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A SUSTAINABLE TREATMENT APPROACH FOR PATIENTS WITH MUSCULOSKELETAL DISORDERS:

TOWARDS A TRANSDISCIPLINARY PROFESSIONAL COLLABORATION

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ABSTRACT

Patients suffering from musculoskeletal disorders are treated in the Danish healthcare sector by general practitioners, physiotherapists, chiropractors and other specialists in a mono-sequential approach, meaning that patients are sent back and forth between professionals. Musculoskeletal disorders are very diffuse and complex, yet, the current treatment paradigm practices the biomedical course of treatment, meaning, that patients are treated "mechanically", regardless of other aspects which might initially have triggered, and are still affecting, the pain. The complexity of the disorder, and the practices performed in the treatment of these disorders in the Danish healthcare sector, have the consequence that many patients do not recover sufficiently and regain their quality of life, including aspects such as their jobs, physical and psychological functioning and basic daily living.

Thuswise, in addition to pain and impaired functioning for the affected individual, musculoskeletal disorders have significant consequences in terms of treatment costs and production losses, due to reduced workability and permanent withdrawal from the labor market. Thus, an estimate indicates that an average Dane loses seven good years of life due to pain and function limitation related to musculoskeletal disorders; hence, this has a significant effect on the patient, and society as a whole. The complexity of the disorder additionally implies that, in order to navigate between the professions in the Danish healthcare sector, the patient must act like his own "project manager", often starting with consulting the general practitioner, which occasionally can lead to misdiagnosis, late diagnosis or even malpractice.

In this thesis we have approached the field with the framework of Actor-Network Theory, thus, focused on agency and relations between the actors in the Danish healthcare sector, who are related to the treatment of musculoskeletal disorders. This was inevitable to understand how the professions engage with the patients in the course of treatment, how they perform treatment, and how they are interrelated to other actors in the network configuration.

Recent research has pointed towards the significance of treating the "whole" person, meaning that other aspects such as social and psychological factors, etc., must be included in the course of treatment. Thus, with an understanding of the current configuration of the network, and the new biopsychosocial understanding of pain, it became apparent that four tension points were particularly prevalent when treating patients with musculoskeletal disorder: first, the hierarchy amongst the professionals, which had the effect that they did not communicate sufficiently internally, second, the complexity in diagnosing musculoskeletal disorders, which lead to late or misdiagnosis. Third, the perception of a "cured/treated" patient was different depending on the professionals treating them, and finally, the misrecognition of each other's professional domains meaning some professionals neglected the importance of other professions in the course of treatment.

To accommodate our findings in the descriptive emipircal work and in the analysis, we developed a framework with the aim of implementing formal and informal transdisciplinary collaborations between the professionals to create a patient-centered course of treatment. This framework desires to reconfigure the current paradigm of treating patients with musculoskeletal disorders, towards a more holistic and sustainable approach, respectively.

TO WHOM WE ARE GRATEFUL

This report was written as documentation of the 4th-semester project on the Master programme in Sustainable Design Engineering, class 2016-2018, being the master thesis of Ahmad Al-Jenabi, Mads Andersen, and Sabrina Lyhne Hornstrup.

We would like to use this opportunity, and start out, by thanking the following individuals and organizations for setting aside time and contributing with significant knowledge to this thesis.

We would like to pay the most profound gratitude to Professor Inge Ris Hansen and Professor Jan Hartvigsen from the University of Southern Denmark, who provided us with insights in the research and challenges within musculoskeletal disorders. Further, we would like to send a big thank you to physiotherapist Kristina Lykke, psychologist Marie Hjalmarsson, and general practitioner Jette Willenstrup, who provided us with an understanding of the daily activities and challenges within these respective professions.

Additionally, we would like to send our grateful thoughts to the owner of FYSIQ, Flemming Enoch, for setting aside time to meet with us on different occasions, for providing us with free access to the clinics, and for establishing contact to the employees. In continuation of this, we would like to send our sincere gratitude to the daily leader in FYSIQ Lotte Telvig, for arranging meetings with several physiotherapists, for providing us with access to observe and conduct interviews, and for establishing contact to her patients. These sessions have helped us to understand FYSIQ as an organization and to explore the network, as well as understand and follow the practices performed within the field of research, respectively.

