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**Facilitating awareness of philosophy of science, ethics and communication through manual skills training in undergraduate education.**

**Abstract**

**Background:** Professional health- science education includes a common theoretical basis concerning the theory of science, ethics and communication. Former evaluations by first year students of the bachelor physiotherapy program at Oslo and Akershus University College of Applied Sciences (HiOA) show they find it hard to understand the relation between these particular topics and future professional practice. This challenge is the starting point for a pedagogical development project that aims to develop learning contexts that highlight the relevance of these theoretical concepts.

**Aim:** The aim of the study is to explore and present findings on the value of using *sykegrep*<sup>1</sup> manual skills classes as an arena in which students can be encouraged to think about, reflect on and appreciate the role and value of the philosophical perspectives that inform their practice and contributes to practice knowledge.

**Method:** A qualitative study with data collection through focus groups was performed and analyzed using thematic content analysis. Eighteen first year undergraduate students who had completed the manual skills course, participated in the study.

**Findings:** Analysis of the data yielded three categories of findings that can be associated with aspects of philosophy of science, ethics and communication. These are: Preconceived understanding of physiotherapy, Body knowledge perspectives and Relational aspects of interactions. Undergraduate students' understanding and experience of philosophy of science, ethics and communication may be facilitated by peer collaboration, reflection on intimacy and touch and the ethical aspects of interaction during manual skills training.

**Conclusion:** Practical classes in *sykegrep* provide a basis for students' discussions *about* the body as well as their experiences *with* the body in the collaborative learning context. The students' reflections on their expectations of manual skills in physiotherapy and experiences of touch and being touched, can facilitate an awareness of philosophy of science, ethics and communication.

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<sup>1</sup> *Sykegrep* - Soft tissue and joint treatments were developed by Aagot Normann, founder of the Mensendieckskolen in Norway (Halvorsen, 2009).

Implications: Our study will be an incitement to further develop a manual skills teaching program that incorporates philosophy of science, ethics and communication in undergraduate education  
Key words: Physiotherapy education, Manual techniques, Peer-collaboration, Skills training, Philosophy of science

### ***Introduction***

The profession of physiotherapy exists at the point of intersection between science and humanities. Health evidence from both quantitative and qualitative perspectives is therefore required to ensure that practitioners use verified research in professional practices (Biggerstaff & Thompson, 2008; Shaw, Connelly, & Zecevic, 2010). Clinicians and researchers also require knowledge of different scientific approaches to manage these roles (Nicholls & Gibson, 2010, 2012).

*Evidence based medicine is the integration of best research evidence with clinical expertise and with patient values (Sackett, 2000, p. 1).* Patient values may entail unique preferences, concerns and expectations which, in the clinical encounter, must be integrated into clinical reasoning and decision making. Clinical expertise in professional physiotherapy practice requires knowledge of a number of different traditions, not just biomedical knowledge. Kerry et al (2008) argues that assimilating the philosophy of science into clinical practice provides clinicians with greater insight into the logic that underlies decision-making reasoning and facilitates better approaches in practice (Kerry, Maddocks, & Mumford, 2008). Clinical reasoning requires the use of communication skills that are matched to the dialogue partner and to the contextual demands. These skills need to be integrated into practice (Ajjawi & Higgs, 2012). Reasoning becomes a form of shared contextualized interaction that, based on a intersubjective and embodied process, contributes to mutual understanding (Gallagher & Payne, 2014). The professional knowledge of physiotherapy is complex that in health sciences involve interaction between physical, psychological, and social dimensions. Knowledge of the philosophy of science, ethics and communication should therefore be activated in the physiotherapy program to enhance student competence and their future professional practice.

All first year health sciences students at Oslo and Akershus University College of Applied Sciences (HiOA), are required to learn about the philosophy of science, ethics and communication. This learning is provided by a lecture-based multidisciplinary study unit. The National Physiotherapy Curriculum in Norway, defines the aim of this to develop a holistic view of the human being, to show respect for the integrity and rights of the person and to safeguard the user's autonomy and shared decision making (*National Physiotherapy Curriculum*, 2004). The physiotherapy program intends to support students in their development of a reflected view of how knowledge forms affect professional practices and research and professional development approaches.

The knowledge field of the physiotherapist is body, movement and function. Manual skills are therefore a fundamental element in the practice of physiotherapy as a subject (Broberg et al., 2003). *Therapeutic touch has been a vital component in the development and definition of physiotherapy practice and continues to be one of the profession's principal distinguishing competencies* (Nicholls & Holmes, 2012, p. 454). *A professional approach to the human body requires a knowledge of the coherence between the physical and psychological aspects of bodily reactions and expressions and an awareness of these. These represent important parts of physiotherapeutic competence* (The National Physiotherapy Curriculum in Norway / 2004, p. 5).

