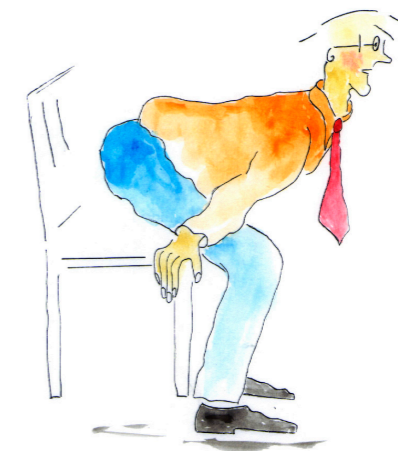


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# Movement Awareness and Communication in Patient Transfer –an Educational Intervention



Kristina Kindblom

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**Karolinska  
Institutet**



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From the Department of Neurobiology, Care Sciences and Society,  
Karolinska Institutet, Stockholm, Sweden

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Kristina Kindblom



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Words are not always leading to actions, but many actions good as others,  
have demanded words to be performed.

Sokrates

All kärlek  
till min nya och min gamla familj  
Oskar, Viktor, Wille, Soonie, Bella, Packo, Walter och  
Anders

## ABSTRACT

**Background:** This thesis addresses patient transfer, i.e., assisting the physical movement of patients with disabilities. Patient transfer is the primary cause of work-related disorders in healthcare providers. It has mainly been viewed as a physical work task, although the providers' own movement awareness and communication skills may be as important to support the patient to mobilise remaining resources. In response to this, Natural Mobility has been developed as an experiential educational method in patient transfer, inspired by physiotherapists' tacit knowledge. The aim of the education is to create a learning environment where healthcare providers can train body and movement awareness and communication skills to be able to guide the patient to move independently.

**Aim:** The overall aim of the thesis was to explore and evaluate healthcare providers' changes in patient transfer after participation in Natural Mobility regarding type and number of changes and the sustainability of the changes.

**Methods:** In total, 462 healthcare providers from health facilities (nursing homes, hospitals) in different municipalities and county councils in Sweden were recruited voluntarily to the studies. The intervention consisted of a course in Natural Mobility. Study I (n=212), used a pre-post design; Study II (n=20) was an interview study, and in Study III (n=250) and IV (n=192) a quasi-experimental pre-post design with control groups was used. Outcome was measured with both quantitative (questionnaires) and qualitative (interviews, weekly notes) methods

**Results:** About two thirds (68%) of the providers had changed something in their transfer habit after a year. They also reported less strain and higher work satisfaction (Study I). The reasons for changes seemed to be related to whether the provider focused the patient, their own body or the communication with the patient (Study II). Providers' perceived strain and reported disorders decreased one year after the education, while their movement awareness increased, and they gave more detailed instructions (Study III). The communication mode with the patient, changed in some providers from a physical to a more verbal mode. The providers described the patients performance instead of their own (Study IV). This was in line with the course content.

**Conclusion:** Participation in training in patient transfer according to the Natural Mobility method can enable some healthcare providers to increase their movement awareness and communication skills to support patients' independent movements during transfer, and thereby also reduce physical strain and disorders. More research is needed to fully understand the role of communication in patient transfer and how training can be optimised.

## SAMMANFATTNING

**Bakgrund:** Den här avhandlingen handlar om patientförflyttning, d.v.s. att assistera rörelser hos patienter med nedsatt funktion. Patientförflyttning är den främsta orsaken till arbetsrelaterade besvär hos vårdpersonal och har huvudsakligen betraktats som en fysisk arbetsuppgift. Dock är kanske vårdpersonalens egen kroppsmedvetenhet och kommunikationsförmåga lika viktiga, när patienten behöver stöd vid förflyttning att röra sig helt eller delvis på egen hand. Som ett svar på detta har en upplevelsebaserad undervisningsmetod, kallad Frisk-förflyttning, inspirerad av sjukgymnasters tysta kunskap, utvecklats. Syftet med utbildningen är att skapa en lärandemiljö där vårdpersonalen kan träna kropps- och rörelsemedvetenhet samt träning av kommunikationsförmåga. Målet är att patienten ska röra sig så självständigt som möjligt.

**Syfte:** Det övergripande syftet var att undersöka och utvärdera om vårdpersonalens arbetssätt förändrades vid patientförflyttning efter deltagande i utbildningen Frisk-förflyttning vad gäller typ och antal förändringar men också om förändringarna bibehölls över tid.

**Metod:** Totalt rekryterades 462 vårdpersonal från hälso- och sjukvården (sjukhem, sjukhus) i olika landsting och kommuner i Sverige. Deltagande i studierna var frivilligt. Utbildningen i Frisk-förflyttning utgjorde interventionen i alla delstudier. Studie I (n=212), hade en före- och - efter design och Studie II var en intervjustudie (n=20). I Studie III (n=250) och i Studie IV (n=192), användes en kvasi-experimentell före- och - efter design med kontrollgrupper. Utfallet bedömdes med såväl kvantitativa (frågeformulär) som kvalitativa (intervjuer, veckoanteckningar) metoder.

**Resultat:** Cirka två tredjedelar (68%) av vårdpersonalen hade förändrat något i sitt arbetssätt i patientförflyttningen efter ett år. De rapporterade också mindre ansträngning och högre arbetstillfredsställelse (Studie I). Orsaken till förändringarna verkade vara knutna till vårdpersonalens fokus vid förflyttning d.v.s. om fokus låg på patienten, den egna kroppen eller kommunikationen med patienten (Studie II). Vårdpersonalens rörelsemedvetenhet ökade och de gav fler och mer detaljerade instruktioner (Studie III). Personalens sätt att kommunicera med patienten ändrades hos ett begränsat antal personal, från ett fysiskt till ett mer verbalt kommunikationssätt. Personalen beskrev patientens rörelser i stället för sina egna (Studie IV), vilket var i linje med kursen.

**Konklusion:** Deltagande i förflyttningutbildningen enligt Frisk-förflyttning kan medföra att en viss del av vårdpersonalen kan öka sin rörelsemedvetenhet och kommunikationsförmåga och stödja patientens självständiga rörelser under patientförflyttning. De kan därmed minska fysisk ansträngning och besvär. Ytterligare forskning behövs för att utröna kommunikationens roll vid patientförflyttning samt hur utbildning kan förbättras.

## LIST OF PUBLICATIONS

- I. Kindblom-Rising K, Wahlström R, Stenström CH. Effects of staff training in Natural Mobility: A long-term follow-up. *Advances in Physiotherapy* 2002; 4:136-144.
- II. Kindblom-Rising K, Wahlström R, Ekman S-L. Nursing staff's perception of changes in patient transfer habits after a course – a phenomenological-hermeneutic study. *Ergonomics* 2007;7:1017-1025.
- III. Kindblom-Rising K, Wahlström R, Nilsson-Wikmar L, Buer N. Nursing staff's movement awareness, attitudes and reported behaviour in patient transfer before and after an educational intervention. Submitted 2009.
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## PREFACE

Patient transfer is a subject that has interested me since the 1970s. I trained as a physiotherapist in Germany, where I also worked in a special clinic for spinal cord injuries. The main treatment of these patients was patient transfer training, sports and social training, in order to become as independent as possible and be able to use the facilities of society despite a large disability. In Sweden I have worked in somatic and psychiatric care in hospitals, and as a district physiotherapist in a primary healthcare centre. How to support patients to find their bodily resources has guided me in my work as a physiotherapist.

The discussions I had with healthcare providers about patient transfer included questions about learning strategies and how we actually move ourselves. To be able to answer these questions, we had to be practical. There was a need to perform the different movements, asking “What do I do?” and “How does it feel?”, and compare this with the current view of transfer movements. By performing, comparing and observing movements it was possible for the providers to put words to the movements. The providers were guided by me in their daily work in patient transfer. My experience of working together with healthcare providers and patients has formed the basis for the development of the educational concept that I have designed. I have chosen to call it “Frisk-förflyttning” and the English translation is Natural Mobility. My thesis is an attempt to explore this education, in a scientific way.



# 1 INTRODUCTION

This thesis addresses patient transfer, i.e., assisting the physical movement of patients with disabilities. Patient transfer is a concept in healthcare. It has mainly been viewed as a work task for healthcare providers, related to transferring the patient from one place to another (Johnsson, 2005). However, patient transfer is more than a physical matter. The view of the body (Engelsrud, 2005), awareness of movements (Dropsy, 1987) and knowledge of communication (Watzlawick et al., 1967) are other elements influencing a transfer. Healthcare providers can view their work from the perspective of the provider or the patient. McWhinney has described a patient-centred clinical method, characterised by activating the patients to share their views and their own resources in consultations with doctors (McWhinney, 1997). In contrast, the doctor-centred approach concentrates on diagnostic aspects of the consultation, which draws attention away from the patient's experience. Patient transfer can be viewed in a similar way. A provider-centred perspective means that providers focus on their own work performance during patient transfer. A patient-centred perspective means that the provider focuses on the patient's performance during patient transfer. This thesis is concerned with a patient-centred perspective on patient transfer.

Patient transfer is the main reason for work-related disorders among healthcare providers (Hignett, 1996). This causes suffering and considerable costs, both for the individual and for the society. Work-related disorders among healthcare providers are a problem, not only in Sweden (Swedish Work Environment Authority, 2007), but in a great number of countries (Best, 1997, Engels et al., 1997, Garg et al., 1991, Yassi et al., 2001, Lagerström et al., 1998, Warming et al., 2008, Koppelaar et al., 2009, Martimo et al., 2008, Engkvist, 2006). Disorders among healthcare providers increased in Sweden with a peak of reporting in 2003 (Swedish Work Environment Authority, 2007). The incidence rate of disorders has declined, but nurse assistants still belong to the group of professionals in healthcare that report the highest number of disorders and accidents compared with other professions. In 78% of reported accidents, patients were the causal factor, due to resisting a movement or losing their balance during the transfer. In 58% of the cases the provider's back was injured (Swedish Work Environment Authority, 2007). Heavy lifting and unsuitable postures are a common cause of injuries among licensed practical nurses, nurse assistants and other assistant staff (Swedish Work Environment Authority, 2009). In order to reduce such disorders, providers have been trained to move the patient in an ergonomically correct manner (Johnsson, 2005, Kjellberg, 2003). My assumption underlying this thesis is that the providers' disorders also could be reduced by guiding patients to move independently.

## 1.1 HISTORICAL BACKGROUND

As early as in the 17<sup>th</sup> century, Ramazzini the father of occupational medicine was interested in work-related disorders. He visited workplaces and discussed the workers' illnesses with them. He also observed their postures and manual lifting, and collected the existing knowledge in a publication entitled "De Morbis Artificum Diatriba", in 1700 (Franco and Fusetti, 2004).

