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## ***The Relationship between Combat-related Traumatic Amputation and Subclinical Cardiovascular Risk***

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### ***What is the ADVANCE Study?***

The ADVANCE Study investigates the physical and psycho-social outcomes of battlefield casualties in the long-term. The study has 1,144 participants who served in the Afghanistan War of 2002-2014. Half of the cohort have sustained serious battlefield injuries, and the other half are the control group of non-injured servicemen. The participants attend 6 study visits over a 20-year period.

### ***What does this piece of ADVANCE research look at?***

In this study we examined the relationship between combat-related traumatic injury, particularly traumatic amputation, and subclinical measures of cardiovascular risk. This was done with the data collected at the ADVANCE baseline visits. By 'subclinical measures' we mean changes that are not detectable by usual clinical tests.

These subclinical cardiovascular risk measures were compared between the amputees, the injured non-amputees and the uninjured group, in order to find out whether an amputation affects these risk measures.



### ***What did we measure?***

A variety of cardiovascular markers were looked at. These included markers of systemic inflammation (from blood samples), obesity, functional status (as measured by the six-minute walk test) and indirect measures of atherosclerosis and blood flow to the heart muscle. These markers are early indicators of potentially increased risk of future cardiovascular disease development.

### ***What were the findings?***

We found that the above measures of cardiovascular risk were relatively greater among injured amputees compared to injured non-amputees and uninjured participants. In other words, having a traumatic amputation seemed to increase these risk measures. However, it should be emphasised that the levels observed in amputees were still largely within the normal range.

### ***What are the next steps?***

We plan to obtain more robust activity and lifestyle data (e.g. on diet and exercise) using wrist-worn physical activity monitors during the ADVANCE follow-up visits. It will also be interesting and important to find out how the risk measures change over time, e.g. whether the identified differences between the amputees and non-amputees in the ADVANCE cohort will increase, lessen or stay the same over time. Measuring the changes over time will be important to better understand the clinical and practical significance of these findings.

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