

## Research themes

### Behavioural immunology

Within this theme we exploit the vaccination model to study effects of psychological and behavioural factors on antibody response to medical vaccines. We have shown that chronic psychological stress predicts a poorer response to vaccination, whereas social support is associated with a better antibody response.

Recently, we have shown that brief exercise or acute psychological stress, at the time of vaccine administration, is, in contrast, associated with enhanced antibody and cellular immune responses to vaccination. We are also examining the effects of circumstantial factors, such as time of day of vaccine administration, on immune response.

In addition, the effects of acute stress on both secretory immunoglobulin A (sIgA) and lymphocyte circulation and function are being explored. Lymphocytes with strong cytotoxic potential are most perturbed by acute stress. The group is also interested in the association between psychosocial stress and latent virus, e.g. cytomegalovirus, reactivation and the effects of such viruses on mood and their role in immune ageing.



<http://www.adobe.com/go/getflashplayer>

AgeWell Conference at the School of Sport and Exercise Sciences

### Cardiovascular psychophysiology

There is an ongoing concern with the way that acute stress perturbs cardiovascular function and the role of such perturbations in the aetiology and expression of cardiovascular disease. Attention is now focused on the issue of 'triggering': the notion that acute psychological, postural, or exercise stress can precipitate acute cardiovascular events, e.g. myocardial infarction, in vulnerable individuals.



We are concerned with the capacity of such acute exposures to decrease plasma volume, increase blood viscosity, reduce clotting time, affect inflammatory markers, such as IL-6 and C-reactive protein, and perturb endothelial function. This research involves both healthy participants and patients groups, such as rheumatoid arthritis and cardiovascular disease patients.

Second, the group has a strong interest in the association between blood pressure and sensory processing and cognition. Initial focus lay with the association between blood pressure, hypertension, and the nociception reflex (NFR), an objective measure of pain. We have shown that the NFR is modulated across the cardiac cycle, being lowest at systole. Since then, we have begun to explore the wider sensory, motor, and cognitive corollaries of blood pressure and hypertension.

This research has received support from Action Medical Research, British Heart Foundation, National Institutes of Dental and Craniofacial Research (USA), National Heart Lung and Blood Institute (USA), Research Councils UK.