Students gain their first experiences of physically touching and being touched by their fellow students whilst learning manual treatment techniques during their first academic year. Bodily touch within the framework of professional practice contributes to somatosensory stimulation which influences impulse activity in muscles, skin and joints (Brodal, 2007). Stimulation via somatosensory systems has significance for a person's own experience of themselves through increased impulse activity during movement of receptors in joints, tendons and muscles (Thornquist, 2001). The phenomenon of being touched by another illuminates these perspectives.

Phenomenology, a methodological approach established by Edmund Husserl, is a study of human meaning and experience. Attention is directed at the world as it is perceived and experienced from a subject's perspective (Shaw & Connelly, 2012). Human science emphasizes the bodily experience and the phenomenological tradition understands the human being as a bodily subject (Merleau-Ponty, 1962). Merleau-Ponty draws a distinction

between body-subject and body-object. He uses the body-subject to mean the body as we experience it, even before we are aware of this. Body as subject is associated with a pre-reflective awareness. The body as a subject precedes and therefore, means that bodily experience is present before reflection (Merleau-Ponty, 1962). Attentive presence of the body signifies the idea that the body is viewed as being an object.

The phenomenological tradition highlights that perception is dependent on context and that perception is linked to the entire spectrum of experience and knowledge. This means that we bring preconception with us into new situations (Gadamer, 2004). The hermeneutic theories of Gadamer emphasize how presupposition affects how we perceive what we are about to examine. This impacts our understanding. The way we approach a specific situation will therefore be determined by what we are looking for (Gadamer, 2004). It is essential we are aware of this in research, and in the clinical reasoning of students which they will later apply in their professional practice.

Former students' evaluations of our program show that undergraduate physiotherapy students find it difficult to grasp the relevance to their future professional practice of theoretical perspectives in philosophy of sciences, ethics and communication. Several studies have indicated that higher education institutions achieve limited learning outcomes from lecture based classes in generic core skills that are intended to be transferable to discipline specific competences (McWilliams & Allan, 2014).

McWilliams and Allan (2014), referring to these studies, argue that student learning outcomes can be improved by embedding tailored teaching programs within discipline-specific courses. Students need to experience a coherence between the scientific context of the educational process and the profession itself (Smeby & Heggen, 2014). The link made between theory and praxis in programs of professional studies should therefore include the teaching and professional practice context in a way which makes sense to students (Boud & Walker, 1998; Eraut, 1994; Molander, 1997; Schön, 1995). One can therefore say it is not only a matter of "what to learn" but also "how to learn". In line with a discipline-specific approach applied to health science students, Arvaja (2014) discusses how the students use reflect on their experiences. Based on a dialogical learning model, the students explored how they consider themselves and their activities in the light of philosophical approaches (Arvaja, 2014). Consciousness is in the body. Reflections on own experiences in relationships will therefore

be essential to learning. Learning through participation in social practices brings knowledge alive (Molander, 1996; Säljö, 2001).

### ***Collaborative skills training in manual treatment techniques in the Mensendieck tradition***

*Sykegrep*, which is a manual technique, is a passive and active assisted soft tissue and joint treatment<sup>2</sup>. The technique is used to improve joint and muscle function and promote relaxation locally and generally (Lingsten, Halvorsen, & Jakobsen, 2001). Communication and relational skills are essential in the performance of *sykegrep*. Students actualize these skills as competencies through the learning outcome *Students can identify and reflect upon ethical issues that relate to undressing, touch and bodily closeness (Programme Plan 2011-14)*. The theoretical foundation embedded in the current learning outcome encompasses perspectives on bodily experiences, on physical and relational interaction and the relationship between these and the philosophy of science, ethics and communication.

Collaboration, practice and critical reflections have been core concepts in the learning theories, models and instructional strategies that have been developed to guide the teaching of students (Brookfield 1990). Collaborative learning in *sykegrep* skills training implies that students switch between the practitioner's role and the recipient's role. "Learning by doing" and skills training in interaction with others are anchored in a socio-cultural view of learning. This view is rooted in John Dewey's thoughts on action, interaction and dialogue and their importance in cognitive processes and learning (Dysthe, 2001).. Experiences gained through skills training allow students to interpret and find meaning in their own reactions and experiences (Dysthe, 2001; Schunk, Pintrich, & Meece, 2014). The body is, from a phenomenological perspective, the center of experience. This, implies that empathy is not only an internal emotional concern, but also a bodily one (Thornquist, 2009). In relation to phenomenology and medicine, Rudebeck (2001) suggests that bodily empathy allows the symptoms that patients communicate to be integrated with the physician's knowledge of existential anatomy, for example with proximal, bodily aspects of perception, emotion and language (Rudebeck, 2001). The term bodily empathy therefore is one that can

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<sup>2</sup> *Sykegrep* - Soft tissue and joint treatments were developed by Aagot Normann, founder of the Mensendieckskolen in Norway (Halvorsen, 2009).

be used to describe the ability of a physiotherapist, as an individual, to feel what the other experiences.

