

GOING FROM STRENGTH TO STRENGTH



Photo by SSgt Mark Jones RLC

CLOSING IN ON COMPLETING FIRST FOLLOW-UP

Thank you to all participants who have now attended their first follow-up visit. The 1000th participant came in for their first follow-up in early April - scroll down to page 7 for a photo. We still have 145 participants left to book in for follow-up 1 - please reach out to us if you are one of them! The second of the five follow-ups has also started, with the addition of activity monitors. You can read more about this on page 6. On the same page you will also find a video message to participants from the ADVANCE Senior Project Manager Emma Coady.

THE DATA NEVER ENDS

Since the first ADVANCE baseline publication came out, it seems we can't stop more papers being published! You can read about the latest two publications on page 3 of the newsletter. One of the papers is on post-traumatic stress disorder (PTSD) and cardiovascular health, and the other one is on combat injury and heart rate variability (HRV). You can find details of all ADVANCE publications to date on our [website](#).

All ADVANCE findings are shared with relevant and interested parties to make sure we maximise the impact from the study. In the next newsletter we will tell you more about how we disseminate ADVANCE findings.

Our data team recently worked out the total number of data points that were collected from all the participants at their baseline visits. Are we talking hundreds, thousands, or more...? Find out on page 6.

WELCOMING GENERAL SIR NICK PARKER

We are delighted to welcome General Sir Nick Parker as the new Chairman of the ADVANCE Charity Board of Trustees. He was appointed in March, and we look forward to working with him. You can read more about his appointment on page 3.

IN OTHER NEWS...

In this newsletter you will also find an interview with ADVANCE participant Ryan Knight (page 2). Among other things, he talks about his journey with the Supporting Wounded Veterans (SWV) charity. On page 6 you can read about a new addition to the ADVANCE tests - the activity monitor. These have been introduced for follow-up 2.

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PARTICIPANT VIEW: Ryan Knight

When and where were you deployed? During my time in the Army (2001-2010), I served on various operational tours, including Iraq and Afghanistan, the latter resulting in serious injury calling time on my military career

Why did you choose to take part in ADVANCE? Taking part in ADVANCE has given me an opportunity to help shape pathways for future veterans. Besides having a health check at each study milestone, contributing to the overall study outcomes was my main driver. Since 2020 I have also been on the ADVANCE Participant Panel which helps shape the strategic direction of the study by focussing on retention of participants and maximising impact.

What have you been up to since you left active service? After leaving the military I moved to Australia for a fresh start. I studied health and safety and worked within the construction industry. Medical complications and need for surgery resulted in my return to the UK in 2019. I now work as operations manager at Works And Works Again Ltd. We specialise in creating, building and installing sustainable exhibition stands for a variety of clients. Outside of my day to day work I am a charity ambassador for Supporting Wounded Veterans. You can read about my journey with them below.



Ryan enjoying a hike in the Lake District.

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Taking part in ADVANCE has given me an opportunity to help shape pathways for future veterans.

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What other interests have you got? Everyone who knows me will expect my beloved labradoodle Byron to always be by my side (pictured below). I flew him back from Australia with me, and he comes to work with me every day. My wife Olivia keeps me on the straight and narrow and provides lots of support. I'm a huge Newcastle United supporter and particularly enjoy watching them this season... Getting time up in the hills surrounded by likeminded people always gives me a boost too.



Ryan with his labradoodle Byron.

Ryan on Supporting Wounded Veterans (SWV)

Upon my return to the UK in 2019 and following additional surgeries I was pretty lost as to what to do next. My physical health, PTSD, general mood and self-esteem were at a real low. Having returned from Australia and being unemployed, I turned to SWV for some assistance.

SWV is a small military charity who do things a little differently. They have been operating since 2012 but mainly under the radar. They more often than not get you engaged with the charity by means of what they call 'sports habilitation' (skiing, sailing, cycling etc.). Amongst many other events each year, they take 20-25 injured veterans skiing to Switzerland, the skiing being fully adaptive and accessible to all.

