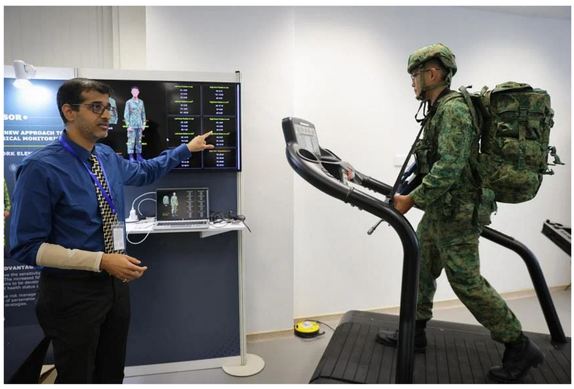
Smart uniform to monitor heat stress in soldiers among ideas mooted in new research centre



Associate Professor Ali Asgar S. Bhagat (left) explaining the ongoing research into integrating wearable sensors into a soldier's uniform. ST PHOTO: ONG WEE JIN

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SINGAPORE – Amid a rise in temperatures, future generations of Singapore Armed Forces (SAF) soldiers may potentially 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.

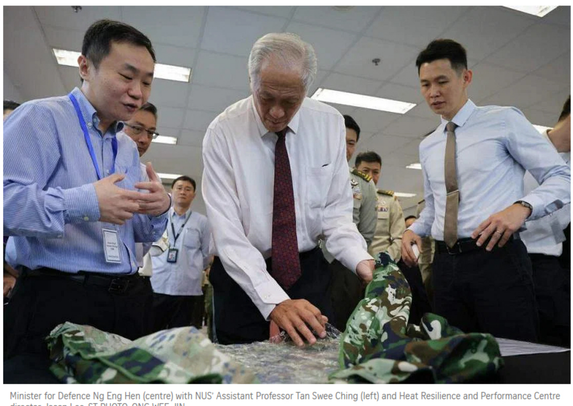
He said the SAF constantly updates its heat-related protocols based on scientific evidence, benchmarked against international standards.

He cited the example of the arm immersion cooling regime, as well as the recent implementation of another 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.



Minister for Defence Ng Eng Hen (centre) with NUS' Assistant Professor Tan Swee Ching (left) and Heat Resilience and Performance Centre director Jason Lee. ST PHOTO: ONG WEE JIN

"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."