Ingegerd Skogling-Öhman

PARTICIPATORY METHODS AND EMPOWERMENT FOR HEALTH AND SAFETY WORK

CASE STUDIES IN NORRBOTTEN, SWEDEN
PARTICIPATORY METHODS AND EMPOWERMENT FOR HEALTH AND SAFETY WORK
Case studies in Norrbotten, Sweden

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Abstract

The purpose of the research presented in this thesis was to explore experiences from studies on participatory ergonomics methods conducted during a period of seven years. The phenomenon of interest was participative methods for implementation of best practices in order to improve conditions in different work environments. The posed research questions dealt with the usefulness and applicability of the assessed ergonomics methods/tools. One question concerned the change agents, what those were, and in which way the workers could be empowered in their daily work.

The thesis is built on four case studies using a qualitative approach. In the first study an assessment of the Future Workshop as a participatory ergonomics method was made. This was achieved by conducting workshops in which professional cleaners, health care personnel and miners participated, and by assessing their perceptions of the conducted workshops and their immediate and long-term effects on safety work. The second study determined whether home care personnel used their gained knowledge and skills after completing a training programme in patient transfer technique, and identified hindering and supporting factors for the use of safe work technique. The assessment was performed through focus group interviews and individual interviews with home care staff, unit leaders and safety representatives. The third study evaluated a team-based systematic risk assessment method and action plans at two municipal homes for elderly. Lastly, the fourth study described experiences from a participatory ergonomics project in home care services. In this case, an occupational therapist was working together within the home care teams, as well as functioning as an investigator during a period of three years. Studies one to three had an explorative, descriptive design, while the fourth study was inspired by action research. A phenomenological approach for analysing the data was used in the first and fourth study, and the second and third were analysed through qualitative content analysis.

The research presented in this thesis contributes to theory and practice in two ways. From a pragmatic point of view, the research provides knowledge (knowing) from reality. The empirical findings in the four studies showed participative methods to be suitable and functional tools in safety and health work in different environments. The research also showed that the essential change agent is empowerment, and that employees are empowered by their own involvement in the work. From a theoretical point of view, the research gives support for earlier research within the area, and connects approaches such as learning by doing and reflective practice with the concept of participatory ergonomics.

Keywords: empowerment, health and safety, learning by doing, participatory ergonomics, reflective practice
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Ingegerd Skoglund Öhman
Glossary of terms and abbreviations

Action research (AR)
AR is an approach based on problem solving and knowledge creation in collaboration between the researcher and clients (O’Brian 1998, Coghlan & Brannick 2001).

Case study
Case studies are suitable for answering questions such as “How?” and “Why?” and allow the investigation of real-life events (Yin 1989).

Empirical research
Empiricism means gaining knowledge through real events, e.g. knowing by experiencing real situations through our senses. In science, the empirical way of thinking involves a continuous and systematic interplay of rational thought and empirical data generation (Graziano & Raulin 1997).

Empowerment
Empowerment concerns enabling and promoting the taking of power (Sears & Marshall 1990, Ghaye 2005).

Flow
Flow is a state where attention and motivation, and challenge meet (Csikszentmihályi 1990).

Focus groups
The focus group is a qualitative research tool. A group of participants discuss a common theme, guided by a moderator. One benefit from focus groups is the interaction between the persons involved, with the synergistic effect of creativity and sharing of ideas (Langford & McDonagh 2003, Barbour 2007).

Future Workshop (FW)
The FW is a method aiming to support participants in identifying common problems, developing visions and ideas, and forming a shared action plan. The participants are actors concerning shared themes (Jungk & Mullert 1987, Eriksson 1991).

Holistic
A holistic view relates to wholes or systems rather than parts (Longman Dictionary of Contemporary English 2000).

HSEQ approach
The Health Safety Environment and Quality (HSEQ) approach is a risk assessment method developed for the heavy manufacturing and process industry (Niemelä et al. 2010).
IMS  The Integrated Management System (IMS) includes the combined resources, processes and structures for planning, implementing, controlling, measuring, improving and auditing quality, the environment and health & safety in an organisation (Wilkinson & Dale 2007).

Iterative  The term “iterative” is used when describing on-going processes, involving recurrence and repetition.

Learning by doing  Learning by doing is a pragmatic view of knowledge, with the individual acting to perform a task and knowledge deriving from the action (Dewey 1925).

NIWL  National Institute for Working Life (Arbetslivsinstitutet) in Sweden, which was closed down in 2007 due to a change of government.

OT  Occupational therapist

PAR  Participatory Action Research (PAR) involves practitioners acting as both co-researchers and subjects, working together in a shared environment (Argyris & Schön 1991).

PAAR  In Participatory and Appreciative Action Research (PAAR), researchers and participants are involved together in a partnership for developing and attaining changes (Ghaye 2008).

Participatory ergonomics  Participatory ergonomics is a concept involving the use of participative techniques and various forms of participation in the workplace (Vink & Wilson 2003).


PDCA  Plan-Do-Check-Act, or the Deming cycle, has been used since 1950 as a model for systematic work improvement (Langley et al. 2009).

PDSA  Plan-Do-Study-Act, or “The Shewhart cycle for learning and improvement” (Deming 1993), is widely used for learning, development and improvement of products and processes.

Pragmatism  The foundation of pragmatism is a view of knowledge focused on human actions and practical doing. The term “pragma” = act or deed (Gustavsson 2000).

Reflective practice  Reflective practice can be defined as “the capacity to reflect on action so as to engage in a process of continuous learning” (Schön 1983).
Safety culture
Safety culture is often used to illustrate the way in which safety is managed in the workplace, and reflects the attitudes, beliefs, perceptions and values that employees share in relation to safety (Cox & Cox 1991).

Safety management
The safety management system concerns the manner in which safety is handled in the workplace, and how policies and procedures are implemented (Kennedy & Kirwan 1998).

Systematic work environment management
Systematic work environment management should be a natural part of daily activities at the workplace, and cover physical, psychological and social factors relevant to the environment and employees. It involves investigation, risk assessment, action, an action plan and monitoring/control (European Council Directive 89/39 EEC, 1989; Swedish Work Environment Authority, 2001).

Sense of coherence (SoC)
SoC includes three components for well-being: meaningfulness, comprehensibility and manageability (Antonovsky 1987).

Top-down approach
Advocating a top-down approach at the same time as a participatory approach is advocated seems to involve a contradiction in terms (Ingelgård 1996). In the top-down approach, a specialist, manager etc. possess control over the workplace and processes.

Well-being
Well-being is a holistic term, combining physical, psychological and social aspects of health and safety at work (Otala & Ahonen 2003).

Work engagement
Work engagement refers to individuals being able to express their entire self in their role: physically, cognitively, and emotionally (Kahn 1990).

Work system
A work system consists of two or more people interacting with some form of job design hardware and/or software, internal or external environment, and organisational design (Hendrick & Kleiner 2002).
List of original publications

This dissertation is based on the following publications:


Ingegerd Skoglund-Öhman, who is the primary author of these original publications, has carried out most of the research work presented in them. This work has included formulating research questions and theoretical frameworks, generating and analysing data, obtaining empirical findings and drawing conclusions. The co-authors have participated by monitoring and commenting on the material, and thereby strengthening the manuscripts.
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1 Introduction

This chapter presents the background to the research, and the purpose and research questions of this thesis. Finally, the structure of the thesis is described.

1.1 Background

In Sweden and the other Nordic countries, workplaces have developed into more flat organisations, which means that decisions are delegated downwards in the organisation to the employees on the shop floor level (Ehn 1988, Jensen 1997). Such an approach makes demands on the employees and employers which require participation from those concerned. The basic concept is participation from the persons involved, for the purpose of developing and improving the work carried out. It is known that those who are close to the task/problem are those who possess the best knowledge of it (Levi 1987, Gardell 1987, Vredenburg & Zackowitz 2001, Mitchell et al. 2005). The decision level and control are factors influencing self-confidence, self-determination and health and safety issues (Karasek & Theorell 1990, Mikkelsen & Saksvik 1999, Hakanen et al. 2008, Wadsworth et al. 2010).


It is essential that the employees are appropriately supervised and trained for tasks connected to risk assessments and problem solving. Developing knowledge and skills is important for being enabled to deal effectively and safely with processes such as risk assessment and problem solving (Evanoff et al. 1999, Hignett & Crumpton 2007, Hasson & Arnetz 2008, Koppelaar et al. 2009).

As described at the beginning of this introductory chapter, working life in the Nordic countries in general is built upon worker participation. It might be assumed that a great amount of studies have been carried out to illuminate this issue. The research performed during the 1970s–1990s mostly dealt with
measuring the effectiveness of participative teams, training programmes, workplace planning/design or product design (Ehn 1988, Garner et al. 1995, Shahnaz et al. 1995, Pohjonen et al. 1998). During the past few decades research has progressed in the field of risk assessment and implementation of health and safety programmes (Hignett & Crumpton 2007, Väyrynen et al. 2008, Koppelaar et al. 2009). However, studies revealing the lived experiences of different involved actors have been found to be sparse.

There is a research void in understanding and knowledge creation regarding participative methods related to current health and safety risk perspectives, and involving iterative risk identification and problem solving. In the Nordic countries it is common that several actors are involved at workplaces (Niemelä et al. 2010), and many employees work at shared work sites (Väyrynen et al. 2008). In the work life of today, the usage of agencies providing HR (Human resources) is obvious in all work fields, from the public sector to enterprises, both private and state-owned. In comparison with the labour market as a whole, staffing companies show a higher number of reported work accidents in relation to the size of the branch (Swedish Work Environment Authority 2011). These circumstances make specific demands on safe work environment management. Within elderly care, an additional dimension is evident, i.e. the elderly person and his/her close relatives or informal carers, who must be included as actors concerning their old person. Research from their perspective is rare regarding participation in connection with assessment of risks and problem solutions in daily care and life.

This thesis presents experiences gathered using participatory methods in different work settings. The methods assessed in two of the studies aim to identify problems and health and safety risks, and to find solutions to the identified problems or risks. The leitmotif of the thesis is collaboration and participation on the part of those involved in the process at the work site.

In summary, further research is needed to increase our understanding of the perceptions of the actors involved, who share the environment, experiences and collaboration at work. A fundamental issue is the enhancement of knowing in this field, in order to support further development of participative ergonomics – bearing all the involved actors in mind.
1.2 Purpose and aims

The work life of today is complex and makes different demands on the workers. Tasks can be multi-faceted and require skills of different types, skills connected to one’s profession, skills concerning interaction and communication, flexibility, the ability to adapt to certain circumstances, and skills in solving problems. In working life, we are all parts of ongoing, continuous processes of learning and change (Dewey 1916, Schön 1983, Engeström 1999, 2000, 2001, Sommerville & Keeling 2004, Sanda 2006, Ghaye 2007). The work life of today requires both employers and employees to take responsibility for the work and the workplace, and for the goals of development and improvement.

The aim of this thesis is to contribute to knowledge by exploring experiences gathered in studies on participatory ergonomics methods conducted during a period of seven years. The phenomenon of interest is participative methods for implementation of best practices in order to improve conditions in different work environments.

1.3 Specific aims

1. Assessing the usefulness of a participatory method in different work environments and contexts (Study I).
2. Investigating the factors that influence the use of safe patient transfer technique among home care service personnel (Study II).
3. Evaluating the effects of activities based on team-based risk assessment and an action plan for staff at homes for elderly (Study III).
4. Assessing perceptions from a participatory ergonomics project among home care service personnel, informal carers and unit leaders (Study IV).

1.4 Research questions

The following research questions were posed:

- Are participative methods suitable tools for reaching improvements in working life?
- Are these tools applicable in different kinds of workplaces? What are the change agents? How can employees be empowered in their daily work?


1.5 Disposition of thesis

This thesis consists of six chapters. Chapter one is the introduction, describing the purpose and aims of the thesis. Chapter two gives the theoretical background for the research, describing the theoretical body of the research. Chapter three describes the research design, including methods for collection and analysis of data. Chapter four presents a summary of the research findings. In Chapter five the findings and the overall conclusions are discussed. Finally, in Chapter six a Swedish summary of the research is provided.
2 Theoretical frame of reference

This chapter presents the theoretical background, focusing on participatory and action-oriented approaches in connection with learning in daily occupation. Moreover, safety at work, including safety culture, safety management, and risk assessment, is described. This chapter provides the foundations of the theoretical framework which my research is built upon.

2.1 Work system

Describing the work system is necessary to be able to understand the individual in connection with the surrounding elements at the workplace. Work systems are depicted in different models and defined in different manners. These models and definitions have some features in common, and one feature is the connection between the individual and the environment. An illustration of the work system is to be found in Fig. 1 below. My intention here is to give a brief overview of the system, showing it as an entity where individuals act in diverse activities, and interact in collaboration with other people.

2.1.1 Individual, team and surroundings

In Smith and Sainfort’s (1989) model of the work system (Fig. 1) the individual is the centre, with his/her physical characteristics, perceptions, personality and behaviour. Technology is available for the performance of specific job tasks. The capabilities of the technologies affect performance, as do the workers’ skills and the knowledge needed for their effective use. In addition, the task requirements affect the skills and knowledge needed. Both the tasks and the technologies affect the content of the job and the physical demands. The tasks are carried out in work settings, along with the use of technologies. There is also an organisational structure that defines the nature and level of individual involvement, interaction, and control. This model describes relationships between job demands, job design and ergonomic loads, and shows that these various elements interact when work is being carried out. The overall physical and psychological effects are defined by the ways in which these elements are integrated. This is a systems concept in that any one element will have an influence on other elements (Kourinka & Forcier 1995).
Hendrick (2002) describes a work system as consisting of two or more people interacting with some form of job design, hardware and/or software, internal and external environment, and organisational design. Work systems are complex socio-technical systems (Carayon 2006). Risikko (2009) describes the work system as a system which “involves a combination of people and equipment within a given space and environment and the interactions between these components within a work organisation”. This definition originates in the ISO standard for designing worker-friendly work (ISO 6385:2004). The ISO standard presents a route for improving the interface between individual users and the components of their work situation, such as tasks, equipment, workspace and the environment. Risikko’s doctoral thesis (2009) concerns safety, health and productivity in the field of work performed in the cold, and represents one example of utilisation of the standard.

### 2.1.2 Change processes

Change processes can be viewed from many perspectives. One perspective concerns the creation of a successful change process which can solve organisational problems in the best possible way. An evaluation of a number of change processes has shown that broad participation is the most important characteristic of successful change (Aronsson 1989, 1995). Management support and a democratic climate are other important characteristics. Karltn (1997)
describes these processes by classifying them into two categories, i.e. action-driven change and vision-driven change. Action-driven change occurs within the goals and objectives in the system and it is oriented towards immediate action. Vision-driven change is more long-term, and includes changes that not only improve existing systems, but also transform the system and the working conditions in the system.

Creating a shared vision is the first step towards effective processes. A clearly outlined and shared vision ensures that everybody is working in the same direction (Pahkala 1997). A development process can be seen as a spiral. The development starts after the following steps: 1) recognising the need for change; 2) assessment of the current situation, which must be accomplished before taking any action; 3) formulation of a vision which will provide guidance for the development work; 4) testing all new practices; and 5) an evaluation, which has to be conducted before any implementation. Fig. 2 illustrates the development spiral by Vartiainen (1994).

![Fig. 2. The development spiral (Vartiainen 1994).](image)

Successful changes typically begin by specifying the generalised goals for the organisation, and then move through the whole organisation towards more and more specific and concrete objectives (Kourinka & Patry 1995). Mikkelsen et al. (2000) found in a Norwegian study that participatory intervention in health care institutions showed that problem-solving actions based on the employees’ own perceptions of the main problems were the main motivators for organisational change, improvement and increased control.
2.1.3 Macro- and micro-ergonomic perspectives

Implementing changes requires that both macro- and micro-ergonomic views are considered and linked together. Macro-ergonomics contains components at the overall system level, such as organisational climate, organisational culture, organisational structure, technology, participation etc. Micro-ergonomics consists of components on the individual level, such as task design, workstation design, performance, and job characteristics (Moro & Bayeh 1996).

2.2 Worker participation and ergonomics

A retrospective study of the roots of the term “participatory ergonomics” is valuable, since it gives an understanding of essential parts of working life. For this reason I have chosen to write rather long descriptions in the following subsections dealing with participatory ergonomics. The reader will find similarities and connections to previous issues and up-to-date conditions in working life. This concerns, for example, problem identification, risk assessment, development of solutions, and change processes. Bearing history in mind, it is striking to note that participatory ergonomics is still an issue of great immediate importance in the working life of today. Striving for improvements in working life is urgent and challenging, although decades have passed by since the concept of participatory ergonomics was born.

2.2.1 Concept of participatory ergonomics

organisations (Robertson & Dray 1991) and in industrially developing countries (Shahnavaz 2002).

Noro & Imada (1991) state that participatory ergonomics is a technique that is successful in solving ergonomic problems and implementing ergonomic change. It can be particularly useful at the planning stage, by involving workers in the identification and analysis of ergonomic problems. Brown (1993) argues that participatory ergonomics and other participatory approaches will lead to positive changes in productivity and the quality of working life, and to a better realisation of human potential. The more committed an organisation is to permanent participatory arrangements, the more likely it is to achieve a long-term increase in productivity. Worker participation benefits both the worker and the organisation by enhanced motivation, work satisfaction, problem solving capabilities, acceptance of change and knowledge of the work/organisation (Haims & Carayon 1998, Haines & Wilson 1998).

2.2.2 Examples of definitions of participatory ergonomics

Participatory ergonomics can be described as “a concept involving the use of participative techniques and various forms of participation in the workplace” (Vink & Wilson 2003). The concept includes interventions at macro levels (systems, organisations) and micro levels (individuals), with workers being enabled to use their knowledge for problem solving in their own work activities (Hignett et al. 2005).

