

# Experiences from a Participatory Ergonomics Project Among Home Care Personnel, Informal Carers and Unit Leaders in a Swedish Municipality

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**Abstract:** The aim of this study was to gain understanding and knowledge of experiences from a participative approach, inspired by action research. A qualitative analysis with inspiration from phenomenography was used. Data were collected by observations in real world work situations in care receivers own home environment, by questionnaires and interviews among home care staff, collaborating professionals and informal carers. The findings contribute to an understanding of the complexity between person, environment and task. The study points out that participation for reaching safe work performance is essential regardless if the assistant is employed personnel or an informal carer, and regardless if the matter concerns movement and transfers or personal care.

**Keywords:** Participatory, ergonomics, home care, phenomenography.

## INTRODUCTION

In Sweden the group of elderly represents a growing share of the population. Sweden has the largest population of people over 80ies among the EU member states; 5.3 percent of the population [1]. This makes specific demands on the service for the elderly. Each individual is allowed to choose whether they want to remain in their own home with help from home care services, or to choose special housing [1, 2]. Municipal care provides the elderly with disabilities to live in their own homes for as long as possible. This means that home care personnel provide a very heterogeneous group of people [3, 4] with assistance in activities such as personal care, cleaning, washing, and/or shopping [2] in order to manage every day life in their own homes.

Älvsbyns municipality in northern part of Sweden, with a population of 8 340 inhabitants aims to help the old people to sustained living in their own homes. Within the municipality approximately 250 people older than 65 years receive assistance from home care services [5]. The organisation consists of about 60 employed day personnel and six staffs in the night patrol. One approach in facilitating the aim of sustained living in one's own home was a project during the years 2007-2010, with an occupational therapist acting as a rehabilitative resource directly within the home care service units. Aim of the project was to enhance rehabilitation awareness among home care service personnel, through active collaboration with the personnel in the daily home care service activities. Co-operation with diverse professions was a natural feature in the project, as normal routines in daily work. This means collaboration with home care staff and their unit leaders, care managers, occupational therapists within the primary health care, short-time dwellings and hospital care, physiotherapists, district nurses etcetera. Supervision based on empirical based methods, regularly held

transfer technique programmes and communication with informal carers were important ingredients within the project. Participative approach was the overarching theme in the project, which was inspired by action research [6, 7]. Rehabilitative aspects, as well as ergonomics underpinned the project.

Participatory ergonomics can be described as a concept involving the use of participative techniques and various forms of participation in the workplace [8]. The definition includes interventions at macro levels (systems, organisation) as well as micro levels (individual), with workers being enabled to use their knowledge for problem solving in their own work activities [9]. Participatory ergonomics aims to improve working conditions, production and/or quality of products. Problem-solving and finding solutions to identified problems are main features of participatory ergonomics, which is applied in different work environments, all from offices, automobile production, industrially developing countries, to home care work and hospitals [10-21]. In an overview of the participatory ergonomics theory and interventions Hignett *et al.* [9] have found that within participatory approach, the process usually involves an expert ergonomist as facilitator.

Action research is used in real situations with primary focus on solving real problems, and is often applied by practitioners wishing to improve understanding of their practice [7]. The perspective of "learning by doing" by Dewey [22] or a cycle for learning and improvement [23] can be applied in a description of action research. Action research is usually described as being based on problem solving in collaboration between researcher and clients, aiming to solve problems as well as generate new knowledge [24]. Knowledge creation can be described as an iterative and cyclical process, taking place in the environment of change close to the involved in the process [7]. This stands in line with Lewin [6], 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 ac-

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tion research, in aims to reach a holistic approach [7, 24]. The role of the researcher depends on the project. In general the role is being an expert, planning the project, collecting and analysing gathered data. During the research participants are involved in a process of change [25]. Mikkelsen *et al.* [26] found in a participation intervention study that actions based on employees own perceptions were the main factors for change. Mitchell *et al.* [27] also claim that those who are directly involved and empowered can be considered as effecting a meaningful change.

