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### Use of Kinaesthetic in patient mobilization: an evaluation study

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#### Abstract

**Aims and objectives:** To examine nurse-experienced effects of using Kinaesthetic for active mobilization of ICU patients in regard to active use of the patients' movement competences and physical work-related strain for nursing staff.

**Background:** ICU patients often survive with permanently decreased functional levels, both physically and mentally. Active mobilization helps to maintain functional abilities. Kinaesthetic is an educational and supportive method of stimulating and training patients' movements and their own contribution to mobilization. Design: Mixed methods with semi-structured interviews and a questionnaire survey.

**Methods:** A four-day Kinaesthetic course was completed by 41 (61%) of ICU nurses between September 2015-March 2017. Semi-structured individual interviews and focus group interviews with course participants and non-participants were conducted, followed by a questionnaire survey between August-November 2017.

#### Results

**Interviews:** Kinaesthetic trainees and course participants found that Kinaesthetic helped to get patients mobilized quicker and more actively. Non-participants generally found Kinaesthetic useful, but often had a "them and us" attitude towards their experience.

**Questionnaire:** A total of 50 (75%) participated. Most of those who had participated on the Kinaesthetic course used their new knowledge often or very often. They now involved the patients in mobilization more than before and mobilization entailed less physical strain for the staff. Nonparticipants had more varied experiences, but the majority still felt that the ICU should continue to focus on Kinaesthetic.

**Conclusions:** Based on nurses' experiences, Kinaesthetic is a workable method to include patients' movement competences in mobilising ICU patients. Furthermore, the use of Kinaesthetic may reduce physical work-related strain for nursing staff.

**Relevance to clinical practice:** Initiatives to maintain as many of hospitalized patients' functional abilities as possible are needed. Using the concepts of Kinaesthetic helps maintaining patients' movement competences and may be valuable to implement in all units dealing with patient mobilization issues.

**Keywords:** Mobilization; Kinaesthetic; Nursing; Patient involvement; Functional ability

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## Introduction

Many intensive care unit (ICU) patients survive hospital admission with permanently decreased functional levels. As active mobilization has been shown to help maintain functional abilities, approaches to active mobilization are needed. The concepts of Kinaesthetic offer a structure for a differentiated registration of patient movement activity and through that Kinaesthetic can be used as an educational and supportive method of stimulating and training patients' movements and their own contribution to mobilization. There is sparse literature outside Germany on the effect of Kinaesthetic, and this paper offers both an introduction to the concepts of Kinaesthetic and presentation of nurse experienced effects of using Kinaesthetic. This is relevant not only in ICUs but in all units dealing with patient mobilization issues. The aim of intensive care is to help patients to survive illnesses that otherwise could lead to death. The last six decades have brought numerous sophisticated treatment options, such as mechanical ventilators, continuous haemodialysis and Extra Corporal Membrane Oxygenation (ECMO), and many patients now survive due to these treatments. However, many of the patients survive with permanently decreased functional levels, both physically and mentally [1]. Therefore, over the last decade ICU have had an increased focus on not only facilitating the survival of patients, but also on maintaining as many of their functional abilities as possible [2]. One of the ways to obtain this is through early and active patient mobilization [2,3]. For years, ICUs have mobilized most patients by lifting the passive patients from their bed to a chair; however, although this kind of mobilization may help to prevent bed sores, secretion stagnation, obstipation and thrombosis, it does little towards maintaining

patients' functional status [4]. To achieve that, the mobilization needs to be active, and it involves actions such as standing, walking, bed cycling and using hand weights, which require the active involvement of patients [5]. Studies have shown that even though ICU patients are seriously ill, active mobilization is possible [6]. To move from passive to active mobilization, the concept of Kinaesthetic may help [7]. The word Kinaesthetic derives from two Greek words: "Kino", which means to move, and "Aesthesis", which means feeling and sense. Kinaesthetic is the study of the human movement execution for each activity. The "kinaesthetic sense" is the perception of the body's movement through sensory perception from muscles, ligaments and joints. Gravity and the position of the body provide orientation of balance [8]. In clinical practice, Kinaesthetic can be used as an educational and supportive method of stimulating and training patients' movements and their own contribution to mobilization. It strengthens the patients' movement competences and provides them with the opportunity to play a more active role in their own healing process. This can give them a feeling of being a person and not just a patient, and a feeling of being able to do something for themselves, which can further motivate them towards participation in mobilization activities. Even if the patient is sedated, it is possible to both identify and support the patient's resources. When certain movements are repeated, they may become recognisable for the patient when he or she regains consciousness. Furthermore, the concepts of Kinaesthetic may reduce the physical work-related strain for nursing staff [9].

