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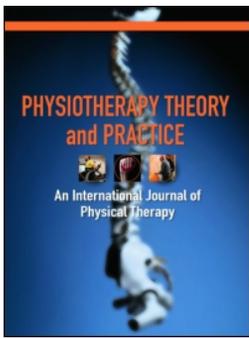
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## Stories of professional development in physiotherapy education

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### ABSTRACT

This study examines graduating physiotherapy students' narratives related to their professional development. The data comprised interviews with 33 graduating physiotherapy students. The data were analyzed using the narrative analysis approach. As a result, five different story models were identified. The descriptive story models were named: 1) "Study path dominated by life changes"; 2) "Realizing the connection between physiotherapy theory and practice"; 3) "Self-regulated and practical-oriented learning path"; 4) "Becoming a critical developer"; and 5) "Multiprofessional working towards expertise". In students' stories, there appeared different turning points that illustrated especially meaningful episodes during the process of their professional development to be a physiotherapist. From a pedagogical point of view, two important features appeared: the importance of connecting theory and practice and the role of clinical supervisors.

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### Introduction

Physiotherapy education, like education in general, requires continuous development in response to the challenges of the rapid changes taking place in the world. These changes (e.g. globalization, streams of refugees, economic and political unsteadiness, progress of information and communications technology, and changes in work) have forced education providers to plan and implement new kinds of pedagogical strategies and practices and to prepare students for an unknown future. Furthermore, various pedagogical models have been adopted and experimented with, such as competence-based learning and using various online technologies (Bergsmann et al., 2015; Mącznik, Ribeiro, and Baxter, 2015). The key point in different models is the students' role changing into that of an active, self-regulated and reflective agent. The ability to reflect both on the individual and collective level is seen as a prerequisite for transforming a student's competence and professionalism (Kurunsaari, Tynjälä, and Piirainen, 2016, 2018).

Generally, professional development has been illustrated as being a long process that progresses through different stages from novice to expert (Benner, 2000; Dreyfus and Dreyfus, 1986; Lindquist et al., 2006; Reeve et al., 2012). Typical of expertise development is goal-oriented and persistent deliberate practice (Ericsson,

2006) and progressive problem solving (Bereiter and Scardamalia, 1993) through which individuals tackle challenging tasks and surpass themselves, that is, go beyond their previous performances and achievements. In studies on adult learning and higher education, professional development has been described as a series of transformational steps, as noted in transformative learning theories (Kear, 2013; Mezirow, 1990), or as a process of integrating different forms of knowledge, as proposed in the Integrative Pedagogy model (Tynjälä, Virtanen, Klemola, and Rasku-Puttonen, 2016).

In the field of physiotherapy, the professional development literature has mostly focused on novice physiotherapists' initial years of practice (Hayward et al., 2013), whereas there are less longitudinal studies addressing physiotherapy students' professional development (Lindquist et al., 2006; Lindquist, Engardt, and Richardson, 2010). However, longitudinal data on students' educational processes would be important for the development of education programs in physiotherapy (Greenfield et al., 2015). The narrative research approach provides a rigorous methodology for collecting data on personal experiences, such as regarding professional development. Previous studies on professional development using the narrative approach have focused on the professional development processes of, for example, nurses (Kucera, Higgins, and McMillan, 2010). In contrast, searches of certain related databases (i.e.

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CINAHL, ERIC, PEDRO, PSYCHINFO, Academic Search Elite, and MEDLINE) covering 1990 to 2015 (reviewed 6 February 2016) indicate that usage of the narrative approach to explore professional development in the field of physiotherapy education has remained scarce. Few earlier studies have focused on how physiotherapy students learn to act professionally (Greenfield et al., 2015; Korpi, 2018). The present study responds a gap in the literature concerning physiotherapy students' professional development. Using the narrative method in particular, we examined how graduating physiotherapy students perceive their professional development in physiotherapy education.

### Professional development in physiotherapy

Professional competence in the field of physiotherapy has been defined as the ability of a practitioner to examine and advise patients, handle manual therapies and therapeutic exercise, and use special disease-specific and evidence-based knowledge (Briggs et al., 2012; Dahl-Michelsen, 2015; Lo, Osadnik, Leonard, and Maloney, 2015; Rossetini et al., 2017). Having emotional intelligence, good communication skills, and cultural competence as well as being able to consult other professionals are also regarded to be important in physiotherapy (Gribble, Ladyshewsky, and Parsons, 2019; Higgs, Hummell, and Roe-Shaw, 2009; Lindquist, Engardt, and Richardson, 2010).

In a metasynthesis of qualitative studies by Lindquist, Engardt, and Richardson (2010) there emerged learning patterns of managing health and improving body structure as well as movement. Jensen, Gwyer, Shepard, and Hack (2000), as well as Greenfield et al. (2015), underlined using reflective and metacognitive knowledge, making functional assessments and collaborating with patients, while Larsson and Gard (2006) emphasized the role of professional demands and rules "that education, health care units, society and the influence of different workplaces and cultural traditions place on the profession" in addition to different theoretical knowledge. On a more theoretical level, Le Maistre and Paré (2006) constructed a model of expert knowledge in physiotherapy and other fields involving professional knowledge (i.e. content knowledge, procedural knowledge, and knowledge about the profession) and personal knowledge (i.e. knowledge of oneself and metacognition).

The concept of professional development in physiotherapy has been related to developing general and professional competences and becoming an expert through the active process in education and, further on, as a physiotherapist in professional practice. The educational channel for becoming a physiotherapist consists of theoretical studies and participation in

several instructed clinical placements (Gard and Dagis, 2016; Olsen et al., 2015).