Work injuries are more common among staff in elderly and handicap care sectors compared to other service professions [28-30]. Home care tasks comprise of personal care as well as more service oriented tasks. Assisting in daily life activities makes specific demands on both knowledge and skills, and the task to assist a person with transfers (moving from one point to another) in their homes, requires skills regarding coordination of body movements and muscle force as well as interaction- and cooperation abilities [31-33]. Work technique training has been utilised in several countries as a method for coping with the problem of back pain among nursing personnel. However, researchers point to findings revealing that this strategy have no impact on injury rates or safe work practice [34, 35]. On the other hand, when developing a competency based training an influence on safety culture behaviour can be seen among staffs that have participated in such training programme. The programme gave enhanced problem solving capacity, which affected the working practices positively [36, 37] in terms of guiding their decisions in manual handling situations. A safe handling practice encourages the use of individual care receiver's own abilities in connection with the environment and the task being performed [38]. This means that appropriate assisting devices can be used in promoting independence, which requires skills in handling those [34]. Kromark *et al.* [39] stated the need of improving equipment and training in handling assistive devices for staff in home care in a cross sectional study. This stands in conformity with Hasson and Arnetz [40] who also claims the importance of improving competence and skills among home care personnel, based on finding significantly less sufficient knowledge among home care compared with staff in nursing homes. Adopting a rehabilitative view of daily life is a matter of taking advantage of individual's own capabilities, and to use these abilities as an asset for independency and self-efficiency. By guiding the person in the movement, or through the movement, and by using the human's natural body movements the person can be enabled to enhance her/his own involvement in the process. Kindblom [41] asserts that the concern is about avoiding lifting situations, and on the other hand using individual natural capabilities and resources in the movement situation.

Patient transfer technique training programmes of short duration have shown that personnel undergoing the short model have difficulties in retaining the principles they have been taught [38]. In present project the aim was to work with a rehabilitative focus during a long period of time, facilitating the individual care receivers own abilities combined with using a good work technique for the assisting personnel. During the years 2007-2009 an occupational therapist was available continuously as a rehabilitation resource for the staff in home care services, being a facilitator for using good, optimal work techniques in corporation with the involved,

and with rehabilitative approach. The approach involved a combination a short annually held transfer technique programme with continuous active involvement and supervision/training in the daily work practices during the study period of three years. The main aim of the transfer technique programmes is to empower the personnel by giving them tools and strategies when dealing with movement and transfer situations.

A four-hour training session is provided for all employees, focusing on practical situations in daily work. Every session starts with theory followed by practice. Participants are encouraged to describe practical transfer situations from reality, with possibility to try and to test suitable solutions for solving the transfer problems. Additionally a training session of three hours was held for unit leaders, who also are responsible for work environment for their staff [42, 43]. Another target group is the informal carers, who were provided a three-hour session twice a year, with movement and transfer technique focusing on practical activities and advices regarding moving and transfer situations they are dealing with in every day life.

*Aim* of this study is to gain understanding and knowledge of experiences from a participatory development project involving rehabilitative and ergonomics aspects.

## MATERIAL AND METHODS

This study has a descriptive design based on empirical data. The research method was inspired by action research [6,7, 24,25] and a qualitative method [44,45] with a phenomenographic approach was used [46-49].

A small sized municipality was selected for the empirical study. The study comprised of two parts; one with collaborators perceptions about occupational therapist as a resource in home care services, one with participants perceptions from the programme in transfer technique combined with practical training in daily tasks.

### Participants

Participants in the first part of the study were the home care personnel in the municipality and their unit managers, occupational therapists in short time dwellings and primary health care. 71.8% (46 of 64) among the home care staff filled in an evaluation questionnaire after one year of the project (2007) and 64% (41 of 64) two years later. For the other collaborators (unit managers and occupational therapists) the frequency was 100 % (eight of eight persons) in both evaluations.