In the 1970s, caring work called for attention, due to the harmful consequences of lifting patients. This constituted a negative impact on a growing profession (Dehlin et al., 1974). Dehlin and Lindberg stated in the introduction of their article that mechanical lifts were accessible but manual lifting was preferred by patients and providers and described as being more rapid. Comparing lifts by one or two persons showed that the two-person lift was less demanding and the duration of the lift was less than 20 seconds (Dehlin and Lindberg, 1975). Isometric muscle strength was significantly higher in physiotherapy students compared with nursing aides (Dehlin et al., 1974). The focus on physical factors, gradually evolved from carrying to lifting, pushing and pulling the patient (Eklundh and Lundblad, 1975, Garg et al., 1991, Marras et al., 1999).

Literature on work environment, work technique and back healthcare was published as support and guidance for health professionals in their work (Bigner, 1973, Bigner and Beckman, 1976, Carleson and Ingesson, 1970, Eklundh and Lundblad, 1975, Jäderberg et al., 1980). Two patient transfer situations are shown in Figure 1 and Figure 2.



Figure 1. A carrying procedure in patient transfer<sup>1</sup>



Figure 2. A pulling procedure in patient transfer<sup>1</sup>

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<sup>1</sup> Footnote: Photo Knut Andreassen, Gunnar Hanse. Book title: "You and your work", Eklundh, M & Lundblad, K. Stockholm: LTs förlag, 1975.

”The Durewall system”, a method in patient transfer based on jiu-jitsu, was often used in Sweden between the 1970s and 1990s (Durewall, 1995). During the 1990s physiotherapists started the “Back Health Service“ in the Stockholm county council (Carlsson et al., 1990), with the so-called “Elsa courses” as part of the concept. They offered training in patient transfer to different professions within healthcare. “Hands in caring work” and “Everyday healthcare – where hands meet” were developed from “Basic body awareness” (Roxendal, 1980, Roxendal and Wahlberg, 1992). The provider’s perception and awareness of the body was included in the training, and attention was paid to the way in which the patient was viewed.

In the late 1990s, the ”Back Health Service” developed into the “Stockholm training concept” (Lagerström et al., 1997), which was used by the Swedish Association of County Councils to give recommendations and guidelines for patient transfer. The guidelines were presented in a handbook with text and pictures. This handbook was made available to the public in 2001 via Internet ([www.sjukvardsradgivningen.se](http://www.sjukvardsradgivningen.se)).

## **1.2 PATIENT TRANSFER**

### **1.2.1 Provider-centred perspective**

A large number of studies have contributed to the development of knowledge on patient transfer. However, little or no attention has been paid to the actions of patients and how they can assist themselves using their own hands. The research performed has been linked to studies on biomechanical analysis (Schibye et al., 2003), observations of healthcare providers’ work technique (Kjellberg et al., 2000, Johnsson et al., 2004, Warming et al., 2004), evaluations of ergonomic training programmes (Peterson et al., 2004, Engels et al., 1998, Engels et al., 1997, Owen, 2000, Hartvigsen et al., 2005) and analysis of safety and risk assessment in patient transfer (Kjellberg et al., 2004, Smedley et al., 2003, Pellatt, 2005). Causes and attitudes in relation to accidents have also been explored and evaluated (Engkvist et al., 1998, Engkvist, 2004). Transfer technique and “No lift policy” are two strategies used to reduce work-related disorders among healthcare providers. Transfer technique aims to reduce physical load, and “No lift policy” aims to reduce the number of transfers, mainly by using mechanical or electrical lifting devices. Reducing the number of transfers by using the mechanical or electrical devices have significantly reduced providers’ disorders (Charney et al., 1991, Engkvist, 2006, Guthrie et al., 2004). However, the use of manual transfer technique has not shown such a reduction (Martimo et al., 2008, Hignett, 2003b). Nelson and Baptista (2006) have summarised evidence on practice in patient transfer, showing that old techniques are still used to a great extent. In another article it is shown that transfer work is often based on experience and a traditional way of working (Nelson et al., 2007).

One type of recommended work technique is based on ergonomic guidelines (Johnsson, 2005). Kjellberg showed in her thesis that there is greater variation in transfer technique between providers than within one individual. This result leads to recommendations that broader guidelines rather than standard methods should be communicated to be

able to meet a larger group of healthcare providers (Kjellberg, 2003). The recommended principles for a safe transfer involve using transfer aids (Iakovou, 2008), pulling the patient instead of lifting (Garg et al., 1991), and never performing the transfer alone (Marras et al., 1999). Walking belts are recommended (Marras et al., 1999).

In spite of these efforts, addressing work-related problems exclusively by reducing the work-load has not contributed to any great success (Martimo et al., 2008), and although psychosocial (Warming et al., 2008) and psychological factors are involved in pain and back health problems (Bigos et al., 1991, Linton, 2000, Linton, 2005, Linton, 2001), they have received little attention in patient transfer. Strategies need to be developed to reduce work-related disorders in a broader way (Hignett, 2003a, Martimo et al., 2008, Peterson et al., 2004, Hartvigsen et al., 2005, Smedley et al., 2003, Warming et al., 2008). Some recent research emphasize to programmes with greater versatility (Nelson et al., 2006). In a review article, the quality and number of studies in which providers contributed to patients' increased mobility was evaluated. Forty-nine studies between 1966 and 2006 were identified. Several of the studies had poor quality and were related to mobilizing hospitalised stroke patients using specific methods (Bobath, Carr J & Shephard R). The population size was small in all studies (Kneafsey, 2007). One study facilitated the providers moving and handling practice through communication with the physiotherapist. Providers reported an increased understanding of their practice in patient transfer (Mitchell et al., 2005).

Healthcare providers have shown difficulty in making use of patients' functional ability to move (Engels et al., 1997, Warming et al., 2004), and they have proved to be restricted in their verbal activation of patients (Warming et al., 2004). Empirically patients seem to be able to pull themselves into a standing position by using a walking device even though it requires more physical strain than using one's hands to push against a chair or a bed. The assumption is that there is an additional group of patients who could move independently if they were given proper guidance. According to the National Board of Health and Welfare, the knowledge and experience of both providers and patients are under-utilised (National Board of Health and Welfare, 2003a). In society as a whole and particularly in the field of public health, there is a call for more health promoting health care, including individual meetings with patients (Swedish National Institute of Public Health, 2006). This may result in providers' and patients' knowledge and experience, a better utilization of which could also include patient transfer.

The hierarchical structure in healthcare implies an unequal relationship, and healthcare providers have a position of power in relation to the patient. The work has often involved a paternalistic approach (Coulter, 1999), with the patient in a passive position. A dualistic view of the body has been prominent in healthcare (Thornquist, 2001), but a dichotomy between body and mind involves an objectification of the body (Engelsrud, 2005). In patient transfer the patient's body has traditionally been viewed and described as an object (Iakovou, 2008): "The body is handled", "The patient is

moved”, “We are conducting a transfer”. The way in which providers view their own body has implications for how the patient’s body is treated (Rosberg, 2000). Situations of patient transfer when two providers are involved often show limited communication, or no communication at all, between provider and patient; it is the transfer itself, which seems to be in focus (Figure 3).



Figure 3. The picture shows one common way of transferring a patient between wheelchair and bed, associated with strain for the provider and difficulty for the patient to participate (Illustration: Kristina Kindblom).

### **1.2.2 Patient-centred perspective**

The patient is dependent on healthcare providers’ communicative competence. The law regarding patient rights and participation in healthcare changed in 1999 in Sweden to enable better use of patients’ knowledge and ability (National Board of Health and Welfare, 2003b). Fear is often present in the medical context, and disability is a personal experience (McWhinney, 1997). “Letting the patient lead the activity” was a key role in the patient-centred method developed by McWhinney (1997). This means to listen to the patients and respond to their verbal and non-verbal communication. Patient transfer is a multidimensional task requiring knowledge and competence about the patient’s resources to move, about their own resources how to guide the patients’ mobility, how movements are performed and what experiences they give. My assumption is that a patient-centred perspective focusing on the patient’s performance in patient transfer could lead to greater mobility in patients, and could thereby reduce the provider’s physical load.



## **1.3 MOVEMENT AWARENESS IN PATIENT TRANSFER**

### **1.3.1 Movement awareness**

Movement awareness is related to how movements are performed (Trew and Everett, 2005). Lack of awareness of movements is a common feature in the general population. Most people do not consider how they move or perform everyday actions until they for different reasons lose the ability (Trew and Everett, 2005). When a person is unable to move in the usual, automatic way, he/she may need assistance to become aware of how he/she acted before. Movements are a basic function for human beings, they are settled in the brain motor cortex and follows a universal pattern (Trew and Everett, 2005). The view of Sherrington (1906) was previously the dominant in motor control, suggesting that movements are the result of combining several simple reflexes into greater actions. His reflex theory has been challenged by the Russian neurophysiologist Bernstein. The theories of Bernstein's research presented a new and more dynamic view of movements. The performance of movements is affected by the task requirement the individual and the environment, and is the result of a whole system of impulses that cooperate (Bongaardt, 2001). The performance of movements depends on physical abilities, but also on emotions and cognitions as well as social and cultural assumptions (Cech and Martin, 1995).

When automatic movements no longer function, either completely or partly, it can be associated with a feeling of fear. Fear of moving is linked to the human defense system (Perkins and Corr, 2006). Depending on the situation and the degree of the threat, the body reacts in different ways (Perkins and Corr, 2006). In a patient transfer situation, the patient moves in the opposite direction away from the threat. Trusting the body has shown to be related to one's self-esteem (Dropsy, 1987, Rosberg, 2000), which reduces fear.

### **1.3.2 Body awareness**

The concept of "Basic body awareness" consists of exercises from Dropsy and Roxendal (Roxendal, 1981, Dropsy, 1987). This concept has been introduced and developed by Roxendal within the field of psychiatric physiotherapy (Roxendal, 1985). Basic body awareness is a system of physical exercises designed to integrate mental and bodily awareness (Roxendal and Winberg, 2003, Roxendal, 1985). This means finding a footing and creating a relationship to gravity (Rosberg, 2000). Exercises provide reflection on learned habits, and body contact is reinforced by mental presence (Dropsy, 1987, Roxendal and Winberg, 2003). Training in basic body awareness increases the discovery of one's own resources and has a strengthening effect on the I-function (Roxendal, 1981). Body awareness has been explored in several Swedish theses (Mattsson, 1998, Lundvik Gyllensten, 2001, Ekenberg, 2000). As movements are processed at a subconscious level, healthcare providers may lack awareness of how to support patients to move independently.

## **1.4 COMMUNICATION IN PATIENT TRANSFER**

### **1.4.1 Bodily communication**

The body conveys information but bodily communication is rarely spoken about, although non-verbal communication is said to be greater than the use of words (Argyle, 1988). The body was the main instrument for communication before language developed. According to Polanyi (1967) bodily knowledge (Mitchell et al., 2005) is often tacit knowledge. We as human beings are seldom aware of what we convey with our bodies in the everyday communication (Argyle, 1988). Meta-communication is the quality of the relationship during communication. It is linked to what providers think and feel about themselves and the patient, for example during a transfer (Watzlawick et al., 1967). If providers have confidence and trust in their own ability to assist their patients, this constitutes the conditions for patients' mobility (Kalman, 2000b). Non-verbal or bodily communication means in this thesis interaction through the body or movements without using words e.g. putting a hand on the patient's back, initiate through the body that the patient shall bend forward, various taking hold of the patients' arms or hands for standing up can communicate through the body the patient's inability. This manner of assisting prevents patients from using their own hands. Illustrations showing providers taking hold of patients' arms or hands have recently been removed from the patient transfer programme in the "Handbook for guidelines in patient transfer" on internet ([www.sjukvardsradgivningen.se](http://www.sjukvardsradgivningen.se)).

