

MITIGATING EXPOSURE TO MUSCULOSKELETAL RISKS – THE SIUN SOTE ERGONOMICS MODEL

Introduction

Musculoskeletal (MSK) strain and musculoskeletal disorders (MSDs) are relatively common among health and social care (HeSCare) workers in Finland and often the cause of sick leave. These workers deliver essential care and support services in diverse settings such as hospitals, home care, residential units and emergency rescue operations, all of which expose them to physically demanding tasks, such as patient handling, awkward working postures and the use of heavy equipment. When the organisation *Siun sote* became aware of the large number of absences due to MSD-related illness, they implemented a prevention programme to address MSK strain among its staff at the end of 2017. The aim was not only to reduce physical strain and MSDs, but also to create a work culture that prioritises prevention and resilience.^{1,2}

According to risk assessments by Siun sote, there are various physical and psychosocial factors that contribute to MSDs: ‘moving and handling patients/clients, awkward postures at work and when using tools and equipment and restrictive interventions in violent situations’, as well as a highly demanding workload. The model places a strong emphasis on prevention through proactive risk management, training, active employee involvement at all levels and awareness raising. Furthermore, it was essential for this model to be flexible and applicable to various subsectors and environments, in order to accommodate the wide-ranging health and social care tasks of Siun sote.³

This case study is based on desk research and qualitative interview data collected from two interviews with key representatives of Siun sote. The interviewees were both part of the *Area services for the elderly*, one working in the provision of home care services and the other in residential care, but Siun sote as an organisation was also thoroughly discussed.

This case study is part of a research project⁴ carried out with the aim of providing an overview of research on the occupational safety and health (OSH) of home care workers.

Description of Siun sote’s ergonomics model

Background



Source: OneClinic

¹ Siun sote. (2022). Siun soten ergonomiamalli menestyi eurooppalaisessa kilpailussa. <https://www.siunsote.fi/-/siun-soten-ergonomiamalli-menestyi-eurooppalaisessa-kilpailussa>

² EU-OSHA – European Agency for Safety and Health at Work, *Healthy Workplaces Good Practice Awards 2020-2022 CASE STUDY: Large-scale prevention training for social and healthcare workers through an adaptable ergonomics model*, 2022. Available at: https://osha.europa.eu/sites/default/files/documents/gpa_case_study_2022_fi_02_siun_sote_en.pdf

³ EU-OSHA. (2022). *Healthy Workplaces Good Practice Awards 2020-2022*.

⁴ The full report is available at: <https://osha.europa.eu/en/publications/home-care-workers-comprehensive-overview-occupational-safety-and-health-risks>

Pohjois-Karjalan hyvinvointialue – Siun sote (The North Karelian Welfare Region – Siun sote) provides public social and health services, rescue services and environmental healthcare in the North Karelian region of Finland. At the end of 2024, around 8,304 HeSCare workers, and other professionals were employed by Siun sote to provide care and other services to approximately 162,300 North Karelians. 70.4% of Siun sote's employees work in HeSCare and the majority of them are women (they represent 83% of all employees).⁵ The organisation is divided into five physically demanding service areas (1-5 below) and two administrative and corporate service areas (6-7 below), these are:

1. Health and medical services
2. Services for the elderly
3. Family and social services
4. Environmental health and maintenance
5. Rescue and security services
6. Administrative services
7. Corporate services

Employees who are involved in the physically demanding service areas are regularly exposed to MSK risks, but the risks are very dependent on the type of work carried out and on the work environment.⁶ *Health and medical service* employees mostly work in healthcare institutions, such as hospital wards, dental clinics and rehabilitation clinics, while the employees in the *services for the elderly* either work in hospital wards and residential homes or at the patients' homes. *Family and social service* employees work at welfare units and similar facilities for children or people with disabilities.⁷ *Environmental health and maintenance* employees not only work on food and water safety, as well as other suspected health hazards, but also on veterinary care.⁸ The *rescue and security services* units are available for first aid, emergency care and rescue operations. Lastly, both the *administrative* and the *corporate services* make sure that Siun sote and all their initiatives run smoothly.