We would also like to thank Mette Kilsgaard, co-founder of KIApro, for setting aside time to talk to us, provide us with knowledgeful information and further, for letting us explore the business concept of KIApro.

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READING GUIDE

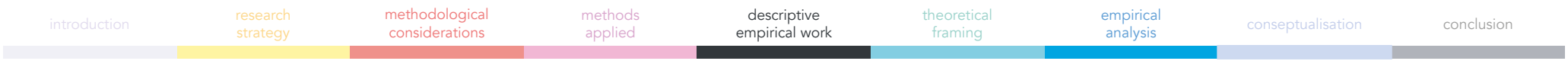

Figure 1: Structure of main report. Own illustration.

The documentation of this master thesis consists of the main report and an appendix report, respectively. The main report is divided into nine main chapters reflecting the process which the thesis has been developed after. These chapters are indicated in the header of each page, and they will each be defined by a particular color, as illustrated in figure 1. The appendix report will consits of worksheets as well as appendices, and these will be refered to the following ways: (worksheet, x) and (appendix, x), where x refers to the specific annex/worksheet number x.

Throughout the thesis, the APA system will be used for references, in which both the author and the respective year of publication will be presented in parentheses (surname, year of publication). In case of two references with the same surname, they will be referred to as (surname, year of publication, a) and (surname, year of publication, b). In case more references are needed, they will be referred to as (surname, year of publication; surname, year of publication) The full overview of all the references used for this thesis can be found in the last chapter, under the references section where they are divided into literature, websites, interviews, and pictures, respectively.

When referring to transcriptions of meetings in the form of statements, slight adjustments have been made to make the quotes less gnarled. During interviews, there will often be speech impediments, which contributes to long sentences or repetition of phrases. Therefore, to create a more coherent overall impression, these have been adapted to fit with the actor's original statement. Furthermore, sometimes quotes from meetings are taking from a specific context, which has the consequence that the quote in itself does not necessarily provide all information needed to understand the meaning it is related to. In such situation, we have chosen to indicate essential information in quotes with []. For instance, *"this [thesis] is written by students from Aalborg University Copenhagen"*. Also, all quotes used in the report will be showed in *italic* and highlighted with orange.

To see an overview of the different meetings conducted during the research study we refer to (worksheet, 1).

