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A pre-emptive resilience program called Finnish Sisu Training to improve prehospital work performance

Submission date
18/03/2024

Recruitment status
No longer recruiting

Registration date
19/03/2024

Overall study status
Completed

Last Edited
22/08/2025

Condition category
Other

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Finnish Sisu Training pre-emptive resilience coaching program is based on iPREP (International Performance, Resilience and Efficiency Program). Core components of the training included: (a) education about the physiology of the stress response system, energy management, and fuelling for peak performance; (b) group instructions on how to use mental focus and visualization to enhance sensory perception and situational awareness in performance and non-performance settings; (c) instruction and use of biofeedback to practice engaging in controlled breathing exercises that have been shown to enhance central nervous system control during stress. Finnish Sisu Training is designed to improve work performance by improving situational awareness and decision-making skills.
The main aim is to find out if Finnish Sisu Training can improve work performance by enhancing situational awareness and decision-making skills. Secondarily the aim is to find out if Finnish Sisu Training can improve recovery after stressful simulation scenarios.

Who can participate?
Paramedics with 3 years of working experience or prehospital physicians with at least 1 year of field experience, 18 years old or older

What does the study involve?
Participants are randomly allocated to one of two study groups. The first group receives 16 hours of Finnish Sisu Training and the second group serves as a control group. Three simulation scenarios take place after the coaching program, where the participants themselves and outside observers measure situational awareness and decision-making skills. Respiratory rate, maximum heart rate and heart rate variability are also recorded.
16 hours of Finnish Sisu Training are held over 2 days in sessions of 8 hours per day. The simulations then take three subsequent days. The control group receive the training after the study simulation scenarios have been held.

What are the possible benefits and risks of participating?
The benefit of participation is free Finnish Sisu Training, which might improve situational

awareness and decision-making skills, and participants will receive a certificate of attendance. Safety and wellbeing are ensured at all times. As a precaution, this study included mandatory defusing sessions for all participants after each simulation scenario.

Where is the study run from?
Päijät-Häme Central Hospital (Finland)

When is the study starting and how long is it expected to run for?
February 2023 to May 2025

Who is funding the study?
Investigator initiated and funded

Who is the main contact?
Dr Hanna Vihonen, hanna.vihonen@paijatha.fi

Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Protocol serial number
HA/2657/13.00.00.00/2023

Study information

Scientific Title
Effectiveness of Finnish Sisu Training, a pre-emptive resilience coaching program to enhance the work performance of prehospital personnel: a prospective randomized controlled pilot study

Acronym
FSTpreCP

Study objectives

The principal hypothesis of this study is that Finnish Sisu Training can improve work performance by increasing situational awareness and decision-making skills during stressful full-scale simulation scenarios and has a positive effect on recovery after stressful simulation scenarios.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 22/06/2023, HUS Medical Research Ethics Committee, Finland (Stenbäckinkatu 9, Helsinki, 00029 HUS, Finland; +358 (0)403593063; saila.koivusalo@hus.fi), ref: HUS/3235/2023

Primary study design
Interventional

Study design
Prospective randomized controlled pilot study

Study type(s)
Prevention, Quality of life, Safety, Efficacy

Health condition(s) or problem(s) studied
Work performance of prehospital personnel

Interventions
The study enrolled 16 paramedics. Eight of them were signed to the intervention group and eight in the control group respectively. The randomization was done by the local EMS work shift co-ordinator to two groups consisting of two teams each. The work shift coordinator otherwise took no part in the study, did not know the study design and had no Finnish Sisu Training nor iPREP training.

The intervention group received 16 hours of Finnish Sisu Training, which included core components such as:
1. Education about the physiology of the stress response system, energy management, and fuelling for peak performance
2. Group instructions on how to use mental focus and visualization to enhance sensory perception and situational awareness in performance and non-performance settings
3. Instruction and use of biofeedback to practice engaging in controlled breathing exercises that have been shown to enhance central nervous system control during stress
4. Education of cognitive biases affecting work performance
5. Education of cognitive biases during stress

The control group had no prior training but instead kept with their normal daily routines.

