Hazard Note

A national evidence-based SES program to reduce injury

About this project

The *SES fit for task* project was undertaken by Australia's SES agencies in partnership with the Bushfire and Natural Hazards CRC, jointly funded with the Australian Council of State Emergency Services and completed by Natural Hazards Research Australia with support from AFAC. It built on earlier research completed between 2014 and 2016. This national research was undertaken with AFAC, the National SES Volunteer Association and staff and volunteers from State Emergency Service (SES) agencies across Australia. The aim was to develop an evidence-based program that defined the minimum physical fitness required to undertake certain SES tasks, supplemented with a set of physical fitness assessments that can be undertaken by SES units and groups. The subsequent SES Fitness for Role program, launched in August 2023, is the first time that state- and territory-based emergency services across Australia have collectively developed and implemented a single national approach to safe physical fitness of first responders. Based on almost a decade of research and translation, the program is now being implemented across all SES agencies to improve the health and wellbeing of SES members, to ensure safety as members perform required tasks.

Authors

Dr John Bates and Terese Howlett, Victoria State Emergency Service.

Contact: safety@ses.vic.gov.au.

Summary

In Australia, State Emergency Service (SES) staff and volunteers contribute to disaster risk reduction and provide emergency support during and after disasters and are often the first responders to emergencies such as storms, floods, bush search and rescues, building damage, traffic hazards and road crash rescues. More than 40,000 volunteers are deployed across all states and territories, fulfilling a range of roles. Given the physically demanding nature of SES roles, suitable occupational health and safety strategies are needed that, amongst other things, optimise the health and wellbeing of all members. One such strategy is the ability to match the physical fitness of members to the demands of the role. This strategy is colloquially referred to as 'fitness for task'.

The *SES fit for task* research project was undertaken between 2017 and 2022 through the Bushfire and Natural Hazards CRC and Natural Hazards Research Australia, conducted by a team of researchers from Human Performance Science alongside the Australian Council of State Emergency Services (ACSES), AFAC, the National SES Volunteer Association and more than 3,000 staff and volunteers from all SES agencies around Australia. The aim of this project was to develop a SES program that improves the safety and health of SES members

across Australia, reduces the risk of injury while performing required tasks and contributes to building a culture of wellbeing. It expanded an earlier proof-of-concept study undertaken by ACSES and Deakin University from 2014–16.

Researchers used job task analysis, developed with SES staff and volunteers from every state and territory, to determine the most common and physically demanding tasks required for the most common SES operational activities. This evidence was used to develop several activities that mimic operational roles and assess physical fitness for land – and water-based operations and

training, and which can be used to show that SES members have the physical fitness to meet these minimum requirements and undertake their roles safely. More information about the research can be found in the final report (see Further Reading).

Based on a decade of research and translation, the National SES Fitness for Role program launched in August 2023. Using this evidence-based program, the SES can now measure the minimum physical fitness that SES members need so that they can complete required tasks safely and effectively during operational responses and training.

Below: This research has been used to develop an evidence-based SES program ensures physical safety and wellbeing of SES staff and volunteers across Australia. Photo: South Australia State Emergency Service.

An Australian first for State Emergency Services

This is the first time that emergency services across Australia's states and territories have collectively developed and implemented a single national approach to ensuring that members have the minimum levels of physical fitness that they need to undertake their roles. This benefits individual SES members and will ensure that when they are deployed to support other states or territories, they will have an appropriate level of physical fitness to safely undertake all the roles for which they are deployed.

Background

At the time this research began, there were no evidence-based task analyses and physical fitness assessments directly relevant to work undertaken by SES members around Australia. Whilst some assessments, including swim tests and pack hike tests, were being used as a measure of physical fitness, their direct relevance to the actual tasks undertaken by SES members had never been determined.

ACSES initiated a proof-of-concept research study in 2014 with Deakin University, to explore and understand the physical demands of operational activities for a group of six common operational SES activities and to develop supporting evidence of the physical fitness demands of those activities. This research identified the value of job task analysis in understanding the essential and important criterion tasks (that is, the most common and physically demanding tasks) within each operational activity.