Participants in the second part of the study were the home care personnel in the small-sized municipality, who all were participating (Table 1) in annually held transfer technique programmes conducted by two of the rehabilitation staff (e.g. occupational therapist and physiotherapist). Another category of participants was a group of informal carers (Table 2), who met on regularly (once a month) meetings arranged by the municipality. Informal carers were invited to transfer technique information focusing on the needs from their point of view. Additionally, a third category was the unit leaders (Table 3), who participated in a special session of patient transfer technique, in aims to gain knowledge of what transfer technique programmes are about, and what

**Table 1. Participants from Home Care Service Staff in Transfer Technique Programme**

Year	Number of participants	Number of questionnaires	Number of interviews
2007	64	64	2
2008	53	52	2
2009	55	55	2

**Table 2. Participants from Informal Carers in Transfer Technique Programme**

Year	Number of participants	Number of interviews
2008	10	2
2009	16	2
2010	6	1

**Table 3. Participants from Unit Leaders**

Year	Number of participants	Number of interviews
2008	5	2

enhanced knowledge of the demands of their staff really means in practical reality. The care receivers are end-users of the services from the home care personnel, and cannot by any means stand unmentioned as participants. However, care receivers are not individually documented in the research files, and they are not interviewed regarding their conceptions or experiences. Illustrating living examples from every day home care practices is an attempt in describing end-users.

The participants received verbal and written information about the evaluation, and they participated in the study under informed oral consent.

### Data Collection

Collection of data was done continuously during 2007-2009, and various methods were used. Data collection was carried out using field notes based on observations, questionnaires with open-ended questions, and semi-structured interviews. An interview guide was used, with questions covering participant's perceptions about the programme as well as expectations about how to use the gained information/experiences. The interviews were recorded on digital voice recorder, transcribed and validated against the recorded material.

### Procedure

In the first part an evaluation was made about how three different collaborator groups conceived co-operation with the occupational therapist. Each employee and their unit leaders in home care, and occupational therapists at short time dwellings and primary health care services received a questionnaire after first year of collaboration. After two years the questionnaire was sent to the collaborators in order to reach a before/after comparison of their perceptions. The

questionnaires were simply asking if respondents have had any collaboration with the occupational therapist. If the answer was yes, a description of collaboration was asked for. Finally questions were raised whether the occupational therapist can be counted on as a resource for the care receivers, or for the personnel, and whether the occupational therapist can be a resource facilitating sustained living at ones own home.

The issue in the second part is to collect conceptions of transfer technique programme, which was one of the elements in the participative project. Each participant from the home care staff filled in an evaluation questionnaire with open-ended questions directly after the session of transfer technique. These were collected, assessed and a written conclusion was distributed to the unit leaders. Two weeks after the session individual interviews were made with two, randomly selected participants. The purpose of interviewing was to reach enriched descriptions of perceptions, and to "mirror" the interview material against the statements in questionnaires. The main question was "How do you perceive the transfer technique programme? Can you describe the usefulness of the programme?" After the informal carer's session of transfer technique, two of the members were interviewed. Also two of the unit-managers were interviewed after their specific session. The interview questions for both the latter groups were covered similar topics as for the home care personnel.

Field-notes were made continuously during the project. These were written directly after experiencing specific transfer situations in daily work. The field notes were briefly written notes, focusing situation without any personal information of the individual care receiver. Living examples were extracted from the field notes, and were transformed by fictive names, age's etcetera to insure personal integrity.

Practical supervision of the staff was made by the occupational therapist by collaborating with the staff at work in real situations in daily work. This means; being available for the staff for making assessments and supervising in situations where the staffs are expressing needs of assessment and supervision. One example of a common need was during morning activities (assistance from bed to toilet, to shower etc). This gave a “meeting of minds” by interaction, participation and supervision under natural circumstances. Professional documentation was done, in duty in ordinary record system within the organisation, and that record data was not at all used in the study. However, field notes illustrate examples from practical daily situations, as described above.

