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The Influence of Physical and Mental Health Mediators on the Relationship Between Combat-Related Traumatic Injury and Ultra-Short-Term Heart Rate Variability in a U.K. Military Cohort: A Structural Equation Modeling Approach

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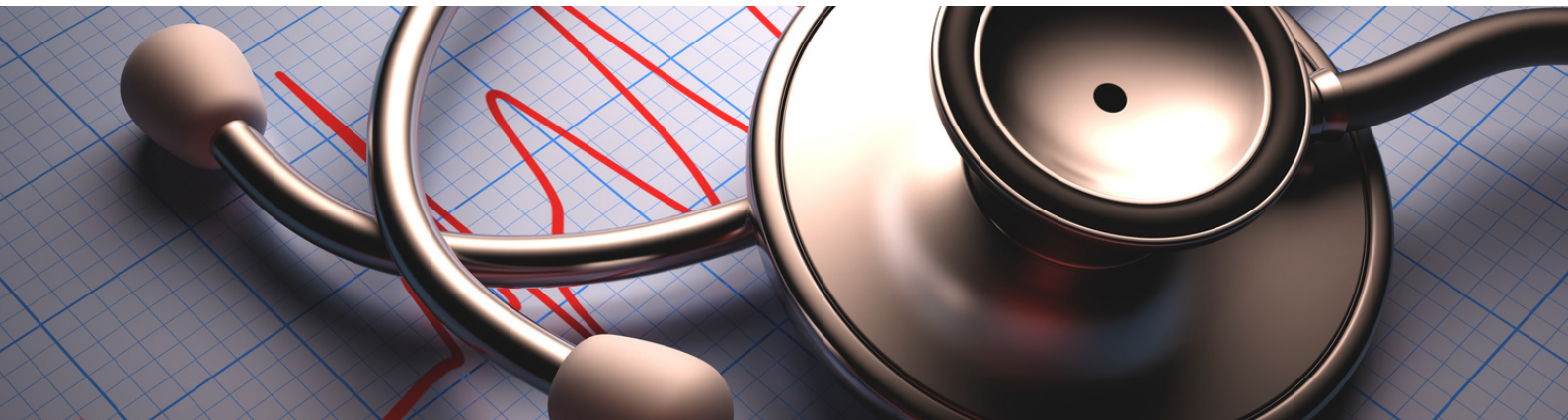
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What is the ADVANCE Study?

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?

Heart rate variability (HRV) looks at the variation in time between each heartbeat. More variation means higher HRV, which is an indication of better wellbeing and better health outcomes. HRV is important for functions such as maintaining your heart rate. We previously showed that, overall, HRV was found to be lower in the injured ADVANCE group compared to the uninjured group. In this study we looked at factors that might explain the link between combat injury and HRV.



What did we measure?

Previous research in other military cohorts has found that reduced physical function and physical health are explained by combat injury. In addition, higher rates of depression and anxiety were previously reported in the injured ADVANCE group compared to the uninjured group. The factors looked at in this piece of research were **depression**, **anxiety**, the **6-minute walk test** and **body mass index (BMI)**.

What were the findings?

We found that the relationship between combat injury and HRV was **not** found to be mediated or explained by BMI, depression or anxiety. However, the 6-minute walk test - which is a measure of physical function - significantly mediated or “explained” the link between combat injury and HRV.

What are the next steps?

These findings provide insights into the complex relationship between combat injury and HRV. The results suggest that while depression, anxiety or BMI did not ‘explain’ the lower HRV as a result of injury, greater physical function may lead to improvement in HRV levels. Individuals with traumatic injury may therefore benefit from increased physical function and movement. These findings are important when designing rehabilitation interventions for those with combat injuries. However, the findings are limited as they are only based on one point in time. Data from the ADVANCE follow-up visits will be analysed next to find out what happens over time.

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