The encounter between physiotherapist and patient requires the consideration of ethical issues. The following quote is included in the student's curriculum. "*The physiotherapist should be aware of how they can ensure that the patient feels respected. How can I make sure that I can touch the patient in the best way possible such that the patient does not feel violated?*" (Lund, Bjørnlund, & Sjöberg, 2010, p. 157). Answering this question is challenging. According to Lévinas (2002), we can never be sure that we do not violate others. The person we encounter, represents something genuinely different. This means that we are not able to understand the other person fully through our perception (Lévinas, 2002). Lévinas' thinking can be understood as securing respect for the other's integrity. A encounter between patient and physiotherapist is an encounter between bodies which contain more than a traditional biomechanical view of the body (Nicholls & Gibson, 2010). This also applies to encounters between students when collaborating in skills training classes. Students, to a large extent, alternate between being the performer and being the one the skills are performed on. We believe that collaborative learning that involves bodily closeness invites awareness and attention therefore helps students become familiar with the issues associated with the other person's values, dignity and culture. This is important to their future professional practice.

To the best of our knowledge, little research has been carried out on multidisciplinary study unit skills training for physiotherapy students' in a conceptual understanding of the philosophy of science, ethics and communication. Our sensitizing interests are students' expectations of manual skills in physiotherapy, reflections on bodily perspectives and the aspects communicated through touch in close physical interaction.

Our assumption is that bodily closeness in peer collaborative training gives access to an awareness of bodily experiences and to ethical aspects of personal interaction. We think that students' reflections on peer collaboration in practice may help them clarify theoretical concepts through the bodily experiences they encounter during manual skills training.

The aim of this study is to explore and present findings on the value of using manual skills classes as an arena in which students can be encouraged to think about, reflect on and appreciate the role and value of the perspectives on philosophy of science, ethics and communication. This study constitutes a pedagogical development project.

## Method

### *Short description of the context of sykegrep-skills training*

One of the main topics of the first year of the bachelor mensendieck physiotherapy program is covered by the course “Functional assessment and manual skills”. An essential element of education and physiotherapy practice within the Mensendieck tradition is the *Sykegrep* manual technique<sup>3</sup> (Halvorsen, 2009; Lingsten et al., 2001). One of the assessed learning outcomes of this is *Skills in sykegrep and other manual soft tissue techniques performed on fellow students (Programme Plan 2011-14)*. Students perform *sykegrep* on each other as demonstrated and guided by an instructor. The focus is on achieving a technically and functionally correct execution. Instruction emphasizes ergonomic principles, the correct and appropriate placement of the practitioner's hands and the pace and rhythm of movements that are required to achieve the desired effect. *Sykegrep* does not, however, solely involve the technical aspects of execution. The effect of *sykegrep* is also dependent on the dialogue between the patient and the physiotherapist during execution. Interventions must be viewed within the context in which they are used and how they are received, responded to and interpreted by the patient. This dimension reflects that physiotherapy is a social and relational practice (Engelsrud & Schriver, 2005), which is an important aspect in the educational setting and in students' learning process collaboration.

### *Study design*

This pedagogical development project used a qualitative research design and collected data through five focus groups. A distinguishing feature of focus group discussions is the use of interaction and group dynamics. This can enhance knowledge acquisition and the generation of data (Flick, 2006). Seeing and listening to members of a community of practice speak openly about a topic can stimulate participants to share experiences and perceptions that they normally would not share in everyday conversation (Krueger & Casey, 2000). Focus groups were therefore used to promote the study's objective of exploring issues that students are not greatly aware of. Focus groups are a valuable way of developing a shared

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understanding. Individual differences in opinion can however, also be voiced (Morgan, 1996).

After completing the skills training course exam, the students were both asked in person and in writing to participate in focus groups to provide data for the pedagogical development project. They were asked to share their learning experiences and their experiences in the role of performer and the one being performed on. A concern was that some students might feel some discomfort when talking about personal experiences that relate to bodily closeness in skills training interaction. This concern was addressed by the topics and questions covered in the focus groups being described in the information letter that was sent to the students. The letter also informed students that the facilitator was one of the course teachers and that participation was voluntary.

The instructor who carried out the focus group discussions was also responsible for grading the students' course work. The focus groups were therefore held after the students had completed their exams to avoid statements made by students in the focus groups being influenced by a fear that their comments could have an impact on their course work grades.

We also assumed that students would find it easier to share experiences and thoughts when no longer being engaged in the collaboration skills training course. We believe that the physiotherapy students have common professional interests and their own opinions and views about the topics discussed. We also believed that they would feel comfortable sharing their experiences in focus groups. This a crucial point in our selection of focus groups as a data collecting strategy (Morgan, 1996).