The concept of Kinaesthetic was developed in Germany at the beginning of the 1980s by American researchers who offered movement courses for dancers, parents and children.

Subsequently, the courses were also offered to healthcare professionals. Here, an interactive development process with the course participants evolved and the Kinaesthetic concept system was developed [7]. Since 2006, Kinaesthetic has been organised in a European Network with national organisations. Kinaesthetic is found in Germany, Switzerland, Austria, Italy and Romania, and is currently being implemented in Japan, Russia and Denmark. More than 1,000 Kinaesthetic instructors teach and develop Kinaesthetic for different organisations and healthcare. The concept of Kinaesthetic offers a structure for a differentiated registration of movement activity. There are six concepts (interaction, functional anatomy, human movement, effort, human function and surroundings) and all human activities are central to each concept. The six concepts offer different angles on the activities and can be used as a tool for differentiated analyses. On a Kinaesthetic course, the participants learn how to analyse and describe their personal movement activity is differentiated. This personalised knowledge is the basis of understanding how, in different situations, the patient can be helped to use his or her own resources and how to support these. The aim of the study was to examine nurse-experienced effects of using Kinaesthetic for patient mobilization in regard to active use of the patients' movement competences and physical work-related strain for nursing staff.

## Method

### The Kinaesthetic course

A Kinaesthetic course consisting of four teaching days was established in the ICU. The first two days focuses on theory and training with colleagues, which is followed by several weeks of training with ICU patients during normal work hours. The course concludes with the third and the fourth teaching day, which also feature a mix of theory and training. All nurses could sign up for the Kinaesthetic course, and all who wished to participate were enrolled onto the first two courses in September-October 2015 and February-March 2016. A number of

those who had not wanted to participate in the first round of courses subsequently became interested and were offered places on the course in February-March 2017. The course was conducted by an instructor from the German Centre for Kinaesthetic. The intention was to let the Kinaesthetic knowledge spread from course participants to non-course participants through bed-side training. Two nurses from the ICU had previously taken an advanced course in Germany. Apart from unstructured supervision of colleagues during daily ICU work, they had two days per months where they solely worked with one-to-one supervision of using Kinaesthetic in daily patient care. Furthermore, they were enrolled on a Kinaesthetic instruction course in Germany.

### Sample/Participants

The study took place in a 14bed mixed ICU in a regional acute care hospital with 400 beds. The nurse-patient ratio is 1-1.2, and the nurses have responsibility for and take part in all aspects of the patients' care, including mobilization with assistance from a physiotherapist (in the ICU for 3.5 hours during the daytime) and hospital porters if necessary. As the ICU use non-sedation as a rule, active mobilization was in principle possible for all patients. Inclusion criterion for the focus groups was at least two years employment in an ICU, which ensured that the participants had mobilization experience prior to implementation of Kinaesthetic in the ICU. To include focus group interview participants, two days were picked at random, and nurses without the Kinaesthetic course fulfilling the inclusion criterion and working on the day shift on the first day were invited via e-mail to participate in the focus group. Likewise, nurses with the Kinaesthetic course fulfilling the inclusion criterion and working on the day shift on the second day were invited to participate. All nurses in the ICU received an invitation to complete an electronic questionnaire via their work e-mail.

## Data collection

Firstly, individual interviews with the two Kinaesthetic instructor trainees and focus group interviews with nursing staff with and without the Kinaesthetic course were conducted. Secondly, a self-administered questionnaire was developed and completed. Both individual interviews and focus group interviews were conducted by HIJ or GVF, using a semi-structured interview guide based on literature and experiences from the Kinaesthetic implementation period. The guide included questions about personal experiences with Kinaesthetic, effects of using Kinaesthetic in regard to patient involvement in mobilization, work-related strain and assessments of pros and cons using Kinaesthetic in an ICU. The last question was about whether there were any other issues in regard to the implementation of Kinaesthetic which the participants found important. All interviews were audio recorded and verbally transcribed. Based on the interview data, two questionnaires were developed: one for nurses with the Kinaesthetic course and one for nurses without. The questionnaires were developed in cooperation with the Kinaesthetic instructors and ICU nurses and pilot tested on nurses both with and without the Kinaesthetic course in regard to content, understandability and relevance. The questionnaires contained background questions about years of ICU experience and type of shift. There were questions about the use of the concepts of Kinaesthetic in the mobilization practices in the ICU and the participants' assessment of the usability of the Kinaesthetic concepts in regard to increased inclusion of patients, active mobilization and protection of staff (please see Table 2 for details), with options of writing comments and ending with an open question about whether there were any other issues in regard to the implementation of Kinaesthetic which participants found important.