### Analysis

The material from questionnaires and interviews was analysed stepwise using qualitative methodology [44, 45] inspired by phenomenographic approach [46-49]. The material was read through several times in order to become familiarised with the content. Significant statements related to the phenomenon of study were identified. Differences and similarities were collected and grouped into categories. An attempt was made in describing the essence of each category, and the categories were labelled. A comparison was made resulting in identification of logical relationship between the described categories, called the outcome space [48]. A colleague compared the written material with author’s analysis during the different stages of the process. Analysis was discussed until a consensus was reached [46].

### RESULTS

The material from the questionnaires in part one, were rich of describing statements. The results show collaborators conceptions about experiences from interacting with occupational therapist in a participatory ergonomics project. The collaborators expressed it as a strength having a rehabilitative profession directly within the home care staff (mentioned in 92 % of the questionnaires). It was seen positive for finding out care receivers capabilities and limitations in daily life perceived by all collaborators (eight of eight), and mentioned by 44 % of the home care staff. Thus, the collaborators noted that several so called “problem-situations” have changed into “challenge-situations” for care receiver as well as the home care personnel. The view of occupational therapist as a resource; acting within the home care organisation in collaboration with different actors, and combining perspectives of individual care receiver as well as ergonomics for the staff, was expressed in a similar manner by both unit leaders and occupational therapists.

Analysis of material from both parts of the study shows out three themes pointing to an enhanced awareness about how to work in a safe manner, exemplified by conceptions expressed in questionnaires and interviews. The three themes depict raised insights and understanding about the meaning of movement- and transfer situations. It also reveals an enhanced understanding about the possibilities in being capable to influence the present situation by having sufficient knowledge about how to manage the transfer in the best manner. The themes are shared by the home care personnel and the informal carers, and appeared in the analysis stage of comparing similarities and differences in the material.

The questionnaires and interviews are concluded in bold text below. Perceptions from open-ended questions and semi-structures interviews were woven together, after comparing similarities and differences. A red thread, a logical relationship, appeared through the answers and descriptions from participants during the analysis. This red thread showed up a character of three dimensions, visualised in three core questions connected to safety and work performance (Fig. 1).

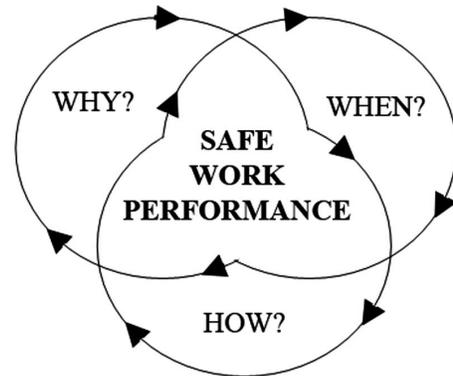


Fig. (1). The overarching questions connected to safe work in ordinary home environment.

Three overarching questions; WHY? WHEN? HOW? are outlined from the analysis. The conceptions connected to these questions are sorted in frequency order, by the most commonly mentioned written first, and illustrated in % of participants giving their statements in questionnaires or interviews.

Why?	To protect from harm or injury when performing transfers (90 %)
	To facilitate the care receiver to active participation in the movement/transfer (86%)
	To be able to cope with the situation together in a mutual action (75%)
When?	In ordinary daily situations (94%)
	In more acute situations; maybe protect from falling when stumbling (70%)
	In connection to incidents or accidents; as example after falling to the floor (67%)
How?	Acting together in the team and with the care receiver active in the action (90 %)
	Having a facilitator or mentor (85%)
	Having knowledge of best practices, in order to use optimal methods (80%)

The following citations are selected from the material for illustrating core questions connected to a safe work technique.

Why?

*Knowledge about methods gives us strategies for solving work tasks*

*We all need a reminder about how we actually do our tasks, and how to avoid harmful effects*

*We have to work safely, both on behalf of ourselves, and the one we are assisting*

*This is about working together...*

*To reach a good level, using both our and care receivers abilities with quality and optimal technique*

When?

