

New centre aims to boost SAF soldiers' heat resilience

Smart uniform to monitor heat stress among ideas mooted at research facility

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Amid a rise in temperatures, future generations of Singapore Armed Forces (SAF) soldiers may be issued smart uniforms that can monitor their susceptibility to heat injury.

Through the use of sensors incorporated throughout the uniform, commanders can keep track of their soldiers' temperatures, enabling them to quickly identify those at risk.

This idea is one of several being mooted at the Heat Resilience and Performance Centre (HRPC), which was launched on Wednesday at the National University of Singapore's (NUS) Yong Loo Lin School of Medicine.

The centre – a tripartite collaboration between the SAF, NUS and DSO National Laboratories – aims to come up with solutions that boost human resilience against heat stress.

Associate Professor Jason Lee, director of the centre, said that while the solutions would be put to use by

the SAF, there was also potential for them to be adopted in different contexts, benefiting society as a whole.

"In addition to heat injuries and performance degradation, extreme heat stress can also compromise decision-making, leading to potential accidents.

"Heat can be an enabler for physiological adaptations if we know how to use it correctly," he added, with the HRPC leveraging both local and overseas expertise.

On top of the progress made by HRPC's research, the SAF will also continue to adopt measures to regulate soldiers' temperatures, said Senior Lieutenant-Colonel Ho Chee Leong, head of the Centre of Excellence for Soldier Performance.

He said the SAF constantly updates its heat-related protocols based on scientific evidence, benchmarked against international standards.

He cited the example of the arm immersion cooling regime, as well as the recent implementation of an-

other form of temperature regulation – the ingestion of an ice slurry.

The arm immersion cooling regime involves soldiers dipping their arms into iced water for between 15 and 30 seconds to help cool their core body temperature.

During his speech at the centre's launch, Minister for Defence Ng Eng Hen brought up how some soldiers also now have their body temperatures monitored in real time, with the data transmitted from a "pill" that they swallow.

Once their temperature exceeds a certain threshold, they will be stopped from carrying on with training.

"Thankfully, because of our new heat injury preventive measures, we have not had a heatstroke fatality for the last four years," said Dr Ng.

"The fact that we have not had a fatality gives us some comfort that if we pay enough attention, you can get results. But the challenge is this – for us situated at the Equator, this challenge will be even harder in the future because of global warming.

"Remember, soldiers have died because of heatstroke. That must be our ultimate motivation to prevent every death."

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Above: Associate Professor Ali Asgar S. Bhagat from NUS' department of biomedical engineering describing an ongoing project on integrating wearable sensors that measure motion and temperature into a soldier's uniform.



Left: Defence Minister Ng Eng Hen (centre), seen here with NUS Assistant Professor Tan Swee Ching (far left) and Heat Resilience and Performance Centre director Jason Lee, looking at an exhibit of a study into a super hygroscopic material that promotes sweat evaporation, leading to heat loss. ST PHOTOS: ONG WEE JIN