Infographic. Thermoregulatory impairment in athletes with a spinal cord injury

Katy Ellen Griggs,1,2 George Havenith,3 Michael J Price,4 Victoria L Goosey-Tolfrey1

Presented in this infographic is a summary of studies investigating the thermoregulatory impairment of athletes with a spinal cord injury (SCI) during real-world sporting scenarios.1–3 The infographic depicts the heightened thermal strain experienced by athletes with tetraplegia (high-level lesions), both compared with athletes with paraplegia (low-level lesions) and within the sport of wheelchair rugby. In addition to the cooling interventions presented, the infographic highlights the significant need for appropriate interventions to reduce the risk of overheating and potential performance decrements.4 This infographic was field tested with those who work within a wheelchair sports environment, ranging from practitioners, researchers, athletes with an SCI and sports clinicians. The experimental studies were also designed in consultation with the wheelchair rugby coaches and players.

1School of Sport, Exercise and Health Sciences, The Peter Harrison Centre for Disability Sport, The National Centre for Sport and Exercise Medicine, Loughborough University, Loughborough, Leicestershire, UK
2Department of Engineering, School of Science and Technology, Nottingham Trent University - Clifton Campus, Nottingham, UK
3Design School, Environmental Ergonomics Research Centre, Loughborough University, Loughborough, Leicestershire, UK
4School of Life Sciences, Centre for Sport, Exercise and Life Sciences, Coventry University, Coventry, UK

Correspondence to Prof Victoria L Goosey-Tolfrey, The Peter Harrison Centre for Disability Sport, School for Sport, Exercise and Health Sciences, The National Centre for Sport and Exercise Medicine, Loughborough University, Loughborough, Leics LE11 3TU, UK; v.l.tolfrey@lboro.ac.uk

Acknowledgements The authors would like to thank Adam Pryor, National Centre for Sport and Exercise Medicine, Loughborough University who designed the infographic.

Contributors All the authors were all involved in the design, analysis and contributed towards writing of the manuscripts of the studies highlighted in the infographic. All authors wrote the manuscripts highlighted in the infographic. KEG and VLG-T were involved in the main design of the infographic.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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Thermoregulatory impairment in athletes with a spinal cord injury

A spinal cord injury (SCI) results in:

- Sweating response
- Sweating response
- Blood flow control

Lab setting®
60 min intermittent sprint exercise

<table>
<thead>
<tr>
<th>Distance covered</th>
<th>Core temperature change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetraplegia</td>
<td>2.6 km</td>
</tr>
<tr>
<td>Paraplegia</td>
<td>3.0 km</td>
</tr>
</tbody>
</table>

Game setting®
Indoor wheelchair rugby match, game clock = 70 mins

<table>
<thead>
<tr>
<th>Distance covered</th>
<th>Core temperature change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetraplegia</td>
<td>4.8 km</td>
</tr>
<tr>
<td>Non-SCI</td>
<td>5.5 km</td>
</tr>
</tbody>
</table>

The core temperature of athletes with tetraplegia rises rapidly during exercise (in a 19-20°C environment) causing an overheating risk and potential performance decrements.

Possible practical solution®
For athletes with tetraplegia

Ice vest before exercise and water sprays during breaks in play

Summary

- TP: heightened thermal strain during simulated and wheelchair rugby match play compared to PP and non-SCI.
- Employ appropriate cooling methods, e.g. ice vests and water sprays.
- Alternative practical methods may also be beneficial.®

References

Acknowledgements
This infographic is a summary of PhD studies carried out by Dr Katy Griggs at the Peter Harrison Centre for Disability Sport, Loughborough University. Designed by Adam Pryor, National Centre for Sport and Exercise Medicine, Loughborough University.

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Accepted 16 December 2018

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