### **1.4.2 Verbal communication**

Words can be used for instruction to guide people's actions (Stein, 2003), but the dialogue is affected by intention and meaning (Watzlawick et al., 1967). Healthcare providers' words in their contact with patients can worry more than inspire and encourage, because providers may lack awareness of the words they use and the way in which patients interpret them (Cedraschi et al., 1998).

Verbal communication includes both information and instruction. Information is concerned with describing a situation, whereas instruction is related to action. Taking things for granted is present in all dialogues (Johannesson, 1990). Self-evident matters do not receive much attention, and they are therefore usually not observed or articulated. A similar statement is given by Rolf, in terms of the trap of applied knowledge (Rolf, 1991), and Hodges, in terms of incompetence (Hodges, 2006), i.e., using practical knowledge of routines without critical review. One study indicates that providers find it difficult to use the patient's capacity to perform a transfer (Engels et al., 1997). With limited knowledge in communication, it is possible that providers move patients in a more passive way than necessary.

## **1.5 PHYSIOTHERAPY AND PATIENT TRANSFER**

Physiotherapists are the group of healthcare professionals whose work mainly involves promoting health from a movement perspective (Broberg, 1996). According to Thornquist (1998), physiotherapy has evolved into a movement science; and receiving

and conveying bodily knowledge is central (Thornquist, 1998). Physiotherapists use bodily communication (Kalman, 1999) and touching (Kalman, 2000a) during a patient transfer to get the patient to move on his/her own. Rosberg (2000) believes that dialogue through bodily movement can create trust in a relationship, and physiotherapeutic treatment can be understood as an exercise in exploring and strengthening the ability for trust and movement (Rosberg, 2000). Trust is crucial for the ability to act (Kalman, 1999). Thornquist has shown that there is a variation in how physiotherapists' act and reasoning in their work, and that the body can be described as social, cultural or medical (Thornquist, 2006). The World Confederation of Physical Therapy has stated that the nature of physiotherapy is to provide services to individuals and populations in order to develop, to maintain and restore movement and functional ability throughout the lifespan (WCPT, 2009).

Physiotherapeutic knowledge is theoretical and practical and only part of the knowledge is explicit (Broberg, 1996). Polanyi argues that practical or bodily knowledge is a perfect example of tacit knowledge (Polanyi, 1967). In Thornquist's thesis she argues that tacit knowledge which is not documented remains outside of language, and is invisible (Thornquist, 1998).

## **1.6 LEARNING AND CHANGE**

Work within healthcare is expected to become more qualified. In order to meet future requirements, the Swedish Government has given municipalities and county councils the task of strengthening healthcare providers' competence (National Board of Health and Welfare, 2003a). A traditional way of looking at competence is from a dualistic approach, which classifies knowledge as a number of attributes that constitute competence (Sandberg, 1994). According to Sandberg, competence is based on workers' understanding of their work, which is an implicit process (Sandberg, 1994). New knowledge can broaden competence, while seeing one's work with new eyes can change practice altogether (Sandberg and Targama, 1998). Changing perspectives on transfers from provider-centred to patient-centred may imply seeing one's work with new eyes. Learning can be described in terms of change and competence and is based on understanding. Schön speaks of learning based on reflective actions, and maintains that reflections are present at different levels: "knowing in action", "reflection in action", "reflection on action" (Schön, 1995). Schön emphasises that the practitioner's knowledge is personal and tacit and providers understand what they do through the doing itself (Schön, 1995). When "knowing in action" is articulated, it becomes "knowledge on action". The process of reflection seems to focus interactively between result, action and the tacit knowledge during action. Schön argues that the expert reflects during action. According to Dall'Alba and Sandberg, 2006) the levels of competence show a hierarchical structure, from detail to a whole. Understanding of the practical work is not only the basis for practice, but also for competence (Dall'Alba and Sandberg, 2006, Dall'Alba and Sandberg, 1996).

The purpose of all types of learning is change. This applies to changing mental models or creating new ways of thinking (Dall'Alba, 2004). Diwan et al describe a model for the process of changing, where practice gives knowledge which can shape attitudes and lead to changed practice (Diwan et al., 1997). Marton and Säljö related learning and change to attention and how and what we understand (Marton and Säljö, 1976). The way students perform practical work is the way they understand the work (Dall'Alba, 2004). Without a basic understanding, change is not possible (Göransson, 1990).

### **1.6.1 The educational design**

An educational design can guide learning. Dewey and Lewin are among the primary educators concerned with experience-based learning, and Kolb used their design of teaching for his development of different learning styles (Kolb, 1984). Dewey developed “learning by doing” and worked for utility-oriented education. Dewey’s theory assumes democratic learning, with attention to equality between teacher and student. The activity of participants is central, and the main task of the pedagogy is to establish a learning situation where the participants can develop their ability to assess the consequences of a conscious action. Making participants aware of their own resources is crucial. “Learning by doing” also includes thinking as a tool for negotiation (Dewey, 1985). Dewey asked questions like “What is true?” and “What is value?”, and argued that these questions are answered by applied action. Metaphors, narratives and learning by doing are learning strategies that enhance understanding (Sandberg and Targama, 1998, Nilsson and Waldemarson, 1998). Molander (1996) argues that understanding requires shaping new forms rather than only reproduction and that understanding can provide a sense of surprise, a sudden understanding (aha-experience) and thus an opportunity to see something with new eyes. This requires methods that facilitate understanding as discussed by Dall’Alba (2004). Learning by doing is linked to a specific context and promotes understanding through the bodily experiences. When more senses are involved in the learning it has a greater impact (Nilsson and Waldemarson, 1998). “Role changes” facilitates an understanding of patient and provider perspectives in specific situations (Maerker et al., 1990, Winchester, 2003, Nilsson and Waldemarson, 1998).

The design of patient transfer training has mostly been practical and experience-based (Johnsson, 2006). The extent of the transfer training shows great variation. Engels et al have presented a patient transfer training programme consisting of ten occasions (Engels et al., 1998), while Peterson’s training programme consists of three (Peterson et al., 2004). There is a lack of knowledge and uncertainty about how patient transfer should be designed and taught in the best way (Owen et al., 1999).

### **1.6.2 Natural Mobility – an educational intervention**

Natural Mobility is an educational method in patient transfer that I have developed gradually since 1989. It’s approach has similarities with the theories of “learning by doing” (Dewey, 1985). Providers are at the centre, and it is their awareness and actions that are in focus. The purpose of the method is to make providers aware of their movements, body and thoughts, and how they communicate with the patient, in order to

understand how patients can be guided to move independently. This may give the providers a choice how to practice their work. The body is used as an educational instrument in the training. Drama exercises and role changes are used to enhance participants' understanding of their own experience of being a patient or a provider in specific situations (Nilsson and Waldemarson, 1998). Natural Mobility has been inspired by the tacit knowledge of physiotherapists. The course contains learning activities related to movement awareness (Trew and Everett, 2005), communication (Watzlawick et al., 1967), body awareness (Dropsy, 1987, Roxendal and Winberg, 2003) and knowledge of fear as a defense system (Perkins and Corr, 2006). The defense system refers to the direction of movements, when performing movements being frightened. Fear is assumed to be a major obstacle in patient transfer. Training in the form of applied action provides an opportunity for reflection and understanding of the body's tacit knowledge (Thornquist, 1998). Healthcare providers learn from their own experience in performing the movements and supporting the "patient's" ability to move independently. Verbal instructions, non-verbal support and body awareness can assist the patient in learning to move the centre of balance in her body without being afraid. In order to use a patient-centred approach in patient transfer, knowledge and awareness of movements, the body and communication are needed.

### **The course in Natural Mobility**

The overall structure of the course is to make the participants aware of their own bodily knowledge. How they move, what strength is needed when moving and what reflection it gives when comparing movements. It is further to observe and compare movements with the other participants looking at similarities. Furthermore the participants will experience the feeling of being guided to move just with words. The process described above is also experienced while simulating disabilities.

The first course day comprises five parts and takes half a day in total.

1. The course starts with exercises about communication. One exercise is to increase awareness of preconceptions (Argyle, 1988). One pre-conception is: if the provider does not believe that the patient is able to move, the space and time to perform the movement independently may not be given. The next exercise is related to words. One participant plays the patient, while the other one guides the patient, with words alone, to move from sitting on a chair to standing up. The participants are not allowed to touch each other and the person playing the patient is to perform exactly what he/she is told. The words and instructions used are presented by the participants and reflected upon. With reference to theories of communication (Argyle, 1988, Watzlawick et al., 1967), words and instructions are discussed, while alternate movements are performed to increase movement awareness and to develop possible words that can be used for instructions.

The movements performed by the providers during the course in Natural Mobility are: standing up, sitting down and moving sideways, getting out of the bed, lying down and moving higher up in bed, turning on one's side and getting up from the floor. These

movements are seen from a whole body perspective with focus on similarities between movements, within a movement skill and between participants.

2. Next part is about self-awareness of movements. All the mentioned transfer movements are performed with spontaneity in the same way as above, to understand how they occur for healthy individuals. The participants are paying attention to what is taking place, but without overt reflection on the performance. The transfer movements are performed several times in a row, giving the participants time to increase their awareness of whole body movements and details. The more rapidly movements are performed, the greater the similarities between the providers.

The action of standing up is the same movement as sitting down, only in reverse order (Figure 4). Moving sideways, (Figure 5), moving higher up in a chair, pulling a chair towards a table, or pushing a chair away from a table, all contain the same components as standing up and sitting down. Almost the same instructions can be used for each pair of movements. One of the movements in these pairs requires specific analysis, while the other movement shows the same procedure in reverse order and needs only a simple explanation.



Figure 4. Standing up and sitting down  
(Illustrations: Kristina Kindblom)



Figure 5. Moving sideways

Movements in the lying position can be viewed in the same way as the sitting position (Figure 6).

