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## *Infographic: Thermoregulatory impairment in athletes with a spinal cord injury*

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**Infographic:** Thermoregulatory impairment in athletes with a spinal cord injury

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Presented in this infographic is a summary of studies investigating the thermoregulatory impairment of athletes with a spinal cord injury during real-world sporting scenarios.<sup>1-3</sup> The infographic depicts the heightened thermal strain experienced by athletes with tetraplegia (high level lesions), both compared to 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.<sup>4</sup> 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.

## References

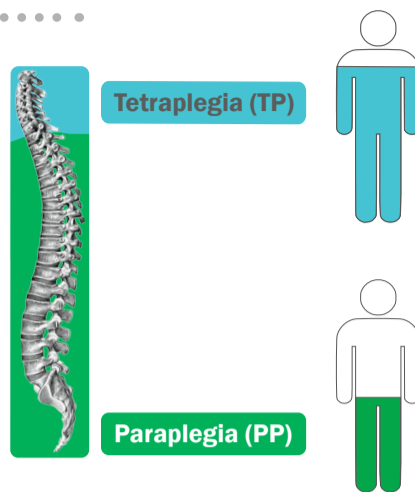
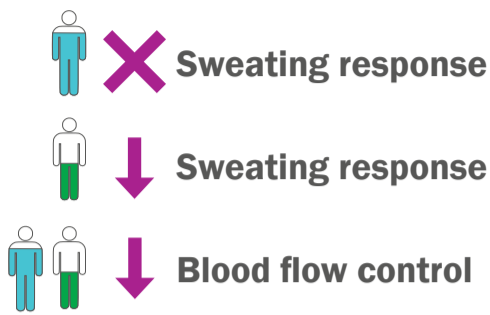
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2. Griggs, K.E., Havenith, G., Price, M.J., Mason, B.S. and Goosey-Tolfrey, V.L. (2017). Thermoregulatory Responses During Competitive Wheelchair Rugby Match Play. *Int J Sports Med.* 38, 177-183. DOI: 10.1055/s-0042-121263
3. Griggs, K.E., Havenith, G., Paulson, T.A.W., Price, M.J. and Goosey-Tolfrey, V.L. (2017). Effects of cooling before and during simulated match play on thermoregulatory responses of athletes with tetraplegia. *J Sci Med Sport.* DOI: 10.1016/j.jsams.2017.03.010
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The authors would like to thank Adam Pryor, National Centre for Sport and Exercise Medicine, Loughborough University who designed the infographic.

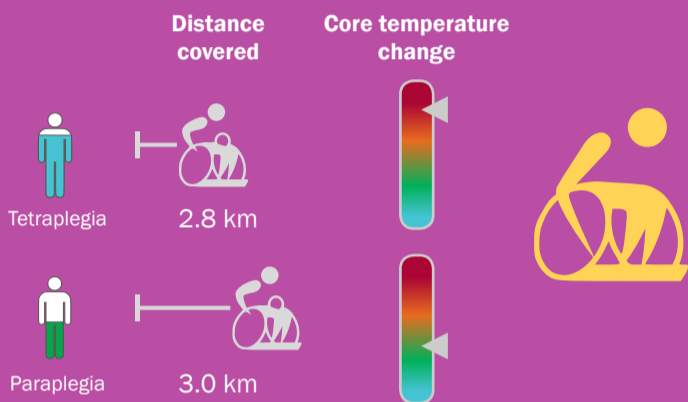
# Thermoregulatory impairment in athletes with a spinal cord injury

A spinal cord injury (SCI) results in:



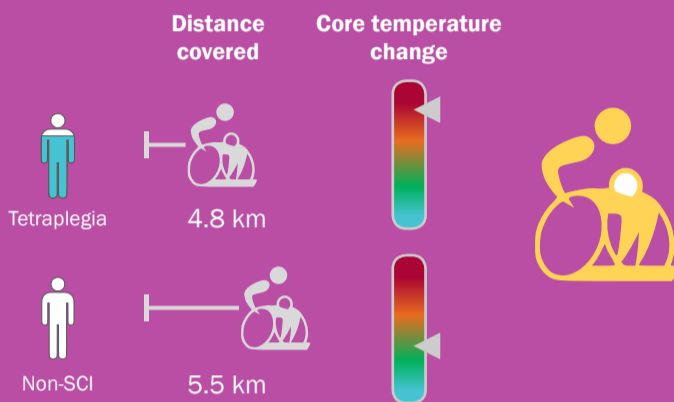
## Lab setting<sup>①</sup>

60 min intermittent sprint exercise



## Game setting<sup>②</sup>

Indoor wheelchair rugby match, game clock ≈70 mins



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

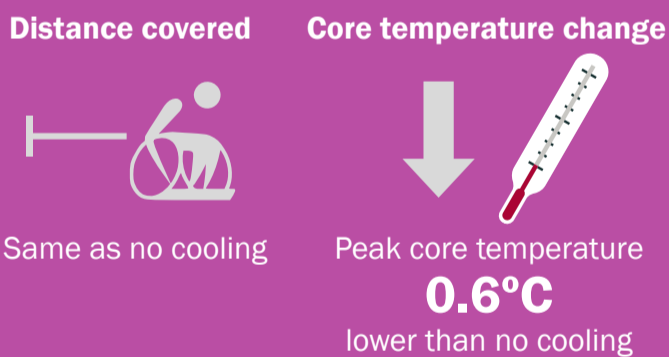


## Possible practical solution<sup>③</sup>

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.<sup>④</sup>

### References

- ① Griggs et al. (2015). Int J Sports Physiol Perform. DOI: 10.1123/ijssp.2014-0361
- ② Griggs et al. (2017). Int J Sports Med. DOI: 10.1055/s-0042-121263
- ③ Griggs et al. (2017). J Sci Med Sport. DOI: 10.1016/j.jsams.2017.03.010
- ④ Griggs et al. (2015). Sports Med. DOI: 10.1007/s40279-014-0241-3

### Acknowledgements

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Wheelchair sport images are adapted from Parutakupiu's wheelchair rugby pictogram, via a Creative Commons BY-SA licence: [commons.wikimedia.org/wiki/File:Wheelchair\\_rugby\\_pictogram\\_\(Paralympics\).svg](https://commons.wikimedia.org/wiki/File:Wheelchair_rugby_pictogram_(Paralympics).svg)