## Ethical considerations

The study was registered with the Danish Data Protection Agency. According to Danish law, the study did not need (and therefore could not get) Institutional Review Board approval. All participants received oral and written information about the study, and interview participants gave written informed consent.

## Data analyses

The interviews were analyzed based on content analyses with a focus on manifest content [10]. To obtain an overview of the data, the interview transcripts were read repeatedly. This meant that units could be extracted and data condensed by reducing the texts while preserving the core, which led to data being divided into main categories. Questionnaire data was analyzed using Stata 13 for descriptive statistics.

## Results

### Interviews

The two individual interviews with the Kinaesthetic instructor trainees lasted a mean of 20 minutes. Eight nurses (five with the Kinaesthetic course and three without) participated in the focus group interviews, which lasted a mean of 30 minutes. Three themes emerged from the content analysis: Time to react, change of mind-set and "them-and-us". The themes were found within all three groups of interviewees: Kinaesthetic instructor trainees, Kinaesthetic course participants and non-course participants.

### Time to react

One of the main advantages as seen by the instructor trainees was that the patient got more time to react to staff initiatives, whereas previous patients had often been frightened of and opposed to mobilization because they did not have time to understand what was going to happen. Giving the patient more time to react helps to support and maintain the mobility they

had before being admitted to the ICU. "...you sort of surrender your self-esteem when you walk into the hospital; we can give a part of that back to them" (*Individual interview, Kinaesthetic instructor trainee*). It may take ten seconds or more before the patients react on requests, but if giving the patients this time they are often able to do much more than the staff anticipate and staff can find a way together with the patient. The instructor trainees often heard statements such as: "Before, we just did it (*moved the patient*) without having seen the patients' potential and resources" (*cited by Kinaesthetic instructor trainee*). The nurses who had not yet participated in the Kinaesthetic course were generally positive towards using Kinaesthetic in the ICU because they found that it generally helped in getting the patients more actively involved, but they also found it to be more time consuming.

### **Change of mindset**

One of the challenges described was that the course participants wanted general "tips and tricks" to mobilize whereas Kinaesthetic has to be modified to the individual patient. What works well with one patient may not work for the next patient; therefore, patients cannot simply be just shown how to do it. Instead, the concepts of Kinaesthetic need to be understood in order to analyse the individual patient's movements, and this takes time and patience. The nurses who had participated in the Kinaesthetic course were all enthusiastic about the concepts and found that it had changed their mindset regarding mobilization and that patients were mobilized quicker and more actively than before. "I think we have become braver. Patients are getting up earlier and they become self-sufficient faster in many areas" (*Focus group. Course participant*). The nurses who had not yet participated in the Kinaesthetic course learned by watching their colleagues and used the concepts to a certain degree. However, both nurses who had and had not yet participated in the Kinaesthetic course sometimes found it difficult to use in practice, as the concepts were still not second nature for

them. Furthermore, because there is no correct way to do things, it depends on the individual patient's issues and abilities. Both groups found the theory complicated and learned the most by receiving bedside supervision from the instructor trainees.

### **"Them and us"**

The nurses who had not yet participated in the Kinaesthetic course sometimes felt inferior to those who had participated in the course and experienced it as "them and us", and the feeling sometimes went beyond mobilization practices. This was a personal issue but also an issue for the patients because they could not mobilize in the same way as their Kinaesthetic trained colleagues. "The things he (*the patient*) himself could help with at the beginning of the week, were actually declining subsequently because we had not worked in that way" (*Focus group. Non-course participant*). The "them and us" feeling was also found amongst the course participants, where most of them found it was easier mobilizing a patient with help from a Kinaesthetic course participant. "It is also possible to do it with those who have not been on the course, but then you have to stand and explain and to check them in some of their habits...."

(*Focus group. Course participant*).

### **Questionnaire**

For those having completed the Kinaesthetic course, 33 out of 41 (80%) participated in the questionnaire survey. For those not having completed the Kinaesthetic course, 17 out of 26 (65%) participated. Of those not having the course, most had learned about the concept of Kinaesthetic through their colleagues (18% to a great extent, 47% to some extent, 18% just sparsely and 18% not at all). Table 1 shows that most of the nurses in both groups had many years' experience both as nurses and in the ICU, and most of them worked more than one kind of shift. All nurses except one were female.