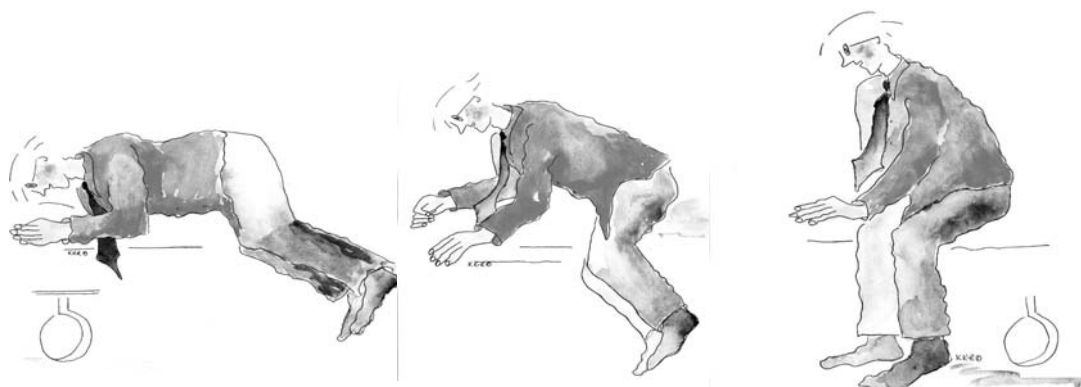


Figure 6. From right to left, the man in the pictures is going to bed, and from left to right he is getting up (Illustrations Kristina Kindblom)

3. To broaden the awareness of the same transfer movements, they are compared with movements performed in the opposite direction (for example turning on the side with bent legs and with straight legs) so that participants can choose which one feels comfortable, uncomfortable, secure, insecure. Movements are accompanied with tiredness, alertness, fear and different simulated disabilities to increase awareness and to get an opportunity to understand how answers from their bodies respond. This may help them to increase their ability and trust in their own body and to critically reflect on their work habit. This can give a support in choosing how to work.

4. This part includes verbalising all transfer movements performed. Participants then give and take instructions while taking turns to play the different roles of patients and providers.

5. The last part deals with how to use one's hands in the above-mentioned movements to promote mobility. The experience of the hand and arm function in balancing and directing movements is also explored.

### **In between practice**

Prior to the course the participants received information about the course structure. This included the practical training at the respective work place during the course interval. At the course day they were asked to write down what they intended to train from the course at their work place. The two weeks interval was included for the participants to practice the course content and to assess the consequences of their performed action.

### **Follow-up day**

This half-day follow-up, which takes place two weeks after the first half-day course, includes feedback and discussion on the practical training performed at the participant's own workplace. Exercises are repeated to deepen awareness regarding specific details of movements that are important for guiding patients with larger disabilities how to use their remaining functions, and in using instructions and guidance when two helpers are needed. Exercises to explore bodily communication and the use of one's hands were mainly performed by grasping the patients' arms or hands in different transfer situations. How to share trust and responsibility are discussed and experienced.

## **1.7 RATIONALE FOR THE THESIS**

The rationale for this thesis was the need to explore how healthcare providers' transfer habits were influenced by participation in a course in Natural Mobility. The main aim of the course was to increase the providers' competence in guiding patients to move independently to a greater extent. Increased knowledge of possible effects of the education will help understanding what works and what is not working in the training curriculum. This may contribute to improvements of educational program if needed.

Several questions are raised. Will the providers change transfer habits after the course? What will be changed, to what extent and will the changes be retained over time? It was furthermore to understand if the providers will increase their movement awareness and if they will change their attitudes and communication skills on patient transfer? Will providers in particular use more verbal instructions after the course and how specific will the changes be in relation to course objectives? Will changed transfer habit decrease physical strain, reduce disorder or increase satisfaction? How do providers perceive changes in patient transfer habits after the course?



## 2 AIMS

The overall aim was to explore and evaluate healthcare providers' changes in patient transfer after participation in an educational intervention (Natural Mobility) aiming at promoting movement awareness and communication skills.

Specific objectives were:

- I. To investigate whether working habits changed and were retained after one year, how the strain of staff work was affected, and whether satisfaction with patient transfer was affected after a half-day Natural Mobility training course in patient transfer.
- II. To illuminate nursing staff's perceptions of changes after a half-day Natural Mobility training course in patient transfer.
- III. To evaluate changes after two half-days Natural Mobility training course in patient transfer on nursing staff's movement and body awareness and attitudes, as well as their reported behaviour, strain, disorder and sick leave.
- IV. To explore and describe nursing staff's perceived movement and body awareness and communication modes in self-reported patient transfer situations before and after two half-days Natural Mobility training course.

### **3 METHODS**

In these four studies, quantitative and qualitative methods were used to evaluate the outcome of the educational intervention of the course in Natural Mobility. In Study I, a questionnaire was used to investigate if any changes could be attained and maintained after a half-day course in Natural Mobility. This raised the question: “What is the underlying basis for changing habits after a course?” The question led to Study II, which was an interview study on providers’ perceptions of changes. Studies III and IV, were quasi-experimental with control groups. The course in Natural Mobility was increased to two half-days. A questionnaire was used to evaluate changes in movement and body awareness, attitudes, reported behaviour and strain (Study III). In Study IV, weekly notes were used to explore and describe healthcare providers’ body awareness and communication mode in patient transfer.

#### **3.1 PARTICIPANTS**

A total of 462 healthcare providers were included in the four studies. They were recruited voluntarily from municipalities and county councils in Sweden. In Study I, 212 healthcare providers participated, and in Study II, 20 of the 212 healthcare providers contributed. Providers in the first and the second study were employed in the municipalities and county councils of Uppland, sörmland, östergötland, Dalarna, and Småland. In Study III, 250 healthcare providers participated from two hospitals in the intervention and from two hospitals in the two control groups. In Study IV, 192 of the 250 healthcare providers contributed in an intervention group and one control group. Healthcare providers in the third and fourth study were employed in the county councils of Sörmland and Stockholm. An overview of the four studies is shown in Table I.

Table I. An overview of the four studies regarding study design, method, intervention, number of participants at inclusion, and data collection period. Participants in Study II are included in Study I. Participants in Study IV are included in Study III.

Study	Study design	Method	Intervention	Number of participants at inclusion	Data collection period
I	Pre-post intervention	Questionnaire	One half-day	212	Before intervention 4-5 months after intervention One year after intervention
II	Post intervention	Interview	One half-day	20	18 months after intervention
III	Quasi experimental	Questionnaire	Two half-days	148 <sup>a)</sup> 44 <sup>b)</sup> 58 <sup>c)</sup>	Before intervention One year after intervention
IV	Quasi experimental	Weekly notes	Two half-days	148 <sup>a)</sup> 44 <sup>b)</sup>	Before intervention One year after intervention

<sup>a)</sup> Intervention Group, <sup>b)</sup> Control Group, <sup>c)</sup> Additional Control Group

Study I: In this study, 212 healthcare providers with different professions participated. There were no exclusion criteria for participation. The majority of healthcare providers worked in nursing homes or in home care, while the participating physiotherapists, occupational therapists, physiotherapy assistants and occupational therapy assistants, as well as a few licensed practical nurses, worked in primary healthcare or in hospital care (Table II).

Study II: In this study, 20 licensed practical nurses (LPN) and nurse assistants (NA) were selected for interviews among the participants from Study I. The number of participants from Study I was reduced from 212 to 93. LPNs and NAs who no longer worked with patient transfer, as well as physiotherapists, occupational therapists and their therapy assistants, were removed from the original group. Participants were randomly drawn from the group of 93 LPNs and NAs using the statistical programme SPSS (SPSS Inc, Chicago, IL USA). Inclusion criteria were: those participants who stated that they changed transfer habits and those who stated they did not change transfer habits according to the questionnaire responses. Fifteen agreed to participate. Using a strategic procedure, five more persons were selected. LPNs and NAs who worked in hospital care, nursing homes or home care participated (Table II).

**Study III:** In this study, 148 healthcare providers registered voluntarily to the research project in the intervention group, 44 registered voluntarily to a control group, and 58 to an additional control group. The criterion for inclusion was: healthcare providers that worked with patient transfer. They reported to the head of the respective clinical ward that they were interested in participating. The participants in the intervention and the control groups came from different hospitals so that knowledge from the course would not be conveyed to the participants in the control groups. The majority were LPNs and they worked in different clinical wards. The participants in the intervention group compared to the control group differed to some extent in years of work experience and attended transfer courses (Table II).

**Study IV:** In this study, 192 healthcare providers participated; 148 were included in an intervention group and 44 in a control group. They were part of the same quasi-experimental intervention as Study III (Table II).

Table II. An overview of the healthcare providers included in Study I-IV. Participants in Study II are included in Study I. Participants in Study IV are included in Study III.

<b>Background variables</b>	<b>Study I</b> n=212	<b>Study II</b> n=20	<b>Study III</b> IG <sup>a)</sup> n=148	<b>CG<sup>b)</sup></b> n=44	<b>ACG<sup>c)</sup></b> n=58	<b>Study IV</b> IG <sup>a)</sup> n=148	<b>CG<sup>b)</sup></b> n=44
<b>Sex</b> man/women	8/204	1/19	1/147	1/43	2/56	1/147	1/43
<b>Age</b> yrs, median (range)	41 (19-62)	38 (23-62)	48 (23-64)	40 (20-60)	47 (24-64)	48 (23-64)	40 (20-60)
<b>Profession</b> (n)							
Registered nurse (RN)	2		58	12	25	58	12
Licensed practical nurse (LPN)	49	9	87	32	33	87	32
Nurse assistant (NA)	86	11	3			3	
Physiotherapist	36						
Occupational therapist	28						
Therapy assistants	11						
<b>Years of work experience</b>							
median (range)	13 (1-35)	9 (4-32)	25 (1-43)	13 (1-38)	25 (1-39)	25 (1-43)	13 (1-38)
<b>Patient transfer courses</b> (n)							
No courses	15		35	19	2	35	19
1-3 courses	113	11	90	22	30	90	22
More than three courses	78	9	22	3	26	22	3

<sup>a)</sup> IG=Intervention Group, <sup>b)</sup> CG=Control Group, <sup>c)</sup> ACG=Additional Control Group

## **Dropouts and excluded participants**

Dropouts and excluded participants will be presented under Results for each study.

## **3.2 EDUCATIONAL INTERVENTION - NATURAL MOBILITY**

The intervention consisted of a course in Natural Mobility. For Study I and II a half-day training course in Natural Mobility consisted of one half-day training and a recommended follow-up at the respective work place. This follow-up was intended to be performed by the local physiotherapist or occupational therapist who also participated in the course Natural Mobility. They agreed to perform the follow-up with their participating colleagues at the respective work place. More than half of the participants did however not receive follow-up at the work place.

The intervention in Study III and Study IV included the follow-up as an additional half-day course. The course in Natural Mobility consists now of a two half-days of training with a two-week interval between the course days. When the study was completed, the control group (but not the additional control group) was offered the Natural Mobility course.

## **3.3 DATA COLLECTION**

### **3.3.1 Questionnaires**

Two different questionnaires were used in Study I and Study III. Both were based on the Natural Mobility course but constructed on different occasions. The questionnaires from Study I was answered on three occasions: before, after 4-5 months, and after one year. In Study III the questionnaire was also answered before, 4-5 months after and one year after the intervention, but only analysed before to after one year.

