

PARTICIPATORY APPROACH TO REDUCING RISKS ASSOCIATED WITH MUSCULOSKELETAL DISORDERS FOR MAINTENANCE TECHNICIANS

General information

Country: Ireland

Sector: Manufacturing (ophthalmic lenses)

Type of organisation: Manufacturing site

Size of organisation: Medium (about 250 employees)

Location: Urban

Job/tasks: Maintain machinery, operation of production

Workplace and task characteristics: The primary focus of the intervention was on the maintenance work. It entails practices such as the regular servicing of equipment, replacement of worn or non-functional parts, checks and repair work. Work is often performed in confined space with awkward movements and postures. One task was particularly problematic, where maintenance technicians worked in a static kneeling position and needed to use force to change the blades on a granulator.

Workplace participation measures:

- Identify problems: Workers were encouraged to identify risk factors in their daily work by staying alert and reporting tasks that they are uncomfortable with or find difficult to perform. A questionnaire was also used.
- Assess risks: Workers were included in an ergonomics assessment to analyse the task and identify risks for musculoskeletal disorders (MSDs).
- Organise workshop: A workshop was held where the safety and health coordinator, maintenance technicians and other relevant stakeholders brainstormed to identify measures and solutions.
- Implement solutions: The new solution was implemented, and both maintenance technicians and operators were consulted to make sure that the adjustments did not affect the operations on the production floor.

The action

Background

Regular maintenance work is essential to keep a flow in production processes and make machines and the work environment safe and reliable. Often busy and tight production schedules require that maintenance activities be performed alongside running operations and in close contact with the machinery, during night shifts, or in limited time intervals where operations are on hold. Furthermore, maintenance work is often characterised as so-called unusual work, where maintenance technicians perform their work in complicated conditions without any standard operational procedures. Maintenance tasks such as the exchange of valves, fuses and machine parts are often overlooked in companies' overall risk assessments since they are not part of the daily operations. All these factors mean that maintenance work can be associated with a greater risk of MSDs, but also with human errors that increase the accident risk.

The company had been aware of the maintenance technicians' particular challenges related to safety and health for some time. One of the first things the safety and health coordinator did to address these issues was to create a questionnaire to learn more about the maintenance department's difficulties. Although all workers had been through routine safety training and workers described safety as 'something we always talked about,' the exposed position of maintenance work had not been addressed before. Based on the questionnaire, a number of issues were identified and measures were implemented. Perhaps more importantly, these initial safety and health activities also led to maintenance technicians becoming more open about their problems and challenges. From being a division that often risked being overlooked, maintenance technicians now proactively approached both management and the safety and

health coordinator with their problems. This led to the identification of uncomfortable and difficult tasks that required corrective actions, such as the one where maintenance technicians work in a static kneeling position and need to use force to change the blades on a granulator.

Participants and stakeholders

To solve the identified problems, a multidisciplinary team was formed from multiple departments: both representatives from maintenance and daily operations, and the safety and health coordinator were involved in all steps of the intervention. Top management participated in key meetings and were otherwise kept informed about the progress on a regular basis.

Participatory approaches, methods and tools

Identify problems

The maintenance technicians were encouraged to be aware of tasks that they find difficult or uncomfortable to perform, and then report these to their safety and health coordinator. As a result, one of the maintenance technicians reported a problematic working routine where the blades on a granulator had to be changed while sitting in an uncomfortable static kneeling position on a working platform with limited space. Furthermore, the awkward position resulted in a bad leverage position that required the maintenance worker to use more force to perform the necessary activities.

Assess risks

An ergonomics video assessment to identify the risks was completed by the safety and health coordinator in consultation with maintenance technicians performing the tasks. At the same time, operators who usually work in the area were consulted to make sure that potential changes would not have any negative effects on them and their work.

Organise problem-solving workshop

A multidisciplinary team was formed from different departments to brainstorm collaboratively on potential solutions. It was important to include all the stakeholders who could potentially become affected by the changes. Therefore, a representative of the operators and the supervisor responsible for the working area where the intervention would take place were also invited to join the workshop.

In an initial meeting, participants gathered to discuss the problematic working area and possible solutions. Although the workshop was held in a conference room, concrete solutions were discussed in the working area since this made it much easier to identify potential problems with the solutions. Operators who normally work in the area were consulted during the assessment to make sure that potential changes would not have a negative impact on them and their work.

Implement solutions

A new lower platform was installed with the help of an external company. Maintenance technicians are now able to change the blade on the granulator in a standing position on the lower platform. The platform solution was chosen because it would be easy to use, and therefore it would be used in practice.

