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## A strategic MSD prevention tool for municipalities

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**Abstract:** Musculoskeletal disorders (MSDs) are a common designation for pain, stiffness or tenderness in the joints, ligaments, tendons, muscles or bones. Employees in the healthcare sector in general and in particular elderly care in municipalities are at risk of developing MSDs due to heavy manual work including person lifting and moving. This paper presents a strategic MSD prevention tool developed in collaboration with Danish Municipalities. The tool consists of two volumes: 1) a method linking strategy to practice and 2) a toolbox with seven concrete tools for reducing MSD in practice.

Keywords: Musculoskeletal disorders, prevention, method

### 1. Introduction

Musculoskeletal disorders (MSDs) are a common designation for pain, stiffness or tenderness in the joints, ligaments, tendons, muscles or bones and the associated cardiovascular and nervous system often resulting in symptoms as swelling, restriction of motion and functional impairment. The known risk factors for developing MSD are: 1) Heavy manual work including person lifting and moving, 2), Monotonous, repetitive and monotonous, stressful work, 3) Straining, awkward postures and movements, 4) Whole-body vibration (NFA 2009, National Research Council and the Institute of Medicine 2001). The first three risk factors are prevalent in the health care sector and employees are prone to develop MSDs due to the high level of manual labour such as physical handling of patients.

MSD is a serious and comprehensive work environment problem in elderly care in Danish municipalities. This problem is recognized in the Danish National Work Environment Strategy 2020, where MSD is ranked as one of three main focus areas with the aim of reducing the number of MSD incidents with 20% by the year 2020 (WEA 2020).

Most elderly care are organised by the Danish municipalities who are responsible for home care and nursing homes. MSD has not been reduced in elderly care despite continuous efforts from the municipalities. There are several reasons for this the first being constant cutbacks reducing the amount of staff and the second being that the criteria for receiving care has been continuously sharpened. People receiving care are more ill and require more care and consequently there is a risk of work intensification. The counter reaction has been increasing use of equipment to reduce physical exposure.

This paper is a result of a collaboration between the sector work environment council for the social and health care sector (BAR SOSU) and researchers at the Department of Management at DTU. The purpose of this paper is to present a strategic MSD prevention tool synthesized from an exploratory study of best practice in Danish municipalities.

### 2. Methodology

All 98 Danish municipalities were contacted for a telephone interview (response rate = 45%) regarding interventions to prevent MSD and the continuous improvement of work environment

effort. The interviews focused on the top administrative level of the elder care in municipalities – the chief of elderly care (in Danish: ældrechefen). The telephone interview was based on a semi-structured questionnaire containing 25 questions and designed to last approximately 15 minutes. Interviews were recorded and summarized in a database.

Three municipalities were selected for in-depth interviews as they were characterised as nuanced and insightful in their continuous work environment effort as well as reaching their improvement goals. The three municipalities also represented three different organisational approaches to organising their continuous work environment effort.

In each of the three selected municipalities, two in-depth interviews were conducted with: 1) the working environment representative (safety rep) and 2) a manager responsible for working environment. The interviews focused on how the working environment effort was organised and examples of interventions. The interviews were transcribed and analysed for how working environment was organised and changes implemented. The data and insights formed the base for the development of a strategic prevention tool.

The tool was then tested on working environment consultants in two municipalities and one hospital using think aloud test (McDonald et al. 2012) and observations (Drennan, 2003). Comments were recorded and used to revise the tool. The hospital was included to test if the tool could be applied in this type of working environment organisation. Lastly, three chiefs of elderly care evaluated the tool and were interviewed individually by telephone.

### 3. The strategic prevention tool

The developed strategic prevention tool consists of two volumes: 1) a method (Edwards et al. 2016a) and 2) a tool box with seven tools for reducing MSD (Edwards et al. 2016b). Based on feedback from practitioners the two volumes were written in an accessible language using a vocabulary familiar to the practitioners. Consultant and research lingo were removed to avoid alienating users. Both volumes were written as step-by-step guides that would allow easy application for a practitioner.

The method assumes an organizational setup where a central authority is responsible for coordinating and evaluating the over-all working environment effort. In the context of Danish municipalities this central authority is - in almost all municipalities - the MED-committee.