Learning practical skills is central in physiotherapy education and a core component of the physiotherapy curriculum for two reasons. Firstly, physiotherapy students practice with different kinds of patients, and, secondly, the level of autonomy in the physiotherapy profession and job positions brings with it the need for diverse clinical and professional skills and competencies (Cruz, Moore, and Cross, 2012). Therefore, a growing body of studies on skills has been published regarding clinical settings in which students practice under the instruction of experienced physiotherapists and other professionals (Chipchase et al., 2012; Sevenhuysen et al., 2015). In recent years, research has also focused on pedagogical models of physiotherapy education concerning for example: competence-based learning (Bergsmann et al., 2015); example-based learning (Dyer et al., 2015); peer learning (Ladyshewsky, 2010, 2017; Sevenhuysen et al., 2017); transformative learning (Prout, Lin, Nattabi, and Green, 2014); and using various online technologies (Mącznik, Ribeiro, and Baxter, 2015; Maloney et al., 2013).

Several recent studies in the field of physiotherapy education have focused on students' understanding of professionalism. These studies have shown, for example, that students appreciate personal characteristics and behaviors such as punctuality, effectiveness, the ability to handle difficult situations, keeping abreast of the impacts of current research on practices, and trying to advance patient-oriented care (Grace and Trede, 2013). Furthermore, students have emphasized skills such as independent decision making, documentation, and clinical reasoning (Black et al., 2010; Cruz, Moore, and Cross, 2012).

While several studies have examined students' perceptions of their professional skills, literature describing their professional growth and specifically focusing on students' pathways in physiotherapy education is scarce. In their longitudinal study, Lindquist et al. (2006) discovered four pathways of development: 1) reflecting on practice; 2) communicating with others; 3) performing skills; and 4) searching for evidence. In another study, Korpi, Peltokallio, and Piirainen (2014) identified three story models regarding students' professional development: the development of the autonomous learner, becoming a member of the physiotherapy community, and the critical developer.

To the best of our knowledge, other than the two reviewed above, there are no other studies that describe and conceptualize physiotherapy students' professional growth during their education based on student narratives. For these studies (Korpi, 2018; Korpi, Peltokallio,

and Piirainen, 2014; Lindquist et al., 2006), the data were collected from 2005 until 2008 and 2012, respectively. Since then, new pedagogical models have been developed and experimented with in the physiotherapy curriculum and could have had an influence on students' pathways of development. Therefore, the purpose of our study was to update and deepen the understanding of physiotherapy students' professional development based on their own narratives of their professional growth. Since there is little narrative research on graduating physiotherapy students' experiences of their professional development during their studies, the purpose of the present study was to examine how graduating students perceive their professional development. The aim was to produce knowledge that can be used in developing physiotherapy education. In more detail, the following research questions were addressed: 1) How do graduating physiotherapy students describe their professional development during their education; and 2) What kinds of narrative models can be identified in graduating physiotherapy students' stories of their professional development?

## Methods

### Participants

The participants ( $n = 33$ ) of our research were final-year physiotherapy students. The students were studying in the Bachelor's degree (BA) program at a Finnish university of applied sciences (210 credits). The average study time is 3.5 years, but the actual study time varies depending on students' previous studies, qualifications and prior experiential learning, as well as on prolonging factors such as medical or parental leave. Of the participants, 7 were men and 26 women. At the end of their studies, these participants were between 22–37 years old (average = 24.7 years) and had studied 2.5–4.5 years. Eight participants had partly trained or studied abroad, either as international exchange students at a university or in clinical placements.

The program is based on the qualifications outlined in the European Education of Physiotherapists, EQF6 (European Network of Physiotherapy in Higher Education, 2012) and the recommendations of the World Confederation for Physical Therapy (2011) on the competence of a physiotherapist. The basic aspects of the knowledge in physiotherapy which describe physiotherapy science from the perspectives of its scientific knowledge base, theory-based practical models and evidence-based guidelines are presented in a structured model of The Core Competences of a Physiotherapist. Furthermore, the program has a multidisciplinary basis,

and both social and psychological sciences are acknowledged (Finnish Association of Physiotherapists, 2018).

In the pedagogy, the main idea is to encourage an investigative and evidence-based approach to learning in students, so that they develop themselves as an active, independent and self-regulative actor of their own learning process and build their expert knowledge by integrating theory and practice, whereas teachers and clinical supervisors are facilitators and supporters. Studies consist of theory studies and practical training (70 credits) at the school and in clinical placements. Four full-time, supervised practical training periods (8–13 credits), usually two in the second year (6.5 and 8.5 weeks) and two in the third or fourth year (8.5 and 5 weeks), are carried out in accordance with students' personal learning plan and career plan in various workplaces and in projects in the field.

### Data collection

The present research was conducted using the narrative approach. In a narrative study, data are generally acquired through interviews (Monrouxe, Rees, Endacott, and Ternan, 2014; Price, McGillis, Angus, and Peter, 2013). The data were collected by interviewing the graduating physiotherapy students during the last month of their studies, before graduation. The interviews were carried out by the first author. At the beginning of the interviews, the students were requested to talk about their life and study process in response to the question: "Tell me, what has happened since you started your studies?" The open interview approach was intended to stimulate and encourage students to freely describe their life experiences, study process, and professional development throughout their university education. During the interviews, the students were encouraged to elaborate on their experiences in order to ensure that they would focus sufficiently on their professional development. Typical clarifying questions were: "Can you give an example of [...]?" or "Could you tell me more about [...]?"