The *SES fit for task* research project was funded by ACSES and the Bushfire and Natural Hazards CRC to strengthen that initial research, by:
→ extending the number of operational activities subjected to job task analysis
→ ensuring that each job task analysis was supported by a robust evidence base
→ developing fitness assessments that could be used to measure the minimum levels of fitness required to undertake the agreed operational activities
→ verifying that the assessments closely replicated SES operational activities
→ validating the robustness and reproducibility of the proposed fitness assessments
→ using this evidence to develop new SES assessments as part of the SES Physical Fitness for Role program.
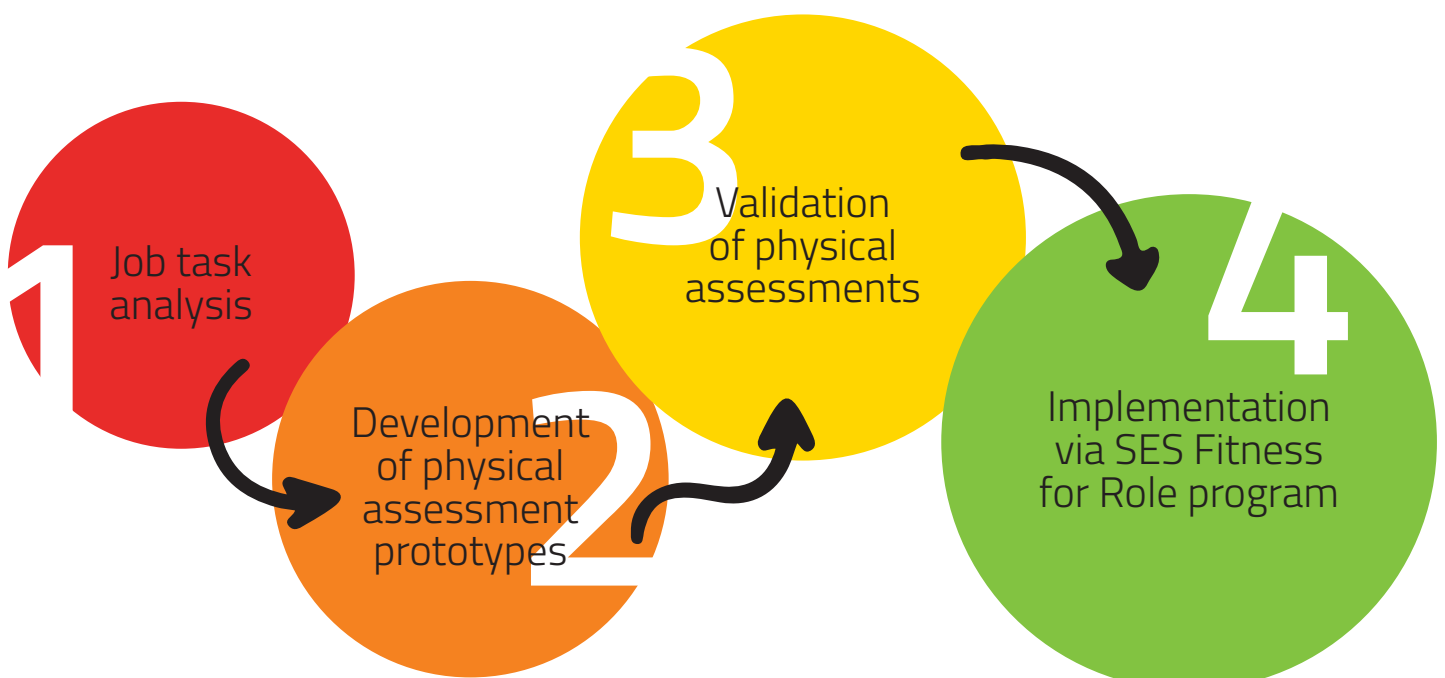
Research methodology and findings

This project employed a robust scientific process, delivered by Human Performance Science in four stages, as summarised below and outlined in detail in the final report (see Further Reading):

Stage 1: Job task analysis

This identified and measured the physical demands of tasks undertaken by SES members and involved more than 1,050 SES members in a series of:
→ subjective techniques, including focus groups, panel discussions and questionnaires
→ objective techniques, including the quantification of physiological (e.g. heart rate, force output) and physical (e.g. equipment mass, height of lifts, distance equipment is carried) job parameters.

The job task analysis identified 209 tasks mapped to 13 skill sets in scope for the project (see breakout box, page 3). Following consultation with subject matter experts from all SES agencies, the 209 tasks were condensed into 67 criterion tasks – these criterion tasks comprise tasks that are the most physically demanding, frequently occurring and operationally important.

1 Job task analysis

2 Development of physical assessment prototypes

3 Validation of physical assessments

4 Implementation via SES Fitness for Role program

Stage 2: Development of physical assessment prototypes

To understand the similarities and differences amongst skills sets, development of the assessments focused on three key inputs:

→ core job physicality: the fundamental physicality required to be demonstrated in order to meet job demands
→ performance features of the criterion tasks: for example, lifting and carrying, pulling or dragging, prolonged walking
→ organisational desires and limitations.

From the criterion tasks, the research team further grouped tasks with similar characteristics to develop at a battery of nine new SES assessments that captured all movement types and physiological demands for all skill sets.

Each assessment was conceptualised, created and evaluated by subject matter experts, representing an evidence-based measure that mimics the functional demands of SES roles, using equipment and facilities available to SES units where feasible. The nine assessments are summarised in Table 1.