*Daily tasks, for example transfer assistance from/to chair, bed, toilet*

*Supporting a person with disability, for example protect from falling during balance and vigilance problems*

*Daily tasks, such as cleaning tasks, in and out from car*

*Actually always, but it is rather a goal which we have to continue working on...*

How?

*Assist in transfers as optimal as possible, taking advantage of individual's own capabilities*

*To use my own body in the best way, since my body is my tool*

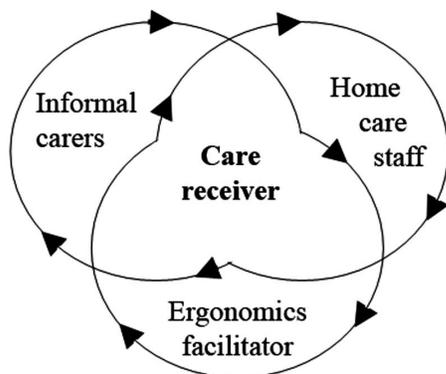
*New ways of thinking when moving a person from one point to another*

*Facilitate by using the right equipment and the right technique*

*Lift up problems from our daily work, and test solutions*

*Training sessions like this half day, combined with training in daily work*

The three dimensions connected to a safe work technique are important concerns for home care staff as well as informal carers (spouses, daughters, and sons) or other close relatives involved in care receiver's daily life. This is a participative issue, involving several actors sharing engagement and activities in daily life, illustrated in Fig. (2). Transfer situations cannot be regarded as only individual issues of interest. In contrary these are a matter of mutual interest for all involved, in order to reach as safe and secure movement/transfers as possible.



**Fig. (2).** Safe work performance: a participative issue.

Also hindrances for a safe work technique were reported in the material (statements in questionnaires by 58% of the home care staff). Following examples can be mentioned as common obstacles when working in ordinary home environments; narrow spaces, voluminous furniture, often work-

ing alone, and lack of time etcetera. These examples stand in line with mentioned studies. Some of the home care personnel described difficulties in being able to influence care receivers choose of cleaning tools/equipment (statements in questionnaires by 12 % of the home care staff). This resulted in unwanted straining situations for the staff, in cleaning tasks such as vacuum-cleaning and mopping floors. Additionally, low individual personnel physical condition was pointed out as obstacle and the personnel's own ability of being aware and foresee a specific difficult and cumbersome situation (mentioned by 5 % of the staff).

The material from interviews with unit managers stands in line with above presented results, but in their case emphasis on work environment issues was prominent. All of the interviewed managers pointed out the importance of a safe work environment for their personnel. They also stated that caring tasks in ordinary homes involves several actors, and accordingly co-operation is very important. The participants (home care staff and unit managers, as well as informal carers) reflected on the different advices and techniques in order to facilitate the care receiver to active involvement in the actions to be taken during transfer situations. Participants from the home care staff, as well as informal carers described that they after undergoing the programme have changed their own behaviour when handling in transfer situations. Supervision in reality, in specific tasks was pointed out as important for learning. However, a precondition is a process of continuous learning, e.g. training programmes combined with practical training in daily work tasks. This is underlined by the number of statements in questionnaires requiring a facilitator in order to reach good ergonomics in daily work.

### Living Examples

Living examples in the following descriptions illustrate an essential part of the phenomenon of participation. Two examples depict different individuals living in their own homes, being dependent on assistance from other people to be able continuing living at home. The third example illustrates the perspective of a wife, who also is informal carer of her husband.

