



ARMED
SERVICES
TRAUMA
REHABILITATION
OUTCOME
STUDY

The underlying mechanisms by which PTSD symptoms are associated with cardiovascular health in male UK military personnel: The ADVANCE cohort study

Dyball D, et al. DOI: <https://doi.org/10.1016/j.jpsychires.2023.01.010>

Published in the Journal of Psychiatric Research in March 2023; 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 has 1,145 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?

Those who experience post-traumatic stress disorder (PTSD) have been shown to be at higher risk of developing cardiovascular disease. The mechanisms by which this occurs are thought to be varied, including changes to lifestyle factors (e.g. exercise or diet) but also direct changes to your heart or hormones. PTSD has a variety of different symptoms, but it is thought that hyperarousal - the symptoms of feeling more easily startled/jumpy - could be primarily responsible for the changes that contribute to cardiovascular risk. However, not many studies have actually looked into PTSD and cardiovascular health. In this piece of research we investigated whether the severity of specific PTSD symptoms was associated with cardiovascular health in the ADVANCE Study cohort.



PTSD symptoms

We looked at four symptom clusters: intrusive thoughts (e.g. re-experiencing PTSD symptoms), hyperarousal (e.g. increased startle response), avoidance behaviours (e.g. behaviours engaged in to avoid reminders of the traumatic event) and emotional numbing (e.g. difficulty feeling connected to loved ones or feeling positive).

Cardiovascular risk

We looked at three areas of the cardiovascular system: cardiometabolic effects (e.g. blood pressure, cholesterol), inflammation (e.g. high sensitivity C-reactive protein) and haemodynamic functioning (e.g. heart rate).

What were the findings?

Our findings showed that multiple PTSD symptom clusters, rather than just hyperarousal, were associated with a variety of cardiometabolic effects and haemodynamic functioning indicators, but not inflammation. Specifically:

- Avoidance behaviours were associated with systolic blood pressure.
- Emotional numbing was associated with heart rate and insulin resistance.
- Hyperarousal was associated with triglycerides.
- Intrusive thoughts were associated with visceral adipose tissue and systolic blood pressure.

What do the findings mean?

The theory that hyperarousal is responsible for increased cardiovascular risk in those with PTSD may be an oversimplification. We found that multiple symptoms were associated with cardiovascular risk factors, specifically cardiometabolic effects and haemodynamic functioning. It is likely that the associations we observed between PTSD symptoms and cardiovascular health represent an early sign of worsening cardiovascular health, but more research is needed to understand this better. ADVANCE will continue to look into this over the coming years.

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