I was fortunate enough to take part in the 2020 veterans' ski week. The week was certainly much more than just the skiing. Once there, you are given what I would describe as a 'wrap around' package - access to pain management services, occupation, training and employment assistance, mental health services and mentoring, to name a few.

It was a whirlwind week, but I left there full of confidence and positivity, with clear direction going forward. The other thing about SWV is the length of time veterans engage with them, the average being 12-18 months. The support continues long after you get home. You get out what you put in.

Due to this level of 'wrap around support' SWV assists a smaller number of veterans (around 100) each year with the ultimate objective of getting everyone back into meaningful employment and/or training. The sports week simply acts as a springboard into other pathways.

In 2020 I was invited to join the Veterans Ambassador Board at SWV where I enjoy shaping the future of the charity for other veterans with my peers. SWV is always looking for veterans to support - if anyone is interested to learn more about the charity's services, you can check out their website here: www.supportingwoundedveterans.com/.



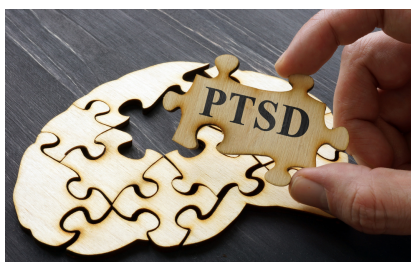
Publications update

As the ADVANCE Study progresses and more and more data are collected from the participants, new findings start emerging from the data. These findings lead to publications by the brilliant ADVANCE researchers. In this newsletter we want to highlight not just one, but two recent publications.

Association between PTSD and cardiovascular health

Those who experience post-traumatic stress disorder (PTSD) can 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. However, not many studies have actually looked into PTSD and cardiovascular health. We looked at whether the severity of specific PTSD symptoms was associated with cardiovascular health in the ADVANCE cohort.

Our findings showed that multiple PTSD symptoms were associated with a variety of cardiovascular measures. The PTSD symptoms we looked at included: intrusive thoughts, hyperarousal, avoidance behaviours and emotional numbing. These were found to be associated with blood pressure, heart rate, insulin resistance and visceral adipose tissue.



More research is needed to understand these relationships better, and we will continue to look into this over the coming years. You can read more about the findings in our blog post [here](#).

Relationship between combat injury and heart rate variability (HRV)

Findings on the relationship between cardiovascular disease risk and combat-related traumatic injury in the ADVANCE cohort were reported previously. Following from this, we investigated heart rate variability (HRV). 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 breathing and maintaining your heart rate.

HRV studies in military populations are limited. We therefore studied, for the first time, the relationship between combat trauma and HRV in a military cohort - the ADVANCE cohort.

HRV was found to be lower in the injured participants compared to the uninjured ones, even almost 8 years after the combat injury occurred. In addition, participants with more severe injuries or blast injuries had lower HRV.

These findings suggest relatively poorer health and wellbeing in participants with combat injury compared to those without combat injury. Fortunately, something can be done about this, as there are ways to elevate HRV. However, this is yet to be investigated in a military population such as the ADVANCE cohort. Therefore, our findings may be used to inform and guide interventions targeted for this study population. The next step is to explore the underlying mechanisms of the relationship between combat injury and HRV, such as the influence of mental and physical health factors. You can read more about our findings [here](#).



Welcoming General Sir Nick Parker

We are delighted to welcome General Sir Nick Parker (right) as the new Chairman of the ADVANCE Charity Board of Trustees.

Following the sad news in November 2022 of the passing of Lord Boyce who had been Chairman of the ADVANCE Charity since 2019, the charity's trustees put a search process in place and are delighted at the outcome.

The new Chairman brings a wealth of experience from a long and distinguished career and, in particular, his service in Afghanistan provides him with a unique perspective on the ADVANCE Study.