### *Participants*

The material is drawn from first year students immediately after they had completed the manual skills training course. Eighteen students, 9 female and 9 male and of ages 19 - 29 years, participated in the study. A timetable of the days and times focus groups would be held was drawn up. Students marked the days and times that they could take part in the discussions and they were divided into five groups based on this. The groups varied in size from 2- to 5 students. 3 groups were made up of both males and females, one group was just females and one just males.



### *Ethical considerations*

All 18 students who participated in the focus groups gave their written consent that the anonymized data could be used in publications and for teaching purposes. The results have been presented in a way which ensures the anonymity and confidentiality of the participants. The study has been approved by the Norwegian Social Science Data Services (NSD), which means that an application is not required to be submitted to the Regional Committees for Medical and Health Research Ethics (REK).

### *The focus group process*

A thematic topic guide was developed based on the learning outcomes of the multidisciplinary study unit (*Programme Plan 2011-14*), the syllabi for the course on philosophy of science, ethics and communication and on discipline topics that relate to sykegrep skills training.

The focus group questions were based on the following four topics (Table 1).

<i>Topic</i>	<i>Main</i>
<i>Sykegrep as a manual technique in professional practice</i>	<ul style="list-style-type: none"><li>- <i>What do you think about sykegrep as a treatment and a professional manual technique?</i></li></ul>
<i>Perceptions and thoughts on performing sykegrep on fellow students</i>	<ul style="list-style-type: none"><li>- <i>Could you please express some of your thoughts and feelings about performing sykegrep on fellow students</i></li><li>- <i>Which sykegrep do you like or dislike? How do you explain this?</i></li></ul>
<i>Perceptions and thoughts on sykegrep being performed on you</i>	<ul style="list-style-type: none"><li>- <i>Could you please express some of your thoughts and feelings about a fellow student performing sykegrep on you?</i></li><li>- <i>Which of the sykegrep do you like or dislike? How do you explain this?</i></li></ul>
<i>Communication issues during collaborative skills training</i>	<ul style="list-style-type: none"><li>- <i>Do you have any thoughts about your communication and interaction during the sykegrep skills training?</i></li><li>- <i>What were the general themes of your conversation?</i></li></ul>

The focus group was conducted after their course assessments had been completed. The focus group discussions were carried out by the second author, who was less involved in the

teaching of the course, to reduce the students' experience of a disproportionate balance of power between teacher and students. The focus group took place in a room which the students were familiar with and in which skills training was usually taught, to avoid the facilitator's role as an expert being reinforced (Elwood & Martin, 2000). The focus groups lasted about one hour and were recorded.

Each focus group opened with the question:

*How did you experience sykegrep as a manual technique in physiotherapy practice?*

The students were, to promote their involvement in the discussion, encouraged to recall situations that had made an impression upon them (Boud & Walker, 1998; Brookfield, 1990). This type of focus group takes the form of an informal conversation between the students. Questions were adapted to the development of the conversation, as argued by Morgan (1996) and in such a way that differences between informants could be expressed (Morgan, 1996).. This strategy was chosen to ensure that the authors did not adapt their questions to their expectations of the responders' level of knowledge (Lincoln, 1995). The facilitator did not raise questions that relate to gender topics. These topics were, however, naturally topicalized by the students. The facilitator asked follow up questions on other topics brought up by the students to obtain more information and to influence the direction of the conversation. The facilitator, through this, ensured that all participants had an opportunity to take part and express their views. .

### *Analysis*

The material was transcribed by the second author. The data was analyzed by both authors using systematic text condensation as modified by Malterud (Malterud, 2012). The data from the five focus groups were analyzed as individual studies to preserve the integrity of each group interaction and the data that emerged from them (Flick, 2006). The authors read the material independently to form a picture of what appeared to be the main topic of the research question. We were particularly careful that we exchanged and shared our different interpretations, to prevent us using the data to support our own ideas of the study's key findings (Miles & Huberman, 1994). A primary goal of qualitative studies is that informants' authentic representation of experiences, feelings and perceptions as they appear in the text are safeguarded (Lincoln, Lynham, & G., 2011). Defining and clarifying the interwoven

natures of the themes and subthemes was quite challenging. We, in an attempt to ensure the trustworthiness of the analysis, involved colleagues with the same general thematic understanding in the interpretation of the material. Their involvement increased the nuancing of codes and sub codes.

Statements that illustrate the topics were identified as significant units. They represent the students' construction of meaning based on their own experiences of *sykegrep* skills training. The content was organized into codes by looking for statements that reflect the experiences inherent in the roles of being the performer or being performed on. Codes were grouped, in analysis process, into clusters around interrelated ideas and concepts. Codes and sub-codes that displayed nuances of the codes were then synthesized into three categories (Table 2).