*Ruth, 82, widow since many years, lives alone in an apartment. A rheumatic disease has gradually affected her mobility and functional abilities. During the last five year she has received daily assistance from the home care services. Assistive devices help her managing daily activities. For some years Ruth have had useful help from using a walking table (a stable walking aid on wheels), enabling her to walk around in the apartment. The ability to stand and to walk is highly important for Ruth. After an infection she felt weakness and loss of condition, and after that she is dependent in having somebody by her side, as a security, when walking by using the walking table. Her ability to stand up from sitting at the edge of the bed or from a chair has decreased, and some months ago she got a wheelchair. Ruth is very sad about the situation, and so are also her helpers. The home care staff assisted her up to standing position, and with movement to and from the wheelchair. Two persons holding around her back from each side did this. The staff pointed out for occupational therapist that this manoeuvre had turned to be straining and unsecure for both Ruth and helpers, due*

to her aching knees and inability to take the few steps and to turn around (step by step sideward's) to be able to sit down in the wheelchair. By participating in morning activities with Ruth and the staff, the occupational therapist analysed the situation and recommended a trial of an assistive device; stand/turn platform. This resulted in a secure and smooth transfer, since the insecure and straining moments were gone. Instead a convenient and smooth moving situation, which also was safe and less straining for involved, was reached. Ruth's self confidence was enhanced, and she appreciated being enabled to participate in her own personal activities. Additionally, her ability to turn herself and change body position when resting at bed was enhanced. This was made by using a special sliding bed sheet with a silky surface, which made it possible for her to use her own capability instead of being turned and handled by another person.

Ruth's example depicts how facilitating of own abilities in combination with the use of appropriate assistive devices both keeps up self confidence for the individual, and results in less straining manoeuvres in transfer situations – a positive outcome for both care receiver and assisting person. Supervision for involved people in actual problematic situations is a precondition for achieving such example of improved daily situation, with rehabilitative aspect in mind. Also continuity with follow-ups by occupational therapist is important for reaching sustainability of achieved results.

*Carl, 68*, had a stroke two years ago, resulting in a permanent weakness of his right side of body. He has daily assistance from home care services for personal needs such as morning and evening activities, hygiene, meals etcetera. During a follow-up visit side by side with the staff in ordinary morning activities occupational therapist noticed a specific, unnecessary straining moving situation in Carl's daily life. The staff, supporting Carl during walking in the apartment, used a walking belt placed round Carl's waist. The occupational therapist noticed that this walking belt also was used as an aid in helping Carl into a standing position from sitting. This was really not convenient for Carl or his assisting person. In fact, the belt was not intended for that kind of use. It was meant, and prescribed for support walking. Used in wrong manner, when the helper almost lifts the person up by gripping the belt, the belt glides up in upwards direction. This gives pressure on the chest and a feeling of un-ease, not being an aid, neither for Carl nor the helper. By instructions on the spot, in means of guiding or facilitating Carl in using his own abilities in natural movements (by leaning forward, placing his hands on his knees, each foot placed in a functional position) it was possible for him to make this moment almost by himself, with minimal assistance or effort from the helper. These instructions were followed up during a period of time, for ensuring that the personnel used the optimal technique. All of them received supervision and training, to be able to use a proper and safe work technique.

This example shows how supervision enables the staff adapting into a natural and more convenient behaviour. The importance of facilitator (ergonomist, rehabilitative staff) is highlighted by the supply of dignity to a situation by using a natural activity pattern. This depicting case illustrates a situation, which by routine or non-reflectiveness had turned into a bad movement assistance habit among the personnel. Additionally, the result was an enhanced self-confidence for

Carl, being enabled to manage most part of the moves by himself without manual assistance from another person.

*Emma, 65*, serves as informal carer of her husband who is suffering of dementia. She regularly visits the municipality-arranged meetings for informal carers, and appreciates the fellowship and sharing of experiences with likeminded. Her comments after last session of movement and transfer technique information highlight the experiences of a close relative sharing everyday life with a spouse, who gradually change in conditions and capabilities. "Oh, this is an ongoing circle, you know our situation (e.g. her and her husband's daily life) changes step by step, and it's not easy to describe to somebody. I mean, how to explain that yesterday morning it was almost impossible for me to guide John from bed to the toilet...he couldn't really comprehend what I meant when I told him what to do and how to do. And today, this morning, everything was almost like it was earlier before the disease...we said good morning and spoke some words, and then he walked from bed to the toilet all by himself. It was a clear and bright morning for him, for both of us".