The definitions of several researchers have similarities, pointing out active involvement in problem identification and problem solving by the persons concerned. Haines & Wilson (1998) made the following definition: “The involvement of people in planning and controlling a significant amount of their own work activities, with sufficient knowledge and power to influence both processes and outcomes to achieve desirable goals”. Nagamachi (1991) defined participatory ergonomics as follows: “Workers’ active involvement in implementing ergonomic knowledge and procedures in their workplace”. Noro & Imada (1991) consider participatory ergonomics as “ergonomists and workers working together with the end-users (i.e. workers) taking an active role in identification and analysis of risks, as well as problem solution and implementation of these”. Kuorinka (1997) points out “practical ergonomics with participation of the necessary actors in problem solving” as features of participatory ergonomics.
Noro & Imada (1991) describe three reasons for involving people in the development of ergonomics:

1. Ergonomics in itself is an intuitive science. It provides names and labels for ideas, principles, or practices that workers already are using. It legitimises the ideas and experiences that workers have accumulated in the process of performing their job. 2. Ownership of ideas enhances the likelihood of implementing ergonomics successfully. People are more likely to support projects for which they feel ownership. This has implications for a more involved and dedicated workforce committed to problem solving in the long run. 3. End-user participation developing technology creates a flexible problem solving. If people implement the technology, they will be able to modify it to solve future problems.

2.2.3 Worker participation

Worker participation is a term used to describe the involvement of employees in decision-making within an organisation. Employees close to the work being carried out are often recognised as being the best persons to make suggestions for improvements in their own work environment. Participative managers count on the opinions of their workers before making final decisions concerning issues that directly impact workers’ conditions. Empowering the workers in this way provides them with authority, responsibility and accountability for required decisions (Vredenburg & Zackowitz 2001). Enhanced motivation and satisfaction among workers increase productivity. The level of control and decision-making, added problem-solving capabilities and control over their work increase the workers’ self-confidence (Karasek & Theorell 1990, Mikkelsen & Saksvik 1999, Wadsworth et al. 2010). Imada & Nagamachi (1995) share this view, pointing out the workers’ confidence and willingness to implement ergonomics changes as beneficial to all parties.

Twenty-five years ago, Lawler (1986) suggested three reasons why employee participation is important. Firstly, individuals are becoming more specialised in their work activities, acting more as problem-solvers. New technologies allow people to have greater control over their work. Secondly, changes in the work force are occurring as people are generally becoming more educated, having more knowledge about workers’ rights. Thirdly, most people want control over their work. Lawler (1991) noted that participation moves information, knowledge, rewards, and power downwards in the organisation, which allows people to have more control over their work. Ingelgård et al. (1994) studied a model for initiating
a redesign process for the work environment in a company dealing with the handling and decomposition of packaging. Their studies include the use of participatory work groups in order to analyse and select the most important problems and propose solutions. The results showed that the workers appreciated the systematic evaluation of their work environment, which also facilitated the work of the participatory groups. The groups suggested the order in which problems should be solved and also how to solve them. Levi (1987) stated that "people know their own problems best and they should be encouraged to speak for themselves". Gardell (1987) shares Levi's point of view and argues that obtaining a correct picture of how the work influences the workers’ mental well-being and health is dependent on the individuals’ own perceptions of the working conditions. Doukmak & Huber (1996) are of a similar opinion, stating that the success of change is dependent on "meeting people where they are".

2.2.4 The “Nordic model”, Scandinavian tradition

Participatory activities in working life involving co-operation and ergonomics are a well-known practice in Scandinavia and the other Nordic countries. Co-operation was supported at the national level during the latter half of the 20th century by legislation and agreements. Representative participation has been developed by negotiations between labour and management, the parties operating on the labour market, and the State. Agreements have been concluded and laws have been passed. The trade unions select representatives to participate in this co-operation process. The concept of participatory ergonomics can be described as a strategy for change, with the trade union representatives as part of an organisational arrangement for promoting this strategy (Jensen 1997).

The Nordic countries have a long tradition of co-operation across many areas of activity in working life. Workers’ health has been of importance since the beginning of the 1900s. The trade unions have supported employees in the improvement of work conditions. In Sweden, the first Law on Workers Protection was adopted in 1912. In those days the main problem was long working hours (12–14 hours per day), which was thought to be a reason for work-related accidents. In 1920 legislation stipulated the 8-hour working day. In 1949 a new law was adopted which stipulated the introduction of health and safety committees in companies with more than 50 employees, and worker safety representatives in companies with more than five employees. The National Board of Occupational Health and Safety was also formed. The current Work
Environment Act was adopted in 1977 and emphasises the importance of prevention in both physical and psychological terms. It applies to all areas in occupational life, in the private and public sectors alike. Regulations have been issued and laws have been passed by the Government with the aim of promoting health and safety. Through special ordinances, the National Board instructs employees as to how the work environment law should be followed (Swedish Work Environment Act 1991:677, Janerus 1992, Jensen 1997).

The Scandinavian participatory design tradition, with roots in the democratisation of working life that took place during the 1960s and 1970s, has emphasised participation involving both users and designers in the design process (Ehn 1988). The methods and processes can be described as combining practices with reflection and theory. The Scandinavian school had its roots in a scientific philosophy and social theory. Activity theory has played a role when forming a framework for the understanding and practice of the design processes (Leontjev 1986, Ehn 1988, Kaptelinin 1994).

2.2.5 Ergonomic change

Macro-ergonomists suggest that a participative approach can be used to eliminate the disadvantages of a top-down approach. Some authors, for example Eason (1994), argue that the employees should take part in the design process, and that the ergonomist should be involved as a facilitator, helping the user to find what is in the user's best interest. Advocating a "top-down approach" at the same time as a participatory approach is advocated seems to involve a contradiction in terms (Ingelgård 1996). The notion of a "top-down approach" possibly derives from traditional ergonomics, where it is believed that the ergonomist has to have control over the design process. Using a participatory approach in the form of a "top-down" initiated programme, in order to encourage the employees to accept changes which they may not have understood or accepted, may be directly in contrast to the initial purpose of change. Different strategies for ergonomic change are illustrated in Fig. 3.
Ingelgård (1996) states that it seems that a non-linear strategy for change may reach organisational goals. In the case of non-linearity, there is the possibility of taking another direction in change, if this should be viewed as necessary. In this perspective, a pure "bottom-up approach" is not suitable, as changes may start from any part and any level of an organisation (Ingelgård 1996). The creation of solutions in participatory ergonomics may be iterative (Kourinka 1997), and is usually non-linear, rarely straightforward (Kourinka & Patry 1995). This concurs with Ingelgård’s described strategies for ergonomic change.

Co-operation and involvement form the base for intervention and the implementation of ergonomic measurements in workplaces and organisations. Organisational barriers can hinder this process, and knowledge of these barriers is of importance. In order to reach a permanent impact, it is essential to ensure participation from the entire organisation. The whole organisation must co-operate to nourish the further development and implementation of the change process. Jensen (1997) stresses that one important pre-condition for giving the work environment a stronger status in decision-making is the existence of people who are familiar with the use of formalised management systems and the participatory approach. Formalised management systems may be helpful in promoting participatory ergonomics as a standard operating procedure in workplaces and organisations. The education and training of both management and workers are of importance as a support in establishing participatory ergonomics. Mikkelsen et al. (2000) found in a Norwegian study that participatory interventions based on the employees’ own problem solving were perceived as main factors for organisational change, work improvement and increased control. Mitchell et al. (2005) came to similar conclusions in their
participatory action research project, claiming that meaningful change is built on the direct involvement and empowerment of those who are directly involved.

2.3 Well-being at work

Wadsworth et al. (2010) state in a review article that the term “well-being” is often used interchangeably with terms such as quality of life, life satisfaction and welfare. They point out certain themes or characteristics associated with well-being at work. The most common themes concern organisation and communication, decision latitude/autonomy/control, stress, working hours, recognition/fairness and social support. Well-being is multi-factorial. This concurs with Otala & Ahonen (2003), who point out well-being at work as a holistic term, combining physical, psychological and social aspects of health and safety at work. Wadsworth et al. (2010) claim that mental well-being is connected to the individual’s ability to develop her/his potential in connection with work productivity, creativity and positive relationships with others. In the Finnish dictionary of occupational safety, well-being at work is defined as follows: “Employees’ physical and mental state, resulting from the appropriate balance of work, environment and leisure time. Professional skills and work control are the most important factors which promote well-being at work.” The definitions of well-being are multi-faceted and are written in different ways. These definitions can include productivity, life-long learning, reward and satisfaction, social dimensions, goal-oriented activities, etc. A Finnish Institute of Occupational Health project (Anttonen & Räsänen 2008) on the achievement of well-being at work through new innovations and good practices found that the following definition was common: “Well-being at work means safe, healthy, and productive work in a well-led organisation by competent workers and work communities who see their job as meaningful and rewarding, and see work as a factor that supports their life management.”

2.3.1 Sense of coherence

Well-being is multi-faceted. One essential aspect is defined as “salutogenis”, a term used by Antonovsky (1979). He asserted that certain activities move the individual towards optimal health. This process prompts professionals to be proactive in reaching the goal of experienced enhanced health. The salutogenic model is useful in many fields, and for all the fields of health care (Antonovsky
Antonovsky (1979) coined the theory or term “sense of coherence” (SoC), which includes three components of importance for well-being, namely meaningfulness, comprehensibility and manageability. Meaningfulness concerns being motivated and finding challenges, while comprehensibility means making cognitive sense and understanding the challenges. Manageability concerns the situation being under the individual's own control, with the individual believing that resources are available (Antonovsky 1987). SoC can be said to build a foundation for well-being at work, with individuals having a sense of being motivated, comprehending the challenges and being able to cope in different situations.

2.3.2 Flow

Csíkszentmihályi (1990) has been studying the state of optimal experiences for more than two decades. His interest in the phenomenon focuses on questions such as: “What makes life worthwhile?” or “What is the meaning of happiness?” Csikszentmihályi developed a concept called “flow”. In the state of flow, the individual is completely involved in an activity for its own sake, i.e. absorbed in the activity. Her/his experience of time is altered, and time flies. Attention and concentration are focused on the task in question, which has clear goals. Actions, movements, and thoughts follow from the previous ones. The individual’s whole being is involved, and her/his skills are used optimally. There must be a balance between the individual’s ability and the challenge of the task. Flow is a state where attention and motivation, and the challenge in the situation meet. This results in a kind of productive and energetic state. Correlation is found to the development of skills and personal growth, and to motivation and performance enhancement (Csikszentmihalyi et al. 2005).

2.3.3 Work engagement

The term “work engagement”, which is often used to describe a condition, is much the same as the flow term used by Csikszentmihályi (1990). Maslach & Leiter (1997) label the state where the employee feels energetic, committed and capable and has a good self-esteem by using the term “work engagement”. Kahn (1990) related the concept of engagement to psychological presence. In Kahn’s definition, engagement refers to individuals being able to express their entire self in their role, physically, cognitively, and emotionally. Job resources and personal
resources are key variables found as drivers of work engagement. Social support from co-workers and from managers, performance feedback, coaching, control, task variety, learning and development, and training facilities are factors connected to job resources. Personal resources consist of factors such as self-efficacy, self-esteem and optimism. Hakanen et al. (2008) found a connection between job resources and work engagement in a longitudinal study among Finnish dentists. They found positive and reciprocal associations between job resources and work engagement, and between work engagement and personal initiative.

2.4 Empowerment

2.4.1 Concept of empowerment

Empowerment is a multidimensional concept for which there is no universally agreed definition (Ghaye & Lillyman 2000). The empowerment concept concerns individuals’ influence on their own lives, as well as democratic participation in the community. Empowerment can be utilised in different contexts and backgrounds, and on different levels, such as the individual level and the team level (Rappaport 1987). Empowerment acts as a process, encompassing the individual’s goals and enhancing influence over decisions affecting the individual’s life (Nutbeam 1998, Hansson & Björkman 2005). Participation and activity are of vital importance. The processes involve the individual, in problem identification and the development of goals and strategies to overcome obstacles and reach the formulated goals (Swift & Levin 1987, Brooking & Bolton 2000).

2.4.2 Empowerment on different levels

Empowerment is a phenomenon that can be found on both the individual and the team level, as well as the organisational and the society level. In the present case, it is appropriate to illustrate empowerment on the individual and the team level, since the thesis is built on studies of different work teams. An active approach in problem solving is developed through a process, and this process is empowerment. The process gives the individual enhanced insights and enhanced control over his/her environment. Individual goals, ability, autonomy, control and self-efficacy are elements of empowerment (Nutbeam 1998, Arneson 2006). Siitonen (2009)
identified three sub-processes of empowerment. In the first sub-process, a person may remain disempowered if she/he has difficulties with goals, capacity beliefs, context beliefs or emotions. In the second sub-process, empowerment has a catalytic effect on commitment, in terms of poor empowerment resulting in poor commitment, with strong empowerment resulting in strong commitment. In the third sub-process, empowerment arises out of and gives rise to human well-being. Siitonen suggests that the theory of empowerment is valuable in teacher education in working to promote the well-being of students and teachers, and that it supports the empowerment of elderly, chronically ill, marginalised or unemployed people.

Empowerment concerns creating opportunities for enabling and promoting the taking of power, and creating an enablement process. Thereby, empowerment is connected to enabling (Ghaye 2005). Sears & Marshall (1990) share this view and developed the concept of empowerment-as-enablement. Ghaye (2005) asserts that team empowerment is often experienced when the team members work together, sharing and supporting ideas and working in quality relationships. The participative method ‘problem-based learning’ (PBL), described by Egidius (1999), has been shown to facilitate empowerment processes. The identification of problems and finding strategies for solving work-related problems were stimulated by the PBL method (Arneson 2006). Siitonen and Robinson (1998) state that empowerment is linked to the teacher’s personal and professional growth.

2.4.3 Definitions of empowerment

Thatchenkery (2005) describes empowerment as being “evident when individuals in an organisation gradually acquire the autonomy, freedom and authority to make appropriate decisions within the domain of their influence”. Bjerknes & Bratteteig (1995) conceive empowerment as a means by which people might control their everyday lives. Empowerment is often described as connected to self-empowerment and self-determination. Renblad (2002, 2003) expresses this as the possibility of making choices and influencing practice. Self-determination can be defined as the individual’s experience of being in control, initiating and legalising actions (Arneson 2006). Diener & Biswas-Diener (2005) use the following definition: “Psychological empowerment represents a facet of subjective well-being, and refers to people’s belief that they have resources, energy and competence to accomplish important goals and positive moods.” This concurs with the World Health Organisation’s (WHO) definition of empowerment as a
process which provides people with enhanced control over decisions and activities regarding their health (Nutbeam 1998).

2.5 Knowledge and continuous learning

2.5.1 Learning by doing

Dewey (1916) viewed knowledge as an essential part of human life. He describes human life as a continuous process in which the individual is constantly searching for new possibilities for survival. Dewey’s view is characterised by two features: firstly, human activity, which involves humans in the world, and secondly, the emanation of knowledge from the actions of humans in connection with the environment. Dewey stated that the beginning of human thinking is the search for problem solutions. Reflection and questioning enable humans to reach knowledge, which in turn provides them with power over their own actions. In other words, knowledge consists of experiences and reflection together. It is a pragmatic view of knowledge, with the individual acting to perform a task and knowledge resulting from the action. Dewey coined the term “learning by doing”, which has strongly influenced the school world, as well as our perceptions regarding education and knowledge (Dewey 1925). Knowledge as a tool means that existing knowledge is the power for production of new knowledge (Gustavsson 2000). Several researchers have formulated assumptions in conformity with Dewey, and developments have been made over the years.

2.5.2 Reflective practice

Schön (1987) asserted that people actually learn to do something by performing tasks and by reflecting in action and on action. Donald Schön introduced the term “reflective practice” almost three decades ago. Reflective practice can be defined as “the capacity to reflect on action so as to engage in a process of continuous learning” (Schön 1983). He was inspired by concepts developed by Dewey (1916, 1925), Lewin (1946), and Piaget (1983). The concept of reflective practice focuses on life-long learning, with individuals learning from their personal experiences of practice. Reflective practice gives professionals the possibility of continually updating their skills and knowledge, and also considering interaction
with their colleagues (Somerville & Keeling 2004). It is commonly applied in educational and medical fields of work.

**2.5.3 Reflective thinking and knowledge enabling**

People create and recreate knowledge continuously, which is achieved by performed actions and through reflective thinking. The largest part of knowledge is produced and held collectively, although knowledge is often thought to be a property of individuals (Ghaye 2007). Such knowledge is created when people are working together in different tasks and activities (Haraway 1991, Suchman 2002). In a public service study, Thatchenkery and Chowdhry (2007) identified four factors as knowledge enablers in an organisation. Empowerment was one of the enablers, accompanied by collaboration, belief in the mission and building relationships.

**2.5.4 Iterative models for development**

The iterative nature of the learning cycle can be found in several development theories or models. One example is the Activity Theoretical Model, which is a theoretical model which focuses on the active actions of humans as a central factor for the personal development of humans. This can be seen as a dialectic process between humans and the environment (Fortmeier 1985). The Activity Theoretical Model has been used as a reference frame in developing a theory of activity systems (Engeström 1990). Engeström has developed the model further, into a model which has been applied in projects concerning learning processes and work organisation (Engeström 1999, 2000, 2001, Sanda 2006). The process involving individual subjects questioning accepted practice and then gradually expanding it into a collective movement forms an expansive cycle or spiral. An ideal expansive learning cycle is depicted in Fig. 4 (Engeström 1999). This expansive cycle has some similarities with the development spiral by Vartiainen (1994).
2.5.5 Pragmatism and continuous learning processes

Learning by doing and reflective practice are both approaches with origins in the pragmatic tradition of learning (Dewey 1925, Schön 1983, Somerville & Keeling 2004). Life-long learning and continuous learning processes, as described by Vartiainen (1994), Engeström (1999, 2000, 2001), and Sanda (2006), have also connections with the roots of pragmatism (Gustavsson 2000). In the following, some examples of tools for learning and improvement are presented.

2.5.6 PDSA

Plan-Do-Study-Act (PDSA) is a widely used model for learning, development and improvement of products and processes (Deming 1993). This model is built on the Shewhart cycle (1939), which had three steps: specification, production and inspection. Deming stressed the importance of continuous interaction between the elements in design, production, sales and research, and modified the Shewhart cycle into four steps. This resulted in the Deming cycle or Deming wheel, labelled Plan-Do-Check-Act. PDCA has been used since 1950 as a model for systematic work improvement. In 1986 Deming presented a new version where the word check was changed to study. The model was modified and developed, and in 1993 Deming called it “The Shewhart cycle for learning and improvement”, the PDSA cycle. Further on, the cycle was refined by pointing to
the purpose of building new knowledge (Langley et al. 2009). Three questions were hereby added to supplement the PDSA cycle (illustrated in Fig. 5). Experiences gathered through using the model show that it is applicable to organisations of different kinds. It facilitates teamwork for assessments and improvements at work. The model provides people with possibilities of taking actions that lead to useful solutions. This results in empowerment, by active involvement and learning.