An agreement in the public sector (state institutions and municipalities) between the employers' organization (KL) and unions provides an opportunity for combining the joint councils (focusing on distributing and discussing information on productivity and employee satisfaction) and the mandatory safety organization in a MED-committee. As a result, almost all OHS organizations in municipal and state workplaces are merged with the joint committees. The MED-committee consists of representatives from management and employee-elected shop stewards and work environment representatives.

The MED-committee is the organizational anchor point for the method and responsible for managing the process. The work of the MED-committee is only specified in general terms leaving the MED-committee free to organize the work as they see fit. Consequently, there are huge differences between methods and results of the individual the MED-committees across Denmark. For this reason, the method introduces 6 steps intended to structure the work of the MED-committee and ensure consistent working environment intervention and evaluation. The 6 steps constitute an annual cycle of work for strategic MSD prevention (**Fejl! Henvisningskilde ikke fundet.**) and have identical structure. Each of the steps have the following structure: 1) *When* the step takes place relative to the annual working environment discussion, 2) *How* to perform the

step using concrete examples, 3) *Who* is to perform the step and lastly 4) When the step is *completed* – all steps are written as an actionable list of activities.

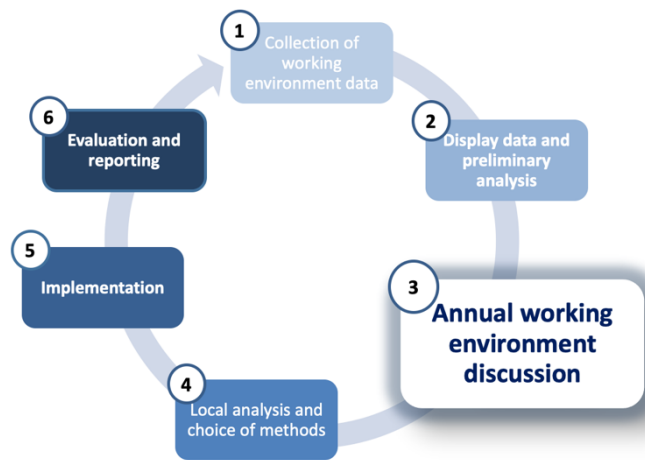


Figure 1: The annual cycle of work for strategic MSD prevention. The legally required annuals working environment discussion is point three in the figure.

The first step is collection of working environment data. These data are never conveniently compiled in a single repository and its necessary to collect data from all relevant sources. Examples of such data are stats on work related accidents, sickness and absence statistics, injunctions and reactions from the Danish Working Environment Agency etc.

The second step is display data and preliminary analysis. In order to use the collected data as part of the annual discussion it must be displayed in a way that allows analysis and discussion of possible working environment problems and solutions. Examples of displays are simple time series showing the development of specific types of working environment problems e.g. fall, person handling etc. A variety of displays can be used to facilitate the analysis and discussion.

The third step is the annual working environment discussion. The purpose of the step is the analyse the data and prioritize areas of concern. To facilitate discussion a SWOT-like tool (figure 2) is suggested which focuses on strengths and development potential representing the internal focus and opportunities and challenges representing the external focus.

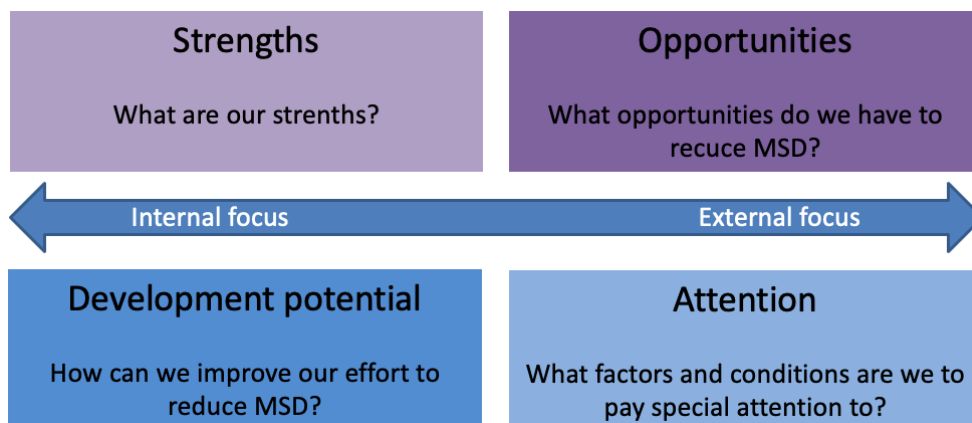


Figure 2: Tool to facilitate the annual working environment discussion.

