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Quick Review of Model System Research

Ultrasonographic median nerve changes after repeated wheelchair transfers in individuals with paraplegia, and their relationship with subject characteristics and transfer skills[1]*

What is the study about?

This study examined the effect of wheelchair transfers and transfer technique on wheelchair users' median nerve, which is located in the wrist; damage to the nerve can contribute to carpal tunnel syndrome. It linked ultrasound measures of the median nerve with how an individual performed wheelchair transfers and other factors such as weight.

Who participated in the study?

Participants (N=30) were wheelchair users with SCI who were older than 18. They were recruited at the 2013 and 2014 at the National Veterans Wheelchair Games and at the 2014 Paralyzed Veterans of America Buckeye Games, as well as by fliers and research registries. In order to be included in the study, participants needed to have had non-progressive paraplegia for at least one year prior and be able to make transfers in less than 30 seconds with or without assistive equipment.

How was the study conducted?

A physical therapist observed study participants transfer and assessed their techniques (using the Transfer Assessment Index). They had a physical examination of the wrist to determine symptoms of carpal tunnel syndrome. Ultrasound images were taken to measure the size and swelling of the nerve. These were analyzed to assess changes in response to transfers and how these changes related to specific transfer techniques.

What did the study find?

This is the first study to find a statistically significant correlation between wheelchair transfers and size of the median nerve. Repeated transfers are associated with acute increases in nerve size. The researchers also discovered that poor transfer technique and higher weight was associated with a larger median nerve size. They suggest that using proper transfer technique such as appropriate hand position and use of hand grips may reduce the likelihood of developing chronic injury to the nerve and possibly carpal tunnel syndrome.

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[1] Hogaboom, N. S., Diehl, J. A., Oyster, M. L., Koontz, A. M., & Boninger, M. L. 2015. Ultrasonographic Median Nerve Changes After Repeated Wheelchair Transfers in Persons With Paraplegia: Relationship With Subject Characteristics and Transfer Skills. *PM&R*. http://doi.org/10.1016/j.pmrj.2015.08.001

* The contents of this quick review have been reviewed by the corresponding author of the original study.