focus



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