![Diagram of PDSA cycle](image)

Fig. 5. PDSA cycle, improvement model raising three questions, modified version from Langley et al. (1996).

### 2.5.7 Future Workshop

The Future Workshop (FW) is a method developed by Robert Jungk from Germany, and builds on democratic values and participation. The method aims to support participants in identifying common problems, developing visions and ideas, and making an action plan. The FW is a structured process divided into five phases: the preparation phase, experience phase, fantasy phase, strategy phase and action phase (Jungk & Mullert 1987). The participants formulate shared interests and goals, and are actors concerning shared themes (Eriksson 1991). Bødker et al. (2004) have developed the technique further, and use the phases of preparation, critique, fantasy, implementation, and follow-up.

According to Jungk & Mullert (1987), the FW is constructed with distinct pieces of building material. One part is social fantasy, meaning that all humans have fantasy and creativity, which create a specific power - empowerment - when people together through democratic forms of activity are able to express themselves. This results in a stimulating involvement and increasing human
participation. The FW’s democratic base is crucial for giving participants the possibility of obtaining insights, awareness and tools to make decisions by themselves. Denvall & Salonen (2000) prescribe the prerequisite of a clear leadership through which the activity arena and open discussions are guaranteed.

It is not necessary that the leader in the FW should possess knowledge about the field or problem areas which the FW in question is focusing on. An external leader with a strict “from-the-outside” perspective can be an advantage, giving the FW a safe and secure framing where all the participants are provided with space for their ideas and perspectives. Denvall & Salonen (2000) describe the leader of the FW as a facilitator, active at the beginning of a change process. They also emphasise the leader’s role in striving for results such as action plans, deeper problem knowledge and shared visions/ideas in/for the group. Dialogue is placed in the centre of the activity performed in the group. Past, present and future perspectives are used. Action and involvement are emphasised. Other democratic methods of the same type have been developed and are used in a broad spectrum of societies and groups. Denvall & Salonen (2000) mention methods such as search and dialogue conferences, forum theatre, scenario planning, research circles etc., all of which have a workshop feature built on participation and involvement. Jungk & Mullert (1987) had a vision of the FW being commonly used by “workshop-foremen” in miscellaneous environments and groups in society. Jungk & Mullert (1984) use the metaphor “string of pearls” to describe the concept of “permanent workshops” in a development process started by one conducted FW followed by other workshops, leading to a more long-term development towards shared future visions.

2.5.8 Visualising the iterative process

My reflections on development at work are based on the iterative, ongoing circle, which is a symbol for activity, engagement and continuity. This is illustrated in the examples of PDSA, Engeström’s expansive learning cycle, Vartiainen’s development spiral, and the Future Workshop. My contribution is an iterative model which I label “On-going Learning and Enhancing at Work” or “Knowing and Growing at Work”. The suggested model is not an attempt to “reinvent the wheel”, and I am aware that it is an adaptation of already existing and functioning models. Rather, it represents an attempt to point out some vital components of development at work and to visualise the iterative process. Fig. 6 gives an illustration of my model, which is underpinned by the iterative process including
the natural questioning, assessment and testing of solutions in a continuous development circle.

![Diagram: Knowing and Growing at Work](image)

**Fig. 6. “Knowing and Growing at Work”**.

### 2.6 Action research

Under this caption I will illustrate the phenomenon of action research, based on definitions from several researchers. I will also briefly describe some “siblings” of action research, with the aim of providing the readers with a view of the diversity of the approaches developed from the roots of action research.

#### 2.6.1 Action research (AR)

Øvretveit (1999) defines action research as “a systematic investigation that aims to contribute to knowledge as well as solve a practical problem”. Some action research is a type of evaluation. A great deal of “developmental evaluation” is action research. Kuula (2001) argues that action research can be regarded as an undisciplined approach, since it makes it possible to use all the possible methods which the participants find suitable at any given time. Nevertheless, it has to be defined as a separate type of research, and can be classified as belonging to qualitative methods.

Action research (AR) is used in real situations with the primary focus directed on solving real problems, and is often applied by practitioners wishing to improve the understanding of their practice. AR is known by other names, including participatory research, collaborative inquiry, emancipatory research, action learning, and contextual research, but they are all variations on the same
theme (O’Brian 1998). The perspective of “learning by doing” (Dewey 1985) or a cycle for learning and improvement (Deming 1993) can be applied in a description of action research. Action research is usually described as being based on problem solving in collaboration between the researcher and the clients, aiming to solve problems and generate new knowledge (Coghlan & Brannick 2001). Knowledge creation can be described as an iterative and cyclical process, taking place in the environment of change close to those involved in the process (O’Brian 1998). This is in agreement with Lewin (1946), who coined the term “action research”. Lewin describes the approach as using a stepwise spiral, with each step composed of planning, acting and finding facts about the results of the actions. Various methods can be used when conducting action research, with the aim of reaching a holistic approach (O’Brian 1998, Coghlan & Brannick 2001). The role of the researcher depends on the project. The role is usually that of the expert, planning the project and collecting and analysing the gathered data. During the research, the participants are involved in a process of change (Svensson & Nielsen 2006).

### 2.6.2 Participatory action research (PAR)

Participatory action research (PAR) is a form of action research involving the practitioners acting as both co-researchers and subjects (Argyris & Schön 1991) and working together in a shared environment where reality emerges through actions and activities. Paolo Freire (1972, 1994) used PAR as a method for empowering people in poor and deprived communities to understand and improve their environment and live by actions and changes. Freire stated that critical consciousness develops through praxis. The reflective process is connected to action, and the process empowers people towards enhanced control over their lives (Minkler & Wallerstein 2003). Problem solving and action using a reflective cycle connect the approach with action research (AR), but PAR differs from most other approaches by involving the researched people as both objects and partners in the whole research process (Baum et al. 2006). Mikkelsen et al. (2000) found, in a participatory intervention study in health care institutions, that actions based on employees’ own perceptions were the main factors for organisational change. In a participative action research project on stroke rehabilitation, Mitchell et al. (2005) also claim that those who are directly involved and empowered can be considered as effecting a meaningful change.
2.6.3 Participatory and appreciative research (PAAR)

Participatory and appreciative research (PAAR) is an additional development with roots in action and the participatory tradition (Ghaye 2008). In PAAR, researchers and participants are collaborating and being involved together in a partnership aiming to develop and attain changes. Participation can be seen as research with people in a given context, and not research on people (Kostenius 2008).

2.7 Health and safety at work

Work systems are complex, involving individuals, the environment, the organisation etc. (Kourinka & Forcier 1995, Hendrick HW & Kleiner BM 2002, ISO 6385:2004, Carayon 2006), and dealing with such issues makes considerable demands on the researcher. Hence, health and safety work requires a holistic perspective and a multi-disciplinary approach. Under this caption I will give some definitions and features of safety culture, since this phenomenon forms a foundation for health and safety at work. Moreover, systematic work environment management and risk assessment are elucidated.

2.7.1 Definitions of safety culture

Safety culture is described in various definitions, and the term was developed after the Chernobyl catastrophe in 1986. The disaster started a search to understand how and why the organisation and employees contributed to the development of the disaster.

The following is an accepted definition of safety culture from the Health and Safety Commission in the UK (HSC 1993, p 23; quoted by Castle 2006): "The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management." The term “safety culture” is often used to refer to the way in which safety is managed in the workplace, and it reflects "the attitudes, beliefs, perceptions and values that employees share in relation to safety" (Cox & Cox 1991). Kirk et al. (2007) use the following definition, “the shared attitudes, beliefs, values and assumptions that influence how people perceive and act on safety issues in their organisations”, to describe the safety culture of a working group.
A safety perspective, as described by Lyxzén and Sturve (2006), opens the possibility of understanding why risky behaviours may be present in an organisation. The starting point for research on safety culture is that human decision-making is governed by cultural factors, with the internal processes of humans as the focus of interest, especially the individual's beliefs, assumptions and values. Lyxzén and Sturve define safety culture as follows: "Safety culture is an umbrella term that includes the individual's beliefs, acceptance, values and attitudes and how these factors affect the group's common standards and thus affect each individual's behaviour in the group for security in an organisation."

### 2.7.2 Features of safety culture

The quoted definitions suggest that safety culture concerns the dynamics between the individual and the group, including the mutual influence on values, attitudes, norms etc. This concurs with the generally accepted characteristics of a good safety culture, including communication and learning within the organisation, security commitment from the management and a working environment where safety is encouraged. A number of researchers in the field of safety management argue that the individual's attitudes to safety are important. Everyday management commitment to safety holds up the safety culture at the workplace (Firth-Cozens 2003). However, the mechanisms by which attitudes, or safety culture, affect the safety of operations is not clear (Sorensen 2002). The safety culture in an organisation develops over a period of time, as a result of history, the work environment and the workforce, health and safety practices, and management leadership (Reason 1998). Guldenmund (2000) emphasises the importance of assessing an organisation’s basic assumptions, since these are assumed to be explanatory of its attitudes (in Guldenmund’s article equated with safety climate). According to Guldenmund, there is a difference between safety climate and safety culture, since culture exists over a long period of time, in contrast with climate, which is more changeable due to attitudes and beliefs. The safety climate (i.e. the workers’ perceptions regarding the managements’ attitudes towards occupational safety and health) is related to the workers’ behaviour concerning safety and health work (Garcia et al. 2004).

Kirk et al. (2007) point out some essential features for the development of a safety culture: firstly, the quality of the communication between the staff and the management; secondly, agreement on all levels of the organization that security is important; and thirdly, confidence that the steps taken are leading to adequate
safety. The safety effectiveness in an organisation is reflected by the safety performance of the persons involved (Kjellén 2000). Comparisons can be made with Kirk et al. (2007), who argue that safety should be a characteristic of the organisational culture in health care. The expectation of the organisation is that all the employees should work safely and use safe practices. A high level of security can be achieved only when safety permeates the work and the decisions that each employee takes. Because security is multidimensional, interventions should also be multidimensional. This means, for example, the development of teamwork, the development of reporting and feedback, and the development of organisational learning (Kirk et al. 2007). Caregiver well-being and patient safety are influenced and determined by organisational culture and safety (Landsbergis 2003, Piirainen et al. 2003).

2.7.3 Safety management system

According to Kirwan (1998), safety management relates to the actual practices, roles and functions associated with remaining safe. The safety management system embraces the manner in which safety is handled in the workplace, and how policies and procedures are implemented in the workplace (Kennedy & Kirwan 1998). Mearns et al. (2003) have listed three general themes regarding ideal safety management practices: firstly, genuine and consistent management commitment to safety; secondly, communication about safety issues; and thirdly, the involvement of the employees. The third theme includes empowerment, delegation of responsibility for safety, and encouraging commitment to the organisation. Simola (2005) developed a model for safety leadership as a line supervisor’s task in a case study at a steel works. He states that communication is vital in the process, and his communication model involves the elements of risk assessment, accident and near-accident investigation, shop floor safety meetings, and advanced safety inspection. Simola also clarified the role of the supervisor as a safety leader using the developed model as a tool for enhancing the quality of safety management and implementing safety culture. In Finland many employees are working at shared industrial work sites, which make certain demands on the procedures for occupational health and safety. Thus, researchers at the University of Oulu have developed nationwide procedures for occupational safety. This development process, with a span of 10 years, has involved groups within different industrial work sites, and has resulted in the Occupational Safety Card
(OSC) system. This provides guidelines for training interventions in order to improve health and safety at work sites (Väyrynen et al. 2008).

2.7.4 Systematic work environment management

According to the Swedish Work Environment Authority's (2001) provision for systematic health and safety work AFS 2001:1, systematic health and safety work is to be a natural part of daily activities and cover all physical, psychological and social factors relevant to the work environment and workers. The work involves investigation, risk assessment, action, an action plan and monitoring/control. According to the Swedish Work Environment Act, SFS 1977:1160, Chapter 6, §2, safety representatives are to be appointed in workplaces with at least five employees. These worker protection delegates shall represent the employees concerning health and safety issues and work to promote a satisfactory working environment, but have no responsibility for the work environment. The employer has the primary responsibility for the work environment. The Health Safety Environment and Quality (HSEQ) approach developed in Finland for the heavy manufacturing and process industry and their suppliers (Niemelä et al. 2010) presents assessment routines to be utilised by a team of professionals. The HSEQ approach covers similar areas to those covered by the Integrated Management System (IMS) described by Wilkinson & Dale (2007).

2.7.5 Risk assessment for health and safety work

Risk assessment is the key for reducing work-related accidents or occupational diseases. The process of risk assessment concerns evaluating risks to employees’ safety and health from hazards at the workplace. The assessment involves a systematic examination of all aspects of work and determines: 1) what can cause injury or harm, 2) whether the hazards can be eliminated, and, if not, 3) what preventive or protective measures are or should be in place to control the risks. OSHA (2010) states that the employers at each workplace have a general duty to ensure the safety and health of workers concerning every aspect related to their work. This means that the purpose of carrying out a risk assessment is to enable the employer to take the measures necessary for the safety and health protection of workers. These measures include the prevention of occupational risks, the provision of information for the workers, and the provision of training for the workers. Risk assessment is managed by a stepwise approach: identifying hazards
and those at risk, evaluating and prioritising risks, deciding on preventive action, taking action, monitoring and reviewing, and documenting the risk assessment.

Risk assessment is a process to be conducted continuously, like an iterative and cyclic process. It is dealt with in European Council Directive 89/39 EEC, which states that assessments should be reviewed at regular intervals. This means that each member of staff has a responsibility for keeping himself/herself up to date with the current information on the tasks to be performed and the material or equipment being used. This means that a proactive and preventive strategy shall be applied. In this connection, it can be an advantage to use a participatory approach which engages the people involved at the workplace.

Pragmatic tools such as the PDSA cycle or the Future Workshop are well-suited to handling the iterative nature of systematic work environment management in the work to promote health and safety, as described in the section above. Such methods can be used as alternative methods for risk assessments, which my first study gives an illustration of. A participatory and team-based risk assessment followed by a mutually formulated action plan can be a successful method for reaching safer work for everybody involved. This is an experience from my third study, which is presented further in Chapter 5.
3 Research design

Chapter one presented the background, purpose and research questions of this thesis. Chapter two described the frame of reference, the research approach and the paradigm for the research. In this chapter the selection of the methodologies through which data were collected and analysed will be described. Furthermore, the research progress is presented.

The main research question is:

Are participative methods suitable tools for reaching improvements at work?

The main research question is divided into the following sub-questions:

- Are these tools applicable in different kinds of workplaces?
- What are the change agents?
- How can employees be empowered in their daily work?

Creswell (1994) states that it is the purpose statement for research that establishes the direction of the research. This statement captures, in a single sentence or paragraph, the essence of the study. The construction of a good purpose statement is based on the paradigm of the study in question. Accordingly, the following purpose statement has been formulated for the present study: “The purpose of this study is to discover whether participative methods are functional for reaching workplace improvement for personnel in various work environments”.

In order to find answers to the research questions, four case studies were conducted. In the first three studies (I, II, III), my role was to act as an investigator, i.e. to adopt a non-interventionist approach. Non-interventionism means that the researcher is not trying to influence the object being studied (Adler & Adler 1994). In Study IV an approach inspired by action research was used, meaning that I, as a researcher, was acting directly within the work groups. This approach gave the possibility of finding answers to research questions in combination with the possibility of providing professional and practical knowledge in the role of an ergonomics and rehabilitative facilitator in the organisation.

Research is about questioning and searching for answers to questions. As a researcher, one has to ask: “What question do I want an answer to? Are my questions important for somebody else? Is my research beneficial to somebody?” When formulating such questions, the development phase has started, which leads further into the topic of interest. In my case, the focus of interest concerns
participative methods, and whether these lead to empowerment of employees and persons involved in different work tasks and settings.

3.1 Empirical studies in real work environments

My research was conducted in real work environments with employees dealing with real work tasks and situations. Therefore, it is essential to describe the nature of empiricism.

Empiricism means gaining knowledge through the observation of real events, i.e. knowing by experiencing real situations through our senses (Graziano & Raulin 1997). The relevance of theory can be assessed by working in a real world environment. In empirical research the researcher can integrate research and practice, and make reflections according to theory. The emphasis is often on finding answers to specific questions or on testing a hypothesis. The empirical cycle (Fig. 7) depicts the stages in empirical research.

![Empirical cycle diagram](image)

Fig. 7. Empirical cycle.

Empirical research consists of five stages: observation, induction, deduction, testing, and evaluation. In the first stage, data and empirical facts are collected, which in the induction stage are interpreted to form a hypothesis. The third stage, the deduction phase, involves handling the newly gained empirical data. Testing the hypothesis with new empirical data makes the fourth stage, and evaluation of the outcome makes the final stage of the empirical cycle.

One objective of empirical research is to provide science with knowledge of the phenomenon studied. An additional objective is to prove the relevance of a theory by assessing the real world environment or context. The main reason for using empirical methods is to facilitate the integration of research and practice. In my view of the world, this stands for learning by doing in real situations,
combined with knowing using theoretical reference frames, i.e. a combination of science and best practices.

### 3.2 Case study

This study is built on empirical research within different work environments during the years 2003–2010, and it is a multiple case study, since it consists of more than one case. When working with case studies, one does not need to have a minimum number of cases (Tellis 1997, Sanda 2006). The researcher is working with the situation that presents itself (Tellis 1997). The most dominant characteristic of case studies is that they strive towards a holistic understanding of cultural systems of action. Actors performing activities in a social situation form the system (Feagin et al. 1991). Kuula (2001) points out the characteristics of functional case study research in an action research context. The features include orientation to practice, democracy, striving towards change, and the subjects participating in the process. This might be considered as a bias factor, since the researcher and the subjects participate in a social interaction (Yin 2009).

Case studies are suitable when seeking answers to research questions such as “How?” or “Why?” (Yin 2009). The case study allows an investigation to retain the holistic and meaningful characteristics of real-life events - such as life cycles, organisational and managerial processes, and neighbourhood change (Yin 1989). The focus is on a contemporary phenomenon within a real-life context. Many variables of interest can be investigated and multiple sources of evidence can be used, with theory guiding the collection and analysis of data. There are three types of case study research: explanatory, exploratory, and descriptive. Case study research can include single or multiple case studies. The data can be collected using various methods. This means that qualitative and quantitative methods can be used. Using various sources of data contributes to the strength of case study research (Yin 2009). The case study is interpretative, systemic and holistic, aiming to provide full and rich descriptions (Gummesson 2005). This view is shared by Lee et al. (2007), who state that empirically based case studies have the potential to contribute to the development of both theory and practice.