The individual interviews lasted between 19 to 43 minutes. All of the interviews were audio recorded and transcribed verbatim. The resulting data consists of 159 A4-pages (font = Times New Roman 12, spacing = 1.5). For the analysis, we selected the sections of the interviews where students spoke about how they perceive their professional development. The students spoke Finnish and the quotations that we have selected were later translated into English. The translation from Finnish into English was undertaken at the end of the analysis process. The first translation was undertaken by the first author and discussed with the other researchers,

and finally proofread by a professional. The university granted the permission for the implementation of the research. Strict confidentiality and anonymity were ensured throughout the reporting of the results.

### ***Narrative inquiry method and narrative analysis***

Narrative inquiry consists of a group of qualitative research approaches using stories to describe human action. According to Polkinghorne (1995), people organize their experiences in the form of a narrative to construct their identity. Narrative inquiry forms the experiences, events and happenings into a temporal and context-bound whole by means of a plot. In other words, the narrative method enables one to understand human existence as a dynamic process of emplotment, and the specific explicit outcome is a story (Polkinghorne, 1995; Ricoeur, 1984).

Narrative analysis offers researchers versatile tools to construct meanings and analyze narratives of human experience (Bruner, 2004; Greenfield et al., 2015; Parviainen and Aromaa, 2017). In our study, the focus was on students' stories of their professional development in the physiotherapy education context. The narrative inquiry approach allows identifying transitions and turning points that participants find meaningful during their studies (Bruner, 1987; Ricoeur, 1984).

In the narrative inquiry approach, it is important to distinguish the 'analysis of narratives' from 'narrative analysis' (Polkinghorne, 1995). In the present study, a three-step narrative analysis of the narratives of 33 students' individual continuous stories was conducted. The first stage involved gaining a general overview, and descriptions of the stories of professional development were made. In the second step, the turning points of the 33 stories were identified, and after that the story models were defined (Ricoeur, 1984). A story model is a model of combined individual stories with similarities, formed from the research on participants' narratives (Ricoeur, 1984). Thus, the analysis featured configuration and synthesis in order to produce explanatory stories as a result of the analysis process (Polkinghorne, 1995; Ricoeur, 1984). In this emplotment process, the researcher is looking for connections between meanings and influence among the events and identifications of occurrences that contributed to outcomes (Polkinghorne, 1995; Ricoeur, 1984). Moreover, the plot is chronologically organized from the beginning to the end of each narrative (Labov, 1997; Ricoeur, 1984). This led us to finding the common six turning points and five story models.

Narrative analysis is more like 'synthesizing' than 'categorizing' data (Polkinghorne, 1995). According to

Riessman (2008), a good narrative analysis prompts the reader to think beyond the surface of a text and involves broader commentary. Particularities and context take on a form, and stories act as social artifacts describing certain cultures (Riessman, 2008). In our study, students' stories and experiences of professional development pertain to the context of physiotherapy education.

We analyzed the data stepwise, inspired by the ideas of the narrative analysis of Polkinghorne (1995) as well as Riessman (2008). The aim of the analytic procedures was to synthesize data into the form of story models, uniting and summarizing similar plots and turning points. In the emplotment process of the narrative analysis, the researcher is looking for connections between meanings and influences among the events and identifications of occurrences that contributed to consequences (Polkinghorne, 1995; Ricoeur, 1984). The hermeneutic process proceeded so that, firstly, the individual students' story models were discovered; then, according to the narrative analysis, the chronological story models were defined and different turning points of the plot were found. After that, the five theoretical story models were compiled from the individual stories, and, subsequently, the story models were named. The five story models are theoretical and were found using the hermeneutic circle method (Polkinghorne, 1995).

The final outcomes of the analysis, the story models, are theoretical in nature, though grounded within the data. This means that, on the individual level, each participant may have expressed events, meanings and characteristics of one or more story models. In other words, an individual participant's story is rarely identical with any of the other story models. Each individual's life experiences and stories are unique, and the purpose of the narrative study is to identify common features of the different stories and form theoretical story models on the basis of the common features. In other words, the researchers' understanding of the data and the outcome of the analysis as a whole (the five story models) was based on the analysis of parts of the data (individual stories and their characteristics), and, vice versa, their understanding of each individual part was based on the wholeness of the five story models constructed. In the present study, however, regarding the distribution of story models, we placed each individual story into the story model that dominated its narrative.

In more detail, the transcripts were first read several times by the first author in order to understand the students' individual stories as a whole. At this stage, the aim was to discover such issues in the data that would help in understanding students' professional development. In doing so, it was found that the students' stories were often comprised of accounts of their social

life, growth as human beings, and episodes of their studying physiotherapy. The first draft of the emerged stories and turning points of the plots was formed by the first author. The categorization of the plots of the stories took shape in this phase.

In the next phase of the analysis, all three authors together compared the tentative stories against the data and further described the stories, transitions and turning points when needed. As the material was further analyzed, a more varied and fertile picture of the changes in the students' professional development, transitions and turning points emerged in individual stories. At this stage, the individual students' stories were organized around turning points in the plots that took place before the study program, during practical training, in their private life, at the end of the study program, and around the time of graduating.

At the third stage of the hermeneutic process, the researchers' aim was to reach a deeper understanding of the data (Polkinghorne, 1995) by constructing the combined story models from the individual stories. Also, verbatim quotations were chosen to illustrate the identified five story models of professional development.

