Half-Time Strategies: Preparing for the Second Period

Jay H. Williams, Ph.D.
Departrment of Human Nutrition, Foods and Exercise
Virginia Tech
Blacksburg, VA 24061
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

<table>
<thead>
<tr>
<th></th>
<th>1st</th>
<th>2nd</th>
<th>OT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dist (m)</td>
<td>6664</td>
<td>6296</td>
<td>2757</td>
<td>15,717</td>
</tr>
<tr>
<td>Energy (kcal)</td>
<td>653</td>
<td>610</td>
<td>266</td>
<td>1529</td>
</tr>
</tbody>
</table>
Total and High Intensity Distances

- **Graph 1:** Total Distance (m)
  - X-axis: Time Intervals (0-15, 15-30, 30-45, 45-60, 60-75, 75-90)
  - Y-axis: Total Distance (m)

- **Graph 2:** High Speed & Sprint Dist (m)
  - X-axis: Time Intervals (0-15, 15-30, 30-45, 45-60, 60-75, 75-90)
  - Y-axis: High Speed & Sprint Distance (m)
Total and High Intensity Distances

![Graph of Total Distance](image1)

![Graph of High Intensity Distance](image2)

- **Total Distance (m)**:
  - 0-5: First > Second
  - 5-10: First > Second
  - 10-15: First > Second

- **High Intensity Distance (m)**:
  - 0-5: First > Second
  - 5-10: First > Second
  - 10-15: First > Second
Goals Scored

2014-15 NCAA Women’s Soccer

Percentage of Goals Scored

Bars for 0-15, 15-30, 30-45, 45-60, 60-75, 75-90:
- 1-0 (blue)
- 2-0 (orange)
- 1-1 (green)
Can Half-Time Be Used as a Marginal Gain?
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>-15 min</td>
<td>Locker Room</td>
</tr>
<tr>
<td>-13 min</td>
<td>Player Time (including injury treatment)</td>
</tr>
<tr>
<td>-10 min</td>
<td>Coach-Team Talk</td>
</tr>
<tr>
<td>-8 min</td>
<td>Coach-Player Talk</td>
</tr>
<tr>
<td>-6 min</td>
<td>Equipment Issues</td>
</tr>
<tr>
<td>-3 min</td>
<td>Return to Field &amp; Rewarm-Up</td>
</tr>
<tr>
<td>0 min</td>
<td></td>
</tr>
</tbody>
</table>
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*

(Edholm et al. 2014)
Power, Speed and Technical Skill

Vertical Jump

Passing Test

(Zois et al. 2012)
Why Is the Half-Time Re-Warm Up Important?

Brain

Muscle
Muscle Temperature

**Half Time**

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

### 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
Insulin and Recovery

GLUCAGON

INSULIN +++

Wahran et al., 1973

[Graph showing the relationship between exercise and recovery with a focus on insulin levels and CHO intake.]

USYOUTHSOCCER.ORG
Insulin and Recovery

**EXERCISE**

**RECOVERY**

- **Insulin (uU/ml)**
- **Time (min)**

The graph shows the change in Insulin levels over time during and after exercise. The graph is divided into two phases: Exercise and Recovery.

During the Exercise phase, Insulin levels decrease sharply, reaching a minimum. In the Recovery phase, Insulin levels rise initially, then stabilize.

The chart also includes a visual representation of the relationship between Insulin, Glucagon, and CHO (Carbohydrate).
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

- 15 min | Players return from pitch
- 13 min | Player's own time (including injury treatment)
- 10 min | Coach team talk (with group video analysis)
- 8 min | Viewing individual video footage (with associated feedback)
- 6 min | Addressing kit/equipment issues
- 4 min | Rewarm-up incorporating high-intensity exercise and/or post-activation potentiation (PAP)
- 1 min | Caffeine chewing gum

Passive heat maintenance strategies

Start of second half

~ 7 min

Optimized hydro-nutritional practices

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
For More Info...

www.scienceofsocceronline.com

- FaceBook
- Twitter

Science Behind Soccer Nutrition

- Amazon

US Youth Soccer & NSCAA Websites

- Nutrition articles
- This presentation