### 3.3 Progress of the research

My empirical research covers a span of seven years, and during this period I conducted projects (including assessments and evaluations) in different work
environments and contexts. A timetable explaining the progress of the research is presented in Fig. 8 below.

Research study 1  
Assessment, analysis, documentation. Dissemination  
2003-------------------------2004--------------------------2005

Research study 2  
Assessment, analysis, documentation. Dissemination  
2006-------------------------2007--------------------------2008

Research study 3  
Development of study. Team assessment Evaluation  
2008-------------------------2009--------------------------2010

Research study 4  
Action research, continuous data collection, analysis  
2007----------------2008-----------------2009---------------------2010

Research study 3 and 4  
Dissemination  
2010-------------------------- 2011

Fig. 8. Timetable of research.

3.4 Research method

Under this caption, an overview of the methods for data generation and analysis is presented, as well as a description of the reference frame. Finally, the validity and reliability of the research are described by reference to the criteria for qualitative research.

Qualitative research aims to gain a deep and meaningful understanding of phenomena which are not fully known. Qualitative methods can also gain new perspectives on already known phenomena or in-depth information on a topic. In such research, the reports are typically rich in data and details about the participants’ experiences or perceptions of the phenomenon studied. The reports are descriptive, often with an expressive language using quotations revealing
perceptions of the phenomenon of interest. Purposeful sampling (Patton 2002, Silverman 2004) is often used in qualitative research. This means that cases are selected for obtaining rich information, which is assessed by in-depth inquiry. Characteristic features of qualitative research are that the research is conducted in natural settings, the researcher uses herself/himself as a “human instrument” (Lincoln & Guba 1985), and the research process is emergent. This means that analysis occurs and proceeds during the entire research process, from the planning stage until the final conclusions. The researcher using herself/himself as a “human instrument” requires, according to Lincoln & Guba, that the researcher develops certain skill levels appropriate for the task.

A pragmatic set of methods, mainly qualitative methods (Patton 2002, Silverman 2004) has been used in the present studies. Moreover, quantitative data are presented to describe the demographics of the participants and to collect ratings on scales. The reference frame of my research has developed during the different stages in the process, which is one of the features of qualitative research. A schematic overview illustrating the progress of the research is shown in Fig. 9.

Fig. 9. Progress of the research framework.

The overall aim of my thesis is to contribute to knowledge by determining experiences perceived using participatory methods in real life contexts. In order to fulfil the purpose, four studies were conducted in work settings with participants who naturally collaborated in these contexts. Table 1 gives an overview of the
conducted studies in relation to the purpose and aims of the research. The research process is iterative, in that the empirical findings led to a literature search and to an analysis of the findings being performed in a cyclic manner throughout the process.

### Table 1. Studies in relation to aim (purpose).

<table>
<thead>
<tr>
<th>Study</th>
<th>Focus</th>
<th>Relation to aim</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Assessment of the Future</td>
<td>The usefulness of a participatory method as an ergonomics tool</td>
<td>Experiences and perceptions relating to a useful and practicable method, promoting employees’ participation in problem identification and suggesting changes</td>
</tr>
<tr>
<td>Workshop’s usefulness as an</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ergonomics tool</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II Factors that influence the use of safe patient transfer technique in home care service</td>
<td>The use of gained knowledge about patient transfer technique among home care service personnel</td>
<td>Identification and experiences of factors supporting and/or hindering the use of gained knowledge and skills after participation in transfer technique programme</td>
</tr>
<tr>
<td>III Evaluation of team-based risk assessment and action plans for patient transfers in two municipal homes for elderly.</td>
<td>The practical utilisation and experiences of team-based risk assessment in elderly care</td>
<td>Knowledge and perceptions relating to the use and benefits of a risk assessment method based on teamwork and collaboration</td>
</tr>
<tr>
<td>IV Experiences from a participatory ergonomics project among home care personnel, informal carers and unit leaders in a Swedish municipality</td>
<td>Ergonomics and rehabilitative professional as a facilitator in a home care organisation</td>
<td>Knowledge and understanding of the complex relationship between the task, person and environment, gained by being a part of the actual work context</td>
</tr>
</tbody>
</table>

### 3.4.1 Interviews

Interviews are one of the most commonly recognised qualitative research methods. When conducting a qualitative interview, it is more accurate to speak of generating data than to speak of collecting data. Most qualitative perspectives reject the idea that a researcher can be a completely neutral collector of information about the social world. Instead the researcher is seen as actively constructing knowledge about the world. Qualitative researchers have to develop a specific set of intellectual and social skills (Mason 1996).
It is often a more complex task to plan and carry out a qualitative interview than, for example, to develop and use a structured questionnaire for asking a set of predetermined questions. In that sense the informal and conversational style of this form of interviewing is based on a rigorous set of activities. Mason (1996) considers that the process involves activities that are intellectual, analytical and interpretive.

Patton (2002) describes three types of qualitative interviews: informal and conversational interviews, semi-structured interviews, and standardised open-ended interviews. According to Kvale (1989), the analysis of an interview is a part of theory generation and testing. Kvale conceives the research interview as a conversation about the human life world, with the interviewee’s oral expressions transformed into texts to be interpreted. Miles & Huberman (1994) suggest that, after each interview, field notes should be written which contain the most important findings and an overall impression of the interview.

### 3.4.2 Focus groups

The focus group is a qualitative research tool whose main strength is its ability to gain in-depth understanding of the topic being explored (Langford & McDonagh 2003). Wilkinson (2004) states that focus groups have a number of distinct advantages over one-to-one interviews. The focus group interview provides a way of collecting data relatively quickly from a large number of participants. Wilkinson claims that focus groups are “naturalistic”, i.e. close to everyday conversation. Focus groups also allow respondents to react to and build upon the responses from other group members, creating a “synergistic effect”. Focus group interviews are an appropriate method for data collection and, in such interviews, the interaction of the group is likely to benefit from treating issues of concern to the group. Bringing several people together to discuss ideas and thoughts can lead to a fruitful discussion (Wibeck 2000, Langford & McDonagh 2003, Wilkinson 2004).

The analysis of focus group data can, with advantage, be performed using content-analytic or ethnographical methods, as well as other qualitative techniques, and the resulting analyses can be presented in a variety of ways (Wilkinson 2004). Barbour (2007) claims that focus groups always have a considerable potential for comparison, due to the fact that they produce very rich data. Focus groups are often used as a stand-alone method, but they are also often
integrated in a multiple-method design with other qualitative methods and sometimes with quantitative methods.

The group size can vary, and typically 4–6 people are included for a comfortable group size (Wibeck 2000). The size can vary from four to eight, but it can involve as few as two or as many as 12 (Wilkinson 2004), or 6–12 people, depending on the purpose of the interview (Langford & McDonagh 2003). The moderator plays an important role as the team leader, facilitator and guide for the discussion (Wibeck 2000, Langford & McDonagh 2003, Wilkinson 2004, Dahlin-Ivanoff & Hultberg 2006, Barbour 2007). The group leader does not need to be an expert in the field under discussion, but she/he should be well aware of the limits in the study in question, to be able to formulate issues within this framework. Semi-structured interview guides can be used for focusing the discussion on the essential main areas of the topic of interest (Dahlin-Ivanoff 2002).

3.4.3 Questionnaires

A questionnaire can be described in simple terms as consisting of a number of questions that the respondents have to answer on paper or using a computer. The questions can be open-ended and closed-ended. The respondents formulate the answers in their own words when answering an open-ended question. When answering closed-ended questions, the respondents select answers from some options. Different rating scales can be used (Graziano & Raulin 1997), for example ordinal scales such as Likert-scales and psychometric response scales such as VAS-scales.

3.4.4 Field notes

Potter (1996) suggests that field notes can be written down on two levels. On the first level, which can be seen as a surface level, the observations are written down on the spot. On the following, second level, written comments and speculations about the events provide a more detailed description of them. Mason (1996) views field notes or a field diary of some kind as essential for the purpose of recording observations, perceptions, or interpretations in a reflexive manner. These can be an aid and a preparation for answering the questions, “What do I really want to know?” or “What am I looking for?” According to Miles & Huberman (1994), findings and overall impressions can be noted directly after a
conducted interview, serving as memory notes and aids for establishing validity and credibility.

### 3.4.5 Informed consent

When qualitative interviews are being used, it is ethically important to obtain the informed consent of all the participants in the research (Mason 1996). Informed consent may be written or oral, and is a tool for ensuring the participants’ integrity and confidentiality. Graziano & Raulin (1997) consider it important that the potential subjects for a study should be made aware of the procedures of the study in order to make an informed decision, and thus give their informed consent.

### 3.5 Data collection or data generation

In this thesis, the following methods have been used: Future Workshops, questionnaires, individual interviews, focus group interviews, and field notes (Table 2). The use of different empirical methods provides the researcher with various descriptions of a specific phenomenon. By the use of different methods, the internal validity in a study and the quality of the study are strengthened (Miles & Huberman 1994). Qualitative data tend to be detailed and rich (Mason 1996). Mason also claims that, once a researcher is convinced that a combination of methods that she/he is planning is meaningful in relation to her/his research questions, she/he has to consider carefully how to integrate those methods in the research.

<table>
<thead>
<tr>
<th>Study</th>
<th>Future Workshop</th>
<th>Questionnaire</th>
<th>Individual Interviews</th>
<th>Focus groups</th>
<th>Field notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1</td>
<td>81</td>
<td>81</td>
<td>24</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Study 2</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Study 3</td>
<td></td>
<td>20</td>
<td>6</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Study 4</td>
<td></td>
<td>274</td>
<td>13</td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

### 3.6 Data analysis

Inductive analysis of data (Patton 2002) is frequently used by qualitative researchers as a means to extract the critical themes from the generated data. It is
a challenging task to sort out the meaningful categories, examine and interpret the data in a holistic manner, and disseminate the findings to others. Qualitative research is characterised by its description of the phenomenon studied using the “interviewees’ voices” in the material, i.e. by using quotations as illustrations (Malterud 2001, Lincoln & Guba 1985, Patton 1992). The analysis starts as soon as the researcher starts to generate data and continues as the research proceeds (Kvale 2007). According to Kvale, the researcher begins the data analysis even while generating the data when conducting focus group interviews and one-to-one interviews.

The data gathered from workshops, individual interviews, focus group interviews, written evaluations, and questionnaires were assessed and interpreted in a cyclic process. The material from questionnaires and interviews was analysed stepwise using a qualitative methodology (Patton 2002, Silverman 2004).

3.6.1 Content thematic analysis

In the second and third study, a qualitative thematic content analysis was used for analysing the data. It is a method dealing with manifest as well as latent data in a text (Graneheim & Lundman 2004). According to Downe-Wamboldt (1992), a qualitative analysis aims to provide knowledge and understanding of the phenomenon under study. This involves a procedure for searching for clues and meaning in communicative data (Krippendorff 2004). A category in qualitative content refers mainly to a descriptive level of content, and can be seen as an expression of the manifest content of the text. Discovering latent content involves an interpretation of the underlying meaning of the text, and the themes can be seen as expressions of the latent content (Graneheim & Lundman 2004).

The analysis is guided by a stepwise procedure, as described by Downe-Wamboldt (1992). Reflecting on the data occurs during the data collection, and continues while transcribing and listening to the interview material. Verbatim transcriptions open up the possibility of returning to the data several times, to reanalyse in the light of new insights (Barbour 2007). The transcriptions are read several times for identifying meaning units, which are condensed and compared and sorted into preliminary categories. In the next step, the categories are compared and the themes are identified. The categories and themes are discussed with a colleague or another professional until consensus is reached. In the second and third study, the manifest content is presented as categories and the latent content as themes.
3.6.2 Phenomenography

A phenomenographic approach was used for analysing the data in the first and fourth study. The phenomenographic approach (Marton 1981, Sjöström & Dahlgren 2002, Tollén et al. 2007) is characterised by “depicting what is shown up” (Kroksmark 1987), and important patterns and themes are identified and considered in the analysis. The approach describes the collective variations of the participants’ perceptions of the phenomenon of interest, which is explored jointly by the interviewer and the interviewees (Marton 1994).

Data are obtained by interviews, often audio-recorded and transcribed verbatim. The phenomenographic analysis involves reading through the material several times in order to become familiarised with the content. Significant statements related to the phenomenon under study are identified. Differences and similarities are collected and grouped into categories, and the categories are labelled. Global meaning is identified when sufficient evidence is found pointing to an overall meaning expressed by the participants. A comparison is made resulting in the identification of a logical relationship between the described categories, called the outcome space. The outcome space describes categories with qualitatively different conceptions of the phenomenon, i.e. variations (Marton 1981).

3.6.3 Triangulation

Triangulation is a process that allows the researcher to confirm his/her results by making comparisons with findings from other measures. Essentially, findings from different sources, methods, theories and researchers are compared. Triangulation is a way of increasing the trustworthiness and credibility of a qualitative study (Flick 1998). Triangulation can enhance the understanding of a complex phenomenon (Malterud 2001).

When using methodological triangulation, the researcher is adding dimensions to the gathering of data by increasing the sources of data. Methodological triangulation strengthens the research by building in several different dimensions (Potter 1996). This view is shared by Mason (1996), stating that triangulation is the use of a combination of methods to explore one set of research questions. Wolfram Cox & Hassard (2005) consider that method triangulation takes place when the researcher uses three or more methods to be able to validate the results. According to Potter (1996), the convergence of
observations and methods conforms to one interpretation. Contrasting views also appear, helping to uncover the conditions in which differences emerge. Barbour (2007) explains that the idea behind triangulation is that data produced through applying different methods can be compared in order to confirm or disconfirm findings or results. Whilst triangulation is a problematic concept, Barbour (2007) considers that focus groups can provide parallel data, and hence facilitate the comparison of contrasting datasets. This can be seen as a strength of the focus group method.

3.6.4 Reliability and validity

Mason (1996) asserts that qualitative researchers have to ask themselves questions about the basis on which they can make generalisations, and about the validity and reliability of their research.

Reliability is a kind of quality test of the method used. Validity refers to the ability to measure what you intend to measure. Validity is closely linked to generalisability, i.e. whether your results are transferable to other persons, groups or situations (Easterby-Smith et al. 2002). Perhaps the most important validity in work life studies is pragmatic validity (Patton 2002), which means that the presented perspective is judged by its relevance and usefulness for those to whom it is presented, i.e. its ability to create usable outcomes. Risikko (2009) describes pragmatic validity as the ability to create results that are usable by the stakeholders, i.e. decision makers and employees at the workplaces.

3.6.5 Trustworthiness

The trustworthiness of a research study is essential when evaluating its value, as asserted by Lincoln & Guba (1985). They suggested a set of criteria relating to qualitative research, namely credibility (internal validity), transferability (external validity), dependability (reliability), and conformability (objectivity).

- Credibility deals with the question: “Has the researcher investigated what he intended to investigate?” Credibility depends on the richness of the information and on the researcher’s analytical skills, and it can be enhanced through triangulation (Patton 2002). Flick (1998) considers that credibility is the main consideration in qualitative research.
- Transferability. In case studies, implications for practice can be generated, and these may have relevance to other contexts (Kvale 1989). This concerns the question of whether or not the findings can be applicable to a new situation or new participants (Lincoln & Guba 1985, Holloway & Wheeler 1996).

- One measure for enhancing the dependability of qualitative research proposed by Lincoln & Guba (1985) is the “inquiry audit”. This involves a researcher not involved in the study examining the process as well as the results of the research method for such a measure.

- Conformability concerns the degree of neutrality or objectivity with which the researcher reports what is found, and the extent to which she/he gives a balanced and non-judgmental account (Lincoln & Guba 1985, Patton 2002). Reflexivity is a term used concerning researcher objectivity. Malterud (2001) states that the researcher’s background and position will affect the choice of research topic and methods, the findings which are considered to be most important, and the framing and dissemination of the conclusions. Malterud points out, “Preconceptions are not the same as bias, unless the researcher fails to mention them.”

Lincoln & Guba (1985) suggest certain techniques for enhancing trustworthiness. One way of increasing credibility is the use of peer briefing, which means analytical probing and testing and defending hypotheses, assumptions and perspectives in peer discussions. Thick descriptions can be used for establishing transferability. By describing the phenomenon in detail, one has the possibility of exploring the extent to which the conclusions are transferable to other settings, situations or people. Dependability can be enhanced by an “inquiry audit”, as described earlier. To achieve confirmability, techniques such as the confirmability audit or triangulation can be utilised. Triangulation is a process that allows the investigator to confirm his/her results by making comparisons with findings from other measures. Essentially, findings from different sources, methods, theories and researchers are compared.

### 3.7 Frame of reference

The aim of this thesis is to determine experiences of participation for the purpose of work improvement. In this chapter I am going to present the frame of reference for my research, and how my view has developed. This thesis is built on empirical
research using a holistic and participatory approach, from the perspective of a pragmatic view of knowledge.

### 3.7.1 Background and experience

My 30 years of experience of working as an occupational therapist (OT) can be seen as an asset when conducting empirical research within the area in question. During these years I worked in the profession of district OT in primary health care for 16 years, and for about five years as an OT at the local hospital, involved in work ability rehabilitation. During the past four years I have been working with municipal elderly care as an OT in the home care services. I also worked for a short period at Arbetslivsinstitutet (the National Institute of Working Life, NIWL) in Stockholm, before it unfortunately closed down, due to a change of government in Sweden. It is clear that my previous experiences and perceptions have influenced my research and my studies. It is impossible not to take my pre-knowledge into account. This pre-knowledge has led me to the point where I am standing at the moment, and has been guiding me through the development which I have undergone during the research process.