**Table 1:** Participant characteristics.

	Participants with the Kinesthetic Course		Participants without the Kinesthetic course	
	n	%	n	%
<b>Years trained as a nurse</b>				
< 2 years	0	(0)	1	(6)
2 years - < 10 years	3	(9)	3	(19)
10 years - < 20 years	11	(39)	6	(38)
20 years or more	19	(58)	6	(38)
<b>Years in the ICU</b>				
< 2 years	0	(0)	2	(12)
2 years - < 10 years	12	(36)	5	(30)
10 years - < 20 years	10	(30)	8	(47)
20 years or more	11	(33)	2	(12)
<b>Shifts</b>				
Only day	2	(6)	0	(0)
Only evening	2	(6)	0	(0)
Only night	0	(0)	1	(6)
Day-evening	11	(33)	8	(47)
Day-night	12	(36)	5	(29)
Day-evening-night	6	(18)	3	(18)

Most of the nurses participating in the course assessed it as good (59%) or very good (22%), and they assessed the subsequent practical bedside supervision by the two Kinaesthetic nurses as good (56%) or very good (25%). Table 2: presents the nurses' experiences of Kinaesthetic in practice. Most of those with the course used their new knowledge either often or very often and found that they now involved the patients in mobilization more than before and that mobilization entailed less physical strain for them. The majority found that the ICU, either to a high or very high degree, should continue to focus on Kinaesthetic. For the nurses without the Kinaesthetic course, the majority experienced that they either sometimes or rarely used their second-hand knowledge of Kinaesthetic in daily mobilization and a large group had replied "Don't know" to questions about involvement of patients and personal physical strain. In this group, the majority also found that the ICU, either to a high or very high degree, should continue to focus on Kinaesthetic. When asked whom they wanted to

get help from when mobilizing a patient, 28 (88%) from the course group said a colleague who had knowledge about the Kinaesthetic concept, whereas 11 (69%) from the non-course group said Kinaesthetic knowledge was not pivotal. All participants were also asked open-ended questions about their experiences regarding the advantages and disadvantages of using Kinaesthetic in the ICU. The main advantages were patient involvement, and a more gentle, calm and comfortable mobilization for both patient and staff. Disadvantages were found to be a more time-consuming way to mobilize, and that it takes a lot of time before it becomes routine to use Kinaesthetic instead of the usual way of mobilization. Furthermore, for both groups it was a complicating issue that not all staff had been on the course and that the concepts therefore were not used 24/7. This meant that different mobilization practices could be used with the same patient, which was both confusing for the patient and reduced the effect of using Kinaesthetic. Another disadvantage

was that some of the participants found that there was a lack of coherence between Kinaesthetic and other mobilization activities in

the ICU (by physiotherapists and supervisors in person lifting and moving).

**Table 2:** Experiences with Kinaesthetic.

	Participants with the Kinaesthetic course		Participants without the Kinaesthetic course	
	n	%	n	%
<b>How often do you use your Kinaesthetic knowledge in daily mobilization</b>				
<i>All the time or almost all the time</i>	4	(13)	0	(0)
<i>Very often</i>	13	(32)	1	(8)
<i>Often</i>	9	(28)	2	(15)
<i>Sometimes</i>	13	(32)	6	(46)
<i>Rarely</i>	1	(3)	2	(15)
<i>Never</i>	1	(3)	2	(15)
<b>To which degree do you find Kinaesthetic is used both day and night when mobilizing patients</b>				
<i>To a very high degree</i>	0	(0)	0	(0)
<i>To a high degree</i>	10	(31)	4	(24)
<i>To some degree</i>	19	(59)	7	(41)
<i>To a lesser degree</i>	6	(2)	3	(18)
<i>Not at all</i>	0	(0)	1	(6)
<i>Don't know</i>	1	(3)	2	(12)
<b>Which influence has Kinaesthetic had on you involvement of patients in mobilization</b>				
<i>I involve patients much more than before</i>	4	(13)	1	(6)
<i>I involve patients more than before</i>	23	(72)	6	(38)
<i>I involve patients on the same level as before</i>	4	(13)	4	(25)
<i>Don't know</i>	1	(3)	5	(31)
<b>Which influence has Kinaesthetic had on the physical strain for you in regard to mobilization</b>				
<i>I experience much less physical strain than before</i>	1	(3)	1	(6)
<i>I experience less physical strain than before</i>	20	(63)	4	(25)
<i>I experience no difference</i>	9	(28)	13	(2)
<i>I experience more physical strain now</i>	1	(3)	13	(2)
<i>Don't know</i>	1	(3)	7	(44)
<b>To which degree do you think the ICU should continue to focus on Kinaesthetic</b>				
<i>To a very high degree</i>	8	(25)	3	(20)
<i>To a high degree</i>	17	(53)	6	(40)
<i>To some degree</i>	5	(16)	2	(13)
<i>To a lesser degree</i>	2	(6)	0	(0)
<i>Not at all</i>	0	(0)	2	(13)
<i>Don't know</i>	0	(0)	2	(13)