Many thanks to Professor Sir Anthony Newman Taylor who stepped up to act as Interim Chair of the ADVANCE Charity between November 22 and March 23.



Dan becomes a doctor!

Huge congratulations to Dan Dyball who completed his PhD in March and can now call himself Dr Dyball! He is one of the most long-standing ADVANCE team members, having been with the study since 2017, and the first ADVANCE PhD student to complete their PhD. You might have had call from Dan about your ADVANCE visit or seen him around at Stanford Hall. Dan's PhD project was on *'Injury, mental illness, psychological thriving and cardiovascular health amongst combat injured and uninjured UK military servicemen'*. Congratulations Dr Dyball!

Prof Bull receives FiMT Lifetime Achievement Award

Congratulations to our very own Professor Anthony Bull, ADVANCE Project Board member and one of the ADVANCE Study leads, who has received the Forces in Mind Trust (FiMT) Lifetime Achievement Award.

Anthony is a Professor of Musculoskeletal Mechanics at Imperial College London and a leading figure in the field of joint mechanics and their clinical application. His work has had wide-reaching benefits for both service personnel and veterans.

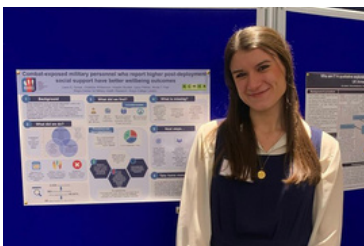
Anthony is also Director of Imperial's Centre for Blast Injury Studies (CBIS) which aims to improve the mitigation, treatment and rehabilitation of blast injuries in military personnel. The work of CBIS has resulted in pioneering changes to military vehicle design and floor mat policies. The Centre's work has also improved the assessment and timing of amputations following heel injuries, with consequent reduction in pain and futile surgery.

Anthony commented: 'It is a little embarrassing to receive such an award when there is so much more to be done for those transitioning from military service to civilian life due to physical injuries. But I am very grateful for the spotlight the award places on this important area and for the very many research colleagues who have worked so hard at CBIS and the ADVANCE Study - both are such significant engines for translational research that benefits serving personnel and veterans alike.'



Spreading the word on ADVANCE

The ADVANCE team attended the FiMT Research Conference and King's Centre for Military Health Research (KCMHR) Veterans' Mental Health Conference in March 2023.



ADVANCE PhD student Laura Grover (left) won a prize for her poster at the KCMHR conference. Her poster was titled *'Combat-exposed military personnel who report higher post-deployment social support have better wellbeing outcomes'*. Big congrats to Laura!

ADVANCE researchers Anna Verey and Howard Burdett (right) presented the ADVANCE-INVEST study at the FiMT Research Conference. The project looks at injured veterans' experiences of transition from military to civilian life.



Both conferences took place at the Royal College of Psychiatrists in London. A few lucky ADVANCE team members (left) went along to support the presenters and learn about the latest developments in the field.

Have your contact details changed?

Let us know by contacting us directly or by completing our online Contact Form via this QR code:



MEET THE TEAM - JOCELYN KESHET PRICE

What is your role within ADVANCE? I'm the senior research nurse in the team. I see the participants at their visits to Stanford Hall and make sure they know what they are letting themselves in for! We are always available for participants to call us and make sure they all get a report on the tests they've undergone - a bit like an MOT report...

What jobs have you had before joining ADVANCE? I trained as a nurse at Middlesex Hospital in London way back when. I've worked in surgery, A&E, older people's medicine, stroke care and been a school matron. I've now been in clinical research since 2010, leading research into things such as skin conditions, hip replacements, blood clotting drugs and Covid-19 vaccines. Alongside nursing, I also have a PhD in Old English Literature and Language and have kept a flock of sheep.

What is the best thing about working within ADVANCE? Meeting the participants, hearing their stories and getting to know them, having a laugh with them, talking through any questions they have and hearing how keen they are to contribute to the future for other service personnel.