Emma expresses how the daily life for her and her husband has turned to be filled with straining situations connected to movements and physical activities. She describes that she have made several manual lifting during both day and night, and before she was informed at the training programme, she made this without reflecting upon how to do it in the best ergonomic manner. After participating in the training she was empowered by knowledge and understanding of the connections of human in interaction with environment. She received and used the principles and examples given at the training sessions. "But after our last session (e.g. transfer technique a half year before) I got some hints about how to act. After the meeting, after our talks and testing some practical things, then some ideas struck me! One of them is to give enough time, I mean give him time to wake up and take in the actual moves to be done, for example when helping him up from sitting in his favourite armchair. Before our meetings I actually lifted him up several times, I am afraid. I am really happy about these advices, thanks a lot".

## DISCUSSION

A study, such as the present one, is a challenge due to researcher's intentions of combining an evaluation of a participatory approach project with an evaluation of one element within the project. A part of the challenge is the use of a qualitative method, such as phenomenography for the analysis.

An action research (AR) approach was chosen, with an occupational therapist as both researcher and rehabilitative/ergonomics resource for the municipality home care service organisation. The aim of action research is to solve problems as well as generate new knowledge by collaboration involving researcher and clients [7, 25]. The involved were participants in knowledge creation through action, by cyclical activities going on [6, 7]. In present study, supervision in specific situations in daily work, follow ups and if needed supervision again, exemplifies such iterative cycle.

This research was inspired by the phenomenographical research tradition by using interviews for data collection [46]. However, an attempt is made in incorporating percep-

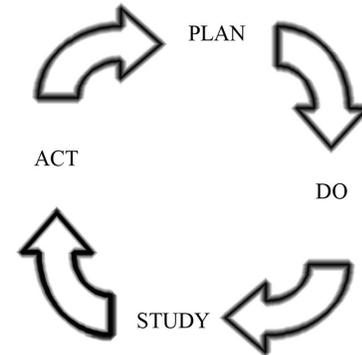
tions from questionnaires with open-ended questions. To analyse by reflecting on and counting on written conceptions shows, in this study, to be feasible and manageable. This stand in conformity with other studies based on written reflections analysed by phenomenographical approach [47]. The presumption for using written material is open-ended questions, which gives the respondents a space for expressing the phenomenon in one's own words. The open-ended questions make it possible combining the material; e.g. statements from questionnaires and interviews in the way which is done in present study.

The material from the questionnaires in part one was rich of statements depicting collaborator perceptions about occupational therapist as ergonomics as well as rehabilitative facilitator in the home care organisation. The findings in this study show that collaborators (unit leaders and occupational therapist colleagues at short-time dwellings and primary health care) expressed it as a strength having a rehabilitative profession directly within the home care staff. It was positive for finding out care receivers capabilities and limitations in daily life. Thus, the collaborators noted that several so called "problem-situations" have changed into "challenge-situations" for care receiver as well as the home care personnel. Additionally, the collaborators shared a view of occupational therapist as a resource; combining the perspectives of ergonomics and rehabilitation. In present study the occupational therapist acted as ergonomics and rehabilitative facilitator in daily activities in care receiver's own homes, interacting with the individual and the home care staff, inspired by the approach of action research. The mission of empowering the individual as well as the personnel can be seen as a beginning in a long-term development. One weakness is that the occupational therapist in this present project is only one person in one profession. It would be an advantage working by a home rehabilitation team, consisting of a group of professionals such as occupational therapist, physiotherapist, nurse, and care manager. This team could together emphasise the goal of developing a participatory ergonomics and rehabilitative approach, built on the prerequisites of this actual municipality.