Themes	Students' expectations of manual skills in physiotherapy		Body structures and body awareness		Aspects communicated through touch in physical interaction	
Codes	The unique feature of "sykegrep" as a manual technique		The body-as-object and body-as-subject		Bodily closeness	
Sub-codes	Force and strength in technical performance	Breathing and relaxation;-unexpected dimensions	Measure-ability, technique and precision	Experiences of touch and being touched	Sense and perception	Empathy, emotions and sensitivity
Categories of findings	<b>Preconceived understanding of physiotherapy</b>		<b>Body knowledge perspectives</b>		<b>Relational aspects of interactions</b>	

Table 2.

## Findings and discussion

Both male and female students were equally engaged in the discussion and in sharing experiences and reflections on collaborative *sykegrep* skills training. The quotes are from all the focus groups and are representative of statements made by students on the topics.

The data material yielded three significant findings: 1) Preconceived understanding of physiotherapy, 2) Body knowledge perspectives, 3) Relational aspects of interactions. A common trait of the three categories is that they all contain overlapping themes. The challenge this presents in the definition of categories will be reflected upon in the discussion. Findings categories are presented and discussed in the light of aspects of philosophy of science, ethics and communication.

In this pedagogical developmental work, the theoretical framework embedded in the students' curriculum and learning outcomes formed the basis of the project. We are aware that our methodological approach might influence our interpretations of the students' experiences, due to an underlying wish for matching the data with the theory. A strategy for aligning data to theoretical propositions can threaten the credibility. We realize that researchers with different theoretical perspectives, will be able to come up with plausible alternatives. Nevertheless, we believe that the analysis visualized in table 2 support the trustworthiness of the study.

### ***Preconceived understanding of physiotherapy***

The students' opinions of *sykegrep* as a treatment technique reflect an imbalance between their actual experiences and their preconceived understanding of the physiotherapy profession and the treatments used to affect the musculoskeletal system in physiotherapy practice.

A female student:

*You don't have to use much force in Sykegrep. It's not what you associate with physiotherapy ... using shaking and force and so on.*

Not unexpectedly, first year students relate the physiotherapy profession to a scientific knowledge tradition in which health, disease and body are defined from a biomechanical view. They have clear expectations and want to see that manual techniques have a distinct impact on anatomical structures. Their attitudes may be influenced by the skills training course being run in parallel with the anatomy course.

The students expressed surprise that the purpose of *sykegrep* treatment techniques is focused on relaxation and expedient respiration.

A female student:

*I never thought, when I started the program, that relaxation and tension would be such a big part of it. A lot of it is about awareness, allowing the patient "to let go". I maybe hadn't thought so much about this before I started studying physiotherapy. I thought it was about making someone stronger. I thought more about preventing injuries, training, training muscles.*

It seems that the focus on *relaxation* and *awareness* contrasts the students preconceptions of the purpose of treatment and rehabilitation. Student preconceptions focused on muscle training exercises. Course expectations and reflecting upon one's own understanding might, however, have an impact on the point of view of students. Placing this in the light of the norms of thought and perception may also contribute to students expanding their horizons of understanding (Gadamer, 2004; Thomassen, 2006).

One of the male students reflected upon the force used when performing treatments:

*My experience often was that a student treating you was a lot harder than the subject teacher. The teacher's treatment was very calm and smooth, but still almost better. 'In my mind the harder the treatment, the better it is ....but that is not always true'.*

Learning the manual skill of *sykegrep* can also be an opportunity to get to know and become aware of the body and bodily reactions. We at the same time see that some students find the new experience of both focusing and relaxing to be overwhelming.

*Male student:*

*Yes and breathing and so on. I thought working with this was a lot of fun. But I hadn't thought so much that breathing is so important. It was a very intense experience, those lessons where we worked with breathing...*

It seems that the student's beginning awareness of the effect of breathing might be an important step in developing a holistic view. A holistic view which, when drawn into physiotherapy practice, is based on a perspective of the body as a source of knowledge and as a field of expression (Merleau-Ponty, 1962).

Performing *sykegrep* on a fellow student is not just about performing it in a way that is technically correct. The encounter also, requires students to be aware and to choose an approach that is perceived as being appropriate and comfortable, based on cultural values and ethical norms of the fellow student.

Female and male students expressed different views when discussing their experiences of practicing *sykegrep* and whether these were gender specific.