### 3.7.2 Role in present studies

My role as a researcher has been the role of an assessor or investigator of the methods used at the work sites in Studies I-III, without directly playing an active role in the development process. The research was inspired by action research, although this approach was not fully applied. The direct intervening at the work sites was performed by those colleagues who normally worked at the workplaces in question. This means that the work processes continued as they normally did, without any interference from an external researcher from the “outside”. As the researcher in the studies, I am strongly convinced of the fact that working with participative risk assessment and action plans is most successful if the process develops and grows with the natural participants involved. This means providing a foundation for long-term effects, with development processes growing within the natural work groups. Study IV was conducted inspired by the action research approach, with me as a facilitator acting directly in the work groups at the same time as I acted as an investigator. This provided me as a researcher with opportunities both to follow and to act in real life work, i.e. to observe, consider and understand the phenomenon in its natural context (Miles & Huberman 1984).
My intentions and my chosen approach concur with those of researchers such as Åborg (2002), who asserts that work life research seeks to know something about real life situations, simply to know what is happening in ordinary workplaces.

### 3.7.3 View and reference frame

In my view, participation is an important aspect of empowerment and learning is an essential ingredient in work processes. Schön (1983) states that people learn to do something through actually doing it, i.e. that learning occurs by reflecting in action and on action. Reflective practice (Schön 1983, 1987) is a continuous learning process. Learning by doing (Dewey 1925) and the Deming cycle (Deming 1993) focus on acting and reflections regarding the “doing”. These features are connected, and similarities can be found. This view of doing, reflecting and learning is supported by Ghaye (2001), who describes learning and empowerment as closely associated, since empowerment is a question of consciousness-raising through reflection. These connections helped me to form my frame of reference, which links doing and learning to empowerment. This standpoint led me to the frame of reference of the present thesis, which comprises a holistic and pragmatic view of knowledge, and a naturalistic approach (Lincoln & Guba 1985) to research.

### 3.8 Ethics

The directors of the workplaces concerned approved Studies I-IV. Traditional ethical principles have been followed (Fontana & Frey 1998). Participation was voluntary, with the possibility of withdrawing from the study at any time. Information about the projects was provided verbally and in writing, and included the aim and purpose of the research, and the length of the research period, etc. The informed consent of the participants was obtained. Confidentiality was secured, and personal data could not be connected to any individual person. The research material was stored safely. The participants were able to reflect upon their participation after the conducted interviews.
4 Findings

4.1 Paper I


Paper I assesses the usefulness of a participatory method in a study involving professional cleaners, health care personnel and miners in the northern part of Sweden. The aim was to determine perceived apprehensions of the Future Workshop (FW) method among the participants, and immediate or long-term actions resulting from the workshops. Another aim was to evaluate the scientific value of the FW method as an ergonomics tool. A descriptive evaluation design with an analysis inspired by the phenomenographic approach was used. Multiple methods yielded a combination of qualitative and quantitative data. Eight FWs were conducted, with a sample of 81 participants. They filled in an evaluation questionnaire with 12 items (Appendix 1) directly after each conducted workshop, and three months later. Eight foremen/forewomen and 16 colleagues of the participants were interviewed and filled in a short questionnaire with a VAS-scale three months after each conducted workshop (Appendix 2a, 2b).

The results showed a positive relationship between the participants’ perceptions of the Future Workshop immediately after and three months later. They rated the usefulness as high regarding problem identification and problem solving, and the ease of understanding the method and the ease of participation were also rated high. These items scored above four on a five-point scale (Appendix 3). Paired Students t tests indicated conformity between the evaluations directly after and three months after, and the Pearson’s correlation coefficient values were close to one (.948**). The FW participants developed action plans and proposed changes (see Appendix 4, which contains an example from one FW, written in the original language), and started change interventions after the conducted workshops. The interviews with the foremen/forewomen and the colleagues and the resulting VAS-scale values showed conformity between the participants’ problem identification and proposed changes at the FWs, and the interviewees own conceptions. An analysis of the field notes and memos pointed out patterns and themes connected to fantasy, involvement and focus on reality.

65
and action. In conclusion, the Future Workshop method was considered to be a useful ergonomics tool.

4.2 Paper II


The aim of this study was to explore whether home care service personnel use knowledge and skills in transfer technique in their daily work, and to identify factors that may hinder and support the use of gained knowledge and skills. A qualitative method using an explorative and descriptive approach was used. The study was based on interviews in home care services in a large and a medium-sized town in Sweden. A selection criterion was that a functioning continuous training programme in patient transfer technique should be offered to the personnel, and that the selected participants in the study should have completed such a programme. Focus group interviews were conducted in each town, with six employees from a home care team in each group. Individual interviews were made with the unit leader, operative manager and safety representatives. A semi-structured interview guide was used in this type of interview (Appendix 5). The interviews were transcribed and analysed using qualitative content analysis. A co-worker checked the transcriptions, codes and categories, and discussions were held with a second co-worker during the analysis process. The findings pointed out that the home care personnel tried to use their knowledge and skills. However, both hindering and supporting factors were identified. The factors obstructing the use of safe work technique were, for example, narrow working spaces and physical hinders in the home environments. The desires of care receivers and their relatives could conflict with safety aspects in the work environment, which could cause dilemmas for the personnel, and this was also found to be a hinder. A lack of information about the persons receiving care was a third hinder. Support from unit leaders and safety representatives was described as important. Group or unit leaders played an essential role in supporting the personnel in gaining awareness of work environment issues and keeping the issues alive in their daily work. The findings indicate that training programmes should not be implemented as isolated actions, and point to the importance of considering both hindering and supporting factors when planning and developing strategies for safe work technique. These
factors are connected to the physical environment, the people receiving care and their relatives, and the work organisation.

4.3 Paper III


The study evaluated a team-based risk assessment method used in transfer situations in two municipal homes for elderly. The aim was to examine whether team-based risk assessments and action plans (see the Risk Assessment and Action Plan in Appendix 6) were a functional participatory method for improving daily work. Three focus group interviews were conducted with care staff of the two homes for elderly. One-to-one interviews were held with managers and occupational therapists of each home. Semi-structured interview guides were used (Appendix 7), focusing on the following discussion areas: the team, the elderly individual, and the use of the material for assessments and action plans.

The interviews were analysed using a qualitative method inspired by qualitative content analysis. They were transcribed verbatim, and categorisation was discussed with a colleague until consensus was reached. An analysis was made of the assessments and action plans carried out by the staff at the two homes during 2009. The findings indicate that the approach of team-based risk assessments and action plans was perceived as a functional participatory method for improving work. A short questionnaire (Appendix 8), which was filled in by the focus group participants at the end of the interview, showed conformity with the interview findings. The study showed that the usefulness of the team-based approach is two-fold, in that it is beneficial to the staff and to the residents at the two homes for elderly. The caring staff had a positive perception of working with systematic risk assessments and developing action plans through active teamwork involving those who were close to the care receiver. The approach resulted in functional problem solution and improvement of work. The strength of the method was stated by the focus groups and the individual interviewees to be that each individual member of staff had been able to make her/his voice heard, and that everyone’s contribution was important for the mutual teamwork. The study pointed out that it is important that caring staff possess an awareness of systematic work assessment. It is also vital that they are active in issues regarding
their own work. Enablers or facilitators are essential for maintaining the safety and health focus and, in an objective light, keeping the needs of the personnel and the elderly residents in mind. These enablers may, with advantage, be rehabilitation professionals and managers.

4.4 Paper IV


This study aimed to gain understanding of experiences gathered using a participative approach involving rehabilitative and ergonomics aspects and applied among home care staff, informal carers and unit leaders in a Swedish municipality. The project was inspired by participatory action research, and a phenomenographic approach was used for analysing the data. The study comprised two parts: one focusing on the collaborators’ perceptions regarding the occupational therapist as a resource in home care services (Appendix 9), and one focusing on the participants’ perceptions from a programme in patient transfer technique combined with practical training in daily tasks. The data collection was carried out during the years 2007–2009, and various methods were used: field notes based on observations, questionnaires with open-ended questions (Appendix 10), and semi-structured interviews. The material from the questionnaires and interviews was analysed stepwise, using a qualitative methodology. A colleague compared the written material with the author’s analysis during different stages of the process, and the analysis was discussed until a consensus was reached. The findings pointed out the strength of having a rehabilitative professional working directly within the home care group. The findings resulted in three overarching themes connected to safe work in ordinary home environments and dealing with the questions “Why?”, “When?” and “How?” concerning the achievement of a safe work performance (Fig. 10). These three questions concern the home care staff and the informal carers or close relatives involved in the care receiver’s daily life. Transfer situations in daily life cannot be seen as individual issues. On the contrary, they are a matter of mutual interest for all involved, and must be treated as such to reach as safe and secure movements/transfers as possible. The findings in the study contribute to an
understanding of the complex relationship between the person, the environment and the task. The participation of and collaboration between the actors are essential, regardless of whether the assistant is an employed person or an informal carer, and regardless of whether the matter concerns movements/transfers or personal care (Fig. 11). Efforts should be made to empower the assistant as well as the receiver of care, in terms of reaching the wholeness of a complete solution using a holistic approach.

Fig. 10. Overarching questions (illustration from Skoglund-Öhman (2011), with permission from the publisher).

Fig. 11. Actors around the receiver of care (illustration from Skoglund-Öhman (2011), with permission from the publisher).
4.5 Summary of the main findings in Studies I-IV

A summary describing the main empirical findings of the four studies, and their contribution to the fulfilment of the aim is now presented to illustrate the actual beneficiaries from my research.

The research contributions based on Studies I-IV, which have been published in original articles, are first presented in Table 3, which lists the main empirical findings and contributions. Then Section 4.5.1 presents the main findings in greater detail.

Table 3. The findings of the studies in relation to the aim (purpose).

<table>
<thead>
<tr>
<th>Study</th>
<th>Main empirical finding</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
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The main research question was:

Are participative methods suitable tools for reaching improvements in working life?

This question was divided into the following sub-questions:

If the answer is yes, are these tools applicable in different kinds of workplaces? What are the change agents? How can employees be empowered in their daily work?

The research questions were answered in Studies I-IV as presented above. The main findings are the answers to the posed research questions, as presented below in greater detail.

4.5.1 Main findings

- Participative methods are suitable for achieving workplace improvements.
- The methods are applicable in different work environments.
- The essential change agent is the reflective thinking of the persons involved and their engagement in their work.
- Employees are empowered by their involvement in the work.

Similarities are found between the four studies regarding the use of participatory methods and perceptions of such methods as appropriate for making improvements at work. This is shown by the results of the interviews and questionnaires. In the first study, all those involved in the assessment pointed out the value of the active involvement of employees in both problem identification and finding solutions, and were of the opinion that the qualities of the FW method were related to the structure and practical implementation of the method. The study involved different employees, namely miners, health care personnel and professional cleaners. In the second study, the interviews showed that the participants (home care personnel) had a positive attitude towards the training programmes, describing them as fruitful, important, and giving new insights into safe work technique. Training programmes were developed on the basis of the experiences and expressed needs of the personnel engaged in home care. In the third study, the caring staff at homes for elderly, the OTs and the managers pointed out the value of team-based assessments in providing a functional tool for developing action plans for each care recipient. Finally, the fourth study showed
that the home care personnel, unit leaders and informal carers all stated the importance of working in collaboration with shared goals in connection with the receiver of care. Collaboration was seen as a natural means of achieving the best practices for work tasks in the care receiver’s home environment.

Study I can be summarised by using a comment from one foreman of a group of miners participating in the conducted FWs: “The workshop was good... now the workers have spoken out about problems and they have suggested solutions... and some solutions were really easy to implement.” Conformity was found between the problem identification and the proposed changes developed during the FW sessions, and the perceptions of interviewed workmates and foremen. The results from a paired Students t test comparing the means of the participants’ attitudes towards the FW method, directly after and three months after the conducted FWs, showed a coefficient close to one (.948**), which means a strong relationship (Appendix 3) with high correlation, indicating that the workshops were perceived as very positive both for the individual and the team.

In Study II the interviewees (home care staff, managers, unit leaders and safety representatives) gave a common description of the home care personnel trying to use their gained knowledge and skills, and meeting supporting as well as hindering factors in their daily work. One comment from the staff illustrating the responsibility for safe work is: “We have our own responsibility and we have to take that responsibility, especially after taking part in the training programme.” Their manager declared, “Our responsibility is to inform and educate the staff, but they have their own responsibility. This is a part of their profession, in terms of considering, ‘What am I doing, and how?’ This is a shared responsibility.” The study indicated that training programmes should not be implemented as isolated actions, but by also considering the physical environment and the wishes of care receivers and their relatives, as well as the work organisation, the safety culture and the role of managers.

In Study III the personnel stated, “The benefit is that we are all participating, and we can make our voices heard in a structured manner, and each of us has an opportunity to speak out.” The OT’s emphasis focused on finding the causes of problems and she discussed with the staff by asking questions such as: “What is not working with regard to the task, and why? Might the time of the day be affecting the elderly person’s performance? What if we were to try to use another technique instead?” Practical assessments and trials regarding the actual situation were made, followed by the development of an action plan. Managers wanted to see a continuous process: “It is a matter of continuity, and I don’t believe in an
OSH-person coming from the outside concentrating solely on the work environment. You have to use the perspective of both the individual care recipient and the personnel, to work with the entirety…”

In Study IV, the OT actively collaborated with the home care personnel, informal carers and unit leaders during a period of three years. During these years, the OT worked together with the personnel in their ordinary daily tasks, involving personal care and transfer or movements in daily life activities. Transfer technique programmes were conducted once per year during these three years. An evaluation regarding the collaborators’ perceptions of interacting with the OT showed a unanimous view of the OT as a resource and strength for the rehabilitative approach, as well as safe work awareness. Evaluations after each transfer technique programme pointed out an enhanced awareness about safe work performance and deepened insight into movement/transfer situations. Hindrances for a safe work technique were reported in the material by more than half of the participants. The importance of care receivers being actively involved in their own movement was regarded as an influencing factor in the mutual work for safety in daily life.

These four studies highlight participation as an essential factor for reaching quality and safety at work. This is described in different ways, by focus groups and one-to-one interviews, questionnaires and the observations of the researcher personally participating in the employees’ daily work. Participation is expressed in terms such as “making one’s voice heard”, “now workers have spoken out about problems and found solutions together”, “it is a shared responsibility” and “it is a matter of continuity, and working with the entirety”. The possibility of shared problem identification and solutions instils a sort of strength in the team. New ideas are developed and actions are evaluated. This results in a sense of empowerment, which is built up by discussions and reflections in a shared process leading towards the goal. The process continues, according to the principles of “learning by doing”. I suggest visualising the process through a model which I name “Knowing and Growing at Work”. This is an on-going process, consisting of questioning, assessing and testing possible solutions in a continuous iterative cycle, as depicted in Fig. 6 on page 41 in the present thesis.

The shared experiences and visions can be seen as a type of reflective practice which, with advantage, could be developed further. Professional knowledge and skills regarding the approach are one prerequisite for fulfilling the structural body for development, in order to reach real reflective practice. In the four studies of my research, reflective thinking occurs among the persons
involved. I am satisfied by the discovery of reflective thinking among the participants in the studies, although deeper analysis or consideration of this specific phenomenon was not an aim of the research. The emphasis of my research is not on developing reflective practice, since the factual aim is assessing participatory methods for reaching workplace improvements.

Empowerment is based on the involvement of those concerned. This is the key for changes, i.e. the change agent. In my research, I choose to use the term “change agent” for the phenomenon of empowerment, although researchers such as Caldwell (2003) define change agents as “the individuals or teams that are going to initiate, lead or take direct responsibility making change happen”. I prefer to label empowerment itself as a change agent, referring to Longman’s Dictionary of Contemporary English (2000) and the explanation of agent as “someone or something that affects or changes a situation”.

The four studies give a view of participation and empowerment from different perspectives: the “shop floor level” of the miners, and the perspectives of professional cleaners, health care personnel, home care service personnel, managers, safety representatives, and other collaborators.
5 Discussion

This research has sought to reach understanding and knowledge of participation as an ergonomics approach. Another aim was to investigate the usability of participatory methods, and to find out what makes the essential potential for change.

At first glance it might seem that each of the studies presented in this thesis is very simple. In fact, they might appear to be too simple for the empirical research in question. However, in my opinion, the simplicity of the conducted studies has helped me to integrate research and practice. I believe that people (i.e. all of us) are parts of continuous learning cycles. We are all participants in activities within ordinary environments (meaning in this research different workplaces and work teams). This makes it possible for us to develop and reach enhanced understanding and knowledge of situations. Therefore, my research has been conducted in real work environments, in real work situations. The assessments of questions of interest have been made in a simple and natural manner, and have been easy to grasp and perform, just like common involvement in workplace activity. This has been done in order to avoid a sense of constructed or artificial factors or influences which might disturb the natural setting or situation.

The participatory approach combined with my professional experiences led me towards the path of empowerment. With this followed an awareness of the importance of mutual assessments and mutual planned interventions regarding systematic work environment management concerning health and safety. My previous experiences regarding risk assessments and action plans were one source of inspiration that led to the present thesis. This meant a journey from the first Future Workshops held with cleaners, health care personnel and miners eight years ago, to the collaborating rehabilitative and ergonomics steps in elderly care some years later.

Participation in one’s own work environment and active involvement in one’s own situation are essential for the achievement of a good and healthy situation. The use of collaborative processes such as problem-based learning (Egidius 1999) or learning by doing (Dewey 1925) has been shown to be fruitful for development and improvement. Arneson (2006) found that the PBL method facilitated empowerment processes. Learning and reflecting upon your experiences help problem identification and finding solutions to problems. I agree with the assertion that reflective thinking can be seen as continuous knowledge creation
and recreation (Haraway 1991, Suchman 2002, Ghaye 2007). I also agree with the view of Thatchenkery and Chowdhry (2007) that empowerment is a knowledge enabler in an organisation. The iterative nature of continuous learning cycles (Engeström 1999) provides a foundation for my pragmatic view of life-long learning by individuals doing and acting in various tasks with various demands. Empowerment as the key for knowing and changes is illustrated in Fig. 12. By depicting empowerment as a spiral or a helix, I want to symbolise the iterative processes and continuous development at work. Factors such as SoC, flow, and work engagement affect the level of empowerment. Involvement, learning by doing and reflective practice also influence the process. These influences are depicted as factors surrounding the helix of empowerment.

![Empowerment as a helix, surrounded by influencing factors.](image)

Encouraging the persons involved to work with their problem solving can be the key to the presented problem. There are many different methods of an interactive and socio-democratic character. The Future Workshop is one of these methods. A conducted Future Workshop can be the direct and immediate solution to a problem. Mostly, such workshops prepare the foundation for new perspectives, future visions and new ideas for solving problems, as described in my first study (Junk & Mullert 1984). The method aims to support participants in identifying common problems, developing visions and ideas, and making an action plan (Denwall & Salonen 2000). The participants formulate shared interests and goals, and are actors concerning shared themes (Eriksson 1991).