What are the biggest challenges of your ADVANCE role?

One of the hardest things is that the participant visits are quite spaced out, so it may be several years before we see some of the participants again. I suppose we can all grow old together! I would like to remind our participants: 'Don't forget about us - we are always looking forward to seeing you back again.'

What is your favourite meal? Roast Sunday meal with lots of veggies - home produced lamb with mint and garlic can't be beaten, yummy gravy made from real stock, and most importantly LOTS of homemade crispy roasts.

What's the last book you read? I'd like to say it was something hugely intellectual, but it was probably a murder mystery - I have a long drive to work at the moment (I still live in Norfolk), and I love audiobooks on my journeys.

If you could see all our participants together, what would you say to them? The drinks are on me!

You are going to be stuck on a desert island - who are you taking with you? My wife, dog and cat (plus a few sheep too if I can). I won't need a Bear Grylls type, as my survival instincts are pretty good and I'm great at starting fires.

What three words would your friends or partner use to describe you? Well, I asked a few of them and some were so rude! The most suggested though were funny, caring and shepherdess.

What was no. 1 in the UK charts on the day you were born? Apparently it was 'Lovesick Blues' by Frank Ifield - I suppose I should have a listen!



Sarah



Bharti

Hello and goodbye

Earlier this year we said goodbye to our lovely radiographer Jasmin Hussain. We wish her well in her future adventures!

But once again, the ADVANCE team is growing. We are delighted to welcome Sarah Dixon-Smith and Bharti Patel.

Sarah joined ADVANCE as a research associate in March 2023. Her work focuses on the long-term outcomes of acute medical and surgical trauma care interventions. Sarah has a background in historical research, with degrees in archaeology and public history, and a PhD in blast injury and chronic pain

Bharti is our new research radiographer. She brings with her a wealth of experience, after working in radiography for several decades. You might well see her in Stanford Hall at your next ADVANCE visit.



YOUR ADVANCE DAY EXPLAINED:

Activity monitors

There is an exciting addition to the ADVANCE tests for the second follow-up: activity monitors (also called motion sensors or accelerometers).

We currently ask participants about their activity and sleep levels in the ADVANCE questionnaires, and this gives us quantitative data. However, questionnaires can be difficult to fill in and interpret. The data collected via questionnaires also tend to miss a lot of the everyday activities we do throughout the day. With the activity monitors we are able to collect much higher resolution data every second of every day. This allows us to get much richer insights into day-night rhythms and patterns of everyday activities.



What can the activity monitors tell us, and how do they work?

The activity monitors, which are worn on the wrist, record acceleration values every fraction of a second. The acceleration values are then processed with a series of algorithms to translate the acceleration data into behaviourally meaningful metrics, such as sleep disturbances, steps taken at different strides, and hourly and daily variations in activity. These data will be incredibly useful for many aspects of the study. For example, we will be comparing activity and sleep data between the injured and uninjured participants, as well as between amputees and the injured non-amputee cohort. We will also be able to look at the relationship between activity and disease outcomes.



Prof Melvyn Hillsdon talking about activity monitors.

In the video above Professor Melvyn Hillsdon explains how the activity monitors work, why we are using them in the ADVANCE Study, and what information we can get from them.

What does this mean for you?