One of the male students said the following:

*Breathing exercises. Feminine is perhaps wrong, but it doesn't feel very masculine to focus on your breathing. I feel that there is more substance in shaking a leg and thigh than breathing with your stomach. I feel that using force, that's one thing. But if you are going to try and make the patient relax and start talking about breathing, which is a calmer topic, then you have to change your approach a little, that's how I feel.*

The male student continued by saying:

*I don't know why, but I think it's a little feminine. But in other ways some of it is quite heavy. Don't know what to say... they're good. But maybe it's that not all are so concrete? Think perhaps you associate masculinity with being a little more concrete. 'What do I do with this?' A lot of it is comfortable and I can imagine that it is relaxing and so on. Does it have any long-term effect?... I doubt it.*

One female expressed the following:

*Wouldn't say that it's feminine. Got to have strength to do some of those moves. Standing there and shaking a leg is hard work. So, I don't know. Maybe it's neutral.*

These quotes reflect the qualities students associate with masculine and feminine norms. Practical experience within a gender perspective is, however, a topic that has rarely been questioned within the physiotherapy practice of students (Hammond, 2009) and professional practitioners (Stenberg & Ahlgren, 2010).

Notions referred to in the data material include force, strength and presenting concrete and precise answers, which are values that Hammond (2009) believes are associated with norms of masculinity. One study highlights that a group of male physiotherapy students found it challenging to talk about their reactions and feelings in a learning perspective because they were unaccustomed with that form of communication and expression (Hammond, 2009). Feminine qualities were, however, seen as linked to areas of caring, empathy, emotions and sensitivity (Hammond, 2009; Stenberg & Ahlgren, 2010) The authors in another study indicate that gender norms are strongly interwoven into students' bodily performance (Dahl-Michelsen & Solbrække, 2014, p. 672)

Discussions that relate to femininity and masculinity were not the intended focus of this study. Our data, however, led us to realize that gender norms were an issue and may affect male and female students' preconceptions of sykegrep skills training. Students' preconception of physiotherapy are associated with measurable factors such as force, strength and tension. They are, however, also associated with human factors such as caring, relaxation and awareness. Preconception is emphasized within the philosophy of science as a phenomenon that effects our interpretation of the situations we encounter and effects how we perceive what we are about to examine (Gadamer, 2004). It is therefore important that students uncover their own preconceived understanding and so become conscious of their interpretation of the situation before them.

### ***Body knowledge perspectives***

The responses of the focus group students show the students expressing bodily experiences in terms of technique, precision and touching. A female student expresses this as follows:

*We who don't suffer any neck pain don't feel anything when we practice pulling the neck. We are focused on the manual, how to pull correctly, more than on an awareness around the treatment. I was focused on getting precise answers.*

This quote illustrates a technical biomechanical view of knowledge. This can be simplified to the view of the body as number of distinct parts that are positioned in relation to each other and the view of physical problems as structural changes.

Our data also reflects how skills training can, over time, contribute to an increase in student confidence through the development of a personal knowledge of the body as both an object and a subject.

Female student:

*I think about how uncomfortable it was in the beginning to get undressed and be touched by others. At least that's how I experienced it. ...but it has sort of loosened up a bit. Like wearing tights. As it was in August. We look at a lot of bodies, get used to it and get a different perception of body*

Female student:

*You get used to touching each other. Nothing embarrassing anymore. Not embarrassing at all to undress and touch each other. You get used to the body, which must be an advantage when we get patients ...*

The quote reflects how *sykegrep* experiences gives students an opportunity to understand and acknowledge the body as ambiguous, of imaging the body as both an objective and subjective reality (Duesund, 1995; Thornquist, 1994).

Female student:

*I think it's good to know how the body feels when sykegrep are being performed. It's good to feel that you are doing it the right way when performing sykegrep. But it's also important to know how it feels when performed correctly on the body.*

This illustrates the students' reaction to *being the one who performs sykegrep* and their empathy with the other's reaction to *having the sykegrep performed on them*. They describe the body in terms of a natural and humanistic scientific knowledge tradition as nuanced in the concept of "having a body – and being a body". This quote illustrates the two double experiences of the body. Bodies are experienced as being objects through the physical contact of hands on the other's body. Students also express the value of experiencing their own body in relation to and close to others. This may be what Rudebeck (2001) describes as bodily empathy. Bodily empathy is dependent on common references. Intersubjective interaction, however, also presumes differences between individual. When we approach another person, we must be able to go beyond our own experiences and imagine the other person's experiences (Rasmark, Richt, & Rudebeck, 2014).

The performer experiences what is an anatomically "correct" placement of hands and the correct movement and rhythm required to achieve the desired effect. The subject dimension of bodily touch however, is sensed as a qualitative experience in one's own body. According to Merleau-Ponty, the human being has access to the world through perception and action, humans existing and participating in the world as bodily subjects (Merleau-Ponty, 1962). This necessitates a heightened awareness and sensitivity to reactions to touching and being touched.



Experiences of applying *sykegrep* to achieve relaxation and to create a functional breathing rhythm can promote an awareness of the conditions that enhance or impair own breathing patterns.