Studies have shown that problem identification and solution through participatory ergonomics is a successful approach [20, 26, 27]. The one who is close to the situation is also the one who has to possess the keys to solve problems showing up. Having the concept of "learning by doing" in mind [22] lays a good ground for feeling a sense of 'this is important for me, my colleagues and the client'. This can bring by involvement, motivation and empowerment, and generate ideas for changing practice. Mitchell *et al.* [27] point out active engagement combined with authority, as being means to effect a meaningful change. From the experiences from mentioned studies, and from present study we can assert that collaboration with mutual action and shared goals are essential for development and change. Change agents are involvement, motivation and empowerment in an iterative process. The participants in present study, pointing out mutual action and working together as a team for coping with the situation, confirm this.

The comments from participant's after undergoing transfer technique programmes highlights a need of continuous programme with a theoretical base combined with practical

training and trials, which have a connection to daily work tasks. It is an advantage working in small groups, consisting of work mates sharing the same work situation and work conditions. This makes discussions and problem solution developing in a natural way, connected to the work groups shared reality in daily work. A fruitful and developing approach can be reached by following the modified Deming development cycle; Plan, do, study, act (Fig. 3). This is a model for continuous development, with the purpose of learning and improvement of a product or of a process [23].



**Fig. (3).** PDSA cycle - the Shewhart cycle for learning and improvement.

Bearing in mind that continued living at home as long as possible is a goal for municipal care of elderly [1, 2]; future research should address the challenge of exploring the issue from care receiver's point of view. Also the informal carer's conceptions are of interest finding out their perceptions regarding co-operation with assisting personnel, such as home care service staff, and with rehabilitative personnel, such as occupational therapists and physiotherapists.

Future research is needed regarding the care receiver's perceptions of performance in transfer/movement situations. This is not depicted very much in research, and consequently it is an urgent issue to be highlighted. Meeting individual clients needs in their own home environments is a complex working area [3, 4], which makes specific demands on the personnel. Factors affecting handling practice in connection to movement and transfers in home environments are described in almost half of the questionnaires by the home care staff, which stands in line with other studies [39, 50]. Research confirms a need of knowledge and training in handling assistive devices in home care [39, 40]. From a participatory and holistic viewpoint it would be of interest studying training programmes built on collaboration between involved actors, participating in the use of assistive devices they are sharing in daily use.

An action research approach involving care receivers, their informal carers, assisting and rehabilitative personnel can be fruitful for developing a participatory model in home care, including rehabilitative aspects as well as work environment aspects. Preconditions for reaching wholeness, in terms of holistic approach, are the activity in collaboration between involved. Changing a practice of handling is complex [27, 37]. Therefore, efforts should be laid on this area, with emphasis on empowerment of personnel as well as receivers of care. A future vision is; ongoing cycles of learning and development, guided by ergonomic facilitators. The

process enhances critical and analytical thinking, which develops through an iterative process among the involved.

### IMPLICATIONS FOR PRACTICE

From ergonomics point of view the use of the described participative approach could contribute to safe handling practice for both receivers of care and their assistants. It could also support care receiver's possibilities to maintain their abilities by using them in activities connected to daily life. Using best practices regarding safe work performance, and reaching enhanced awareness about safety and rehabilitative aspects could be reached by:

- Organising home care services in participative work groups involving management, home care staff, informal carers, and receivers of care. Ergonomics and rehabilitative facilitator supports the group with specific competence and holistic frames.
- Implementing training programmes in aims to formulate shared visions and goals, and to develop best practices focusing on daily natural situations, shared by the involved.

### CONCLUSIONS

The findings in this study provide empirical experiences supporting the importance of participatory ergonomics for reaching safe work performance in the home care for elderly. The findings also contribute to an understanding of the complexity between person, environment and task. It is essential to consider the possibilities for active participation for all involved in the actual, daily life situation. A foundation for a qualitative, meaningful and secure daily life is built on active collaboration between care receiver, and assistive person, with support by ergonomics and rehabilitative facilitator. Participation is essential regardless if the assistant is employed personnel or an informal carer, and regardless if the matter concerns movement and transfers or personal care.

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### CONFLICT OF INTEREST

The authors have reported no conflict of interest.

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