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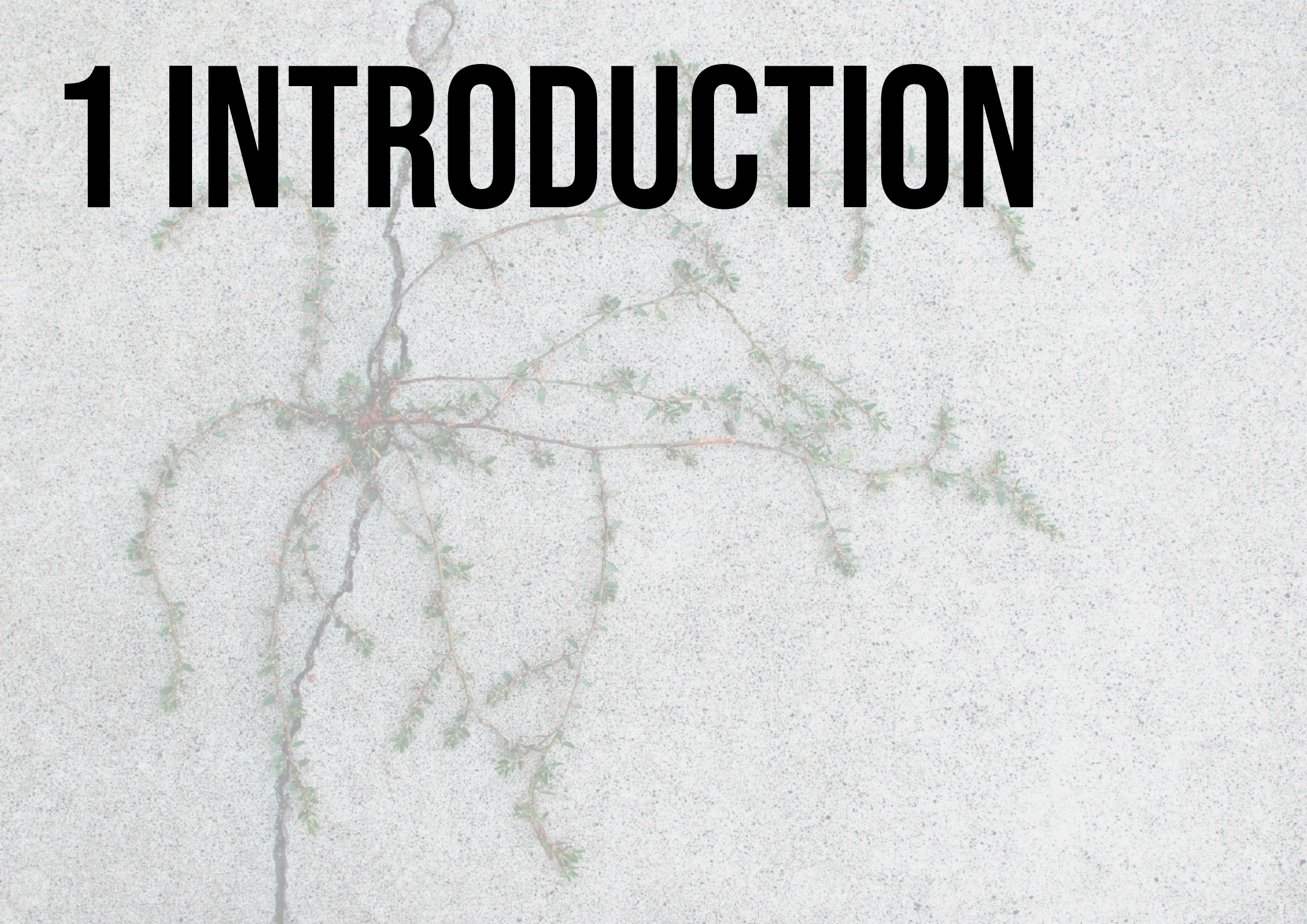
1 INTRODUCTION



Many people have experienced severe pain in the neck, and most, who have not already, will experience it at some point in their lives (Haldeman et al., 2008).

In a report published in 2015 by the Danish Health Authority, the Danish National Institute of Public Health conducted a research study, "Disease Burden in Denmark", which investigates the consequences of 21 different disease groups. It is highlighted that 10 percent of all men (203.200) and 17 percent of all women (369.578), in the Danish population, have experienced severe pain or general discomfort in shoulder and neck from 2010-2012 (Flachs et al., 2015). The research of the diseases was based on various parameters such as prevalence, mortality, treatment, absence due to sickness, early retirement, health economics and losses in production (Flachs et al., 2015). In this report, the number of incidents of neck pain was defined by the amount of the population, who expressed that they had been affected by pain or discomfort in the neck area within the last 14 days. It is highly essential to take into account, that the results of this research are significantly influenced by the fact that actors have only been asked to relate to neck pain within the last 14 days. Additionally, the report indicates that if people, who have been slightly less affected by neck pain, were included as well, the prevalence would be quadrupled. Hence, reviewing the prevalence in regards to this factor, the incidence of neck pain would range from 15 percent to 41 percent within the past month. Neck pain is among other disorders, part of the generic group of musculoskeletal, and globally, functional impairment due to musculoskeletal disorders has increased by 40 percent since 1990. Based on statistical projections of disease development until 2020 in Denmark, it is expected that there will be a significant increase in the number of outpatient healthcare contacts, related to musculoskeletal and joint disorders (Roos et al., 2015).