In a qualitative study, it is important to pay attention to the position and perspective of the researchers. According to Labov (1997), the researchers' understanding of the context where the narratives are produced helps to ensure a valid interpretation of the data. At the same time, being part of the context may cause bias in researchers' interpretations. In the present study, the three researchers have diverse backgrounds. The first author is a physiotherapy teacher and researcher, the second is a professor of educational research, and the third a researcher on physiotherapy teacher education. The context of the present study, the field of physiotherapy and physiotherapy education, was familiar to the first and the third author, whereas the second author could ask clarifying or critical questions. Thus, while the

“insiders” may have brought not only understanding but also bias to the interpretation of the data, the “outsider’s” views and the diverse backgrounds of the research team members brought group reflexivity to the analytical process. Furthermore, throughout the analysis, the researchers intentionally aimed to avoid bias.

## Findings

### Story models and turning points

As a result of our analysis, five different theoretical story models were constructed describing students' learning and professional progression that proceeded through various phases and turning points. The story models were ordered by plots and according to the extent of the main focus of the narration, as follows: 1) Study path dominated by life changes; 2) Realizing the connection between physiotherapy theory and practice; 3) Self-regulated and practical-oriented learning path; 4) Becoming a critical developer; and 5) Multiprofessional working toward expertise. Among the participants, the story models 3 and 4 dominate, and the story models 2 and 5 were less often represented. Only two students' narratives were characterized by story model 1. Four of the five story models had both male and female students' representation. Only story model 1 was represented by female students alone.

In their stories, the students described different turning points that illustrated critical or especially meaningful episodes or periods during the process of their professional development to become a physiotherapist. Six different turning points were identified: 1) getting a study place; 2) coincidental life changes; 3) practical training periods; 4) quitting something formerly important; 5) international exchanges; and 6) getting a job. These main characteristics differ between the story models, whereas less dominating characteristics or events

**Table 1.** Turning points of the story models: their main characteristics and appearance in the story models.

Turning points of the story models	Main characteristics of the turning points	Appearance of the turning points in the story models				
		1	2	3	4	5
Getting a study place	A successful result after short or long-term planning					x
Coincidental life changes	Mostly experienced as negative, but at times also positive	x				
Practical training periods	Ensure the acquisition of skills and competences in physiotherapy, Contribute to the realizing the connection between theory and practice.	x	x	x	x	x
Quitting something formerly important	Makes it possible to properly invest in studying physiotherapy			x	x	
International exchanges	Confirm students in their professional choice to study physiotherapy				x	
Getting a job	A successful continuum of studying and practical training in the first job, or looking for a job with positive expectations.					x

may appear in more than one story model. However, these turning points do not always dominate the main plot of the story. Table 1 shows which turning points were identified in different story models. Thus, it is not a problem that there are some similar features among the story models. It is the main characteristics of the plots that make a distinction between the story models. For example, coincidental life changes appeared in two story models (1 and 2), but only in the first did these life changes play a dominating role in students' stories. Practical training periods were mentioned as important turning points in most of the stories, which shows that they have a significant role in students' development, but the main plot of the story models were determined by other characteristics. Some of the turning points, such as international exchanges, appeared only in one story model, while others, such as practical training periods, were recognized in four story models as the most meaningful episodes during students' physiotherapy education. Excerpts from relevant interviews are included to illustrate the story models, citing responses from both female (F) and male (M) participants with age indicated in years (y). The number following F or M is the place in the interview sequence; for example, F13 means: Female, 13th interview.

### **Story model 1: "Study path dominated by life changes"**

Story model I was the rarest of the five story models. Two of the 33 students expressed characteristics of this model involving coincidental life changes. Turning points that affected some students and their professional development in physiotherapy included: the student's own or a family member's illness or the death of a relative, starting to work to earn money alongside studies, or a combination of these and other personal experiences as well as 'happy' events. Surprising turns in life situations burdened students emotionally and their mood changed quite often. During a difficult or exciting life phase, they occasionally had difficulties in tending to their studies

*The first autumn [...] went by really fast [...]. At that time, I met my boyfriend [...]. I was so in love, I didn't listen much. I was in another world [...]. I skipped school. (F13, 23 y)*

The professional development of both these graduating students, in story model 1, was characterized by low motivation, poor self-esteem and the arduous progress of their studies. At the beginning of their physiotherapy studies, these students had felt unsure about their career choice. They had other interests as well and various rival

options to choose from, but, after exclusively selecting physiotherapy education, they started focusing on their studies. These students described the first year of their studies as the time of waiting for the first practical training period in a clinical placement, hoping to gain more motivation and confidence regarding their career choice. However, after the first practical training took place, these students did not express any changes in their study motivation. At the same time, the students experienced unexpected life changes (e.g broken friendships and/or relationships) and fell behind in their studies.

These students felt that their life changes and low motivation, as well as uncertainty about their interest in physiotherapy, had remarkably impacted their studying throughout their education.

*On the day of the entrance examination, years ago, I was thinking that I will graduate quickly [...], but it didn't turn out that way [...] as a lot of things happened in my private life that affected my studying. (F1, 23 y)*

While the life changes of the students hampered their studies, they experienced the active support and tutoring by their teacher as important, especially during the last year, in helping them to study and graduate as a physiotherapist. This support helped students turn their attention from their challenging situation to finishing their studies. As for the final outcome of the physiotherapy studies, these students felt that they had learned the basics of physiotherapy and developed far enough professionally that they would be able to work in certain physiotherapy sectors.

### **Story model 2: "Realizing the connection between physiotherapy theory and practice"**

Typical of the students in the second story model was the realization that linking theory lessons and practical training remarkably advanced their competencies. Six students' narratives were characterized by this story model. Some of the students also experienced life changes, but these did not have a strong impact on their studies. For the students representing story model 2, practical training periods were experienced as clear turning points in their professional development. Especially in the last half-year, students found they had developed toward being ready to take on the professional role of a physiotherapist. Practical training made it possible for students to apply knowledge to practice. They felt that they had developed enough knowledge to search evidence-based data to support their own decisions in physiotherapy planning. The students' professional development also related to writing in documentary and reporting styles. They illustrated

having advanced to being able to reflect on and understand the theoretical basis of physiotherapy, which encouraged them when working with patients. For example, they had learned to reflect on patients' functions, problems, diseases and examination results as well as therapy treatments and progression in physiotherapy.

