A comparison of physiological and psychological factors during game vs practice warm-up in female collegiate soccer players

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Research done on content, duration, and intensity

Studies incorporating similar variables

Little research using these metrics to compare
Aim: • Use physiological variables (TRIMP, caloric expenditure) and psychological variables (RPE, PR) to compare practice vs game warm-ups

Purpose: • insight to develop best practices

Hypothesis: • Low correlation in all above-mentioned variables between practice and game warm-ups.
Subjects

- 33 NCAA Division 1 female soccer players
- 6 subjects excluded + others during data analysis

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Average Age (years)</td>
<td>20.3 +/- 1.08 years</td>
</tr>
<tr>
<td>Average Height (cm)</td>
<td>165.6 +/- 5.94 cm</td>
</tr>
<tr>
<td>Average Body Mass (kg)</td>
<td>62.9 +/- 7.8 kg</td>
</tr>
<tr>
<td>Max Heart Rate (bpm)</td>
<td>202.2 +/- 7.2 bpm</td>
</tr>
</tbody>
</table>
Study Design

- Prospective
- Quantitative comparative

August
- preparation

September-October
- data collection

January-April
- data analysis
Methods

- Measurement Equipment
  - FirstBeat system
  - Surveys
- Content
  - Practice warm-up
  - Game warm-up
  - Practice and game criteria
Figure 1.1 and 1.2. Spearman's rank correlation coefficients shown both for variables compared between practice and games as well those compared within similar events. *All correlations were found to be significant at the .01 level with the exception of Training Impulse*.
### Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
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</thead>
<tbody>
<tr>
<td>Practice Rate of Perceived Exertion</td>
<td>100</td>
<td>1.00</td>
<td>8.00</td>
<td>4.2657</td>
<td>1.30789</td>
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<tr>
<td>Practice Perceived Readiness</td>
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<td>2.00</td>
<td>10.00</td>
<td>6.2888</td>
<td>1.25075</td>
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<tr>
<td>Practice Training Impulse</td>
<td>100</td>
<td>.27</td>
<td>18.57</td>
<td>7.5347</td>
<td>2.61867</td>
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<tr>
<td>Practice Caloric Expenditure</td>
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<td>15.62</td>
<td>106.56</td>
<td>59.4665</td>
<td>17.43314</td>
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<tr>
<td>Game Rate of Perceived Exertion</td>
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<td>3.00</td>
<td>9.00</td>
<td>6.4800</td>
<td>1.71103</td>
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<tr>
<td>Game Perceived Readiness</td>
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<td>3.00</td>
<td>10.00</td>
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<td>1.44821</td>
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<td>Game Training Impulse</td>
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<td>62.86</td>
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<td>Game Caloric Expenditure</td>
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<td>44.47</td>
<td>326.58</td>
<td>221.7880</td>
<td>47.15349</td>
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<td>Valid N (listwise)</td>
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</table>
Figure 2.1 and 2.2. TRIMP and RPE Mean and Standard Deviation’s shown for both practice and game event selections.
Discussion

- Consistency across events important to analysis
- Work load measurable in TRIMP or kcal
- Low correlation in variables between practice and game

Other research:
- Longer duration, higher heart rate, greater fatigue
- Short duration, high intensity, increase performance

Our research:
- Varying duration, content between practice and game
- Low correlation between RPE and PR linked to environment
Conclusion

- Why is there a low correlation?

- Future direction...
  - What is the best combination of variables?
  - What does the data look like within practices/games?
  - Can we eliminate time as a factor with using TRIMP/min?

- Challenges/changes
Acknowledgements

- Dr. Tom Palmer
- College of Allied Health Faculty
- Department of Athletics Faculty
References

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