Upper Limb Function in People With Upper and Lower Limb Loss 8 Years Postinjury: The Armed Services Trauma Outcome Study (ADVANCE) Cohort Study

Watson. F, et al DOI: https://doi.org/10.1093/ptj/pzae082
Published in the Physical Therapy and Rehabilitation Journal on 2nd July 2024. Access the full article *here*

What is the ADVANCE Study?

The ADVANCE Study investigates the physical and psycho-social outcomes of battlefield casualties in the long-term. The study includes 1,145 male participants who served in the armed forces and were deployed to the conflict in Afghanistan (2002-2014). Half of the cohort have sustained serious battlefield injuries, and the other half are the comparison group of non-injured servicemen.

What does this piece of ADVANCE research look at?

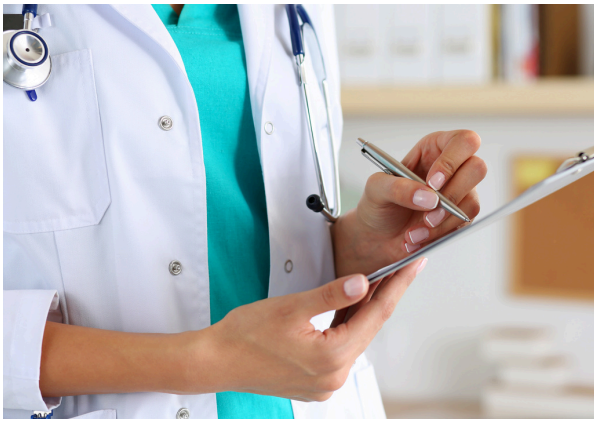
In this study we looked at the effect of combat injury on upper limb (shoulders, arms, and hands) function. Upper limb function is important for everyday life, but combat injury can cause changes to function, strength, coordination or pain. This study looks at the baseline data collection of participants about 8-years after combat injury (or deployment for the comparison group). We compared the combat-injured group to the comparison group, and we also compared different types of injury; participants with injuries that did not result in limb loss, participants with lower limb loss, and participants with upper limb loss.

What did we measure?

This study used a questionnaire called the Disability of the Arm, Shoulder, and Hand (DASH) questionnaire. The DASH questionnaire asks about ability to perform functional daily tasks and considers the impact of any upper limb problems on someone's social life, ability to work, comfort, and ability to sleep.

What were the findings?

We found that combat-injured participants had more upper limb disability than the comparison group. There was a small amount of evidence that participants with lower limb loss had slightly more upper limb disability than the comparison group, but when we controlled for things like age this became more certain, and we found that participants with lower limb loss had 1.7 times increased odds for having more upper limb disability than the comparison group.



Upper limb disability in participants with upper limb loss was no different to those with major amputations (e.g., below elbow) and partial amputations (e.g., fingers/thumbs), though when combined they had 8.3-times greater odds for more upper limb disability than the comparison group. Participants with non-amputation injuries had 2.7-times greater odds for having more upper limb disability. Even though ADVANCE participants with upper limb loss had much higher levels of disability, this does seem to be less than other similar populations in the literature. There are no existing reports of upper limb disability in lower limb amputees or in those with non-amputation combat-injuries.

What are the next steps?

Upper limb disability in all but those with upper limb loss was generally low, but we will continue to monitor the whole population through future data collections. However, given the lack of information in the literature on upper limb disability in those with non-amputation injuries, we also aim to investigate these specific upper limb injuries in more detail. This work has also inspired ADVANCE-adjacent research consisting of interviews with people with lower limb loss to understand how they use and rely on their upper limbs.

Many thanks to the ADVANCE cohort for taking part and to all ADVANCE funders for their generous support.