Further, in a survey examining the disease burden in Denmark, The National Institute of Public Health found that lower back pain, neck pain, and osteoarthritis are among the most frequent disorders in Denmark. Each of the three disorders is affecting between 600,000 and 900,000 people (National Institute of Public Health, 2015). Further, these disorders are also among the four disorders that lead to the most additional sick days for the working population, as well as early retirement, which thuswise also has a significant consequence of production loss.

Consequently, injuries and sick leave, due to musculoskeletal disorders, are the reason for approximately 25 percent of all long-term sick leave over eight weeks. 39 percent of individuals on the long-term sick leave are dismissed within ten months after the first sick leave (Roos et al., 2015). Annually, around 3500 Danes indicate that they leave the labor market due to musculoskeletal disorders; meanwhile, 24 percent of all new occurrences of health-related early retirement is due to these types of injuries (Ibid.).

Each year, neck pain costs 917 million DKK in treatment (Statens Institut for Folkesundhed, 2015). The primary costs associated with the treatment of neck pain are the cost of the primary sector (visit to a general practitioner, physiotherapist, and chiropractor), which accounts for 69 percent of the total cost. (Ibid). In addition, every year, neck pain costs 2027,5 billion DKK in total, due to loss of production. The production loss due to sick leave accounts for 1,2 billion DKK, while the costs related to an early retirement accounts for 815,8 million DKK (Ibid.).As indicated in figure 2, neck pain is ranked as the third most prevalent disease when it comes to visiting general practitioners, chiropractors and/or physiotherapists.

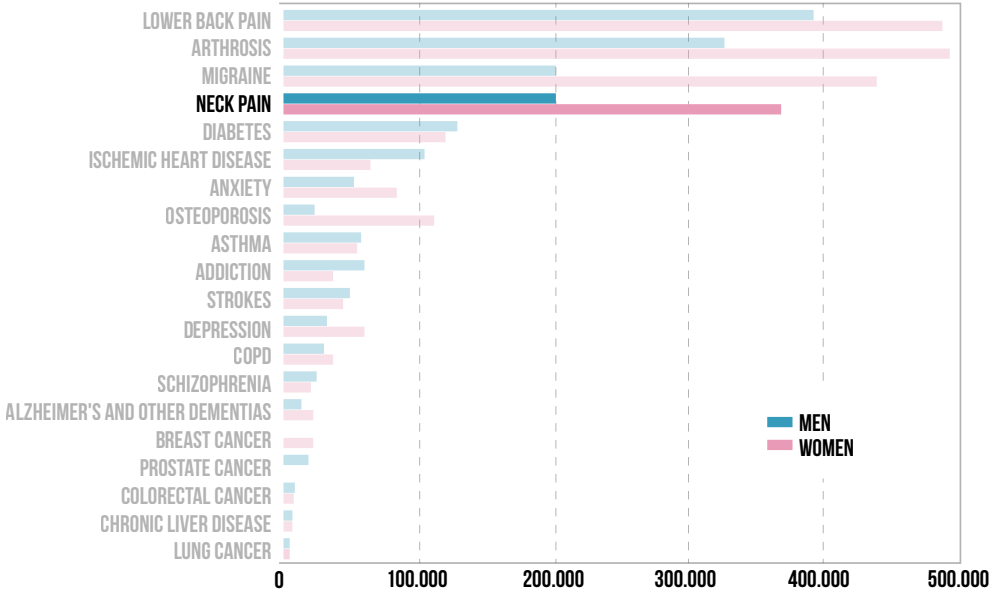


Figure 2: Visits at general practitioners, chiropractors or physiotherapists in Denmark due to chosen diseases amongst men (blue) and women (purple). Annually average, timespan 2010-2012. Own illustration with inspiration from (Flachs et al., 2015).

