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## Parliament: SAF to roll out arm immersion drill, cooling pads to better manage heat injury



The SAF has since been, or will be, putting in place a range of measures to reduce the risks of heat injuries, Defence Minister Ng Eng Hen said. PHOTO: LIANHE ZAOBAO

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SINGAPORE - The Singapore Armed Forces has taken steps to improve heat injury management following an external panel's report following the death of full-time national serviceman Dave Lee in April.

The measures include expanding the use of purpose-built cooling pads and an arm immersion cooling system across the armed forces, as well as simplifying evacuation procedures.

Corporal First Class Lee, 19, died on April 30 after being hospitalised for heat injury. He had completed an 8km fast march at Bedok Camp on April 18.

Although the report found the SAF's current heat injury measures generally sound and aligned with prevalent industry and foreign military practices, there was room for improvement.

Among other recommendations by the five-member external panel, whose 15-page report was released on Monday (Aug 6), are the upgrading of the SAF's Body Cooling Units and fine-tuning work-rest cycles based on practices of foreign militaries.

The report also included numbers of heat injury cases in the army since April 2012.

Although the total number of heat injury cases has declined from 33 from April 2013 to March 2014 to 20 cases from April 2017 to March 2018, the number of heatstroke cases has increased from zero in 2015/2016 to five in 2017/2018.



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The last major review of heat injury prevention measures was done in 2013.

Brigadier-General Kenneth Liow, commander of the Army Training and Doctrine Command (Tradoc) told a media briefing at Mindef last Friday (Aug 3) that the goal of improving the safety system was to achieve zero training fatalities.

The panel was formed in May and chaired by Associate Professor Mark Leong, a senior consultant at the Department of Emergency Medicine at Singapore General Hospital.

It visited the SAF Medical Corps and Bedok Camp to learn about current heat injury measures.

On whether training standards would be compromised, BG Liow said: "The recommendations we have today, we're clear that none of them will lead to a lowering of standards.

"The outcome must be clear, the SAF must still be able to fulfil its mission of defending Singapore; at the same time, the SAF would like to ensure that we return every Singaporean son back to their parents."

### **ARM IMMERSION COOLING SYSTEM**

The Arm Immersion Cooling System is a preventive measure whereby soldiers dip their arms into iced water for between 15 and 30 seconds to help cool body core temperature.

This is done during rest periods during training, and after training.

Since 2015, it has been used in some units at the Basic Military Training Centre, Officer Cadet School, and Specialist Cadet School.

This practice will be implemented across the SAF in phases from this month for fast marches and route marches that are 12km or longer.

These were chosen because they are intensive training activities that take place over an extended period.

Officer Cadet Ayyadarshan Kasivishvanaath, 19, who has been through the drill since he enlisted in January, said that he could feel the difference when immersing his arms during outfield exercises when training intensity was high.

The full-time national serviceman said: "It also acts as a source of motivation to continue pressing on."

### **PURPOSE-BUILT COOLING PADS**

These cooling pads will replace the current use of six ice packs, or plastic bags filled with ice, to cool a suspected heat injury casualty.

Major (Dr) Teo Rui Ming, 32, who is Head of Doctrine at HQ Army Medical Services, said the cooling pads can help decrease the temperature of casualties up to four times faster than ice.

In a study done by the SAF and the DSO National Laboratories, the pads cooled subjects at a rate of 0.12 deg C per minute, compared to the 0.03 deg C per minute rate of the ice packs.

Maj (Dr) Teo added: "They can also be stuck on to the body, which means it does not drop off as easily, compared to ice packs."

While the cooling pads have been used during overseas training since 2015, they will be rolled out across the SAF in phases from this month.

Medics at Basic Military Training Centre on Pulau Tekong will be the first to receive the upgrade.

## **EVACUATION PROCEDURES AND OTHER NEW MEASURES**

Evacuation procedures will become less subjective, with easier decision-making protocol.

Under this new protocol, all commanders and medics across the SAF will evacuate every trainee that cannot respond to simple questions about time, place and identity.

"This will reduce the threshold to initiate evacuation. Basically, we will evacuate when in doubt," said BG Liow.

He added that this will be implemented army-wide immediately.

To maintain currency of safety knowledge, mandatory questions on heat injury management will be included in the annual training safety regulations test for commanders.

A compulsory scenario on heat injury management will also be included in the annual medics' proficiency test.

When soldiers miss training - such as due to injury or illness - there will now be time dedicated for them to redo the training they missed.

"At the end of the day, it is clear to us there's always another day to train. So that soldiers would not push themselves unnecessarily even when they are not in the best of health," said BG Liow.

The SAF will also strengthen open reporting, where serviceman will be encouraged to report any unauthorised activities through a hotline.

Colonel Tong Yi Chuen, head of the Army Safety Inspectorate, said: "We communicated to all the soldiers, as well as to all parents who come to Basic Military Training about this army safety hotline that was established since 2011.

"When they report any safety violations, we'll tell them that the reports will be held in strict confidence; at the same time, we'll also advise the soldiers to report up the chain of command."

Colonel Tong added that every report will be investigated.

## **OTHER SUGGESTIONS BY THE PANEL**

The panel also suggested that the SAF could look into more effective rapid cooling methods, such as cold water immersion and cooling suits, which could eventually replace the body cooling units (BCU) currently used by the SAF.

The BCU sprays a mist of water - dispersed continuously by a fan - over a serviceman's body.

Cooling suits reduce core temperature by conduction and are used in the emergency departments at Singapore General Hospital, Changi General Hospital, and Ng Teng Fong General Hospital.

The panel also noted that the Australian Defence Force has more demanding work-rest guidance for its Special Forces, compared to a more generic set for ground forces.

It said the SAF could consider having a less demanding work-rest cycle for first-year soldiers, in view of their higher susceptibility to heat injuries.

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