*It was the practical training periods [...] where, at last, I learned the most (F6, 26 y)*

*I feel more confident and calm now in situations [with patients], due to the courage that comes from knowing the theory. I have the knowledge and I can use it. I can apply it in practice [...]. I have been motivated to study and read [...] to deepen my understanding. [Physiotherapy] requires mastering knowledge. (F5, 22 y)*

Although, in the middle of their studies, the students representing this story model felt they had gained a strong theoretical basis during their physiotherapy education and learned a lot of new things, they also thought that they needed more practical training to apply the theory in practice. Toward the end of their studies, they had more opportunities to make connections between theoretical knowledge and practical experience; consequently, four of these students felt they had enough skills and competence to manage working as a physiotherapist, and they were pleased to graduate. The remaining two students in this story model, however, still felt uncertain about their professional development and said they needed more experience.

### **Story model 3: "Self-regulated and practical-oriented learning path"**

The professional development of graduating students representing the third story model, "Self-regulated and practical-oriented learning path", was characterized by self-regulation, responsibility, practical orientation and good motivation to learn about physiotherapy. Altogether, eight students expressed these characteristics in their interviews. The practical training periods and quitting something formerly important were experienced as clear turning points in these students' professional development.

The students representing this story model stressed that the physiotherapy studies played an important role in their life, and, because of this, they had quit something else that was also important in their life. For example, one student decided to quit her permanent job, and another said that he decided to quit his competitive sport career in the first year to invest more time and energy in studying physiotherapy. A third student had come to the same decision after injuring herself

during sportive training. These decisions increased the students' commitment to the study program.

*The league I was playing in offered new contracts to me and some friends. But I didn't have time to study and so I decided to invest more time in school and learning instead; also because that way, in my future in Finland, I will earn a higher salary than by playing [...]. I would not have graduated now if I had continued playing in the league; perhaps after two more years. It was just clever [...]. I feel it was a good decision. (M32, 24 y)*

A characteristic of this story model was that students found the reason for what and why they were studying in their practical training placement. All of the students in this story model expressed that starting to work with 'real' clients and patients during the practical training periods notably advanced their professional development. These students illustrated having developed an understanding of the whole treatment process and gained a holistic view of physiotherapy during their education. They had many opportunities to examine and test patients to draw conclusions regarding what the reason for a problem was. The students felt they had advanced in their clinical reasoning and that their treatment planning skills, active exercises with patients, and progress assessment of patients' physiotherapy had considerably developed.

All of the students in this story model felt they had gained enough knowledge and competence to reflect on their own actions in physiotherapy and consequently cure and care for patients. The students reported that they had developed their self-reflection and co-reflection skills so far that they could take on the responsibility of working as an independent physiotherapist in training places. That increased their self-confidence and trust as well as their professional competence.

*There was an aggressive and challenging patient with brain injury. It was mentally hard to treat him because he could get angry over small things, such as saying a wrong word. My supervisor said that I don't need to take on this patient, but I wanted to try and see how I manage. He came three times a week during eight weeks. Gradually, I learned what to say and how. Of course, when we got to know each other better he learned to trust me. At the end of the [training] period, I worked alone with him. (F3, 23 y)*

The students felt that the clinical supervisors' support and feedback, particularly the cooperation during the practical training, was the most important part of their professional development. They experienced clinical supervisors as encouraging, and they appreciated their devoting a lot of time to the supervision.

*I was quite surprised at how positive the supervisors' attitudes were and how much they invested in students' guidance. (F12, 23 y)*

At the end of the study program, all of these students were progressing in self-confidence, being ready to work as a competent and independent physiotherapist. They felt that they had developed sufficient knowledge and competence to reflect on their own actions and the patients' treatment and care.

#### **Story model 4: "Becoming a critical developer"**

The professional development of 13 graduating students representing the fourth story model was characterized by becoming a critical developer. There were four turning points and ways in which students described their learning paths toward the critical development approach. First, getting a place in the physiotherapy program was a starting point to students' active, motivated and critical studying, which later on appeared in a critical development orientation. At the beginning of the study program, 11 of the students representing the fourth story model felt that getting a study place in physiotherapy education was a life-changing situation, a turning point in their life.

*After that [getting the study place], my life changed completely. I had found my own thing and my whole life started to build in some kind of way around physical activity and well-being. It had become my way of life. I know that I'm absolutely on the right track. I can hardly wait to graduate. And after that, whatever comes [...] will be quite fantastic. (F4, 27 y)*

Second, 11 students experienced collaborative working with clinical supervisors during their practical training as crucial for their professional development. Similarly, nine students felt that their collaboration with peers at school supported their critical developmental approach to studying. Third, for six students quitting something formerly important made it possible for them to properly focus on their studies with a developmental orientation. Fourth, there were also seven students for whom the international experiences were turning points paving the way toward becoming a critical developer.

Seven of the students in this story model experienced that, at least after the first year, when they started to study manual therapy and therapeutic exercise, for instance, their general fascination and enthusiasm for studying and learning physiotherapy grew even more. Six of the students decided, in the first year of their studies, to quit something formerly important in their life, such as a competitive sport career, in order to invest properly in their physiotherapy education.