What was achieved

Sustainable measures through good communication between relevant stakeholders

All the relevant stakeholders whose work was affected were involved during the intervention. Feedback from the maintenance technician and the supervisor of the working area was that this comprehensive approach also resulted in an implementation without any problems. Even more important is the fact that the new platform is used every time when the particular task has to be performed.

Increased awareness and knowledge about ergonomics risk factors

The intervention strengthened the awareness of ergonomics risks and the importance of addressing them to create a safe and healthy workplace. The successful new measure both inspired and motivated workers to stay alert and continue looking for possible ergonomics risk factors. As the maintenance technician involved said: 'It makes a world of difference if you follow up on what people are worried about and let them know their input is valued.'

Improvements concerning productivity and efficiency

According to the maintenance technician, it is now easier to perform the task in a standing position that not only is more comfortable, but also gives a better leverage position. This reduces the time to change the blade.

Reduced use of force in awkward kneeling position

The new working position means that maintenance technicians can work without being exposed to MSD risk factors connected to work in static kneeling positions while using force to perform the tasks. The interviewed workers were very satisfied with the implemented measure.

Case quotes

'Consultation with the operators who normally work in the area took place during the assessment to ensure the changes did not have a negative effect on them... Feedback from the maintenance technicians is that the task is now easier to perform, and it takes less time to loosen the blades while in a standing position. They are very satisfied with the change.'

'What I always do is that I create a storyboard that visualises the new measures with photos and short descriptions of the risk factors and how they are handled. We did the same in this case, where we placed it in the working area, so that everyone who went past it could see that something is happening. Those things really mean a lot to people.'

'It makes a world of difference if you follow up on what people are worried about and let them know their input is valued.'

'If they have been involved enough, they will know this is a win-win, because for us it will get easier and safer to perform the job, and the company can guarantee workers wellbeing and safety.'

'After making the first changes related to ergonomic issues the maintenance people became more open and approached me with their problems.'

Resources, costs, and benefits

- The safety and health coordinator was an expert in ergonomics and safety and could therefore offer guidance and help during the intervention that otherwise should have been provided by an external consultant.
- All the intervention activities took place during work time. The company financed an external fabrication company to manufacture the new platform solution.
- The cost of the intervention was approximately EUR 2,500.

Analysis

Barriers

No barriers were identified.

Facilitators

- Operators who normally work in the area were consulted during the assessment to make sure that potential changes would not have a negative impact on them or their work.
- The company in general and the maintenance technicians in particular had previously had good experiences with successful safety and health activities. This created an open and positive way of thinking among all participants that represented an important foundation for the following activities.
- Visiting the work area while brainstorming for possible solutions was shown to be crucial to be realistic when considering potential measures.
- The commitment of management was shown during the intervention by participating in key meetings and activities and showing its support.
- A storyboard that described the new measures was placed in the working area, illustrating the changes with photos of the workers performing the tasks and short descriptions of eliminated or reduced risk factors.

Lessons learned

Although interventions sometimes only have an immediate effect on a specific group of employees, it can also be very valuable to invite other stakeholders into the process who are affected by the changes on a secondary level. In

this specific case, operators do not use the platform for changing the blades of the granulator. Nevertheless, they perform their daily work in the area and could potentially be affected.

Successful safety and health activities foster a climate where risks are taken more seriously and are acted upon more strictly. Consulting workers on MSD problems encourages them to become proactive in raising issues.

Transferability

The described approach is transferable to other industries and sectors. However, it takes time and effort to foster a safety climate where workers proactively approach their supervisors and safety and health coordinators with problematic issues. Workers often need to see that those responsible act on their reports before they change their way of thinking and feel they have responsibility. To ensure all solutions are based on qualified ergonomics principles, an external expert should be contacted if the company does not have the expertise. In this case, this position could be covered by the internal safety and health coordinator.

References and further information

Health and Safety Authority, IE. (2015). *Ergonomics Good Practice Case Study. Manufacturing Sector. Organic Lens Manufacturing*. Available at:

https://www.hsa.ie/eng/workplace_health/manual_handling_display_screen_equipment/guidance_documents/ergonomics/case-studies-ergonomics-manufacturing-4pg-v6-copy.pdf

The report is supplemented with interviews of the safety and health coordinator, a maintenance technician and the supervisor responsible for the working area. Furthermore, background information was provided by the Health and Safety Authority of Ireland.