Study I: The questionnaire comprised nine items and was distributed, answered and collected just before the course started. The questions focused on: sex, age, profession, work experience, attended transfer courses, which transfer method was used, workload, work satisfaction and to what extent they used the same transfer method. Three further questions were added to the 4-5 months questionnaire (12 items) concerning:

- whether healthcare providers received help with follow-up
- whether they changed anything in their work habits
- whether the changes had been maintained

The one year questionnaire contained the 12 questions from the second questionnaire and three open-ended questions (15 items) concerning:

- which changes were made
- positive experience of the Natural Mobility method
- negative experience of the Natural Mobility method

Apart from the open questions, the other questions were answered on a verbal rating scale and on a Visual Analogue Scale (VAS 0-10). The questionnaire was valid with respect to the content of the course, the experience of the course leader and the

literature. Before the questionnaire was used, it was tested on a group of 20 healthcare providers not involved in the study. They answered the questionnaire at one occasion and were asked to give comments to the formulation of the questions. One question was rephrased.

Study III: No existing instrument was suitable for our purposes. Therefore a questionnaire was constructed to assess healthcare providers' movement and body awareness, attitudes and reported behaviour in patient transfer, based on the objectives of Natural Mobility. The questionnaire comprised background variables (9 items), Borg's verbal rating scale for strain (1 item) (Borg, 1990), the Örebro screening questionnaire for pain and sick leave (9 items) (Boersma and Linton, 2002) and the Natural Mobility part (25 items and 3 open-ended questions).

Borg's verbal rating was answered on a nine-point scale, from "no exertion at all" to "maximal exertion". The scale in relation to heart rate measurement was not used. Five of the items from the Örebro screening questionnaire on pain and sick leave were answered on an eleven-point scale (0-10). Participants in the intervention group and in the control group completed the whole questionnaire. Participants in the additional control group answered the background variables, the Örebro Screening Questionnaire items and Borg's verbal rating scale. As the questionnaire could give rise to self-reflection and potential change, the additional control group (who did not answer the whole questionnaire) was included in order to compare reported strain, disorders and sick leave.

#### ***The Natural Mobility part of the questionnaire***

Initially, 115 items were generated for the Natural Mobility part of the questionnaire, based on previous studies. After joint discussion, a panel of practitioners consisting of three physiotherapists, one occupational therapist, four nurses and one physician reduced the number of items to 31. To test reliability, 50 nursing staff participated in a test re-test procedure. The level of Cronbach's alpha was between 0.70-0.88 for 24 items, and between 0.60-0.69 for seven items. After further revision, where six items were excluded, four items were modified and response formulations in six items were changed from frequency to degree of agreement. The 25 items in the Natural Mobility part of the questionnaire were classified into six main areas based on the content of the course: movement awareness (2 items), body awareness (2 items), attitude to the patient (6 items), attitude to oneself (3 items), attitude to work (5 items), reported behaviour (7 items). In addition, three open-ended questions were included.

Fifteen of the Natural Mobility items were answered on a five-point Likert type scale from "do not at all agree" to "agree entirely". Six items were based on frequency from "never" to "always". One item was based on different body senses, and another item on the provider's possible focus during the transfer. Two items were answered on a seven-point scale (0-6). The three open-ended questions were: a) If you agree with the statement "I activate the patient during patient transfer", how do you act? b) What instructions do you give a patient who does not believe he/she will manage to move? c)

Please summarise in one sentence what you think is the most important issue in patient transfer.

### **3.3.2 Interviews**

Study II: The interviews were performed when Study I and the preparations for Study II were completed, which was 18 months after the healthcare providers took the course in Natural Mobility. The first author (KK) was the interviewer. The participants chose the place for the interview, which was performed in the providers' home, or in a convenient and secluded public place. The interviews aimed to capture the meaning of changing or not changing patient transfer habits. The interview started with an open question: "Can you tell me about the course, and what happened when you came back to work?" Another question was formulated: "Did you change your transfer habits after the course?" The task of the interviewer was to encourage the provider to narrate. The interviews, which lasted between 45 minutes and two hours, were audio taped and transcribed verbatim.

### **3.3.3 Weekly notes**

Study IV: Writing weekly notes was chosen as a method because it provided the opportunity for reflection through the writing process. This is a self-reporting method that can be useful in exploring healthcare providers' experiences (Patel and Davidson, 2003). The forms for the weekly notes were sent to the head of the clinical ward, who distributed them to the providers. They should be written by the providers one month before study start and after one year. On each occasion, the notes were written once a week during four consecutive weeks. Participants received four pages with two topics on each page (one page per week). The first topic was: Reflect on a patient transfer during the last week that you consider was good and one that was poor. The second topic was: Reflect on how your body feels during a good patient transfer and a poor patient transfer respectively. After four weeks the weekly notes were sent back to the first author (KK) who was responsible for the analysis. Through the weekly notes, the intention was to capture experiences during both a good and a poor patient transfer. The participants were free to choose the patient, which transfer movement they wanted to describe, and what they wanted to write about.

### 3.4 DATA ANALYSIS

The results were analysed quantitatively and qualitatively (Table III). In addition descriptive statistics were used.

Table III. Overview of the analyses used in the studies.

	Study I	Study II	Study III	Study IV
<b>Quantitative methods</b>				
Wilcoxon matched-pairs signed-ranks test	X		X	
Mann-Whitney U test			X	
Modified Sign test			X	
Chi-square test			X	
Manifest content analysis			X	X
<b>Qualitative methods</b>				
Phenomenological-hermeneutic analysis		X		
Content analysis				X

#### 3.4.1 Quantitative methods

The statistical methods used were non-parametric. The answers to the questionnaire in Study I and Study III were considered as ordinal scale data. The Wilcoxon matched-pairs signed-ranks test was used to analyse the Visual Analogue Scale (VAS, 0-10) and investigate the differences between the responses at the different stages of time (Study I). In Study III, the responses to 22 of the Natural Mobility items were trichotomised and analysed with a modified sign test (Svensson, 1998), to estimate changes between the intervention group and the control group. Before and after, comparisons within the groups were also estimated. Two questions on movement awareness were combined and group comparison were analysed with the Mann-Whitney U test.

All three open-ended questions were analysed using manifest content analysis (Berelson, 1952). Concepts and/or numbers were established. The answers to the question on instructions were coded according to the standard classification related to the course (see Box 1). These were used as standards for comparing the providers' written instructions for the five most common movement sequences (sitting/standing, standing/sitting, sitting/lying down, lying down/sitting on the edge of bed, and turning in bed). Instructions with a similar content were assigned the same code, and the number of instructions was counted on group level. All instructions on all movement sequences were counted together and divided by the number of participants in the intervention group, before and after the intervention. The same procedure was performed for the control group. Chi-square was used to test significance between the groups. The changes in instructions were also evaluated individually. The two other open-ended questions were analysed in the same way, but without counting. Open Code (freeware programs, Umeå University) was used for data handling. The results



from Borg's verbal rating scale were analysed with the modified sign test. One item from the Örebro screening questionnaire on disorders was analysed using the Wilcoxon signed-ranks test. The p-value for significance was set at 0.05. These last two questions were analysed to estimate changes in strain and disorders between the intervention group, the control group and the additional control group.

Box 1. Standard instructions for classifying reported instructions for patients given before and after the educational intervention, to patients who do not believe they will manage to move.

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### **Instructions for each movement skill**

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#### **Sitting to standing**

1. Feet in the right place
2. Lean forward until bottom is lifted
3. Push with your arms

#### **Standing to sitting**

1. Feet in the right place
2. Lean forward until your hands reach the chair
3. Use your arms to lower yourself

#### **Sitting to lying**

1. Crawl onto your side
2. Slide your legs up
3. Roll onto your back

#### **Lying to getting up**

1. Bend your legs
2. Roll onto your side
3. Slide your legs down
4. Push with your arms

#### **Turning**

1. Bend your legs
  2. Roll onto your side
- 

### **3.4.2 Qualitative methods**

*Phenomenological-hermeneutic method:* This method was used in Study II, to gain a deeper understanding of healthcare providers' experiences of changing patient transfer habits. The method has been developed by researchers in Sweden and Norway (Lindseth, 2004), and the use of narrative interviews was appropriate for disclosing the meaning of experiences. The method is inspired by Ricoeur's philosophy (Ricoeur, 1976).

Stages of analysis: Analysis of the interviews was carried out in three stages, as dictated by the method, and covered the entire interview, not only those parts relating to the theme in question. The first stage was the naïve reading. Each interview was read through several times with an open mind to get a first understanding of the providers' experience of changing transfer habits, and a summary of every interview was made.

All interviews taken together provided the initial understanding and guidance for the next stage, the structural analysis, which was the explanatory stage of the method. The text was divided into meaning units, relevant to the purpose of the study, which were then transformed and condensed. Sub-themes and themes were identified to deepen the understanding into new levels of abstraction. The structural analysis facilitated the work of interpretation, while keeping close to the text. The last stage, the interpreted whole, was a summary of the two first stages. The naïve reading and the structural analysis were reflected on in relation to the literature, and the researchers' frames of reference (pre-understanding) were taken into consideration.

*Content analysis:* This qualitative method was chosen for the weekly notes (Study IV). Content analysis is an appropriate method to use when the amount of text is limited and the content is related to communication, or when the research literature on a phenomenon is limited, as in Study IV. The words of the text constitute the content, and what the text talks about is concerned with interpretation. The structure of the analysis has been presented by Graneheim and Lundman (Graneheim and Lundman, 2004), and the method has been described by Lundman and Norberg (Lundman and Norberg, 1993).

The analysis was performed in four stages (Lundman and Norberg, 1993). First, the data was read repeatedly to obtain a summary. Then the text was divided into meaning units, which were condensed and labeled with codes. The codes were based on words from the text and sorted into sub-categories for self-reported good and poor transfers and perception of the body in the respective transfers. The sub-categories were then grouped into categories. The underlying meaning of the categories formed the themes. The categories answered the question of "what", and the theme addressed the question of "how".

### **3.5 ETHICAL APPROVAL**

All participants in the four studies participated on a voluntary basis and they received oral and written information. For Study I, we have retrospectively received an answer from the ethics committee, as there was no ethical clearance in advance. There was no criticism of the study, but a comment that the study did not include all the formal information that should have been given to the participants. Study II received approval from the ethics committee at Karolinska Institutet, and the ethics committee in Örebro approved the design of Studies III and IV. A supplement to the second intervention, (Dnr 2004:M-250) was approved by the ethics committee in Uppsala.

## 4 RESULTS

### 4.1 STUDY I

In this study 78 participants dropped out between the first and the third questionnaire. Some were occupied with other work, were on vacation or parental leave or had retired (n=30). The remaining 48 participants did not differ in demographics compared with the study subjects, (n=134). All 212 participants responded to the first questionnaire; after 4-5 months, 167 participants responded; and one year after the intervention, 134 participants answered the questionnaire. The main results showed a significant reduction in healthcare providers' workload one year after the course and there was a significant increase in work satisfaction (Table IV). The results 4-5 months after the intervention indicated that 68% of 167 healthcare providers changed 1-3 actions in their work habits after the half-day in training. The changes were maintained one year after the intervention. Of the 134 providers, 72 (54%) gave comments on what they had changed in their transfer habits after a year e.g., 22 gave patients more opportunities to move themselves; 10 used instructions more frequently; two changed the way they gave patients support for turning in bed; four providers changed the process from lying down to sitting up on the edge of the bed; four providers changed the process from chair to bed and 17 became more knowledgeable about the body. The rest of the comments were related to how the body was used.