I have been inspired by Antonovsky’s (1979) Sense of Coherence (SoC), as well as by Csíkszentmihályi’s (1990) concept of Flow in my view of research.
work, and in my paradigm of life. These approaches describe how we as human individuals can reach a sense of well-being and commitment, and can find meaningfulness and motivation in our lives. This is applicable in a holistic perspective, by means of covering an individual’s different life spheres (not only work, but also family life, private life etc.). I believe that, when reaching a SoC, and experiencing moments of Flow, the individual can also reach engagement. The concept of engagement as defined by Kahn (1990) refers to individuals being able to express their entire self physically, cognitively and emotionally in their roles.

Change management and improvement processes in the workplace require the involvement of the persons concerned. Participatory ergonomics has been used and developed during the past three decades, and has been shown to be successful for the improvement of working conditions and quality (Noro & Imada 1991, Haines & Wilson 1998, Evanoff et al. 1999, Hignett et al. 2005). As I stated earlier in this thesis, it is clear that participative actions with safety in mind must be integrated in daily work, i.e. must be an integral part of a practice. This means that iterative, cyclic processes have to go on continuously, since the work situation is never static in any kind of workplace. When bearing health and safety in mind, it is important to understand the value of knowledge. This can be achieved in the work team by a supervisor facilitating development in the team and its employees so that good practice is achieved. The supervisor's role in developing knowledge and skills in the working group is to achieve good performance and an enhanced safety culture in their daily work.

Employees close to the work are often recognised as being the best persons to make suggestions about improvements in their own work environment (Vredenburg & Zackowitz 2001, Mitchell et al. 2005). It is clear that the closer one is to the workplace, the better one understands the problems. The personnel involved in Studies I-IV, who represented a spectrum of workers consisting of miners, professional cleaners, health care personnel, and home care service providers (and also, of course, family members acting as informal carers), made suggestions not only concerning ways to improve the quality of work, but also concerning ergonomic solutions to the problems which they were dealing with. In accordance with the idea that those who are close to the problem are also those who have best understanding of it, empowerment can be connected to enabling (Ghaye 2005, Arneson 2006). Empowerment can be found on the individual, team, organisational and society level, and can create enabling and promote the taking of power. Empowerment concerns sharing and supporting ideas in the work team,
and gives rise to well-being (Siitonen 1995). It also concerns providing the team with support and facilitating tools/methods in order to help the enabling/empowerment process and knowledge creation.

Polanyi (1969) used the term “knowing” instead of “knowledge” in order to point out the active utilisation of knowledge, to view knowledge as an activity. I would like to draw connections between Polanyi’s conceptions of knowledge and knowing, and Dewey’s (1916, 1925) conceptions of humans as actors in their world creating knowledge by acting in relation to their environment. Dewey stated that knowledge is created in an action in relation to the environment, in terms of a continuous renewal of knowledge (knowing) by the intimate interplay between the human and the environment. Dewey also argued that the foundation of human thinking derives from seeking solutions to problems. By reflecting on issues, humans can control their actions in a conscious manner. In my view of the world, this means, for example, that humans can reach knowledge (knowing) and can be empowered by combining experiences and reflections. Almost a century after Dewey’s experiences and view of the surrounding world, I would like to assert that experiences of problem solving and actions in daily tasks and challenges, together with reflections, build a base for knowing (knowledge). Gustavsson (2000) states that knowledge is a power for the production of new knowledge, in agreement with Dewey’s statements. I share this point of view, preferring to use the term “knowing”, as I assume it to be a term that denotes an active involvement for creating knowledge, based on collaboration between humans and the surrounding components in the environment. In the case of the present research, the surroundings or environment are the work system (Kuorinka & Forcier 1995, Hendrick & Kleiner 2002, Risikko 2009) in which the elements influence each other.

5.1 Aspects of the findings

Pragmatic tools such as the PDSA cycle or the Future Workshop are well-suited to dealing with the iterative nature of systematic work environment management. Such methods can be used as alternative methods for risk assessment. A participatory and team-based risk assessment followed by a mutually formulated action plan can be a successful method for achieving a safer work environment for everybody involved. Study I showed that the participants in the Future Workshop, as well as their work colleagues and managers, considered the workshop method to be a useful ergonomics tool. Paper I has limitations due to
the fact that precise exemplifications of problem identifications or developed proposals for changes from the actual work settings are not presented. However, the aim of Study I was to determine perceptions of the Future Workshop method, and whether immediate and/or long-term actions based on the action plans were taken after the workshops. The aim was not to present the process and its details specifically based on each conducted workshop, or to compare the work settings with each other.

Study II deals with the use of safe work technique after participating in a transfer technique training programme for home care personnel. The study is based on interviews with staff connected to home care, and points out that the personnel tried to use gained knowledge and skills. However, both supporting and hindering factors for the use of safe work technique were found. This is in concordance with Koppelaar et al. (2009), who found a number of barriers and facilitators for implementing a safe technique. As Study II was based on interviews, it did not elucidate the extent of the factual utilisation of the methods of the gained transfer technique. On the other hand, natural co-operation between different professions was described, presenting communication and mutual actions for problem solving and solutions within the work groups. Moreover, it is important to identify factors that might affect safety in work situations. Factors such as a lack of information about care receivers’ abilities, and inexperienced personnel being scheduled to assist individuals with complex needs were identified in the study. Bearing safety in mind, it is essential to raise such issues in order to foresee the potential safety risks, which should be minimised and removed.

The risk assessment method assessed in Study III is one example of a successfully disseminated method whose qualities address the issue of participation from the involved groups in the development of routines from the very beginning. This forms a foundation which enhances the possibilities of long-term development realised through a participatory process. The Future Workshop, which was evaluated as an ergonomics method in Study I, is an additional example of a feasible participatory method whose qualities are related to the structure and practical implementation of the method. Since these methods enable the participants to carry out problem identification and formulation of solutions and goals, they support the empowerment of both individual employees and work teams. Team-based risk assessments and action plans were also considered as efficient methods, which is described in various comments from the caring staff, occupational therapists and managers in Study III. The risk assessment routines...
are in agreement with the Health Safety Environment and Quality (HSEQ) assessment (Niemelä et al. 2010), which covers similar areas to those covered by the Integrated Management System (IMS) described by Wilkinson & Dale (2007).

The findings in Study IV provide empirical facts supporting the importance of participatory ergonomics in home care for elderly. Study IV underlines the necessity of collaboration between the receiver of care and the assistive person, and support from an ergonomics and rehabilitative facilitator. Training programmes in transfer technique combined with supervision in daily situations resulted in enhanced awareness about safe work. The researcher noted this through hearing opinions expressed by the participants while working side by side with them, and through observing the performance of participants during different daily work tasks. However, it was stated that changing a practice is complex, which is in concordance with other studies (Mitchell et al. 2005, Hignett & Crumpton 2007). One precondition is a process of continuous learning with training programmes combined with practical training in daily work situations. The findings in my studies highlight the fact that home care service personnel and staff in elderly care require support and guidance in the area of patient transfer/movement. This is supported by earlier studies (Brown-Wilson 2001, Kjellberg 2003, Hignett & Crumpton 2007, Hasson & Arnetz 2008) claiming the importance of improving competence and skills among home care personnel.

The implementation of new practices in an organisation requires enabling or helping factors, such as management support, personnel participation, and the acceptance of change. It also requires training and support before and after the implementation phase (Hendrick & Kleiner 2002, Langford & McDonagh 2003, Väyrynen et al. 2004). The experiences gathered in my four studies, combined with the above-mentioned studies, underline the necessity of on-going, long-term processes when implementing new practices. A prerequisite for successful implementation is support, supervision, and training in new practices. Therefore, I agree with Hignett et al. (2005) when they state that the presence of supportive professionals is essential in this process. In an overview of participatory ergonomics theory and interventions, they found that the process usually involves an expert ergonomist or facilitator.

The participants in the studies illustrated participation, in terms of collaboration, with shared comments such as: “the network is very good”, “we cooperate naturally”, and “we can work in pairs with everyone in the group”. A picture of mutual collaboration was shown to be a shared point of view in all four studies. Team-based risk assessments were described by participants stating, “the
benefit is that we are all participating”, and “there is a better wholeness by working through it, together, step by step”. This was supported by questions about which there was total agreement from a majority of the participants, e.g. items such as “the team approach is resulting in effective solutions” and “everyone is able to express their views” (Study III). The risk assessment and action plan procedure is probably quite unique in the sense that it not only involves the personnel, but also other people in the assessed system. This is realised through the participatory process. The strong relationship with high correlation regarding perceptions of the Future Workshop method in Study I supports the importance of participants’ (e.g. employees’) involvement and creativity for identifying and solving problems and developing action plans. Empowerment is not described by the employees by using the actual word “empowerment”, but the use of terms such as “enabling”, “being able to speak out”, and “carrying out our proposed improvements” builds a sort of cornerstone for the sense of empowerment among the employees within the work fields in my research. This can be seen as an involvement in a process of change (Svensson & Nielsen 2006), in conformity with Mikkelsen et al. (2000) and Mitchell et al. (2005), who argued that actions based on employees’ own perceptions were the main factors for change. With this perspective, a meaningful change can be achieved by those who are directly involved and empowered.

Safe work performance was considered as a participative issue by actors connected to home care services and daily tasks in the care receiver’s home environment. Home care staff and informal carers (spouses, daughters or sons) made up the collaborators surrounding the individual care receiver. Occasionally, rehabilitative personnel served as rehabilitative and ergonomics facilitators. Study IV described the complex relationship between the person, the environment and the task, and highlighted the importance of mutual engagement and active participation by the persons involved in daily life. I would like to state, “Since none of us is an isolated entity, we are dependent on each other. Therefore, we ought to collaborate to fulfill the aim of finding a mutual and holistic sense of entirety.” These words can be applicable in diverse sectors, not solely elderly care or home care services.

Differences in gender, age and work experience might have an impact on the findings. Both males and females participated in Study I, but gender was not specifically presented in the article. This is a shortcoming from a gender point of view. Unfortunately, readers are unable to infer that the majority of the miners were men, while the majority of the health care personnel were women.
Nevertheless, the FW process was implemented according to a structured manner and following the concept, and all the eight conducted FW sessions engaged the participants, regardless of their gender. No difference due to gender was noted according to the evaluation questions asked directly after the FW and three months later. However, variances might have been discovered if the researcher had adopted a gender perspective, which would have made it possible to reflect on gender issues in particular.

In Study II all the focus group participants were women with various lengths of work experience. It could be assumed that this might have an impact on their use of a specific transfer technique. The study deals with perceptions of the training programme, and the home care personnel’s own experience of applying the gained knowledge to daily work tasks. In this case, the participants’ work experience might influence their utilisation of the actual methods taught in the training programme. Some participants probably had previous experience of these techniques, and were thus probably able to develop their skills further. Other members of staff, e.g. those with shorter work experience, probably gained new knowledge through familiarising themselves with and practising the techniques. They might then have used/developed their skills by working side by side with a more experienced colleague. We can characterise the process involved here as “learning by doing”. Study II is based on the participant’s own perceptions and descriptions of their use of gained knowledge after completing a transfer technique programme. The use is not measured using frequencies or other quantitative methods.

Study III also presented variance regarding age and work experience. In this study there was one male among 19 female participants in focus groups. Nevertheless, the experiences regarding risk assessments and action plans were quite similar among the participants. When reading the results in Study III, some questions might be raised regarding the differences in frequencies of perceived riskiness connected with different transfer situations. These differences can be explained by the fact that the wards at the homes for elderly host old people with varying disabilities and strengths. Some units are specialised in dementia. In these units the old people occasionally are mobile and physically active during the first phases of dementia. Consequently, they may frequently stumble and fall, which impacts the number of tasks involving assistance to help the care recipient up from floor. I agree with Wångblad et al. (2009), who claim that misunderstandings due to the cognitive decline and communication problems of care receivers might increase the physical strain on the staff at dementia units.
This means that situations involving the assistance of a mobile person may impose physical strain as well as mental strain. On the other hand, residents in some neighbouring wards may have lost their physical abilities and skills, and require assistance with every single task in daily life. Accordingly, the personnel support these elderly people in activities such as moving from a bed to a wheelchair/toilet/shower, moving a person further back in a wheelchair after sliding forward or sideways, diaper changing in bed, and the task of assisting care receivers with eating. The complexities of the sphere of elderly care make special demands on the staff. The team-based risk assessment presented in Study III is one attempt to improve health and safety management in elderly care, in combination with promotion of the mobility and activity of the old person receiving care. This is in accordance with Brown Wilson (2000), who states that the principles of safer handling practices could have positive outcomes for the elderly person’s mobility as well as for safer work performance among the staff.

Study IV involved several actors and was conducted during a three-year period. The participants’ ages, gender and work experience were not presented in the paper. This might be counted as a limitation. The study comprises two parts, the first of which concerns the collaborators’ (unit leaders, occupational therapists, and home care staff) perceptions of the occupational therapist as a resource in home care. The second part concerned the participants’ (home care staff, informal carers, unit leaders) perceptions of a conducted training programme in transfer technique. In this case it is impossible not to take into account the participants’ individual experiences gathered from their work and their private life. With this perspective follows a view that regards all the participants as “people”, regardless of their age and gender. The specific phenomenon of interest was “learning by doing” as an integrated part of daily work, with the researcher as a facilitator in her role as an occupational therapist. The study deals with the collaborating parties, considering their experiences regarding the participative approach.

Another question which might be raised by the readers is, “Where is the before/after data in Studies II-IV?” My explanation is that these studies basically present the experiences and perceptions of the actual studied phenomenon. The intention was not to make before-after comparisons of the perceptions.

Some readers might ask, “Why have you not presented the care receivers’ experiences in Studies III and IV, and where are the before-after data in those studies?” These omissions are due to the fact that the care receivers are vulnerable, with different needs and varying conditions. A long-term evaluation might have been manageable. However, a number of the care receivers might have deceased,
the condition of some of them might have deteriorated seriously, some might have moved from home care to homes for elderly, and some might have become unable to express their views due to illness. A Swedish study of residents receiving long-term care showed that the mortality of residents was 30% within a year (Jakobsson & Hallberg 2006). The mortality was even higher, 43.4%, in an Icelandic study (Hjaltadóttir et al. 2011). These results elucidate the fact that elderly people are in a very vulnerable state after moving from their own homes to special homes for elderly. Accordingly, a study based on elderly and fragile care receivers’ long-term perceptions is difficult to accomplish. The subsequent dropouts from a long-term study might be numerous.

Additionally, the findings should be considered in the light of a dimension that may have an impact on them, namely the individual character of each participating person. Every individual has her/his own values, beliefs, specific reasons and interests in connection with his/her choice of profession, regardless of whether it involves working with people, goods, raw materials etc. With this perspective in mind, one could speculate as to whether these personal factors might have a greater impact on the findings compared with age, gender or work experience. According to Kaufman (1986), individuals appear to maintain an ageless sense of self that transcends change through continuity and meaning. Bearing this in mind, the processes of learning by doing and reflective practice reflect a similar view. The view of life-long learning as a process continuing regardless of age and gender can explain why my research seems to be lacking in precise demographical data.

It was beyond the scope of my research to focus on potential differences related to age, gender and other background variables. However, future studies aiming at identifying and analysing such potential differences are recommendable. A specific gender focus would provide information and knowledge which could enrich the area.

5.2 Methodological considerations

As in much research, there are limitations in my research and my thesis. These limitations can be seen in the light of the theoretical framework and the methodology, as well as my analysis and interpretation of the findings. Applying a case study design entails limitations concerning the possibility of generalising the results. However, as the studies are conducted in different work environments,
they describe empirical reality within different settings and with different prerequisites.

Qualitative methods such as interviews make specific demands on the interviewer’s skills and abilities of communication and interaction. These methods also require analytical skills combined with the competence necessary for objective judgements of generated data. The fact that I as a researcher have conducted the studies by myself, including holding interviews and applying other methods, can be seen as a limitation. However, this can also be seen as a strength, in that I have “used myself as a tool in the research” and have been actively present among the participants in the collection and generation of data. Different methods used for avoiding researcher bias are described further on in this thesis, under the captions “Reliability and validity” and “Trustworthiness”.

Research can benefit from using a combination of qualitative and quantitative methods. It can give answers to questions such as “Why?” and “How?” (Yin 2009). Åborg (2002) supports this combination, and claims that the supplement of enriching qualitative data helps the understanding of quantitative results. In practice there is frequently a pragmatic mix of methods in work life studies. Four case studies were conducted in my research, each one at different work settings, with different work groups.

The researcher can be seen as the key instrument in qualitative research. Therefore, the reliability and validity of qualitative research are greatly dependent on the skills, competence and rigour of the individual researcher (Miles & Huberman 1994). The frame of reference (Yin 2009) of my research, combined with my experience from working life, has equipped me with tools for creating connections between empirical data and research questions. My reference frame is based on a holistic and pragmatic view of the world. I can assert that I know the research field sufficiently to be able to conduct studies regarding my field of interest.

In case studies the data can be collected in various ways, for example documents, interviews and observations. One of the strengths of this type of research is the fact that various sources of information can be used in the study (Yin 2009). In my first study, I used questionnaires, interviews, observations and field notes, and applied quantitative methods (statistical tests) as well as qualitative methods inspired by a phenomenographic approach (Marton 1981). The second and third studies were based on interviews, both focus group interviews and one-to-one interviews, and data analysis was carried out using qualitative content analysis (Graneheim & Lundman 2004). In the fourth study a
combination of questionnaires, field notes, and individual interviews was used for generating data. The analysis was carried out stepwise using a qualitative methodology inspired by a phenomenographic approach. A sort of consensus was reached by using the different approaches, which were brought together at the end of the research process.

Action research aims to solve problems and generate new knowledge. This is achieved by collaboration between the researcher and the clients (O’Brian 1998, Svensson & Nielsen 2006). The people involved in Study IV were participants in knowledge creation through actions in daily work activities in normal work situations. My role as a researcher was the role of an expert acting as a rehabilitative and ergonomics resource, sharing the work area of home care services by working together with the personnel. The research was carried out by collecting or generating data and analysing it with the aim of “making sense of reality”.