Male student:

*Breathing is something you usually don't think about. Particularly just focusing on your breathing. Yes, it's a little hard to get used to. Because the more you are told to focus on your breathing, the more difficult I feel it is to breathe...*

Breathing can be related to physiological, anatomical and psychological conditions. Students' awareness of their own breathing pattern also developed into an awareness of bodily experiences. This recognition may be an incitement to understand that breathing patterns are a response to emotional state (Gard, 2005; Philippot, Chapelle, & Blairy, 2002; Roxendal, 1985). Students seem to have been challenged by being exposed to a less visible but more tangible and personal body expression. Students may also, through recognizing that the body represents more than just anatomy and physiology (Nicholls & Gibson, 2010), and through their experience, gain access to an expanded view of the body and the experience of encounters. These experiences can be used as a source of insight into the balance between informing about the body as an object and experiencing with the body as a subject. *Conditions such as tension are not only experienced subjectively, but also expressed physically* (Thornquist, 2001, p. 4). Physiotherapists have reported that when given the opportunity to share their patient interaction experiences, that they became more aware of their bodily experiences, which in turn impacts reflective practice (Rasmak et al., 2014). Body knowledge perspectives based on students' experiences of touching and being touched, and the body as both an object and a subject, are therefore discussed in both a biomechanical and phenomenological perspective.

### ***Relational aspects of interactions***

Students' experiences may reflect that manual handling is not limited just about technique, but also includes a dimension of care.

Male student:

*I feel it was more about the relation with the patient, the communication between the two of us. When I worked with my usual partner, it was more like we were anatomical*

*dolls. OK. So now I'm going to affect that structure. Then I'll do it like this as I know that in anatomy the muscles go there. And it works. But if I'm working with another student who I don't talk too much, then there is more communication. Not just go in and do it. More like a patient-therapist relationship.*

This quote illustrates the student's reflection that working with someone unfamiliar requires the introduction of an approach that incorporates therapeutic caring. Technical application alone is not enough. The student admits that the body seems to function more like a technical learning object when working with a student he has got used to working with. His approach to a student who is not his usual partner also appears to be more caring.

Collaboration between students, confidence, personal familiarity, trust and routines allowed the students over time to adopt an inquiring and objective perspective towards each other's bodies. The students seem to have gained an awareness that the body takes on the status of an object in students' eyes in the manual skill practice situation. Students however, when working with a new partner, prioritize the safeguarding of the person through verbal communication, information and guidance. This can be experienced as a disrupting element when performing *sykegrep*. It also illustrates how challenging novices find maintaining a holistic perspective. Students seem to be influenced by rule application when practicing on fellow students and novices seem to be concerned about the technical challenge of their approach (Dreyfus & Dreyfus, 1986). Novices who transfer into *sykegrep* skills training will primarily focus on the correct placement of the therapist's hands in relation to the fiber direction of muscles and the desired effect of the *sykegrep*.

The students also reflected upon the process of becoming a more skilled practitioner and the adaption and application of knowledge to the specific context they are in at that moment in an unconstrained way. This may be illustrated by students' describing the sense of relation and comfort in the situation.

Male student:

*....I remember thinking about it when performing the sykegrep where the patient lies supine with the head beyond the bench and then move the head in a semicircle and then release it downwards a few degrees.*

Another male student:

*Yes, it's all about awareness. How to make the patient feel secure. I didn't think much about this before I began the physiotherapy course. I was focused on the manual technique...*

Students, after more practice, experience that they find it difficult to perform *sykegrep* in a technically correct way and with the desired effect without feeling that there is a relationship in the interaction. The students therefore recognize the challenge of providing the dimension of care through technical performance. The relational aspects of interaction may be reflected both in the patient and therapist roles.

Male student on the role of being the “patient”:

*You feel that it's not that easy to relax. And we are relatively healthy. And if someone comes along who doesn't want to be touched? You can imagine it could be a bit problematic.*

Male student on the role of being the “therapist”:

*Of course you have to be quite [...], how can I put it. It's not that easy to just let go. You have to have an okay relation with the patient if he or she is to let go. You can't just ask the patient to lie down on the bench and relax and expect it to happen. The patient has to trust you.*

The students learn, when working in pairs during skills training, that it is not only outer stimuli but also interaction with the other which affects bodily reactions. The student acknowledges that a safe situation needs to be created if the desired effect of the *sykegrep* is to be achieved. Trust and sensitivity seem to be key words in this. The students perceive the situation as challenging. At the same time, a balance between closeness and distance allows dignity in the relationship to be preserved. According to Levinas (1969) however, it is also important for the students to be aware that we are not able to understand the other person completely. This awareness can ensure that a respect for the other's integrity is preserved (Lévinas, 1969).

The next quote illustrates this sensitivity in the quality of the technical and the relational approach.