The exposure to MSK risk factors is higher among employees working outside of a healthcare facility, such as in patients' homes or, for rescue and security services, in the field. Home care workers often have to work in environments without sufficient ergonomic equipment, while rescue workers are required to operate heavy equipment in challenging situations. This case study focuses on the area *Services for the elderly* with insights from interviewees who oversee the work in both residential care and home care.⁹

The 'comprehensive ergonomics expertise action plan for care and support work' (from now on referred to as the 'the ergonomics model') consists of an ergonomics operative group that is responsible for gathering ideas and solutions to improve the ergonomics management among Siun sote's employees. The main objective — preventing MSD-related problems with training and bringing awareness to employees — is done through a three-level ergonomic education system.^{10,11}

Project structure

The ergonomics operative group of Siun sote is responsible for the strategic planning and finding ways to improve ergonomics among its employees. The ergonomics operative group, together with head nurses and employees responsible for ergonomics in home care and elderly home care, are responsible for spreading awareness of the importance of ergonomics and implementing it in the workplace. The head nurses oversee a variety of unit-specific initiatives, including anticipating staff needs, planning education programmes, coordinating with trainers and supporting their team. Head nurses also determine the assistive devices and aids their units require for purchase. To support head nurses, an additional network of employees is responsible for ergonomics within their unit. This network of around 185 employees focuses on the implementation of MSD preventive measures and promoting ergonomics in everyday interactions with clients, patients and colleagues, thereby providing on-site support within

⁵ Siun Sote. Henkilöstö. <https://www.siunsote.fi/tietoa-meista/organisaatio/henkilosto/>

⁶ Siun Sote. Organisaatio. <https://www.siunsote.fi/organisaatio>

⁷ EU-OSHA. (2022). *Healthy Workplaces Good Practice Awards 2020-2022*.

⁸ Siun Sote. Ympäristöterveydenhuolto. <https://www.siunsote.fi/palvelu/ymparistoterveydenhuolto/>

⁹ EU-OSHA. (2022). *Healthy Workplaces Good Practice Awards 2020-2022*.

¹⁰ EU-OSHA. (2022). *Healthy Workplaces Good Practice Awards 2020-2022*.

¹¹ Siun Sote. (2022). *Siun soten ergonomiamalli menestyi eurooppalaisessa kilpailussa*.

the unit, especially in residential care units. The prevention of MSDs among care workers is addressed by the Siun sote ergonomics model through training, which relies on its internal network of trainers for the Siun sote Ergopass training and the 'Ergonomic Card for patient transferring' training.^{12,13}

Siun sote conducts annual risk assessments across its service areas in an electronic reporting system (HaiPro). HaiPro is a web-based, voluntary and confidential incident reporting system widely used in Finland's healthcare sector, created by BTT Technical Research Centre of Finland and funded by the Finnish Ministry of Social Affairs and Health.¹⁴ Within Siun sote, each unit is responsible for updating its risk assessments and is overseen by unit heads and the OSH representatives of the units. Feedback from the system on incidents and challenges within the unit from the last year helps customise the OSH operating model within each unit of Siun sote.¹⁵

Description of the initiative

The Siun sote ergonomic model functions as a three-tier system of ergonomic education:

1. The Siun sote Ergopass
2. The national 'ergonomic card for patient transferring'
3. The 'ergonomic card for patient transferring' training qualification

The qualifications are shown in the most common order of obtaining them. Since the Siun sote Ergopass is only available to Siun sote employees, it is possible that new employees from different regions or companies already hold the national 'Ergonomic Card for patient transferring' qualification. The aim of Siun sote is for all employees to attain the Siun sote Ergopass qualification, and those interested in further education can then pursue the national 'ergonomic card for patient transferring' qualification and its subsequent training qualification.

The *Siun sote Ergopass* qualification was created by Siun sote, it is managed internally and only available to Siun sote employees. This Ergopass is also the most prevalent ergonomic education certificate among Siun sote employees and is the foundation of the Siun sote ergonomics model. After attaining the Ergopass qualification, employees can continue to study for the 'Ergonomic Card for patient transferring' qualification, which is managed by the Finnish Institute of Occupational Health (FIOH) and was developed in 2009 'to define the competencies, skills, and knowledge levels needed to be able to perform patient transfers safely'.¹⁶ Although the qualification is managed by the FIOH, the training is still carried out by Siun sote trainers. This internal training has been made possible by the third-tier qualification, which is fully managed by the FIOH to support Siun sote trainers to train their colleagues in the national 'ergonomic card for patient transferring'. Employees with the Ergonomics Card or the Siun sote Ergopass are responsible for supporting and promoting ergonomics in their own workplaces.¹⁷