A more recent study has shown that people with self-reported neck pain are at an increased risk over a timespan of 20 years for consultation with general practitioners, chiropractors or physiotherapists, and for hospitalization and outpatient visit, compared to people with no neck pain (Hartvigsen et al., 2014). The many medical visits impact the health economy of Denmark, as neck pain is the disease that contributes to the second largest costs for medical appointments, only overcome by lumbar pain. Furthermore, a study from The Netherlands has shown that the primary costs of neck pain are related with the treatment in the primary sector, which includes visits to general practitioners, physiotherapists, and chiropractors which account for 69 percent of the total costs, while the costs of prescription medicine account for 20 percent of all costs.
The above-mentioned paragraphs describe statistics and facts mainly related to neck pain. Neck pain, amongst other muscle and skeleton disorders, are part of the more generic definition of musculoskeletal pain. According to WHO's disease classification, the definition of musculoskeletal disorders is disease states where the bone, connective tissue, tendons, and muscles are primarily damaged (Statens Institut for Folkesundhed, 2007). Among neck pain, typical examples of musculoskeletal disorders are back pain, osteoarthritis, osteoporosis (bone loss), whiplash, and rheumatoid arthritis (Statens Institut for Folkesundhed, 2007).

Tensions and myalgia in the neck is typically built over a more extended period due to inappropriate, monotonous and repetitive standard postures and movements, incorrect sleeping positions, stress, cold, sudden injury or over effort, for example when exercising or the effects of whipping, concussion or osteoarthritis (Hogg-Johnson et al., 2009). A significant number of neck pain subjects are also caused by physical and psychosocial factors, such as work- and economy-related factors, stress, sleep patterns, beliefs, perceptions, and fear-avoidance behavior, as well as social surroundings (Kirkegaard, 2015b; Telvig, 2018; Hansen, 2018). Hence, neck pain often occurs as either a side effect of, or in interrelation with other complications (Cote et al., 2009; Andersen et al., 2003). Neck pain can be relatively hard to deal with, as it in many cases might seem to limit one's performance, as the possibilities of movement and positioning your body in specific ways will decrease as it is simply too painful (Manchikanti et al., 2009; Fejer et al., 2006).

Consequently, for the individual it is not only the physical functioning which has an impact on the experienced pain, the psychological factors play a significant role as well (Hjalmarsson, 2018). As a result of pain and impairment in muscles and joints, an average Dane loses seven good years of life (Manniche et al., 2007; Holmberg et al., 2015).

Much literature points towards that musculoskeletal disorders can both be episodic and long-term, and often relapses will be an actuality. This also has the consequence that neck pain, especially of the long-term variety, can seem impossible to be free of for the individual, which essentially can have consequences both physically and psychologically for the patients in the treatment process (Hansen, 2018). Jens Søndergaard, professor, general practitioner, and head of the Research Unit of General Practice at the University of Southern Denmark, also point towards another aspect which can be troublesome to cope in the treatment process, being the mediation of communication between the professionals and the patient:
"The health service is populated by academics. They often speak a complicated language. Everyone wants the messages to be mediated, but we lack the tools" (Beck, 2016). He continues by stating: *"Firstly, it is a shame for the patients, but it is also a waste of societal resources, that the patients are not treated properly. We are definitely losing someone by not being able to reach them in the right way"* (Beck, 2016).

Notwithstanding these significant societal and individual challenges, there is remarkably limited attention on the subject (Hartvigsen, 2018; Hansen, 2018). While there is good evidence that ergonomic risk factors are associated with musculoskeletal diseases, it is more challenging to present studies showing evidence for preventive interventions exclusively based on ergonomic improvements (Roos et al., 2015). However, there is good evidence from Danish studies of physical training at the workplace as treatment and prevention of pain in the lower back, neck, and shoulders. The best effect is found to be high-intensity training adjusted to the work groups exposure and the individual's health profile. Thus, with an established organization and infrastructure, a workplace can play a significant role in the problem of musculoskeletal diseases (Roos et al., 2015).

According to the guidance on preventing work-related muscular and skeletal problems issued by the Danish Working Environment Authority's, the employer must ensure that the workplace is designed, and the work is planned and organized so that overload of the back, neck, shoulders, arms, hands, hips and legs is avoided (Arbejdstilsynet, 2005).