Table IV. Answers to questions about experienced workload and degree of satisfaction in patient-transfer work before, 4-5 months after, and one year after the Natural Mobility training course. In order to clarify the Table, the exact number of participants (in bold) has been added.

	I	II	III	Statistical significance	
	Before	4-5 months after	1 year after	I vs II	I vs III
				<b>*n=145</b>	<b>*n=109</b>
				<b>**n= 135</b>	<b>**n=110</b>
	n=212 md (range)	n=167 md (range)	n=134 md (range)	<i>p</i>	<i>p</i>
<b>*Workload</b>	4.45 (0.00-10.00)	3.30 (0.00-9.70)	3.50 (0.50-9.60)	< 0.01	<0.01
<b>**Satisfaction</b>	4.60 (0.00-10.00)	5.20 (0.00-10.00)	5.00 (0.50-9.60)	< 0.05	< 0.05

## 4.2 STUDY II

The results are based on 20 participants' narratives and from the naïve reading three foci related to patient transfer appeared: the patient's body (three interviewees), the providers' own body (13 interviewees) and cooperation with the patient (four interviewees). These foci corresponded to the actual changes made. The three foci represent three characteristics that can be described as separate entities but are also interlinked. Increased awareness may lead from focusing on the patient's body, to focusing on one's own body, and further to focusing on cooperation. The changes were related to making the transfer comfortable for the patient's body, reducing the strain on the staff member's body and improving the patient's ability to move independently. As a deeper understanding of the three foci, four sub-themes were identified: perception of the patient's body or one's own body, interaction, and perception of changes during patient transfer. The sub-themes and themes are two levels of deepening the understanding of the text.

### *Structural analysis*

#### *Sub-theme*

*Perception of the patient's body:* When the narratives focused on the patient's body during patient transfer, the patient was viewed as passive and not able to move. Healthcare providers were unaware of their own body and therefore focused on their performance in terms of how to get the patient from one place to another. This conception prompted the provider to take hold of the patient and lift. The transfer movement was performed rapidly in one step, to complete the transfer quickly. Knowledge of how to transfer the patient's body was limited and the lack of knowledge seemed to be connected with a feeling of insecurity.

*"Mostly you're always in a hurry, so you don't always think about what you're doing. You just do it." (IP 5).*

*Perception of one's own body:* When healthcare providers' own body was in focus during the transfer, their body was viewed as important. This indicated preparation before the transfer to improve performance without straining one's body.

*"I mostly think about my back ... I often have back pain ... I almost believe it has become better by thinking about how to do (the transfer)" (IP17).*

*Perception of the interaction:* When narratives focused on interaction with the patient during the transfer, the patient was viewed as active and able to move.

*"We've learned to listen and internalize what they can do ... they can use their function to move a little more than if we grab hold and lift. We've learned to talk a little more and to try to get the elderly to learn how to first get started by themselves before we (staff) take over" (IP1).*

*Perception of changes:* Changes differed depending on the focus. Focus on the patient during the transfer indicated limited changes of movements, such as keeping the back upright, bending the knees more or using a new grip. When the participant's own body was in focus, changes consisted of transfer preparation such as increased awareness of one's body position and transfer patterns. When the interaction was in focus, changes consisted of giving more exact instructions, communicating awareness of movements to the patient through verbal or non-verbal communication (touching, use of space) increasing trust in the patient's own ability or providing adequate time for the patient to move.

### ***The interpreted whole***

#### ***Theme***

The foci in the transfer situation from the naïve reading were linked with the sub-themes of perception and with the themes of meaning from the structural analysis. The findings were related to the literature and the researchers' pre-understanding. The meaning of the body, the meaning of relationship and the meaning of learning were the basis for the reflection and the formation of the interpreted whole, i.e., a comprehensive understanding of the narratives. Healthcare providers' focus during the transfer seemed to be important. With increased knowledge of patient transfer, the learning process seemed to be expanded to awareness of body positions, movement skills and the use of instructions and touching in order to support the patient to move. Changes in patient transfer, as reflected in the narratives, were related to learning.

## **4.3 STUDY III**

In this study (n=148) 49 participants dropped out (n=99) in the intervention group, (n=44) 17 in the control group (n=27) and eight (n=50) in the additional control group. The results are based on 99 participants in the intervention group, 27 in the control group and 50 in the additional control group who responded to the questionnaire both before and one year after the intervention. In the intervention group, compared with the control group, there was a significant increase in the number of instructions and the providers' movement awareness. In addition healthcare providers' self-reported physical disorders and strain decreased significantly in the intervention group compared with the additional control group after one year.

### ***Movement and body awareness***

Awareness of how fear influenced movements increased after a year in the intervention group, from 26 to 51 of 99 providers. Furthermore, awareness of how to use one's hands increased from 60 to 77 of 99 providers. The number of providers who agreed largely or entirely of being aware of their body at first when they registered pain decreased from 45 to 32 of the 99 providers. These three results showed a significant change in the desired direction within the intervention group. There were also changes within the control group but no significant changes. When analysed together, the two

statements regarding movement awareness showed a statistically significant improvement in the intervention group in comparison with the control group ( $p < 0.05$ ).

### ***Attitudes and reported behaviour***

There were no significant changes according to attitudes and reported behaviour between the groups. However the attitude of feeling sure about how patient transfer should be performed changed significantly within the intervention group after one year. Reported behaviour as activating the patient, demonstrating movements with the body and encouraging the patient to move increased significantly within the intervention group after one year. No significant changes could be detected in the control group.

### ***Instructions to a patient who does not believe he/she will manage to move***

In all five-movement sequences, the average number of instructions increased significantly from 5.4 to 7.7 ( $p < 0.05$ ) ( $n = 99$ ) in the intervention group compared with 5.5 before and 5.4 ( $n = 27$ ) after a year in the control group (Table V). In the intervention group, 57 out of 99 nursing staff changed instructions. About half of them added 1-4 instructions ( $n = 30$ ) and the other half added 5-11 instructions ( $n = 27$ ). Those instructions that were related to the patient's use of their arms and hands were those, which mainly increased in the intervention group. Number of instructions in the control group, was mainly unchanged.

Two examples of how instructions were given before and after the intervention illustrate how words were used in different ways. The first example refers to a transfer from sitting to standing.

Before the intervention: "*Stretch your back, we're standing beside, you don't need to be afraid*". After one year: "*Lean forward, push against your chair with your hands.*"

The second example relates to moving from lying to sitting on the edge of the bed.

Before the intervention: "*Grab my hand and we'll pull you up, with your legs over the edge*". After one year: "*Turn on your side, push with your hands against the bed, use your elbow and slide your legs down*"

Table V. Number of healthcare providers' instructions during patient transfer.

Number of instructions for each movement skill	Intervention group n=99		Control group n=27	
	before	after 1 year	before	after 1 year
<b>Sitting to standing</b>				
1. Feet in the right place	37	41	10	14
2. Lean forward until bottom is lifted (Lean forward)	1 (62)	10 (65)	0 (13)	0 (11)
3. Push with your arms	24	44	0	3
<b>Standing to sitting</b>				
1. Feet in the right place	2	2	1	0
2. Lean forward until your hands reach the chair	17	27	8	7
3. Use your arms to lower yourself	53	77	12	17
<b>Sitting to lying</b>				
1. Crawl onto your side (Turn to side)	0 (27)	8 (40)	6 (12)	0 (14)
2. Slide your legs up (Lift, take them up)	0 (47)	2 (53)	0 (13)	0 (13)
3. Roll onto your back (Move to the back)	13 (9)	24 (13)	6 (1)	5
<b>Lying to getting up</b>				
1. Bend your legs	4	9	0	0
2. Roll onto your side (Turn to side)	13 (34)	25 (34)	4 (11)	4 (8)
3. Slide your legs down (Lift them down)	3 (33)	12 (50)	0 (14)	1 (13)
4. Push with your arms	52	79	13	17
<b>Turning</b>				
1. Bend your legs	29	54	4	5
2. Roll onto your side (Turn to side)	24 (35)	51 (22)	3 (9)	1 (3)
<b>Other instructions</b>	19	26	9	11
<b>Total</b>	<b>538</b>	<b>768</b>	<b>149</b>	<b>147</b>

### ***Strain, disorder and sick leave***

There was a significant reduction in healthcare providers' perception of strain within both the intervention group ( $p=0.013$ ) and the control group ( $p=0.035$ ), but no significant differences between the groups. No such reduction occurred in the additional control group. Three months before the intervention, 68 out of 99 providers reported a physical disorder, and this number decreased significantly to 52 providers after a year in the intervention group ( $p=0.008$ ) compared with the two control groups. Sick leave was unchanged in all three groups.

#### **4.4 STUDY IV**

In this study (n=148) 85 participants dropped out (n=63) in the intervention group and (n=44) 19 in the control group (n=25). The participants were excluded because they did not answer the questionnaire at all or just at one occasion. The results are based on 63 participants in the intervention group and 25 in the control group who wrote weekly notes both before and one year after the intervention. The summary of the first reading indicated that the degree to which the patient participated was described as the main component in patient transfer. When the patient actively participated during the transfer and understood what was going on, it was viewed as a good transfer. When the patient resisted during the transfer or could not follow verbal information or instructions, it was viewed as a poor transfer. Healthcare providers' actions were mainly the reason for a good transfer and patients' actions were the main reason for a poor one before and one year after the intervention, both in the intervention and the control group. The results are presented under the categories "Physical and bodily communication", "Verbal communication" and "Perception of the body".

##### ***Good and poor transfers before the intervention***

The respondents' descriptions of a good patient transfer showed a wide range of communication modes from physical, bodily to verbal communication (A-E), (Table VI). In a poor transfer, a smaller range of modes were shown mainly physical assistance, was mentioned (A-C) (Table VII). The communication modes were divided according to the providers' degree of physical action described in Table VI and VII.

##### ***Good and poor transfers one year after the intervention***

In the intervention group, healthcare providers' communication modes changed in their descriptions from using physical assistance to using more verbal instructions. The quality of instructions was described from the level of details or course specific, depending on the specificity of the words used. Some providers used the word instruction in their descriptions after a year, others described more detailed instructions and yet others course specific instructions. Patient performance came into focus. In the control group, changes also occurred to a limited extent Table VI and VII).



Table VI. Physical, bodily (A-C) and verbal (D-E) communication modes during good patient transfer, before and one year after the intervention.