All of the students representing story model 4 felt that their own activity and critical way of thinking was important for their professional development. The students described encountering new, interesting situations during their studies and were becoming increasingly more creative both at school and in their training placements, which motivated them to learn and study harder. They expressed that they had advanced in their ways to learn more and more deeply. They felt that their interest in searching and finding evidence-based information had improved their ability to reason and argue in support of their therapeutic decisions and conclusions. The students experienced that studying with student peers had advanced their professional development as well. For example, the students, on their own initiative, formed small self-regulative groups, conducted theoretical searches, and practiced in their own time. After the individual group sessions, all of the small groups met together to share their tasks and summaries. Then, they started to practice the exercises discussed. The students felt that all of this deepened their understanding and developed their skills effectively. The students continued studying with peer colleagues from the first practical proficiency tests until the end of the education program.

*We formed two- and three-person groups and then worked with given practical proficiency test questions. First, we started to recall things from memory and searched the theory for all that: the background information [...]. And then, towards the end, we integrated these with our own stories [...] and put together a kind of complete package [...]. It was really effective. (M18, 24 y)*

Seven of the students expressed that their international experiences brought a turning point in their professional development. They had reflected critically on the differences between countries with respect to physiotherapy practices, and, after experiences in different work communities and cultures abroad, their professional choice to study physiotherapy was confirmed. They became more active, critical and eager to know the basis and theories of physiotherapy.

*After the international exchange, I realized that I really wanted to do this work. The first two years, I hadn't been absolutely sure [...]. Suddenly, at the neurological physiotherapy lesson at school, I noticed that I felt extremely enthusiastic to learn. I asked questions all the time and reflected on why this or that was done. My student peers also noticed the difference [...]. (F31, 23 y)*

Although all of the students representing this story model felt their interest in developing themselves to be intrinsic, they also expressed that they had benefitted from clinical supervisors' reflective and critical instruction style. They said that the clinical supervisors did not simply give

straight answers but rather encouraged students to reflect, co-reflect and search for evidence-based knowledge when preparing for physiotherapy sessions with patients, and that this advanced their understanding of physiotherapy as well as their critical thinking. The students recognized that not every clinical training placement can provide the same opportunities for development. Five students felt that it was coincidental and either good or bad luck as to what kind of placement one gets. Furthermore, the students felt that the clinical supervisors' encouragement of students to make their own clinical decisions, conclusions and arguments involved in problem solving had also advanced their professional development.

*And yes, also, our supervisors' importance was huge. They challenged me, so I had to work and strive to find out how everything should proceed. They would not let me take the easy way out, and worked together for me to become familiarized with the theory. They evaluated and informed me as to what was correctly done and what not. I had to justify my actions as to why I did something. In this way, I developed a great deal. (M18, 24 y)*

All of the students in story model IV felt that they possessed the sensibility and empathy to work with clients, relatives and other professionals, and to take into account their feelings and empathize with them. They described that, in particular, emotionally charged situations with patients in training places or at school had deeply developed their competence. Students had reflected and co-reflected on their feelings and experiences with teachers and clinical supervisors as well as by writing a journal. Further, students' video recordings and analyses of them together with clinical supervisors, other professionals and teachers were experienced as important for the development of their critical thinking and competence.

*There was one young lad who had lots of psychological problems. The physiotherapist told me that he had hallucinations related to his illness and gave me the advice that, if the patient hallucinates during my physiotherapy, I should calm him down and say that everything is fine, there's nothing to worry about. And so it happened; he was hallucinating during the first time with me, and I was a little bit surprised. The supervisor non-verbally indicated for me to carry on my physiotherapy, and so I continued the treatment. The patient spoke all the time and was a little bit frightened, so I calmed him down. During treatment, I decided to change my approach as the prevailing treatment technique worsened things and I think he wasn't focused enough on the exercises. After carefully considering what I should do, I decided to instruct him to try long stretching exercises, and at the end we discussed things. (F33, 24 y)*

Essential to this story model is that, in the last year of the study program, the students felt they had developed

a strong physiotherapist identity and understood the professional boundaries when working in cooperation with experts from other professions. They experienced being active, critical and interested in developing their professional competence and physiotherapy practice. These students were also aware that their professional development would not stop upon graduating. They expressed that they had gained a deeper understanding of physiotherapy and felt eager to continue their own development. They also developed ideas for their future, such as planning and structuring versatile tasks and content for working on their own as a physiotherapist.

### **Story model 5: "Multiprofessional working towards expertise"**

The fifth story model was characterized by target-oriented, motivated and critical studying that resembles the descriptions of the development of expertise as persistent, deliberate practice (Ericsson, 2006). Four students' narratives were characterized by this story model. The practical training periods and getting a job were experienced as clear turning points in the students' professional development. Typical of these stories was also the emphasis of multiprofessional working as an important facilitator of professional development.

Critical, reflective discussions and dialogs with clinical instructors, professionals representing other domains, and teachers supported students' professional development during placements. Furthermore, the students representing story model V experienced, for example, having a suitable attitude and emotional passion for learning to plan new and innovative therapeutic exercises or rehabilitation treatments with other professionals. They felt strongly about their own values, among which studying played a significant role. The students stressed that they had tried to find challenging opportunities to develop themselves at school and in clinical training places with patients and multiprofessional teams composed of physicians, wellness technology engineers, social workers, and psychiatric nurses, for example. They felt that the physiotherapy program was interesting and exciting, and they possessed the ambition to challenge and surpass themselves in a way typical to expertise development (Bereiter and Scardamalia, 1993).