The Ergopass training is both theoretical and practical. The theory test lasts one hour, study material is available online and employees study for it independently. If they pass the online theory test, there are two options for practical training: a three-hour group training, or an immersive one-week training programme that involves bedside education and exercises. Trainers, who are Siun sote employees certified for this role, conduct the sessions within the units themselves. Bedside training is predominantly employed in elderly nursing homes, where ergonomic training is integrated directly into daily routines. This enables participants in a group of typically five to seven workers to engage in applied learning during real care situations. In home care, a shorter format of training is chosen to minimise the disruption to patients' routines. Trainers usually spend one day in the field with the care worker. Together, they visit different types of patients in their homes. This is done with the patient's consent.

¹² Expert Interview (21 May 2025).

¹³ EU-OSHA. (2022). *Healthy Workplaces Good Practice Awards 2020-2022*.

¹⁴ Koskineniemi, S. et al. (2024). Patient safety incident reporting software: A cross-sectional survey of nurses and other users' perspectives. *Journal of Advanced Nursing*, 81, 5401-5413.

¹⁵ EU-OSHA. (2022). *Healthy Workplaces Good Practice Awards 2020-2022*.

¹⁶ Tamminen-Peter, L., & Fagerström, V. (2011). Ergonomic patient handling card® -scheme - A CONCRETE TOOL FOR IMPROVING NURSES' COMPETENCE IN ERGONOMICS, *NES2011 43rd Annual Nordic Ergonomics Society Conference*, 1. DOI: 10.13140/2.1.3405.8566

¹⁷ Expert Interview (21 May 2025).

Upon active participation during training, staff members are awarded the Ergopass qualification, which is valid for seven years. Trainers subsequently submit a report to the head nurse, detailing participant engagement and providing feedback. These insights serve not only to document the training's outcomes but also to inform ongoing ergonomic development in collaboration with Siun sote's occupational health and safety unit. The Siun sote Ergopass qualification is mandatory for Siun sote's employees. In the next few years, Siun sote's goal is to train all their employees and continuously update their Ergopass knowledge every seven years.^{18,19}

Since the introduction of the ergonomics model, a clear reduction in sick leave has been observed. In 2019, the number of days taken off for being unfit to work was around 152,000, and in 2020 it was around 135,500. MSDs were found to account for 32% of the absences in 2020, mostly due to back-, joint- and soft tissue-related illnesses. The reduction of sick leave numbers that are not specifically related to MSDs also dropped by 11% in 2020 and 4.5% in 2021. Absenteeism due to inability to work fell to 20 days per person/year from 22 days in 2019.²⁰ Further research on the number of absences due to MSDs has not been carried out, but feedback from Siun sote employees on the ergonomics model is still very positive.²¹

Success factors and challenges

The Siun sote ergonomics model has been in use since its launch in 2017 and its success is evident from the positive feedback from their representatives, but also from the fact that the model has barely changed since it won a *Healthy Workplaces Good Practice Awards 2020-2022* by the European Agency for Safety and Health at Work (EU-OSHA). How the ergonomics model has been so successful in North Karelia and what has been challenging in implementing it is discussed below.

Success factors

First of all, the care workers who have the Ergopass qualification, often the heads of units, are **motivated** to increase awareness about MSD prevention among their colleagues, and they support their colleagues in safeguarding everyone's physical health in the workplace. The Ergopass trainers themselves are not only trainers, but they also work for Siun sote as regular HeSCare professionals in home care, elderly nursing homes, physiotherapy and other roles. When they are not conducting training, they continue with their regular duties and build first-hand knowledge from their work to be used during the trainings. The success of the project therefore relies on **the dedication of the employees**, who are also the main beneficiaries.²²

The model supports **multi-professional involvement** from the organisation in order to ensure progress in all units of all service areas. Management, heads of units, but also regular (care) workers of the service area are involved and this is reflected in the benefits of the project.²³ Feedback is taken seriously and the model is adaptable to take into account essential feedback.²⁴ All Siun sote employees and their patients benefit from the ergonomics model, because care workers suffer less from MSK strain, administration deals with less sick leave from its workers, and patients are less likely to have cancellations or changes in their care.

