

LETTER TO THE EDITOR

Thermoregulatory responses in wheelchair tennis players: a pilot study

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Veltmeijer *et al.*¹ seek to compare thermoregulation in wheelchair tennis players with and without spinal cord injury during an outdoor competitive tennis match.

They postulate that the nervous transmission of thermoregulatory signals is interrupted in a spinal cord-injured player due to the inability to vaso-dilate and sweat below the level of the cord transection.

The ability to vaso-constrict and vaso-dilate and sweat is dependent upon the integrity of the sympathetic nervous system, which exits between T1 and L2. It should be noted that because of this limited exit the sympathetic dermatomes do not correspond to the somatic dermatomes. A patient with a transection of the spinal cord at T6 will have preserved sympathetic outflow as low as the umbilicus. An incomplete lesion of the spinal cord results in a preservation of the sympathetic innervation throughout the body. For this reason, investigations on the loss of control of the sympathetic nervous system have classically been carried out in patients with complete transections of the spinal cord above the sympathetic outflow, that is, above T1. This was the methodology that we employed in 1958 when we studied the thermoregulation in patients with complete cord transections, and again in 1991 when we returned to the problem by studying nine patients with complete transections of the cord, six in the cervical region.^{2,3} Price and Campbell⁴ followed a similar methodology in 2003 and they studied patients with complete lesions.

The authors state that there was no difference between the spinal injury patients and the non-spinal injury patients in the skin temperature in the upper region. This is not surprising since in two

of the patients the lesions were incomplete and in the third one who had a complete lesion at T6 the sympathetic innervation could be preserved over much of the body.

I would agree that the study has limitations. I would suggest that they follow the classical pattern of studying patients with complete cord transections above the sympathetic outflow to make comparisons with the subjects without a spinal cord injury. From my experience, patients with transections of the cervical cord can play tennis at an extraordinary high level.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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- 1 Veltmeijer MT, Pluim B, Thijssen DH, Hopman MT, Eijssvogels TM. Thermoregulatory responses in wheelchair tennis players: a pilot study. *Spinal Cord* 2014; **52**: 373–377.
- 2 Guttman L, Silver J, Wyndham CH. Thermoregulation in spinal man. *J Physiol* 1958; **142**: 406–419.
- 3 Silver JR, Randall WC, Guttman L. Spinal mediation of thermally induced sweating. *J Neurol Neurosurg Psychiatry* 1991; **54**: 297–304.
- 4 Price MJ, Campbell IG. Effects of spinal cord lesion level upon thermoregulation during exercise in the heat. *Med Sci Sports Exerc* 2003; **35**: 1100–1107.