After the intervention group received Finnish Sisu Training all study participants took part in three full-scale simulations in subsequent days. These simulations were designed to enhance stress. Physiological measures (maximum heartbeat, heart rate variability and respiratory rate), self-evaluation and outside observers using structured evaluation forms were recorded. In each simulation four paramedics took part who were either in the intervention group or the control group. The study group were not mixed during simulation scenario interventions. The study results were then analysed and compared.

The control group received the training after the study simulation scenarios had been held.

Intervention Type
Behavioural

Primary outcome(s)
1. Situational awareness measured using observer form. In the observer form there are five statements each worth 1 point, receiving a maximum of 5 points. Timepoints: From the start of each simulation scenario (team arriving on scene) until the simulation scenario ends.
2. Decision-making skills measured using observer form. In the observer form there are five statements each worth 1 point, receiving a maximum of 5 points. Timepoints: From the start of each simulation scenario (team arriving on scene) until the simulation scenario ends.

1. & 2. Primary outcomes studied in combination receiving a maximum of 10 points.

Key secondary outcome(s)
1. Self-evaluation using a Likert scale self-evaluation form. Timepoints: Before the actual simulation scenario starts and immediately after the simulation scenario has finished, but before the defusing session starts.
2. Recovery after each simulation scenario measured using the Firstbeat Life device, which recorded the participant's physiological parameters via two electrodes detached into the study participant’s torso: For recovery only heart rate variability (HRV) was compared. The physiological measurements are sent via Bluetooth connection into the participants' phone app and to the lead researcher's computer’s specified Firstbeat life webpage.Timepoint: Each defusing session starting after a simulation scenario has ended and self-evaluation and respiratory rate counting has been done by the observer.
3. Maximum heart rate during each simulation scenario measured using the Firstbeat Life device and the lead researcher’s computer.Timepoints: From the start of each simulation scenario (team arriving on scene) until the simulation scenario ends.
4. Respiratory rate measured using manual counting by the observer before and after each simulation scenario. Timepoints: Before the actual simulation scenario starts and immediately after the simulation scenario has finished, but before the defusing session starts.
5. Heart rate variability (HRV) measured during each simulation scenario using the Firstbeat Life device and the lead researcher’s computer. Timepoints: From the start of each simulation scenario (team arriving on scene) until the defusing session ends.

Timepoints of when the simulation scenario started and ended with each study team as well as when defusing sessions started and ended were recorded and compared with Firstbeat life timeline results.

Primary and secondary outcomes were measured in all three simulation scenarios separately and compared with study groups
Simulation 1 comparison of intervention group vs control group outcome results
Simulation 2 comparison of intervention group vs control group outcome results
Simulation 3 comparison of intervention group vs control group outcome results

Completion date
31/05/2025

Eligibility

Key inclusion criteria
1. Aged 18 years or older
2. Paramedics with 3 years of work experience or prehospital physicians with at least 1 year of field experience

Participant type(s)
Health professional

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Upper age limit
65 Years

Sex
All

Total final enrolment
16

Key exclusion criteria
1. Daily cortisone medication that cannot be withheld for 2 weeks prior to the study intervention
2. Alcohol consumption 24 hours prior to the study intervention
3. Pregnant women
4. Have had previous Finnish Sisu Training or iPREP-based training

Date of first enrolment
05/07/2023

Date of final enrolment
15/09/2023

Locations

Countries of recruitment
Finland

Study participating centre
Päijät-Häme wellbeing service county, Päijät-Häme Central Hospital, Emergency department and EMS
Keskussairaalankatu 7
Lahti

Finland
15850

Sponsor information

Organisation
Wellbeing Services County of Päijät-Häme

Funder(s)

Funder type
Other

Funder Name
Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated analysing this current study will be available upon request from Dr Hanna Vihonen (hanna.vihonen@paijatha.fi): anonymised individual observer forms, anonymised individual self-evaluation forms and anonymised individual physiological data. The data will be available when the study has been published in an international peer-reviewed journal and with the permission of the publishing journal. The consent of study participants was obtained between June and July 2023. All study participants received a pseudonym that was used during the simulation scenarios with regard to the Data Protection Act.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		16/05/2025	19/05/2025	Yes	No
Participant information sheet			19/03/2024	No	Yes
Protocol file			19/03/2024	No	No