The development and the practical implementation of the ergonomics model is done by a team of experts, who monitor and report annually on the training carried out and the effects of ergonomics work. The **ergonomics operative group** acts as an umbrella for the network of ergonomics trainers at Siun sote and the heads and ergonomics representatives of the units.²⁵ They make sure that the support is based on actual risk assessments and customised to different units and divisions. Units and employees that are found to be most exposed to potentially suffering from MSDs, such as home care workers, older employees and rescue workers, are specifically targeted and solutions are sought to avoid risky

¹⁸ Expert Interview (7 May 2025).

¹⁹ Expert Interview (21 May 2025).

²⁰ EU-OSHA. (2022). *Healthy Workplaces Good Practice Awards 2020-2022*.

²¹ Expert Interview (7 May 2025).

²² Expert Interview (21 May 2025).

²³ EU-OSHA. (2022). *Healthy Workplaces Good Practice Awards 2020-2022*.

²⁴ Expert Interview (7 May 2025).

²⁵ Siun Sote. (2022). *Siun soten ergonomiamalli menestyi eurooppalaisessa kilpailussa*.

environments.²⁶ An example of these targeted solutions are the measures related to excessive workloads that were taken after risk assessments related to psychosocial factors highlighted the negative impact of excessive workloads on the wellbeing of (older) employees. These measures included more efficient shift work planning, the maintenance of adequate resources, strengthening expertise on the topic and an even distribution of tasks in work shifts.²⁷

Challenges

Like many initiatives that were designed to benefit the HeSCare sector, during the **COVID-19 pandemic**, Ergopass trainings were cancelled to prevent the spread of COVID-19 among patients. In general, ergonomics were not a priority for care staff during this period; for example in elderly nursery care, the priority was put on tasks regarding medication, nutrition, hygiene and the prevention of pressure ulcers.

Although it is the goal of the ergonomic model initiative to train all Siun sote employees to qualify for the Siun sote Ergopass, there is a limited number of trainers available. Currently, there are 16 trainers who are divided among the smaller regions of South Karelia in which Siun sote operates. This limits the speed with which Siun sote can train all of their employees.²⁸

A more structural challenge to the ergonomics model has been the fact that it relies on the dedication of workers to their own health and safety. Training is essential to increase awareness and knowledge about MSD prevention among care workers; however, it is not always possible to enforce ergonomically safe working practices in a demanding work environment. Effective implementation of organisational interventions regarding ergonomic improvements depends on changes in individual behaviours. For example, care workers might choose an easier or faster way to cope with their high workload instead of following the guidelines from the Ergopass or other ergonomics training that is supposed to keep them and their patients safe and healthy. Trainers, colleagues and ergonomics representatives of the unit can guide, motivate and encourage care workers, but it is still the responsibility of the care workers to have an open mindset towards new practices that will support and protect them from OSH risks.²⁹

Transferability

According to our interviewees, the Siun sote model has not yet attracted explicit interest from other Finnish welfare regions or from international stakeholders. Nevertheless, the findings of the case study suggest that the ergonomics model developed by Siun sote possesses a high degree of transferability, both within Finland and potentially in international contexts, owing to its inherent adaptability.

Feedback loops are essential to the model and, especially in the first couple of years, feedback from trainees gradually changed the performance of the model. Although the model was introduced as a standardised training programme, feedback from home care workers and other units of Siun sote changed direction of the trainings. As a result, the Ergopass training has become increasingly tailored to the specific demands of diverse care work contexts within the organisation.

Importantly, the feedback process is both quick and flexible. As one interviewee explained, 'if we get some feedback today and we all agree it's important, then we can make a change by tomorrow'.³⁰ This shows the organisation's strong commitment to continuously improving the model based on the experiences and input of those using it. Such responsiveness is a key reason why the model holds strong potential for transferability across regions and even internationally.

²⁶ EU-OSHA. (2022). *Healthy Workplaces Good Practice Awards 2020-2022*.

²⁷ EU-OSHA. (2022). *Healthy Workplaces Good Practice Awards 2020-2022*.

²⁸ Expert Interview (21 May 2025).

²⁹ Expert Interview (21 May 2025).

³⁰ Expert Interview (7 May 2025).

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