Qualitative research tools are useful for acquiring knowledge about the viewpoints and experiences of the group of interest. Focus groups provide the ability to gain a more in-depth understanding of the specific issue being explored. One benefit of focus groups is the interaction between the researcher and the participants. An additional benefit is the possibility of asking follow-up questions to clarify and qualify the given responses. An effective focus group moderator can motivate the participants to be active and thereby give more information. Participants in focus groups can react to and build upon the responses and comments from other participants, which can be seen as an advantage. This synergistic effect often results in growing creativity and sharing of ideas (Wibeck 2000, Langford & McDonagh 2003, Dahlin-Ivanoff & Hultberg 2006, Barbour 2007). Bias can be seen as a risk when the researcher is the person active in conducting this sort of interview. Using observers during focus group interviews is one technique to minimise researcher bias. In the case of the present research, the researcher held the focus group interviews, while an observer made notes and posed clarifying questions, if needed, during the interview. The researcher transcribed the recorded data, which was then read by the observer and discussed between them until consensus was reached.

Patton (2002) describes three types of qualitative interviews, informal and conversational interviews, semi-structured interviews, and standardised open-ended interviews. Qualitative research is characterised by its description of the phenomenon studied using the “interviewees’ voices” in the material, i.e. by using quotations as illustrations (Lincoln & Guba 1985, Malterud 2001, Patton 2002).
The analysis starts as soon as the researcher starts to generate data and continues as the research proceeds (Kvale 2007). According to Kvale, the researcher begins the data analysis even while generating the data when conducting focus group interviews and one-to-one interviews. The analysis of an interview is a part of theory generation and testing (Kvale 1989). In my research, I have used the above-mentioned forms of interviews, except for the standardised open-ended type. I found semi-structured interviews based on an interview guide to be a convenient and adequate form of interviewing. Using an interview guide that covers the areas of interest, combined with the possibility of posing additional explanatory questions, makes a good foundation for a conversational and natural discussion with the respondent.

Phenomenography is a method suitable for studies where the researcher is interested in ascertaining how the participants view the world. Marton (1981) asserts that a first-order and a second-order perspective can describe what something is or what something is said to be. The first-order perspective concerns facts which can be observed from the outside, while the second-order perspective concerns how individuals experience something. The later perspective is the focus in phenomenography. Since the main interest is the individual’s perceptions, it is convenient to use interviews in order to collect the data. Mostly the interviews are made one-to-one, but group interviews such as focus group interviews can also be held. Some researchers use material based on written reflections (Svidén 2000). In my research, I made individual interviews in Study I, and used questionnaires with open-ended questions in Study IV. Analysis performed by reflecting on and relying on written perceptions proved to be feasible and manageable. Of course, the prerequisite for an analysis based on written material is open-ended questions allowing the respondents a space for expressing their experiences in their own words. This technique of using written perceptions made it possible to combine the material, i.e. statements from questionnaires and comments from interviews, as was accomplished in Study IV. The relative strength of the phenomenographic approach is that it presents the variations of the ways in which individuals experience a certain phenomenon in terms of structure and content.

The researcher’s involvement in all the stages of Study I, conducting Future Workshops and also evaluating their usefulness as an ergonomics tool, might have resulted in a researcher bias. However, this was avoided by also using quantitative methods whose results were statistically analysed, and by discussing and validating the material with the second researcher/author. The evaluation of the participatory project inspired by action research in a home care service (Study IV)
may be seen as involving a risk of bias, which may be construed as a weakness of
the research. This could have been avoided by using an external researcher.
However, as Study IV was inspired by action research, it was crucial to combine
the roles of the occupational therapist and the researcher, working in collaboration
with the personnel in the home care teams. The close collaboration and
involvement with the personnel were an advantage, giving enriched insights into
the field of interest. In order to avoid bias, a colleague compared the written
material with the researcher’s analysis during different stages of the process in the
study.

Research quality is a question of reliability, validity, objectivity and relevance
(Gummesson 2000). In hermeneutic research, validity means that the study
clearly gains access to the experiences of those in the research setting (Easterby-
Smith 2002). Entrance to actual work sites was gained in all four studies in my
research. These four studies focus on different work sites with different
environments, tasks, and safety cultures, as well as different actors on the daily
collaboration scene.

Reliability means that there is a transparency in how sense was made of the
raw data. Generalisability means that the concepts and constructs derived from
the study have relevance to other settings (Easterby-Smith et al. 2002). Pragmatic
validity may be the most important validity in work life studies (Patton 2002).
When pondering on the results from the qualitative data generated in the four
studies, my interpretation of the wholeness gives a confirmation of participation
as an enabling and empowering approach. The gathered experiences and findings
show a shared perspective on the part of the participants in the four studies. This
perspective is built on active involvement and engagement from the persons
involved, and the phenomenon of involvement in one’s own work or daily
situations appears as an essential factor for enabling and empowerment. My own
experiences based on the studies confirm the relevance of the studies, i.e. the
usability and value of the studies for employees and decision makers.

I prefer to use the terms “credibility”, “transferability”, “dependability” and
“confirmability”, in other words the criteria of trustworthiness, instead of validity
and reliability, when describing the relevance of my research (Lincoln & Guba
1985, Flick 1998). Trustworthiness is a common feature of qualitative research.

Credibility concerns the question, “Has the researcher investigated what he
intended to investigate?” (Flick 1998, Patton 2002). I assert that my research has
a richness of empirical data and perceptions from participants with different
backgrounds, professions and skills. Several methods are used for generating data, and triangulation has strengthened the research.

Concerning the question of transferability, I can state that my studies, in the manner in which they were conducted, may have relevance to other contexts (Kvale 1989). The findings can be applicable to similar situations, participants and contexts (Lincoln & Guba 1985, Holloway & Wheeler 1996).

With dependability in mind, I used a sort of “inquiry audit” (Lincoln & Guba 1985), by having a researcher colleague examine the process and the research material. For example, this colleague compared the written interview material with my analysis during the different stages of the analysis, and discussions were held between us until a consensus was reached (Patton 2002).

The researcher’s pre-understanding means her/his insight into a specific problem and social environment before he/she starts the research work (Gummesson 2000). My pre-understanding is of importance, and cannot be ignored. Of course, my background, history and experiences are “companions” which followed me during the research. However, this pre-understanding changed during the journey, which can be described as a hermeneutical spiral or circle. This process was influenced by new experiences, perceptions and development. I agree with Malterud’s (2001) assertion: “Preconceptions are not the same as bias, unless the researcher fails to mention them”. I maintain that my experiences and knowing have, indeed, provided me with a foundation of confirmability. This means that I believe myself to possess the ability and professionalism required to make objective judgements of generated research data.

In order to reach confirmability, the method of triangulation can be utilised. Triangulation refers to the use of different methods to investigate a research question in order to enhance confidence in the findings of the research being free from bias. Methodological triangulation refers to the use of more than two methods for gathering data. One of the strengths of this approach is various sources of data (Yin 2009). The results from a case study can be generalised if similar cases with similar types of characteristics are compared in the same contexts (Järvinen & Järvinen 2004). Problems in generalisation occur mostly when studying an individual case (Yin 2009). In my research I have gathered data from four studies, and used various methods for generating data. Comparisons have been made between the different studies, and similarities have been found regarding characteristics. My interpretation is that the design of my research enables me to reach confirmability. The strength of my approach is the use of
different data sources, which makes it possible to compare sources with each other.

5.3 Ethical considerations

My preunderstanding, as described at the end of Chapter three, might have influenced the research. In order to avoid biases it is extremely important to be aware of the bias risk, and therefore the researcher must be rigorous in all stages of the research. According to Lincoln & Guba (1985), ethical principles are very important for assuring quality, as well as rigour. Ethical considerations can be seen as an integral part of qualitative research. Accordingly, such considerations are applied during my entire research process.

In this connection, I have to ask myself why I am conducting the research and what the purpose of the research is. I have to be able to balance the research with ethical aspects, which means that I must be aware of the fact that research with people as subjects requires ethical considerations. The guiding principles throughout the research have been in concordance with non-maleficience, beneficience, autonomy of self-determination and justice (Oxford Dictionary, 2011). In short, the guiding principles have been not to cause any harm, but to provide some positive outcomes for the participants, to respect the participants’ values and decisions, and to treat the participants equally. One example of applying ethical principles is the process of informed consent, ensuring that participation is voluntary. Another example is confidentiality, ensuring that the personal identity of the participants is protected. Making it possible for participants to reflect upon their involvement is a third example.

5.4 Future research and implications

A participatory and team-based risk assessment followed by a mutually formulated action plan can be a successful method for achieving safer work for everybody involved. This is an experience from my third study in elderly care, which is presented further in Chapter four. The utilisation of Future Workshops as an ergonomics method was shown to be a useful tool in problem identification and the development of action plans, resulting in efficient problem solving and interventions (Study I). This was an experience based on workshops on work environments in health care services, professional cleaning and ore mining.
Research on risk assessments and action plans built on a participatory approach is a challenging area of work science.

### 5.4.1 Future challenges

Team-based risk assessments, within the framework of developed holistic risk management, provide both employees and organisations with new safety- and health-focused competencies. Therefore, an important field of future research would be the involvement and interaction of the actors concerned in the actual work system of interest. Such research would be applicable in diverse work settings, such as elderly care and health care, the manufacturing and process industry, the mining industry etc. Such an approach would be challenging in the perspective of shared work sites with several actors – a common phenomenon in the work life of today. Agencies providing HR (Human resources) are expanding and an increasing number of people are continuously becoming employed within the branch. In comparison with the labour market as a whole, the staffing company branch shows a higher frequency of reported work accidents in relation to the size of the branch (Swedish Work Environment Authority 2011). This demands a well-functioning safety and health management based on co-operation between the actors concerned, e.g. between the agencies providing employees and the companies demanding/hiring employees. Both actors are responsible for the work environment of the employees. This shared responsibility really implies a big challenge in order to prevent risk assessments and safety issues from “falling between two chairs” and being neglected by both actors.

Future research is needed to assess the demands on the skills and competence of home care personnel concerning patient transfer technique. In this connection, further studies are needed for the development of risk assessment methods and tools. Risk assessment can be considered as building a base for the use of safe work technique, which means safe assisted movements and transfers of persons receiving care.

From a participatory and holistic point of view, it would be of interest to study participatory training programmes in patient transfer technique built on collaboration between the actors involved. An action research approach involving care receivers, their informal carers, and their assisting and rehabilitative personnel could be a challenging area for the development of elderly care. Participatory training programmes within other work sectors could, of course, also be a topic for research. Applying a gender focus would provide knowledge
which could enrich the area, elucidating similarities, differences and strengths that could be useful for developing strategies within the area of safety and health work management. When bearing our multi-cultural society in mind, an ethno-cultural approach would be of interest in participatory ergonomics.

Safety culture can be supported and developed by actions taken by the organisation and the management, emphasising communication, supervision and education for enhanced awareness, responsibility, and the sharing of goals for the promotion of a good safety culture. Research using approaches such as action research (AR), participatory action research (PAR), or participatory and appreciative action research (PAAR) is an interesting way of reaching the phenomenon of empowerment in combination with safety at work. In this connection, a focus on the individuals’ and the team’s commitment to change, as well as the execution of plans and their practical use, would be of interest.

### 5.4.2 Implications

From a pragmatic point of view, my research contributes knowledge (knowing) from reality, e.g. experiences perceived in real work environments with real people dealing with real work tasks and situations. From a theoretical point of view, my research supports earlier research in the field of work sciences, specifically in relation to participatory ergonomics.

### 5.5 Concluding remarks

On the basis of the four studies presented in this doctoral thesis, it is possible to suggest that participative methods are suitable for attaining engagement on the part of the persons involved, and thus for achieving workplace improvements. The findings support earlier studies which highlight empowerment processes as factors for safety and health (Swift & Levin 1987, Ghaye 2005, Hansson & Björkman 2005, Arneson 2006, Arneson & Ekberg 2006). The results from the studies show that reflective thinking occurs among the participants during the process. This is in concordance with Haraway (1991), Suchman (2002) and Ghaye (2007), who assert that people create and recreate knowledge continuously when working together in different tasks and activities. The findings also reflect the results of Somerville & Keeling (2004), who used a practical approach to promote reflective practice among nurses.
Three of the four studies were conducted in elderly care or home care. The results could therefore not be generalised. Nevertheless, the described methods are recommendable for utilisation in other work sectors. It should be taken into consideration that the studies were conducted in the context of mainly “single-gendered” work environments, with an almost total female representation. Notwithstanding, it can be concluded that participative methods are positive in safety and health issues regardless of the participants’ gender and age, and the type of work concerned.

This thesis demonstrates that empowerment is based on the involvement of the persons concerned. This is the key for changes, i.e. the change agent. To be able to reach a desired goal or desired future, the present status has to undergo some sort of process. This process may be influenced by factors within the context and by incoming, additional factors. By the illustration in Fig. 12 (page 76), I choose to visualise the process of empowerment as a living component of change, from a present status to a desired goal. In this process, involvement of the actors concerned is crucial when striving towards a mutual development by processes such as reflective practice and learning by doing.

Finally, it should be emphasised that workplaces involve several actors, and these actors are all important for the wholeness. Safe work environment management built on a participatory approach is essential, in particular when keeping in mind the present situation with shared work sites and several different actors operating at workplaces. Consequently, an approach which actively involves those who are concerned should be adopted to achieve safe and healthy work built on good practices.
6 Svensk sammanfattning av avhandlingen

Deltagademokratiska metoder och empowerment för att främja hälsa och säkerhet i arbetet - fallstudier i Norrbotten, Sverige.


Specifika syften var att:
- Undersöka användbarheten av ett deltagademokratiskt arbetssätt inom olika arbetsmiljöer (första studien).
- Undersöka faktorer som påverkar användning av säker arbetsteknik hos hemtjänstpersonal (andra studien).
- Utvärdera effekter av teambaserade riskbedömningar vid personförflyttning inom två särskilda boenden (tredje studien).
- Undersöka uppfattningar om ett provat deltagademokratiskt ergonomiskt arbetssätt inom hemtjänst; hos hemtjänstpersonal, anhörigvårdare och arbetssedare (fjärde studien).

Följande forskningsfrågor var utgångspunkt för studierna:
- Är deltagademokratiska metoder lämpliga verktyg för att nå förbättringar i arbetet?
- Är dessa verktyg användbara på olika typer av arbetsplatser?
- Vilka är förändringsfaktorerna?
- Hur kan de anställda bli stärkta i sitt arbete?

Studie I - Undersökning av användbarheten av Framtidsverkstad som ergonomiskt verktyg

Syftet med denna studie var att undersöka om metoden Framtidsverkstad (Future Workshop) är användbar som arbetsmiljöförbättrande arbetssätt. I studien användes deskriptiv design analyserad med fenomenografisk ansats.
Framtidsverkstad är en strukturerad metod som syftar till att hjälpa deltagarna att identifiera gemensamma problem, utveckla visioner och idéer för problemlösning, samt utforma handlingsplan för åtgärder. En undersökning gjordes av deltagarnas uppfattningar om de genomförda verkstäderna, och av direkta och/eller långsiktiga resultat eller åtgärder baserade på formulerade handlingsplaner. Ett annat syfte var att utvärdera det vetenskapliga värdet av Framtidsverkstad som ergonomiskt verktyg.


**Studie II - Faktorer som påverkar användning av säker arbetsteknik i hemtjänsten**

Syftet med studien var att undersöka om personal i hemtjänsten använder den kunskap och de färdigheter som de har fått efter att ha genomgått handledning/träning i förflyttningsteknik. Ett annat syfte var att identifiera faktorer som kan hindra eller stödja användningen av erövrade kunskaper och
färdigheter. Kvalitativ metod med explorativ och deskriptiv approach användes i
studien, som baserades på intervjuer inom hemtjänsten i en stor respektive en
medelstor svensk stad. Urvalskriteriet var att fungerande, regelbundna
träningsprogram normalt erbjuds av arbetsgivaren till personalen, och att
deltagare till studien skulle ha genomgått sådant program.

Fokusgruppsintervjuer gjordes med hemtjänstpersonal i båda städerna, med
sex deltagare i varje. Individuella intervjuer gjordes med arbetsledare,
verksamhetschefer och skyddsombud. En semistrukturerad intervjuguide
användes i både fokusgrupper och individuella intervjuer. Intervjuerna
transkriberades och analyserades genom kvalitativ innehållsanalys. En
medarbetare gick igenom det nedskrivna materialet, koder och kategorier, vilket
diskuterades med ytterligare en medarbetare under analysprocessen.

Fynden visade på att hemtjänstpersonalen försökte att använda sina
kunskaper och färdigheter i förflyttningsteknik, och att det fanns både hindrande
och stödjande faktorer. Exempel på hinder var trånga utrymmen och ont om
svängrum i omsorgstagarnas hemmiljöer. Önskemål från omsorgstagare och deras
närmaste kunde ibland vara svårförenliga med arbetsmiljöaspekter, vilket kunde
vara ett dilemma för personalen. Ett tredje hinder var ofullständig information om
omsorgstagarna exempelvis vid hemkomst efter sjukhusvistelse. Stödet från
arbetsledare och skyddsombud poängterades såsom viktigt för ett säkert arbete.
Studien visade på arbetsledarnas roll som väsentlig för medvetenheten om
arbetsmiljön, och för att hålla arbetsmiljöfrågor levande i det dagliga arbetet.
Studien indikerar att träningsprogram i förflyttningsteknik inte ska ses som
isolerade åtgärder, utan att beakta både hindrande och stödjande faktorer vid
planering och utveckling av strategier för säker och god arbetsteknik. Dessa
faktorer hör samman med fysisk arbetsmiljö, omsorgstagarna och deras
närmaste samt med arbetsorganisationen.

**Studie III - Utvärdering av teambaserad riskbedömning och
handlingsplaner i förflyttningssituationer vid två särskilda boenden rör
äldre**

I den tredje studien gjordes en utvärdering av en teambaserad
riskbedömningsmetod i förflyttningssituationer, vilken utarbetats och används vid
två särskilda boenden i Ålsvbyn. Anledningen till utvecklingen av arbetssättet var
att Arbetsmiljöverket vid en inspektion påtalade att omsorgspersonalen utsattes
för fysisk belastning vid förflyttningssituationer, och att detta måste åtgärdas.
Arbetsterapeuter, enhetschefer och skyddsombud vid boendena planerade tillsammans hur de skulle möta situationen, vilket resulterade i det teambaserade arbetssättet för systematisk riskbedömning och handlingsplan.