*I go to the clinical placements with the attitude that if I give all I got, I will learn [...]. It is really possible [...]. I believe, for that reason, I have fulfilled my aims better there [...]. (F10, 24 y)*

All of the students in this story model were also aware that every organization has its own traditions and ways

to handle and solve difficult ethical situations. These students showed social responsibility by wanting to make changes and tried to make a difference, or at least bring to attention difficult and unequal situations, regarding certain patients. Various ambiguous practical situations with multiprofessional teams were experienced as challenging, but also as contributing to students' competence development.

*I wanted to learn more and be challenged by other colleagues. It was not easy to actively practice critical reflection on other physiotherapists' work or training, such as in regard to evaluating patients' spasticity [...]. All organizations have their own customs or traditional treatment methods. (F29, 33 y)*

All of the students representing this story model considered ethical and social issues discussed in multiprofessional teams to play an important role in their professional development. For example, they were concerned about the fact that patients do not have equal opportunities to receive physiotherapy in the various training places, due to economic or social reasons such as social status.

*The clients often come to physiotherapy practice to get answers, or they ask me to write a recommendation so that they can get physiotherapy treatments. Then you just try to make a good recommendation for what reason that very client needs physiotherapy. But then, if the test results for ability of function or movement are quite good yet you see that physiotherapy would be important for social reasons, for example, how can you give reasons for physiotherapy for this client? It is just that you need to define certain ethical limits, if the client's condition is okay ..., but it isn't easy. You need to send a recommendation for physiotherapy, doctors also send their own medical certifications to the group [Kela, the Social Insurance Institution of Finland, which makes decisions about funding physiotherapy for clients], and the group makes the decision without seeing the client, just on the basis of documents [the recommendation], and it is possible that they reject the application or reduce the number of physiotherapy appointments. (M26, 26 y)*

The students expressing characteristics of this story model described that, in the final phase of the study program, they had developed a deep understanding of physiotherapy and were able to integrate theory into practice. They reported that they started making bigger strides in their professional development during the last year, at their final training places. They said that they required scientific studies and evidence-based knowledge in order to justify their own clinical decisions or exercise choices to themselves and the multiprofessional team, colleagues and patients. The students described how their multiprofessional competence

developed during projects and clinical training sessions by working with doctors and nurses.

All of the students representing this story model were anxious to start working professionally as a physiotherapist. They said that their ambition was to graduate as a clinical developer also because they had observed an urgent need for developing physiotherapy practices, and they were willing to do it and felt ready to face the challenge. The students expressed that they had learned to be analytical and self-reflective, considering the whole field of physiotherapy, and, further, that they could also utilize their increasing competence in their personal hobbies, such as sports and athletics. These students also showed an understanding of 'lifelong learning'. The students' experiences of surpassing their own expectations of their professional development were apparent in this story model. All of these students expressed that they had invested considerably in marketing their own competence to get a job, and they all gained work in physiotherapy right after graduating.

All of the students representing story model 5 felt that the role of practical training was essential for their professional development. They wanted to gain a lot of experience and develop their competencies in specifically chosen organizations. All of the students in this story model explained that they had planned their own learning paths and chosen their practical training places to achieve their own goals in their professional development. They showed their initiative in choosing their practical training places.

*I chose my training places for that reason, to be sure I would gain experience [...]. I also certainly put effort into it, and I definitely got what I was looking for. (M26, 26 y)*

## Discussion

Our research results cast light on and contribute to a deeper understanding of physiotherapy students' professional development in higher education. In this study, we found that students' different paths of development can be distinguished according to five story models, and that a variety of events both inside and outside school affect students' motivation and studying, acting as turning points in physiotherapy students' education. The five story models differentiating graduating physiotherapy students' professional development were named as follows: 1) Study path dominated by life changes; 2) Realizing the connection between physiotherapy theory and practice; 3) Self-regulated and practical-oriented learning path; 4) Become a critical developer; and 5) Multiprofessional working toward expertise. From

students' stories and the formed story models, six different turning points in students' professional development were identified: 1) getting a study place; 2) coincidental life changes; 3) practical training periods; 4) quitting something formerly important; 5) international exchanges; and 6) getting a job.

The results highlighted the importance of noticing the five different learning narratives, which suggest a need for different kinds of instruction and guidance by teachers and clinical supervisors in physiotherapy education. It is a challenge to apply the curriculum so that the students of the five different representative story models can utilize the teaching in an optimal way to promote their learning in becoming a physiotherapist.

The students' narratives show that the physiotherapy degree program had been successful in supporting students on their different learning paths. Despite certain challenges, all of the students were able to graduate. Here, the role of teachers and clinical supervisors proved to be crucial. For example, students who reported about life changes that at times made studying difficult had experienced support by the teachers, which they deemed important for continuing their studies and ultimately graduating. Similarly, during practical training periods, clinical supervisors had an important role in helping students to turn theory into practice and supporting them during challenging situations where they needed to develop their empathetic understanding. This finding supports recent studies on the impact of clinical placements and the role of clinical supervisors in the development of students' emotional intelligence (Gribble, Ladyshewsky, and Parsons, 2017, 2019).

In addition to the central role of teachers and clinical supervisors, practical training in general, and realizing the connection between theory and practice in particular, appeared along the students' educational pathway as crucial to the development of their professional competence. These findings are in line with studies on expertise that have shown that acquiring and developing skills and competences requires a lot of experiences and repetition (Ericsson, 2006; Parviainen and Aromaa, 2017). Similarly, a longitudinal study on physiotherapy students' development pathways (Lindquist et al., 2006) emphasized practical training as an invaluable learning environment in physiotherapy education. Training periods made it possible for students to work with more and more demanding patients and their relatives or networks with multiple problems, which both challenged and advanced the professional development of the students examined in the present study (Probst and Skjaerven, 2018).