Male student:

*Some people just grab the leg and lift. Others go in, make sure that they feel you and then lift, ..... and I think everyone became aware of this after a while. Lifting in a certain way. How to take care of the patient.*

Male student:

*I remember one of the first things one of our teachers said. "Remember that lifting a leg is not just lifting it". This is important.*

These quotes reflect a consciousness in handling someone else's body. When the student lifts another student's leg, then the leg is experienced as an object. However, we also see that a student's focus can shift to viewing the other's body as a sentient and acting subject. According to Husserl, empathy is the immediate experience of the other's through a double experience of the body (Thompson, 2005). These interaction experiences can be seen in the light of Husserl's phenomenological perspective. One sees or touches another body and experiences it as another subject (Gallagher & Zahavi, 2012; Thompson, 2005). Bodily consciousness is immediately affected by interaction with another subject. This, therefore, constitutes a precondition for empathy and the recognition of others as bodily subjects.

A female student had the following opinion about the male students' reaction to *sykegrep*:

*I think they (the male students) thought that some of them (sykegrep) can be very intimate and embarrassing. Some said that the breathing sections were embarrassing and that the thorax part and so on were terrible.*

Male student:

*....but some of the sykegrep are very tender, or [...], if I can use the word, very intimate. Usually I didn't touch my friends that much. But now it's quite normal. Not so afraid of physical contact now.*

Another male student:

*"The too intimate borderline" has sort of been moved.*

The students' awareness of the significance of there being a relationship in interaction and how the subjects can mutually affect each other is also reflected in their discussion about the collaboration between male and female students

Male student:

*About masculine and feminine. Changing partner is a positive thing. When you're a guy working on another guy, there is nothing you really have to keep in mind. You don't think about where you put your hand in relation to the shoulder girdle and so on. But when you work with a girl, then you can't just start rubbing her breasts. You have to think a little about what you are doing. That's why it is good to change partners... You often automatically pair up with someone you know.*

An awareness of one's own reactions as performer and of the reactions of the person being treated seems to increase the performer's attentiveness on the other's bodily response.

Empathy and "being present in someone else's experience" is a key term in physical therapy treatment. A study by Svensen & Bergland (2007) showed that physiotherapy students can learn empathy by expressing their bodily experiences in words. (Svensen & Bergland, 2007).

Touch promotes presence, reflection and participation. This is exemplified in the following two quotes, one from the student exercising the treatment, the other from the student being treated:

Male student:

*If you lift a leg incorrectly, then you immediately notice that the patient has tensions. If you do it properly, then you have a secure and relaxed patient. So it's important to learn this.*

Male student:

*Some were gentle and a little more careful. Others just got hold of your leg and lifted it. Much more jerky movements. Some came in, made sure they could feel you and then lifted.*

These quotes may reflect the bodily experiences of students when interacting. Merleau-Ponty (1962) argues that movements and body must be understood separately without the impact of thought. We are not aware of our own communication until we respond. The expressions of other bodies will, however, influence us immediately (Engelsrud, 2013). The students learn to be aware of one's own role and behavior through collaboration, which acquires attentiveness to the other's reaction during the process and involves reflection in action (Schön, 1995). The students' interactions are illuminated with themes that are related to communication and ethics. The relational aspects of collaboration in bodily closeness are discussed based on forms of communication and ethics of proximity.

## **Conclusion**

The data of the focus groups about first year undergraduate students' reflections on experiences with sykegrep skills training has been used to illustrate key topics relevant to physiotherapy education within philosophy of science, ethics and communication.

The data material yielded three significant findings: 1) Preconceived understanding of physiotherapy, 2) Body knowledge perspectives and 3) Relational aspects of interactions.

The first addresses the students' preconceived understanding of manual techniques within the physiotherapy profession. These were associated with measurable factors such as force, strength and tension, but also with human factors such as caring, relaxation and awareness.

These factors may illustrate different views of knowledge which impact interactions with peers during skills training. The second theme, defined as body knowledge perspectives, similarly focus on the ways in which one experiences one's body, illustrated by the body as object and subject. The first and second themes are discussed in a biomechanical and phenomenological perspective. The third theme, defined as relational aspects of interactions, includes qualities characterized by empathy, sensitivity and protection of the dignity of persons. The relational aspects of collaboration in bodily closeness are discussed based on various forms of communication and ethics of proximity.

The findings discussed seem to indicate that practical classes in *sykegrep* manual skills training can facilitate undergraduate students' awareness and knowledge of philosophy of science, ethics and communication, based on their reflections *about* the body and experience *with* the body.

## **Educational implications**

The engagement displayed in the focus group discussions indicated that the first year students were interested in sharing experiences of manual skills training and in reflecting upon bodily experiences and technical aspects

Our study constitutes a good starting point to further develop and facilitate teaching programs comprising philosophy of science, ethics and communication and incorporating these programs into undergraduate education. This can help broaden students' professional horizons to the level required for their future clinical physiotherapy practice.

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