



REDUCING MUSCULOSKELETAL LOAD IN A FISHING ENTERPRISE

1. Organisations involved

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2. Description of the case

2.1. Introduction

Lisner produces processed fish dishes. In the past, salmon was most commonly used in the dishes, whereas nowadays, herring constitutes the basis of production. The company first appeared in Poland in 1991, when it launched production in a modern plant. Lisner employs around 1,200 workers in Poland.

The term “musculoskeletal disorders” is used collectively for symptoms and diseases of the muscles, tendons and/or joints. The main risk factors for work-related musculoskeletal disorders are heavy lifting, awkward work postures, repetitive work tasks and improper job organisation [Factsheet 71]. The prevalence of neck, shoulder, elbow and hand disorders has been reported as higher in workers of the fish processing industry than the general population. These disorders were mostly identified among female workers involved in work tasks requiring forceful movements of the upper limbs, with repetitive movement of the arms and the hands.

In the past, fish were picked manually using sieves and then were transferred to open work crates, in order for the brine to flow out. This generated a manual-handling problem, as the crate, once filled with fish, could weigh from 20 to 30 kilos. Additionally, this task would involve an awkward body posture as workers were forced to bend over to pick fish material from a large container.

At the end of the production line, workers picked up a carton and moved it to a pallet. This task involved continuous bending down and often resulted in back pain.

2.2. Aims

The aims of interventions described in this case study were (1) reduction of employee musculoskeletal load in a fishing enterprise and (2) prevention of development of musculoskeletal disorders among the fishing sector workers.

2.3. What was done, and how?

There was a problem with removing fish from a large container filled with brine (Figures 1, 2, 3 & 4). This task was done manually, using sieves, and resulted in workers developing musculoskeletal problems. The fish were then moved to an open crate where the brine drained away. To eliminate musculoskeletal load, automation was implemented in this part of the production line. Next, workers used a manual trolley to transport pallets, filled with boxes, to a weighing and packing station.

The company management cares about its employees and considers their health and safety to be a very important issue. The employees were asked about their health problems and about improvement suggestions. The workers' participation in improvement processes was invaluable.

CASE STUDIES

Figure 1: Before improvement - a large container filled with brine



Figure 2: Before improvement – collecting fish in a sieve



Figure 3: Before improvement – transferring fish via a sieve from the brine container into smaller boxes



CASE STUDIES

Figure 4. Before implementation of the new solutions, employees were exposed to high musculoskeletal loads, awkward postures and repetitive manual handling



A mechanical tipper (Figures 5, 6 & 7) was installed to eliminate the need to manually pick up fish and so avoids the continuous bending over, which was causing the manual-handling problem. The large plastic container of fish in brine is situated on the tipper, which by means of a control panel, workers can use to tip fish onto an automatic draining line. The draining line (Figures 6 & 7) is connected to a conveyor belt. Fish are automatically transported from the draining line through the conveyor belt onto parallel production lines, where employees weigh the fish and insert them into individual packs. Workers take the fish directly from the conveyor belt to a weighing station. The company management had considered introducing automatic scales, which were tested in the plant. However, since fish material is not sufficiently homogenous, these automatic scales could not be used. Currently, the manual pallet trucks are being replaced with electric trolleys to reduce the need for manual handling yet further.

Figure 5. After implementation - the brine container on the mechanical tipper



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Figure 6. After implementation - the mechanical tipper transfers the contents of the brine container to the automated draining line and eliminates the need to manually pick up fish



Figure 7. After implementation - the automated draining line transfers the fish to the weighing and packing area and eliminates the need for workers to transport fish using trolleys.



2.4. What was achieved?

- Elimination of high musculoskeletal load experienced by workers whilst lifting and filling boxes of fish
- Reducing high musculoskeletal load experienced by workers whilst carrying fish
- Using modern technology
- Using a mechanical tipper to transport and drain fish



- Using an open-work conveyor belt to drain and transport fish
- Using a conveyor belt to transport fish

2.5. Success factors

- Workers' participation – workers were asked about the musculoskeletal disorders experienced by them and were involved in the process of improving the working conditions in order to reduce MSDs
- Focus on employees' health and safety
- Use of modern technology
- Adapting the work to the individual employees, especially with regards to the design of work places and the choice of work equipment, as well as the choice of working and production methods, to alleviate monotonous work and to reduce their effect on employees' health
- Adapting to technical progress

2.6. Further information

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2.7. Transferability

This type of musculoskeletal disorder prevention can be implemented in every enterprise which involves manual handling related to large weights of relatively small individual materials, such as fish, fruit or vegetables. Electric trolleys can be implemented in any workplace where manual handling problems occur, such as supermarkets, shops, retail spaces, packaging plants and warehouses. Prior to implementing changes to working processes and procedures, such as those described in this case, it is vital to carry out a risk assessment to ensure that the changes do not introduce new hazards and that any risks are eliminated or at least reduced.

3. References, resources:

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2. Factsheet 71 - Introduction to work-related musculoskeletal disorders. 2007. European Agency for Safety and Health at Work. <http://osha.europa.eu/en/publications/factsheets/71/view>
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