Syftet med studien var att undersöka om det utvecklade arbetssättet var ett funktionellt participativt arbetssätt för att förbättra dagligt arbete. Tre fokusgruppintervjuer gjordes med omsorgspersonal på boendena. Individuella intervjuer gjordes med arbetsledare och arbetsterapeuter på respektive boende. En semistrukturerad intervjuguide användes, och fokuserade på teamet, den enskilde omsorgstagaren och användningen av materialet för bedömning och handlingsplan.


Studie IV - Erfarenheter från ett participativt ergonomiskt projekt bland hemtjänstpersonal, anhörigvårdare och arbetsledare

Den fjärde studien syftade till att undersöka och tillvarata erfarenheter från ett tre-årigt participativt arbetssätt innefattande både rehabiliterande och ergonomisk

Följande slutsatser kan dras från de fyra studier som har presenterats i avhandlingen:

- Deltagardemokratiska arbetssätt är lämpliga för att nå engagemang från de berörda och för att nå förbättringar på arbetsplatsen.
- Deltagardemokratiska metoder är användbara i olikartade arbetsmiljöer.
- Förändringsfaktorn är reflektivt tänkande och engagemang hos de berörda.
- De anställda blir stärkta genom engagemanget i sitt arbete.

Avhandlingen påvisar att empowerment grundar sig i engagemang av de berörda i en situation. Empowerment är själva förändringsfaktorn, eller nyckeln till förändring. För att uppnå önskade mål eller visioner, måste de involverade i aktuell situation genomgå en process. En sådan process påverkas av faktorer både
inom aktuell kontext och utifrån kommande faktorer. Empowerment framstår som en aktiv förändringsfaktor i strävan efter gemensam utveckling genom processer såsom reflektivt tänkande och "learning by doing". På dagens arbetsplatser ses ofta ett flertal aktörer och medarbetare från skilda arbetsgivare sida vid sida. Det är därför synnerligen viktigt att det förebyggande arbetsmiljöarbetet bygger på de anställdas, de berördas, engagemang och aktiva deltagande i en gemensam strävan för att uppnå säkra och hälsofrämjande arbetsplatser.
References


ISO 6385:2004


Simola A (2005) Safety leadership as a line supervisor's task. A case study of the implementation of a long-term development project at a steel works. Doctoral dissertation, Oulu University, Finland.


Appendices
**PERCEPTIONS OF "FUTURE WORKSHOP"**

Appendix 1

<table>
<thead>
<tr>
<th>Statements</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>No opinion</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The &quot;Workshop&quot; has been an aid in identification of environmental work problems</td>
<td></td>
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<tr>
<td>2. The &quot;Workshop&quot; has resulted in problem solutions</td>
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<tr>
<td>3. I understood the given instructions</td>
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<td></td>
<td></td>
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<tr>
<td>4. The &quot;Workshop&quot;'s different steps were clear</td>
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<td></td>
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<td></td>
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<tr>
<td>5. It is difficult to speak out in front of the group</td>
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<td></td>
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<tr>
<td>6. The time spent in &quot;workshop&quot; was adequate</td>
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<td></td>
<td></td>
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<tr>
<td>7. This method is suitable in problem solving</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>8. The &quot;Workshop&quot; was positive for me</td>
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<tr>
<td>9. Ideas and solutions will continue developing</td>
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<tr>
<td>10. Creativity has increased in our work team</td>
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<tr>
<td>11. This is an action oriented method</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>12. This &quot;Workshop&quot; was useless for our workplace</td>
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<td></td>
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<tr>
<td>13. Own comments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Instructions: Fill in suitable alternatives to each statement. Follow the example:

Example: Today the weather is fine. | Strongly agree | Agree | No opinion | Disagree | Strongly disagree |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I am a Male</td>
<td>Female</td>
<td>Age</td>
<td>Profession</td>
<td>Years at work</td>
<td></td>
</tr>
</tbody>
</table>

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Appendix 2a

Interview guide - semi-structured focused interview with non-participant in FW

Do you know that some of your work-mates have participated in FW?

Do you know what the workshop focused on?
Please, specify.

The participants in FW produced a problem-identification.
Have you been discussing it on the workplace afterwards?

If yes, to what extent?

| Mach | Little |

Have you seen the material that was worked out by the participants?

When you now look at the problem catalogue and the proposed changes, do you think that they correspond with your own perspective?

If yes, to what extent?

| Mach | Little |
Appendix 2b

Interview guide - semi-structured focused interview with foreman/forewomen

The participants on FW have worked out a problem-identification. Has it been discussed on the workplace afterwards?

When you now look at the problem catalogue and proposed changes, do you think that they correspond with the general picture of the workplace?

If yes, to what extent?

| Much | Little |

Have you been working further with the material on the workplace?

To what extent have the participants been discussing the problems and proposed changes based on the material that they have developed?

| Much | Little |

Have you together planned to carry through some of the proposed changes at the workplace?

To what extent is action carried through?

| Much | Little |

To what extent are long-term actions planned?

| Great extent | Low extent |
## Appendix 3

Mean response rates for each 12 items in 5-grade Likert scale.

<table>
<thead>
<tr>
<th>QUEST 1</th>
<th>QUEST 2</th>
<th>QUEST 3</th>
<th>QUEST 4</th>
<th>QUEST 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Valid</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
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## Appendix 4

### Problem beskrivna i erfarenhet/fantasifasen

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<td>1</td>
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<td>2</td>
<td>Buller</td>
</tr>
<tr>
<td>3</td>
<td>Damm</td>
</tr>
<tr>
<td>4</td>
<td>Vibrationer</td>
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<tr>
<td>5</td>
<td>Fallande sten</td>
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<td>Avgazer</td>
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<td>7</td>
<td>Fallrisk från vägbygvel</td>
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<td>8</td>
<td>Tångt i hytten/klämnisik i lastmaskin Toro 650,0010</td>
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<td>9</td>
<td>Halqa ned vid klämnings på maskin</td>
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<td>10</td>
<td>Skräppåsegg-träff hytt</td>
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<td>11</td>
<td>Dålig radiokommunikation mellan instruktör/finesser</td>
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<td>12</td>
<td>Raserisk vid bergbryggan vid radlastning</td>
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<td>13</td>
<td>Kvarglöda doxor vid liggare, vid dikesgravning</td>
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<td>Bergapjäder vid skottermningsutbildning</td>
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<td>Bergapjäder vid skrotning</td>
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<td>18</td>
<td>In- och utklävec från hytten i dålig belysning</td>
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<td>Brott och hål i hydramatslagar</td>
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<td>23</td>
<td>Stolsh/Vibrationer då man sitter på pall och ej i förarstol</td>
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<td>24</td>
<td>Elsäkerhetsrisk; tränings elektroaller, magnetfall</td>
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<td>25</td>
<td>Klämnisik i maskin, stigda-bom</td>
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<td>26</td>
<td>Påätning med gaffeltruck</td>
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<td>Raserisk vid ladning - raset</td>
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<td>Skrotningsspelt - brott - projektiler</td>
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<td>Stensläpp från tappläpp vid handbremning</td>
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<td>35</td>
<td>Fall från hög bild i olika slag utfallgar</td>
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<td>36</td>
<td>Gaser</td>
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<td>Kommunikation i gruvan vid ytaomrakten, utrymningsvägar</td>
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<td>Utbildning av vensmarksfinesser - spellet - bergapjäder på bom</td>
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<td>Slag vid kart från elskäler från ellastmaskin</td>
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<td>Nedbörning av klåder, störka från maskiner</td>
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<td>Varsel på kläder och bilar</td>
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6 av problemen fick poäng under omröstningen. 3 av problemen tillhörde kategorin fysisk miljö, medan övriga 3 tillhörde psykosocial miljö. Eftersom gruppens storlek (4 personer) tillåt fortsatt arbete i helgrupp beslöt att kommande faser skulle genomföras tillsammans.

Följande problem blev föremål för poäng (presenteras nedan i fallande skala, flest poäng först)

1 Klämrisk maskin-bergvägg
2 Buller
23 Stötar/vibrationer på pallen i maskinhytt
Problemåtgärder i fantselan

Fynda miljö

1. Kännyck Maskin Bergvåg
   a. Skyddskläder
   b. Internkommunikation, headset, strumpmikrofon
   c. Växelskjold
   d. Fjärrstyrt nödstopp
   e. "Sigtundös" på hjälm

2. Buller
   a. Se 1b
   b. Bättre och effektivare hörselskydd
   c. Bullervåg för ventilationsskador

3. Sittar/havisation på päl i maskinkhytt
   a. Se 1b
   b. Interaktiv utbildning
   c. Maskinvårdning byggd för inskilling

Psykosocial miljö

59. Ansvar för elevens kompetens
   a. Personella resurser
   b. Tid
   c.God kommunikation mellan chef-instruktörer
   d.Instruktör-cheft TEAM

62. Ökade arbetsmedel
   a. Håla dokumentation
   b. Utbildning på samma sätt mellan instruktörer

63. Egen kompetens - utbildning
   a. Psykologi
   b. Pedagogik
   c. Ny teknik
   d. Mänsker
   e. Personalresurser
### Handlingplan i strategifasen

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<td></td>
<td>Stefan</td>
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<tr>
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<td>Via chef</td>
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Appendix 5

INTERVIEW GUIDE FOCUS GROUP – HOME CARE SERVICE PERSONNEL

How are you thinking when you face a movement/transfer situation with a care receiver?
Tell us about situations when it is difficult to use a safe work technique.
Tell us about how care receivers desires and needs might affect the transfer situation.
Do you have the transfer aids or equipment, which is needed for a safe transfer?

Tell us what you have learned during the training programme.
Was the content of the programme easy to understand?
Can you be able using the skills you have gained during the programme?
Have you been able to change your way of work after the programme?

Tell us about how you communicate about the care receiver, and how you receive response on described problems, in the work group? or from the unit leader?

Do you document how the individual care receiver should be moved/transfered? Is the documentation accessible for the whole work group? Do you have an specific individual plan for each care receiver?
Do you have routines and documentation regarding work environment, and management in ordinary homes, and specifically connected to movements/transfers?
Do you have regularly held group meetings, and are transfer/movement situations raised during these meetings?

If you meet burdensome tasks involving harmful stress, do you describe this to your employer, and how do you do it?

What do you think about the role and significance of safety representatives? Do you have any contacts with your representative?
Who do you think has the responsibility for the use of safe work technique?
How do you act if you notice that one of your colleagues do not use the technique you have learned?

Are there any hindrances for the use of safe technique?
Can you see any opportunity to overcome the obstacles?

What do you think about skills gained during training programmes, do they have any importance?
What are your thoughts about training programmes especially modified for home care personnel?

Do you have clear routines describing how different tasks shall be done?
Do you have instructions regarding prioritisation?
Are you involved in the planning of your daily work?
INTERVIEW GUIDE - UNIT LEADER

How many employees in the home care group?
Employee turnover? Age?

Distribution of working hours? Solo work? Possibility to get help from a colleague, if needed?
Routines and documentation regarding work environment in ordinary homes, and to transfer technique.
Regular group meetings? Are movement/transfer problems raised during these?

Do the staff take up tasks which they consider demanding, and/or in which way?
Risk assessments and action plans in individual’s homes?

Who is responsible for safe work technique in the personnel’s daily work?
How is your possibilities to take that responsibility?
Do you have support further up in the organisation regarding good work related to movement/transfer in care receivers own home (ex training, equipment, time, staff resources)?

Significance of safety representatives? Do you take contact with them?

Who provides the transfer technique training programme?
What do you think is particularly important in the programme?
Is there continuous monitoring of the training sessions? How often?
Can the staff get supervision i transfer technique in care receivers home? Please, describe.

Is the training programme mandatory? What about newly employed personnel?
Have all staff sufficient knowledge of Swedish language in order to assimilate the contents of the programme and training?
Evaluation of the programme, describe how.

What about the co-operation between different professions (ex home care staff, rehabilitative staff, aid assessors), please describe.
INTERVIEW GUIDE – OPERATIVE MANAGER

Routines and documentation regarding work environment, management, please describe.
Are problems connected to movement/transfer situations in individual care receiver discussed during these meetings?

Risk assessments and action plans in individuals homes? Are you informed about the assessments and action plans?
Does the unit leader raise movement/transfer problems to you, and/or how is this done?
How do you handle these issues? How do you manage measures to be taken?

Who is responsible for safe work technique in the personnel’s daily work?
How is your possibilities to take that responsibility?
Do you have support further up in the organisation regarding good work related to movement/transfer in care receivers own home (ex training, equipment, time, staff resources)?

Is transfer technique programme described in your quality, competence, and development plan for elderly care? How to guarantee that goals are reached?

Have the employees undergone transfer technique programme?
Who provides the programme, and how often is it offered?
Is there continuous monitoring of the training sessions? How often?
Evaluation of the programme, describe how.

Are there any hindrances for the use of safe technique? Are there situations when it is difficult using safe technique?

What about the co-operation between different professions (ex home care staff, rehabilitative staff, aid assessors), please describe.
INTERVIEW GUIDE – SAFETY REPRESENTATIVE

(Before the interview starts, ask the safety representative if she/he is registered in the safety representative file, which all safety representatives are).

Are you as union representative contacted by home care staff regarding work environment and safety issues?
Do the employees know who to contact in safety issues?
Are you contacted by the employer?

What about co-operation between the employee and safety representative when dealing with movement/transfer issues in care receivers own home?
What about continuity of this work? How is this linked to assessments and action plans?

Do you think that the staff has sufficient training in transfer technique?
Are there any hinders for using a safe work technique? Are there any hinders for being able to use the skills gained during the programme?

Who is responsible for the use of safe work technique in the personnel’s daily work?

What about the co-operation between different professions (ex home care staff, rehabilitative staff, aid assessors) in the work for safe work, please describe.
### Appendix 6

**RISK ASSESSMENT and ACTION PLAN**

<table>
<thead>
<tr>
<th>Person</th>
<th>Date</th>
<th>Page</th>
</tr>
</thead>
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#### 1. Identify the transfer situation and describe the risk and cause.

- **Describe cause / risk**: The problem you have identified.
- **Example of cause**: Use assessment device.

#### 2. Describe the risk and recommend actions.

- **Risk Assessment Procedure**: Refer to APS WBE-1 and WBE-2.

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<th>Person</th>
<th>Date</th>
<th>Page</th>
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#### 3. Plan and implement actions.

- **FALLS**: Refer to APS WBE-1 and WBE-2.

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<th>Person</th>
<th>Date</th>
<th>Page</th>
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#### 4. Review and update the action plan.

- **Review and update**: Ensure the plan is reviewed and updated.

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<tr>
<th>Situation</th>
<th>Person</th>
<th>Date</th>
<th>Page</th>
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**Notes**

- Ensure all actions are reviewed and updated.
- Refer to APS WBE-1 and WBE-2 for further details.
INTERVIEW GUIDE FOCUSGROUP - ASSESSMENT OF "TEAM BASED RISK ASSESSMENTS AND ACTION PLANS"

Team work
Describe your team work regarding risk assessments and action plans
Does the team benefit from the work method?

Individual care receiver at focus
Describe your experiences of the team based method?
Do the care receiver benefit from the method?

Risk assessment
How did you manage risk assessment before this method?
Describe how you do it at present.
Do you find any differences, and if so, describe what differs?
How do you cope with the assessment forms?

Action plan
How did you do before?
Describe how you do the action plans at present.
Do you find any differences, and if so, describe what differs?
How do you cope with the action plan forms?
EVALUATION OF "TEAM WORK ON RISK ASSESSMENT AND ACTION PLAN FOR ELDERLY RESIDENTS IN ALVSBYN"

**Male or female? **

**Age? **

---

Circle the answers to the questions below, please.

**Teamwork on risk assessment and action plan is a good method.**

<table>
<thead>
<tr>
<th>Totally</th>
<th>Partly</th>
<th>Neither</th>
<th>Agree, nor disagree</th>
<th>Partly</th>
<th>Totally</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

**Teamwork has resulted in effective solutions and improved work environment.**

<table>
<thead>
<tr>
<th>Totally</th>
<th>Partly</th>
<th>Neither</th>
<th>Agree, nor disagree</th>
<th>Partly</th>
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<td>5</td>
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</tr>
</tbody>
</table>

**Everyone in the group has been able to present their views on the transfer aspects of their daily work.**

<table>
<thead>
<tr>
<th>Totally</th>
<th>Partly</th>
<th>Neither</th>
<th>Agree, nor disagree</th>
<th>Partly</th>
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</tbody>
</table>

**My contribution is important to the outcome of our teamwork.**

<table>
<thead>
<tr>
<th>Totally</th>
<th>Partly</th>
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<th>Agree, nor disagree</th>
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</tr>
</tbody>
</table>
### Appendix 9

**Perceptions regarding occupational therapist in home care services**

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you had any collaboration with the occupational therapist within the project?</td>
<td></td>
<td></td>
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</tbody>
</table>

*If the answer is yes,*

Can you describe the collaboration you have experienced?

<p>| |</p>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you assume that the occupational therapist can be a resource for care receivers, and/or the home care staff?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you assume that the occupational therapist can be a resource for facilitating/enabling for the care receiver living at her/his own home?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Evaluation of patient transfer technique training programme

1. What did you learn from the programme?

2. If you need more learning in transfer technique, please describe your needs:

3. This was positive with the programme:

4. This was less positive with the programme:

5. If you can see any hindrances for the use of safe work technique in your daily work, please describe them:

6. Who do you think have the responsibility for the use of safe work technique in daily work?

7. If you have any suggestions about future transfer technique programmes, please describe them:
Original publications


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Original publications are not included in the electronic version of the dissertation.
396. Keskela, Timo (2011) Community-centric mobile peer-to-peer services: performance evaluation and user studies
398. Teirikangas, Merja (2011) Advanced 0–3 ceramic polymer composites for high frequency applications
400. Goratti, Leonardo (2011) Design, analysis and simulations of medium access control protocols for high and low data rate applications
401. Huttunen, Sami (2011) Methods and systems for vision-based proactive applications
403. Räsänen, Teemu (2011) Intelligent information services in environmental applications
404. Janhunen, Janne (2011) Programmable MIMO detectors
Ingegerd Skoglind-Öhman

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CASE STUDIES IN NORRBOTTEN, SWEDEN