Stage 3: Validation of physical assessments

Using these earlier results, nine assessments were formally validated through trials, surveys and 'validation socialisation' with a diverse group of SES participants – each qualified in the relevant skill sets – and subject matter experts.

Feedback and performance data from this validation process were used to further refine and validate the assessments, including verifying that the assessment activities closely replicated the relevant operational tasks and that the level of effort required to meet these minimum physical fitness levels was appropriate for the work that SES members undertake and the environments in which SES members operate. This process produced robust assessments, suitable and ready for inclusion in the SES Fitness for Role program.

National SES skill sets

The identified national SES skill sets that were part of this project were:

→ air search
→ boat operations
→ chainsaw operations
→ firefighting air base support
→ general rescue
→ in-water technician
→ land-based swift water rescue
→ land search and rescue
→ off-road driving
→ road crash rescue
→ storm damage
→ urban search and rescue
→ vertical rescue

	Assessment	Modelled activity
Land-based assessments	Lift and shift	Movement of equipment/stores
	Carry	Stretcher carry
	Ladder climb and lift	On-ladder then stowing it
	Haul	Pulling rope/object toward you
	Hold	Static hold (chainsaw/rescue tool)
	Drag	Dragging something behind you
	Hike	Walking wearing a backpack
Water-based assessments	In-water safety	Water safety and (self) rescue
	Power swim and rescue	Sprint swim and tow rescue

Table 1: Nine new SES assessments, validated for implementation through the SES Fitness for Role program.

Photo: SES members safely completing land-based physical tasks. Photo: Victoria State Emergency Service.

Stage 4: Implementation

This project's evidence-based assessments have been used to develop a new SES Fitness for Role program, launched at the AFAC23 conference in August 2023 and ready for implementation across all Australian SES agencies. Using this evidence-based program, the SES can now measure the minimum physical fitness that SES members need to have so that they can complete tasks safely and effectively during operational responses and training.

Implementation through the SES Fitness for Role program is expected to take up to 24 months in each state and territory. Through successful implementation, SES agencies can be confident in a program that identifies injury risk and prevents hazards or injuries before they occur.

Each of these assessments are gender – and age-neutral, represent minimum physical standards, and are designed to improve the health and safety of all volunteers by demonstrating that they can meet the inherent demands of the role. Not all volunteers need to complete all nine assessments – only those assessments that are required for their existing skill set, or where they intend to apply for training in new skill sets. Inclusivity is an important principle within the program, so that if a volunteer cannot meet one or more of the assessments, they will not be removed from the workforce but would be provided alternative opportunities.

The assessments have been endorsed by the AFAC SES Operations Group and there have been two national training workshops to support the development and evaluation of the program resources. The program is also supported by a National Implementation Framework, facilitator training materials and candidate information and guides. An e-learning resource is currently being developed that will be available for training program facilitators and SES members who want to understand more about the program and its development. SES members wanting more information about the program should contact their agency directly.

This information will also be made available to health professionals who work with the SES agencies to undertake medical assessment for entry into the organisation, or during return-to-work from an injury to better understand the physical fitness required for members undertaking operational roles.

> ▶ **SES Fit for Task assessment video**

Above: SES Fit for Task Assessments being performed by SES staff and volunteers, by Human Performance Science. Watch this video on YouTube: https://youtu.be/BO5dzIxbH0g.

Research impact

This is the first time that emergency services from all Australian states and territories have collectively developed and implemented a single national approach to ensure that SES members have the appropriate level of physical fitness safely undertake their roles without injury. This program will benefit individual SES members by improving health and wellbeing across all SES agencies in Australia, reducing the risk of injury and contributing to a culture of wellbeing.

End-user statements

NSW State Emergency Service Commissioner and AFAC President Carlene York
There are so many roles in the SES and so many ways to contribute to keeping our communities safe during emergencies. This project isn't about who can and can't volunteer – it's about finding the right role for each of our members so everyone can contribute meaningfully.

VIC State Emergency Service Chief Officer Operations Tim Wiebusch
We're thrilled to be launching this program, after years of collaboration among our SES agencies nationwide. It's an important initiative that will enhance the health and wellbeing of SES members, lower injury risks during tasks, and promote a culture of wellbeing. Turning research into action isn't easy, but the project team, backed by AFAC SES Operations Group, has successfully done so with this program's launch. Every SES agency's active involvement in the research and its practical application demonstrates our collective belief and commitment to the program, as well as a strong dedication to delivering health and safety benefits to our members across the country."

Further reading

Each of the following resources are available at www.naturalhazards.com.au/fitfortask
- → Human Performance Science (2023) SES Fit for Task - Final Project Report, Natural Hazards Research Australia
- → SES Fit for Task assessment video of early validation and verification workshop
- → Video overview of the project by the research team