## Discussion

Most of the participating ICU nurses found that the concepts of Kinaesthetic were workable for more actively involving patients in mobilization and, through that, for using and maintaining the patients' movement competences. However, the nurses also found the concepts complicated and the implementation had created a feeling of "them and us" between those with the course and those without. Most of the nurses experienced that the concepts entailed less physical strain for themselves. A concurrent study in the same ICU with registration of daily mobilization methods (not yet published) showed that from before the implementation of an active mobilization strategy including use of Kinaesthetic to one year after, the number of patients standing and walking instead of just being hoisted into a chair was significantly increased. As other studies have found [2], this study also shows that early and active mobilization is possible and most likely will entail a decreased loss of physical functions [3]. Caring for seriously ill patients can be physically demanding for the staff involved. Therefore, initiatives that may reduce the physical work strain for healthcare professionals are welcomed. In this study, the majority of participants found that the use of the Kinaesthetic concepts, besides being beneficial for the patients, also entailed less physical strain for the nurses. This is in accordance with a systematic review by Freiberg et al. [9], which suggested that the Kinaesthetic care conception may decrease musculoskeletal complaints. Unlearning knowledge and practical skills and implementing new knowledge in the workplace are complicated processes (11). According to Rogers' theory of innovation, one of the markers of success is to get the majority of staff to accept the new knowledge and change practice, so that the risk of falling back into old routines is reduced [12]. One of the strengths of the implementation of Kinaesthetic in the present study was having the majority of nurses take part in a course and having two instructors employed in the ICU, and both during their

appointed supervision days and in their daily work, they have been a major factor in maintaining the change of practice. Having staff on a four-day course is time-consuming and expensive and, therefore, the overall plan was to train the majority of nurses and, through them, extend the knowledge to all staff through peer-to-peer training until the two nurses with Kinaesthetic knowledge were trained to conduct the courses themselves. However, as the Kinaesthetic concepts are rather different from the usual way of mobilizing patients, unstructured peer-to-peer training proved not to be sufficient to provide all staff with sufficient Kinaesthetic knowledge. The concepts were, therefore, not used throughout the day as it was dependent on the knowledge of the nurse taking care of the patient. This meant that the effect of involving patient movement competences was probably reduced, the shifting method of mobilizing could be confusing for the patients, and it also entailed a "them and us" feeling among those not having been on the course, which can influence the workplace climate negatively. One recommendation for other ICUs and departments wanting to implement Kinaesthetic is that it is important to train all. Strengths of the study include the mixed method design with qualitative methods to explore what was at stake and a quantitative examination of the degrees to which the issues were experienced. The survey had for the non-course group a fair and for the course group a high response rate, which reduces the risk of non-responder bias.

Limitations include the lack of patients' experiences and length of stay, and measurement of physical strength outcomes. Interview participants were asked if they had had any feed-back from patients. Most of them had experienced only sporadic feedback such as patients expressing that they found it was a pleasant way to get up and that they were happy to be able to actively contribute to their own recovery. However, most of the interviewees experienced that the patients, due to their illness and perhaps different degrees of delirium, did not take notice of the mobilization method (although it was possible to actively involve

them) and, therefore, patients' experiences are not included. Treatment of ICU patients is a multi-faceted process and in an observational study it is complicated to examine an association between a single part of the process, as here the use of Kinaesthetic, with overall outcomes such as ICU lengths of stay and measurement of physical strength outcomes. The international literature on Kinaesthetic (Kinaesthetic) is sparse and mainly published in German [7]. Most of the literature available is about Kinaesthetic simulation of infants [13]. More research is needed to provide evidence for the effect of Kinaesthetic on both adult patient mobilization and work-related strain for healthcare professionals. The study was conducted in an ICU, but the concepts and experiences are relevant for all patients with mobilization issues, for example, in neurological and geriatric departments.

## Conclusion

Based on nurses' experiences, Kinaesthetic is a workable method to include patients' movement competences in mobilizing ICU patients and it may reduce physical work-related strain for nursing staff.

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