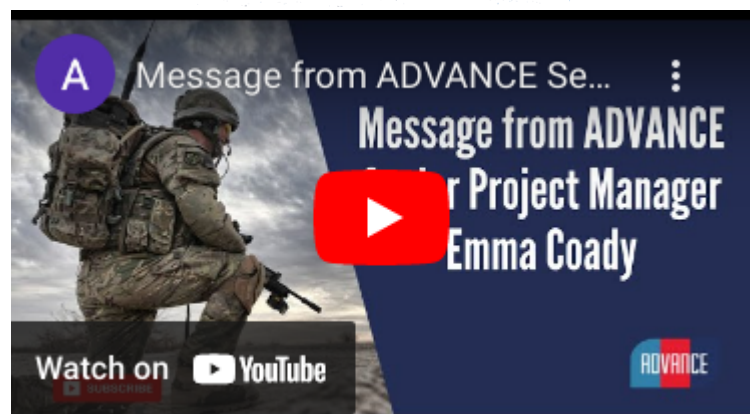
The detailed daily activity data isn't something we can collect in one day during your ADVANCE visit. We will therefore ask you to keep the activity monitor on your wrist for a total of 10 days as you go about your daily life. You can wear the monitor at work, at home, down the pub, in the shower - wherever you need to go! Alongside wearing the monitor, we will also ask you to fill in a sleep record form to keep track of your bedtime and the time you get up. This will help us when we look at your sleep/wake patterns. These monitors have a very long battery life, so you won't have to worry about charging yours.

How many data points were collected from participants at baseline?



We collected a total of **13.7 million data points** from the 1,145 ADVANCE participants at their baseline visits. It's no surprise that we need to keep growing the ADVANCE data team!

Message to participants



Message from ADVANCE Senior Project Manager Emma Coady. 6



ADVANCE PARTICIPANT PANEL

Huge thanks to everyone who got in touch to express their interest in joining the ADVANCE Participant Panel. Due to the unprecedented response to our call for new panel members, it's taking us a while to get back to everyone. Thank you for your patience - we will be in touch in due course!

The ADVANCE Participant Panel plays a vital role in how the Study is conducted, and feedback from the panel is reported back to the ADVANCE Project Board.

THANK YOU TO PAUL CULLINAN

In 2022 we sadly had to say goodbye to Professor Paul Cullinan, ADVANCE Project Board member and Imperial College London lead for ADVANCE, who retired.



Paul was involved with ADVANCE from the very beginning, and his contribution to the Study was enormous. He was Professor of Occupational and Environmental Respiratory Disease at Imperial College London and also a respiratory medicine consultant. His extensive knowledge and expertise in population health research was invaluable to ADVANCE, as was his wisdom and leadership. He will be greatly missed by the ADVANCE team.

1000th participant attends follow-up 1



A big milestone was reached in early April when the 1000th participant came in for their follow-up 1 visit.

The lucky guy was Ryan Beardall who was, of course, welcomed with a giant cookie.



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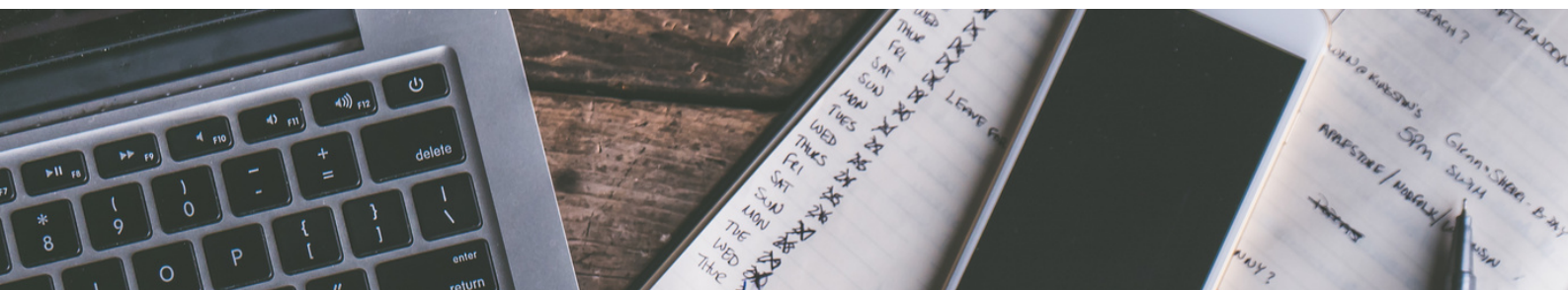
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