Thus, our findings suggest that practical training and connecting theory to practice are important concepts for

a university to build into teachers' practice. Educators need to develop pedagogical models that encourage students to make connections between theory and practice before, during and after their practical training (Billett, 2015). In the physiotherapy program examined here, the ideas of the model of Integrative Pedagogy (Tynjälä, Heikkinen, and Kallio, 2020; Tynjälä, Virtanen, Klemola, and Rasku-Puttonen, 2016) were applied. The model emphasizes the integration of different forms of professional knowledge, such as, theoretical, practical, self-regulative and sociocultural knowledge, in learning situations. With the help of different pedagogical tools like reflective journal writing and discussions, students are encouraged to make connections between these forms of knowledge. At the core of students' activities are the application of theoretical knowledge into practice and reflection on practical experiences in the light of theories.

The importance of practical training was emphasized in all of the students' story models, except for story model 1. In other words, 31 of 33 students regarded practical training as essential for their professional development. Practical training was particularly meaningful to those students who could choose their four training places themselves (four places, 8–13 credits per training). Practicing their professional skills (Black et al., 2010; Cruz, Moore, and Cross, 2012; Greenfield et al., 2015; Lindquist et al., 2006; Lindquist, Engardt, and Richardson, 2010) and creating explicit connections between theory and practice (Olsen et al., 2015), as well as searching for evidence (Lindquist et al., 2006), advanced students' motivation and professional development.

The findings of this study show that peer learning is important in physiotherapy education. Peer groups and other forms of peer collaboration can be seen as spaces in education where students can prepare for working life and acquire competencies for everyday life (Skaniakos and Piirainen, 2019). For this reason, peer learning, in various forms, should be built into the curriculum and pedagogical methods (Ladyshewsky, 2010, 2017; Sevenhuysen et al., 2017)

The students' stories show that coincidental life changes during their education affected their motivation and concentration. It is clear that the university cannot influence students' personal life situations, but what they can do is to take into account the different life situations in teaching, tutoring and guidance. The students' narratives in our study show that the teachers were able to recognize negative or positive changes in students' learning and to develop real-time, proactive study guidance and support practices. Flexible ways in which students could accomplish their studies in challenging

life situations (e.g. extending study time, taking a break from studies, or enabling connections with university counseling services) were important as well. Previous studies (Ruitenbergh and Towle, 2015; Shields and Taylor, 2014) suggest that students' experiences of how to deal with difficult patient situations could also help the students themselves to deal with their own life changes.

Our study documented different kinds of student experiences that are worth taking into account in student guidance. Some of our findings differ from those of earlier studies (Forst, 2015; Navarro, 2014). For example, quitting something formerly important in life, such as a competitive sport career, in order to properly invest in studying physiotherapy was one of the turning points in our story models. In other related research, top athletes have been found to be even more committed to their studies, development and training, even though their study program takes longer than usual (Forst, 2015; Navarro, 2014). In our study, none of the competitive athletes continued their sport career; they rather stopped because of their studies. The conclusion of these contradictory findings is that it is not possible to present any general recommendations for combining university studies and a sport career; the decision is always individual. What was said above about flexible ways of studying is true for athletes as well as students struggling with challenging life situations.

### **Strengths and limitations: methodological reflection**

The limitations of naturalistic story gathering yield some practical and theoretical concerns (Labov, 1997). While some might see a study sample of 33 participants as small, it is not uncommon for theoretical saturation in a qualitative research project to be achieved already at, for example, 11 interviews (Mason, 2010; Täks, 2015). Nevertheless, conducting follow-up studies examining the same cohort in working life is possible and would provide an even broader picture of students' longitudinal professional development. In the present study, the participants came from only one university of applied sciences, thus further research on students at other universities and in other countries would be of interest.

With respect to the interviews, it is important to keep in mind that they were carried out at the end of the students' education, which means that the students had to recall and remember what occurred during their entire educational experience. This could be influenced through positive halo effects. The interviewer tried to minimize the halo effect by having the students clarify their conceptions of competence and to get them to provide concrete examples of their experiences.

To ensure credibility, we have explained the analytic methods and processes in detail. Concerning transferability, we explained the context of the study in order to provide readers with information that helps them to evaluate the transferability of our findings into other contexts. Furthermore, the question of generalizability is not assumed in qualitative research. However, the results of this narrative study may provide insights into other similar contexts where professional development in physiotherapy is being explored.

Riessman (2008) has pointed out that, in regard to the trustworthiness of narrative research, it is important to answer the question of whether the study results produce context-dependent knowledge and whether the findings have pragmatic value. In the case of this study, the different story models and especially the turning points of the plots have important pedagogical implications for the guidance processes and students' professional development in the field of physiotherapy education and the physiotherapy profession, and possibly for those in other fields of higher education as well.

### **Conclusion**

The identified five story models and six turning points describing graduating physiotherapy students' narratives of their professional development yield further insight into students' experiences during their studies to become a physiotherapist. While the story models depict qualitatively different study paths, the turning points represent the most meaningful and critical episodes during students' physiotherapy education. From the pedagogical point of view, two important and inter-related features appeared: firstly, the importance of connecting theory and practice, and, secondly, the crucial role of teachers and clinical supervisors in supporting students' reflective learning processes. These pedagogical implications, drawn from the students' stories, can be used to plan and develop tutoring and guidance for students' professional development and choosing practical training places. The findings can also be used to develop teachers' and clinical supervisors' pedagogical competences.

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## Declaration of interest

The authors declare no conflict of interest.

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