Good transfers	Intervention group n= 63		Control group n=25	
	before	after 1 year	before	after 1 year
Number of transfers (%)	175	128	78	53
A. Staff action with lifting device and transfer technique	42 (24)	18 (14)	31 (40)	14 (27)
B. Staff action with technique and patient assistance	46 (26)	15 (12)	19 (24)	10 (19)
C. Patient action with support of devices or staff hands	49 (28)	19 (15)	23 (30)	16 (30)
D. Patient action with instruction	24 (14)	59 (46)	3 (4)	7 (13)
E. Patient action with information	14 (8)	17 (13)	2 (2)	6 (11)

Table VII. Physical and bodily (A-C) communication modes during poor patient transfer, before and one year after the intervention.

Poor transfers	Intervention group n= 63		Control group n=25	
	before	after 1 year	before	after 1 year
Number of transfers (%)	161	105	64	43
A. Staff action with lifting device or transfer technique	87 (54)	50 (48)	45 (70)	27 (63)
B. Staff action with technique and patient assistance	52 (33)	40 (38)	16 (25)	13 (30)
C. Patient action with support of devices or staff hands	20 (12)	15 (14)	3 (5)	3 (7)
D. Patient action with instruction	2 (1)	0	0	0
E. Patient action with information	0	0	0	0

#### *Perceptions concerning the body in a good and a poor transfer*

A good transfer was related to a positive feeling in the body. The description of a positive feeling varied from feeling nothing at all, feeling no strain, no pain, no stress; to emotions of being strong, secure or satisfied; to perceptions of the body as light, restful, calm, relaxed, happy or good.

*“Don’t feel anything in my body, and the patient is satisfied as she manages almost everything by herself.” (WN16)*

A poor transfer was related to a negative feeling in the providers’ body. In general, healthcare providers’ descriptions varied from feeling strain, pain, stress; to emotions of load, tension or the perception of feeling heavy, stiff, tired or fearful; to feelings related to specific body parts, such as pain or tiredness in the back, legs, arms, shoulders or

neck. The most common body part mentioned was the back. Other problems mentioned concerned being afraid of hurting oneself or of not being able to manage the transfer. *“My body felt weak and I was afraid of hurting my back, when I was turning a patient who could not participate onto her side”*. (WNI)

***Themes: trust and competence***

By summarising the categories, two themes were formed “trust and competence” and they were related both to the intervention and the control group. Depending on the way in which the providers supported the patient, they communicated trust or mistrust. When the providers trusted the patient to move, mobility was promoted, but when grasping the patient’s hands they hindered trust and communicated the patients’ inability to use their own hands instead. Some healthcare providers’ competence may have been expressed through the writing process. Those who used instructions more frequently or those who mainly used physical communication shared different competence.

## **5 DISCUSSION**

### **5.1 MAIN FINDINGS**

This thesis has explored and evaluated changes in patient transfer among providers' after participation in a patient transfer course in Natural Mobility. The results indicated changed transfer habits (Study I). The changes showed a broad variation but a limited number of changes for each provider (Study I - Study IV). The areas of changes were related to movement awareness, instructions (Study III), the focus during a transfer (Study II) and healthcare providers' communication modes (Study IV). The changes may have influenced the decreased work load, strain and disorders and in some providers an increased work satisfaction (Study I, Study III).

### **5.2 MOVEMENT AND BODY AWARENESS**

Healthcare providers' awareness of their own body varied between the different foci they had during patient transfer (Study II). Providers who changed their work habits (Study I) indicated an increase of movement awareness from being aware of their own movements or postures to being aware of the patients' movements (Study II). Providers who felt confident with patient transfer seemed to be able to promote the patient's ability to move, while providers who were insecure seemed to increase their own movement awareness (Study II). Movement awareness related to fear and the use of one's hands increased after one year (Study III). These findings were in line with the course content. If providers are not aware of their own movements and the strength needed during a transfer, it may be difficult to guide a patient to move. This may leave the provider with only one option: to perform the transfer for the patient. The literature shows that self-awareness is the first step in understanding movements, and this needs to be combined with observations in order to ascertain how other people perform movements, to facilitate guiding them (Trew and Everett, 2005). The perception of one's body is essential with regard to how one conceives oneself and others (Kalman, 1999).

Good transfers were connected with a positive feeling in the body or no feeling at all (Study IV). Poor transfers were connected with a feeling of pain, strain, insecurity or fear (Study IV). When the provider is suffering from a disorder, attention is focused on the body: but when there is no damage to the body, there is often no need for attention (Thornquist, 2001). The body is the basis for our experiences (Rudebeck, 2000). One study (Levi Berg, 2009) described that patients' expectations influenced their view of the body. If they were open-minded to explore their own body, they had a desire to learn about themselves and to understand the body. When there was no interest in the body, it was viewed as an object (Levi Berg, 2009). The providers' perception of their own body may be helpful for their own benefit and also for how they perceive their patients (Rosberg, 2000).

There was an increase in the awareness of how fear influenced movements in comparison with movements performed without fear (Study III). Fear was related to resistance during patient transfer. Experience of how movements were performed spontaneously when the patients were afraid may increase providers' competence in reducing patients' resistance. If the providers pulled a frightened patient to a standing position, the patient seemed to grasp into the surroundings to find something to hold on to. Patients' resistance when standing up was assessed as the main cause of accidents during patient transfer (Engkvist et al., 1998), while the co-worker was blamed for causing the accident in 20% of cases (Engkvist et al., 1998, Engkvist, 2004). If the patient's fear plays a key role in causing providers' work-related problems it would be valuable for providers to experience and discuss this matter in the transfer training.

## **5.3 COMMUNICATION**

### **5.3.1 Bodily communication**

Awareness of how to use one's hands increased in the intervention group in some providers (Study III). One type of bodily communication was that providers took hold of patients' arms or hands. (Study IV). In the course the use of the providers' and the patients' hands was experienced through role changes during the intervention. By taking hold of the patients' hands they restricted the patients to support themselves and communicated that they were unable to use their own hands. Healthcare providers' grasping actions decreased slightly a year after the intervention and some providers guided the patient in using their own hands (Study IV). In the control group, the grasping of arms was not reduced and the grasping of hands was not described. The providers' use of their hands is part of the bodily communication. Bodily communication is performed on a subconscious level and is part of the tacit knowledge (Kalman, 1999, Polanyi, 1967).

The providers described that patients' pulled themselves to a standing position by grasping the handle of a walking device instead of using their own hands in pushing against a chair or a bed (Study IV). A reason for the patients not to use their own hands, when standing up, may be their loss of trust and the providers' unawareness of these different ways of standing up. Increased awareness and using adequate words may have assisted the providers in grasping the patient to a lesser extent. Increased body awareness influences how words can be used and leads to more detailed descriptions (Ryding et al., 2004). Healthcare providers' description in the weekly notes (Study IV) varied in the amount of text and details. The variation may be related to the habit of writing. Some providers may experience easiness to write and others difficulty.

### **5.3.2 Verbal communication - Instruction**

Significantly more detailed instructions were given one year after the intervention and the quality of instructions was connected with words and phrases that may facilitate independent mobility such as rolling or sliding instead of lifting (Study III, Study IV). Other providers put instructions in a mixed order (Study III, Study IV). However instructions should be used in the same order as the performance of the movement. My

assumption is that the quality of instructions may be important in order to be successful in guiding the patients to move. The choice of words seems to be important in the contact with patients (Cedraschi et al., 1998). We express what we know through the language, but knowing is also related to how we act (Kalman, 1999, Dall'Alba, 2004).

With increased use of instructions, healthcare providers' descriptions of patient transfer changed (Study IV). The providers described the patient's performance instead of their own. The patient performed the movement step by step, and the provider seemed to be present in the movement by giving the instructions. When on the other hand providers described their own performance in pulling or lifting the patient, they seemed to focus on the starting point or the end point of the transfer, and they seemed to be occupied with their own action. When providers did not need to be occupied with how movements occurred or how the body functioned, it seemed as if they could concentrate on the communication with the patient (Study II). The value of communication in the provider-patient contact has been emphasised in a systematic review "Patient-doctor relations" (SBU-Rapport, 1999) and through communication with physiotherapists nurses received better understanding and skills in patient transfer (Mitchell et al., 2005).

Tacit knowledge can be articulated through performing and comparing movements under reflection. Self-evident matters are not expressed (Johannesson, 1990). Fear related to movements (Study III) may be such self-evident matter, which may be expressed as tacit knowledge. Polanyi (1967) and Schön (1995) claim that we know more than we can tell. What is articulated does exist (Polanyi, 1967) and can be communicated to others. By using more instructions, less physical action may have been performed as the strain experienced by the providers was reduced after one year (Study III). Neither the use of instructions nor movement awareness alone may be sufficient to activate the patients' independent mobility. The words are also connected with healthcare providers' beliefs and trust that the patient is able to move. This should be taken into consideration when planning education.

## **5.4 LEARNING AND CHANGE**

The providers seemed to have understood patient transfer from different perspectives (Study II, Study IV). These findings are supported by the literature. Polanyi (1967) argues that we can hold only one focus at a time: we are attending to something or from something. Polanyi (1967) argues that whether we perceive ourselves as ignorant or competent influences our ability to act. Providers in this study who perceived themselves as competent had a tendency to guide the patient to move (Study II). Marton and Booth show that different foci in learning result in different outcomes of the learning (Marton and Booth, 1997) and that learning can be a change in the learners' conceptions (Marton and Säljö, 1976). Focusing on the content of what is learned versus the amount of knowledge conveyed leads to different outcomes (Marton and Booth, 1997, Marton and Säljö, 1976). The physiotherapists' focus guided their

work in a consultation (Thornquist, 1998), and medical students work varied from setting a diagnosis to promoting health, depending on how they understood the work (Dall'Alba, 2002). Focus may be important, as it seems to be connected with the performed practice and it may be valuable to discuss the provider's focus prior to a course to support them in their process of change after training.

### *Changes*

Changes were present in all four studies in some providers. The wide range of changes showed how providers varied in their choice of what to change (Study I, Study III, Study IV). Many providers implemented several changes to begin with, but ended up with one to four actions (Study II). It seemed as if some providers changed their understanding by describing a patient-centred approach (Study IV). The limited number and the great variety of changes in these findings may be one reason for the rather small differences between the groups. Research supports that changes are performed in a process step by step (Marton, 1984).

### *Competence*

Competence is not based on the amount of knowledge, but on understanding (Sandberg, 1994). Competence can be strengthened within existing understanding and is the most common form of learning but seeing something with new eyes can give a sudden change of practice (Sandberg and Targama, 1998). Schön (1995) speaks about reflection on action as competence growth. Not changing but keeping to the traditional way of working was discussed as a lack of competence in one study, and this was associated with a negative impact on work satisfaction in general among healthcare providers (Hansson and Arnetz, 2008). Work habits in a nursing home showed a more skilled manner in supporting old people and perceiving their work after education in support and supervision and dissatisfaction at work was reduced (Häggstrom et al., 2005). Articulating changes that were made may assist in understanding them and to guiding the individuals in their own process of change: and this in turn may result in a competence growth, which indicate that physiotherapists' tacit knowledge in patient transfer could be valuable for healthcare providers.