The result of this third step is a prioritized list of areas of concern and requirements for the remainder of the process. The next three steps are performed locally as decentralized interventions

in each of the sub-organizations e.g. nursing home wards, kindergartens, departments etc. The interventions are organized and performed by locally managers in collaboration with employees - the team - at the actual work sites with respect to the areas of concern specified in step three.

The fourth step is local analysis and choice of method. The team performs a local analysis of the specified areas of concern and assess the nature and severity of the problem. Depending of the problem one or more of the seven methods presented in the second volume is used to analyse and develop solutions. One example of a method is the use of Photo Safari (Seim 2010; Nørskov 2007) where one or two employees visit similar work places and photograph examples of other ways of working which reduce the problem in focus. The photos and note are subsequently presented for all colleagues at their own workplace. The team then decides if the found solutions are relevant to implement.

Choice of solution and implementation are made in two separate steps to avoid automatic implementation following the use of a method. By itself a method dictates certain types of solutions and the team must explicitly decide what and if they wish to implement. This makes the decision to implement an explicit part of the change management process. It is assumed that an active choice to implement will make the change process easier for the team. Active choice also allows team members to hold each other accountable for the decision and motivate implementation.

Step 5 is the implementation of local initiatives. When the team has decided to implement a solution an action plan must quickly be developed. The action plan must be operational, and concrete i.e. clearly specify who is responsible for what and when. The local working environment representative(s) is the problem owner and responsible to assessing if the implementation is producing the desired effect (reduced risk of MSD). If not, they may take corrective action to ensure the initiative will have the desired effect. The local working environment representative(s) is responsible for briefly reporting the local initiative to the MED-committee allowing for later follow-up and evaluation. The report is done when the implementation is completed with an initial assessment of the effect. The initial assessment can then be compared with the later evaluation to learn of long-term effects and perhaps lack of persistence in sustaining the implemented changes.

Step 6 is evaluation and reporting. Before the end of the annual cycle and in time for the next annual working environment discussion all organizational units must evaluate their initiatives and report to the MED-committee. It is important to note that the reporting is not about blaming but learning. For each of the initiatives the problem owner, preferably joined by a representative from the MED-committee, for each initiative assess:

- 1) What was the goal of the initiative?
- 2) What was the initiative?
- 3) Was the goal reached?
- 4) Why / why not?
- 5) What was costs and resources for the initiative?

The answer to the questions is provided in a standard format allowing easy reading and navigation for the MED-committee.

#### **4. Discussion**

The strategic prevention tool presented in this paper was developed in collaboration with practitioners and received feedback through several iterations of practitioner tests. Between the last test and the final version of the tool only cosmetic changes were made and the test can be viewed as an evaluation of the tool.

Our interviews with chiefs of elderly care showed that they perceived the tool as easily accessible, which is important if the tool is to be used in a busy daily setting. Health care workers do not have ample time to sit down and study new tools and plan interventions. A tool must be actionable and provide a step by step guide that is intuitive and easy to follow. Practitioners using the methods also found the tool accessible and stated that the methods could be used with about 15 minutes of preparation.

With such accessibility naturally comes trade-offs in fidelity and the methods may appear in the eyes of the working environment specialist. We believe this is a good trade-off if it results in a use of methods in the practical and daily working environment improvement work. The tool is designed to be part of a continuous annual cycle of work where the tool and methods are used every year. Ideally this will also form a learning loop where the organization and its members are becoming increasingly competent in using the tool and methods. With competence comes ability to increase fidelity in the use of methods and over time this will compensate the initial accessibility trade-off.

## 5. Conclusion

We have developed a tool intended for use at strategic level with managers and working environment specialists deciding overall direction and asking organisations and teams to locally develop MSD interventions. Results and experiences from interventions are then reported back to the strategic level who may then learn and take corrective action to further improve MSD.

The tool taps into the annual cycle of work for strategic MSD prevention ensures a systematic follow-up, evaluation and learning from MSD prevention activities.

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