### *Learning environment*

The course in Natural Mobility was short. The shortness of the course was related to the learning by doing. This kind of training is not necessarily related to time but to the practical use of the experiences from the course on the work place. The design of the course was built on the participants' activity and experiences and the teacher's work was more of a guide or a coach in the area of movement awareness and communication. The participants performed through the practical exercises and compared transfer movements and communication skills to facilitate making a choice how to work. Comparing two movements or two situations by performing both may provide an 'aha-experience', a psychological term expressed as an implicit movement which mobilises understanding and in turn can lead to a direct change (Bolgar, 1964). According to Dall'Alba and Sandberg (2006) changes through learning are related to understanding. Understanding is integrated in both knowing, acting and being. For this

reason the design and content of a training programme for reaching understanding is of importance. The physical room must be designed with the participants at centre to promote their activity to relax, reflect and discuss their experiences. Learning by doing (Dewey, 2005) involves performing actions, and thinking. Discussing work experiences, narratives using metaphors, illustrations and role changes are other issues supporting understanding (Nilsson and Waldemarson, 1998).

## **5.5 METHODOLOGICAL CONSIDERATIONS**

Different methods provide different perspectives and were used as changes are difficult to assess. In these studies, three methods were used to obtain a more multifaceted picture of healthcare providers' experiences and actions in patient transfer, in order to evaluate the effects of the intervention. The subtle issues of awareness, thoughts, attitudes and actions are other difficulties related to evaluations. Research supports the notion that changes of concepts or mental models vary in qualitatively different ways, both in the way of learning and in the way of change (Marton and Booth 1979). Changes takes place in a process, step by step and old knowledge is connected with new knowledge, like a wall of bricks or a pattern (Marton, 1984). To support healthcare providers in changing transfer habits there is a need to take note of their perspective and make visible how they think and learn (Marton and Booth 1979).

### **5.5.1 Study design**

The participants in Study I were recruited from a number of municipalities and county councils in Sweden, and participants in Study III were recruited from different hospitals. The fact that the recruitment area was broad may strengthen the validity of the study. There was of interest to see whether the educational intervention influenced participants in general, independently of workplace and patients. The providers' changes seemed to show the same content and variation independently of working in a hospital or in community-based care. However, bias due to the voluntary registration to the project may be a limitation. The overrepresentation of those who had changed their transfer habits in Study II can be seen as a limitation. The healthcare providers with some interest in patient transfer may have been the ones who registered. Therefore the findings can mainly be considered valid for those who registered for the study.

For practical and organisational reasons, the study groups in Study III and Study IV were not randomised. Knowledge could have been conveyed from the course if participants were recruited to both the intervention and the control group in the same hospital. Further the hospitals wanted all participants to be involved in the intervention group. The participants were therefore recruited from four hospitals: two for the intervention group and two for the control groups. The hospitals were of different sizes, and their culture and policy might have varied.

### *Drop-out*

A large dropout rate is common in interventions in clinical practice (Smedley et al., 2003), and this needs to be considered in relation to the results. The reason given by the dropouts was the overall burden of participating in several activities related to the intervention. This leads to the assumption that the providers who remained were those with the greatest interest in the subject, and probably therefore those who could be assumed and willing to change.

The size of the control group was smaller than planned for, and it could not be stated whether the differences between the intervention and the control group in years of work experience and education have had any influence on the results. There were also differences between the groups in terms of the number of attended patient transfer courses and type of workplaces. This may be a limitation of the study and could have influenced the results, but it may also be the contrary. Healthcare providers practice may vary depending of interest and general experiences not just because of the number of transfer courses. Changes due to self-reflection may be one reason why the participants in the control group also made changes in the same direction as those in the intervention group. By answering the questionnaire several times, some participants in the control group indicated through additional comments that they had started to think about their performance, which influenced their thinking and actions when working. Changes were related to movement awareness and instructions that mainly are of tacit nature and needs to be articulated. Critical reflection may have a specific influence on this type of tacit knowledge as it is related to one's own body.

### **5.5.2 Methods**

#### *Questionnaires*

Questions were valid with respect to the content of the course, the experience of the course leader and the literature. This relates to the content validity. I have found no other questionnaire of this kind to compare with. Before use the questions were tested on a group of healthcare providers (Study I), which gives a face validity. The questionnaire in Study I was not tested for reliability. The reliability of the questionnaire in Study III was tested through a test re-test procedure and measured by Cronbach's alpha. Each statement and question was separately evaluated for consistency. Some of these scores were low, which may influence the findings. Six items, with both higher and lower scores, were excluded. The remaining lower scores showed inconsistency, but were retained because of the content of the questions, and the excluded higher scores showed a self-evident characteristic and were valued not to be included.

The questionnaire had a value in receiving answers on specific questions and both questionnaires in Study I and Study III showed advantages as well as limitations. The questionnaire in Study I and Study III was based on the course in Natural Mobility. It was my ambition to construct a questionnaire that could be used to gain insight into healthcare providers' experiences and thoughts, to evaluate possible changes in the



participants. The advantages were to gain an overview of healthcare providers' attitudes to the patient, their own body, their work and actions in patient transfer. A limitation was the closed response formulations and that the questions could not be followed up. The reported questionnaire responses in Study III were valuable, but in the light of the findings, the questionnaire seemed too blunt to evaluate small changes. The construction of the questionnaire was also considered too broad. The questions could have been arranged in question areas with several questions on body and movement awareness and on communication modes. This might have reduced the bluntness of the questionnaire, and the differences between the intervention group and the control group might have been clearer. The questionnaire was self-reflecting, which also seemed to have influenced the participants in the control group according to their own statements. This may be one reason for the limited differences between the groups. Experience such as movement awareness, thoughts and attitudes may be issues that are difficult to evaluate with a questionnaire alone. The questionnaire used in Study III needs further development, but it was valuable in that they supported the findings in the qualitative studies, where other questions were raised and answered. In this respect, the methods complemented each other.

#### *Interview and weekly notes*

The interviews clarified and deepened the providers' experiences and were useful in order to understand healthcare providers' perception of what guided their changes after the course (Study II). There was an overrepresentation in Study II of those participants who stated they changed transfer habits according to the previous questionnaire study (Study I). However, almost all interviews contained accounts of both changing and not changing patient transfer habits. The trustworthiness of findings is a concept that is used when discussing validity and reliability in qualitative studies. Trustworthiness contains three interrelated components: credibility, transferability and dependability (Graneheim and Lundman, 2004). Credibility corresponds to validity in quantitative studies, and refers to confidence in how well the data and process measures what it is intended to measure. This was established with more than one researcher analysing the text (Study II). The dependability of the study is more difficult to evaluate as the researcher is the measuring instrument and it is not known in advance what to measure (Study II). In study II, two authors analysed a number of interviews independently. In a few cases there was inconsistency in the interpretation, and this was discussed in order to reach an agreement. The findings were analysed and interpreted close to the material. Several interpretations in this study are supported by the literature, which strengthens the credibility but not directly the transferability as the study represents a small sample size (Study II).

Weekly notes proved to be important for evaluating healthcare providers' experience of their practice and they described their reflections on good and poor patient transfers (Study IV). Weekly notes showed a variation in the amount text that may depend on easiness or difficulty to write. In Study IV, I independently carried out the analysis, and thereafter the fourth author verified 75% of the sorting procedure from codes to subcategories. The third author assessed the methodological part. The second, fourth

and fifth author examined the steps of the analysis to find consensus and trustworthiness. The findings of this study are not directly transferable to other patient transfer contexts, as the findings do not show strong evidence. A similar method, “a logbook”, was used in one study to evaluate the influence of musculoskeletal pain and psychosocial factors during patient transfer. The participants described that the level of pain decreased significantly during their day off (Warming et al., 2009). Written diaries as a method evaluated healthcare providers work by analysing the written verbs related to actions (Skott and Eriksson, 2005). Describing categories of conceptions is known as a method to evaluate how students learn and how physicians practise (Marton and Booth, 1997, Dall'Alba, 2004). Another study used a concept that is similar to the one in this study, analysing changes to assess the effect of an intervention related to a desired outcome (Wahlström et al., 1997).

### **5.5.3 Role of the researcher**

The fact that I was the teacher, interviewer and researcher could be viewed as a limitation of the studies. The risk in the interview study was that the interviewees might have expressed themselves as being more positive towards Natural Mobility than they actually were. On the other hand, it is an advantage to be familiar with the educational method used, and an interviewer who is unfamiliar to the interviewees might not have received such extensive interviews with an external person, which is essential for this type of study (Study II). It was also an advantage that the interview was open and just related to the providers' perception of changes. It has been taken into consideration that participants by answering the questionnaires may want to please, which could influence the validity of the studies. The questions in Study III however, were of a nature that it was not always possible to know which answers that could be preferred. For a researcher to be part of the evaluation is a delicate position that needs to be handled in a cautious way.

## **5.6 IMPLICATIONS FOR PRACTICE AND EDUCATION**

Hopefully the findings in this thesis will contribute to a more patient-centred approach in patient transfer, where both patients' and providers' resources can be used in a better way. Furthermore, the process of change may become an integral part of the patient transfer training. In the future, even more aspects may be involved in the transfer training. Further development of such training could aim at increasing the ability of providers, to be fully competent in guiding patients to move independently.

Patient transfer has rarely been studied using an educational programme designed to support participants' in increasing movement awareness and communication in patient transfer. With a patient-centred approach both providers' and patients' resources can be mobilised and result in a patient transfer that is more health-promoting as it causes less strain for providers and increased independence for patients. Competence growth in healthcare providers can thus be established.

## 6 CONCLUSIONS

Patient transfer according to Natural Mobility has a different approach and aim than other educations in patient transfer with focus on communication and movement awareness. Participation in the training can enable some healthcare providers to increase their movement awareness and communication skills to support patients' independent movements during a transfer, and thereby reduce physical strain and disorders.

This thesis has investigated changes in patient transfer habits. As there are few studies in this area this thesis may be a first step and a guide for others to support an alternative way in patient transfer, promoting healthcare providers competence in guiding patients to move. Although more research is needed to fully understand the role of communication and movement awareness on patient transfer and how training can be optimised. It may be valuable to continue developing the course and to develop the way in which changes can be evaluated. By promoting healthcare providers competence in supporting and utilising patients' resources, patient transfer may become more health-promoting.

## **7 FUTURE STUDIES**

There is a need for further studies in the area of patient transfer. We are required to find optimal ways of training where both the patient and the provider are involved. Quality practice should be improved in collaboration with healthcare providers and they may benefit from competence based training. As health care is assumed to be more demanding in the future, it is an important research area.

Further studies could explore communication skills during patient transfer such as the influence of verbal and non-verbal components on patients and providers and the relationship between movement awareness and verbal communication. The effect of the educational design and learning environment in patient transfer training are other important areas to explore as how the participants' foci of attention influence their work habit. Furthermore there is a need for research in the area of changes in relation to training and how strain and disorders are influenced by the changes made prior to training.

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