As part of the prevention of musculoskeletal disorders, the Danish Working Environment Authority further suggests that it may also be beneficial to provide space for physical activity that can reduce the pain and strengthen the individual's ability to work. Also, it is significant to prevent those who become injured to on sick leave for a long time with a risk of not coming back to work. Hence, it might be useful to start a dialogue and keep in touch with the affected employee and set a schedule for when he or she can return, and what tasks they could slowly start working on (Videncenter for Arbejdsmiljø, 2016).

Professor Inge Ris Hansen, PhD at the University of Southern Denmark, Department of Sport and Biomechanics and practicing physiotherapist, expressed the importance of being in good health:
"If we consider the musculoskeletal, then it will of course make sense to be in good health, and ensure that you have varied workout and working position, it is preventive" (Hansen, 2018).

In addition, she also explains that there are no specific exercises that make it possible to prevent neck pain, yet, she supports the recommendations of the National Board of Health and stated the following:
"There are the general recommendations from the Health Board with exercise 30 minutes a day and twice a week with high intensity training" (Hansen, 2018).

Similarly, professor Jan Hartvigsen, Head of Research Unit, Chiropractor PhD, and one of the world's leading researchers in muscle and skeletal pain, expressed the importance of being in good health:
"You cannot prevent neck pain from occurring in society. It is a part of life to have neck pain. I am sure that we all have experienced it. Yet, you are not disabled for that reason. So, it is more common sense; to keep some breaks (at work), go out and exercise etc." (Hartvigsen, 2018).
Hartvigsen also expressed the significance of avoiding that employees with musculoskeletal disorders are absent on sick leave for a long period of time, since this can have a significant consequence for their self-understanding and have a negative impact on the psychosocial aspects:
"... but I think it is equally important that, for people who have neck pain, to prevent it before it has major consequences for them. It relates to ensuring that they remain active and at work … So we must prevent them from becoming sick as this is also a form of prevention. We also see that those who are absent from work, due to sick leave, they do not have less neck pain despite the fact that they are on a sick leave" (Hartvigsen, 2018).

Both experts, however, pointed out the problem that musculoskeletal disorders, including neck pain, in particular, are neglected in the social debate. This leads to the fact that economic resources are not invested in addressing these problems, and in many cases, patients experience that they are being belittled by their near environment, including family, colleagues, employer, job consultants, etc.:
"It is the family, neighbors, it is colleagues, the employer, doctors. Job consultants, if they are looking for a flex job. It is throughout the entire system. Those are the ones they meet. But they also meet those who say, 'Wow, we need to support these issues'" (Hansen, 2018).

Professor Inge Ris Hansen continued by stating:
"... in regards to whiplash, a few years ago, there was also a debate about this and people said, 'Well, these are just some hysterical crones who need to pull themselves together'" (Hansen, 2018).

Hansen and Hartvigsen both underlined that even though neck pain is on the top three list of most costly societal disorders, there are other disorders which attract more societal attention.
In this context, Hansen presented the following statement:
"It is way more sexy to have cancer and have cardiovascular problems. This topic [neck pain] is at the bottom of how nice it is to be affected by, and how there is no recognition about it. It is one of the aspects we find present very much in patients, because they are feeling really bad" (Hansen, 2018).

The epidemiology of neck pain is essential for several reasons. More knowledge about the size and extent of this problem would facilitate accurate predictions of the need for more coordination in the medical services and proper use of resources. As it has now been emphasized, by leading and world-renowned experts in the field of musculoskeletal disorders, it is not possible to prevent neck pain in different ways than what is already seen. Therefore, in this thesis, we choose to focus exclusively on the treatment paradigm in view of the significant negative impact it has on society, in terms of lost labor, the payment of social benefits, large amounts of resources used in the health sector, and last but not least the quality of life for the individuals suffering from this.

Before unfolding treatment of musculoskeletal disorders further, it is a necessity to define the paradigm which constructs the Danish healthcare system, which highly influences the structures that are defining treatment in practice. The illustration below presents the current configuration and hierarchy of the Danish healthcare system, with the responsibilities and the relations among the different actors.

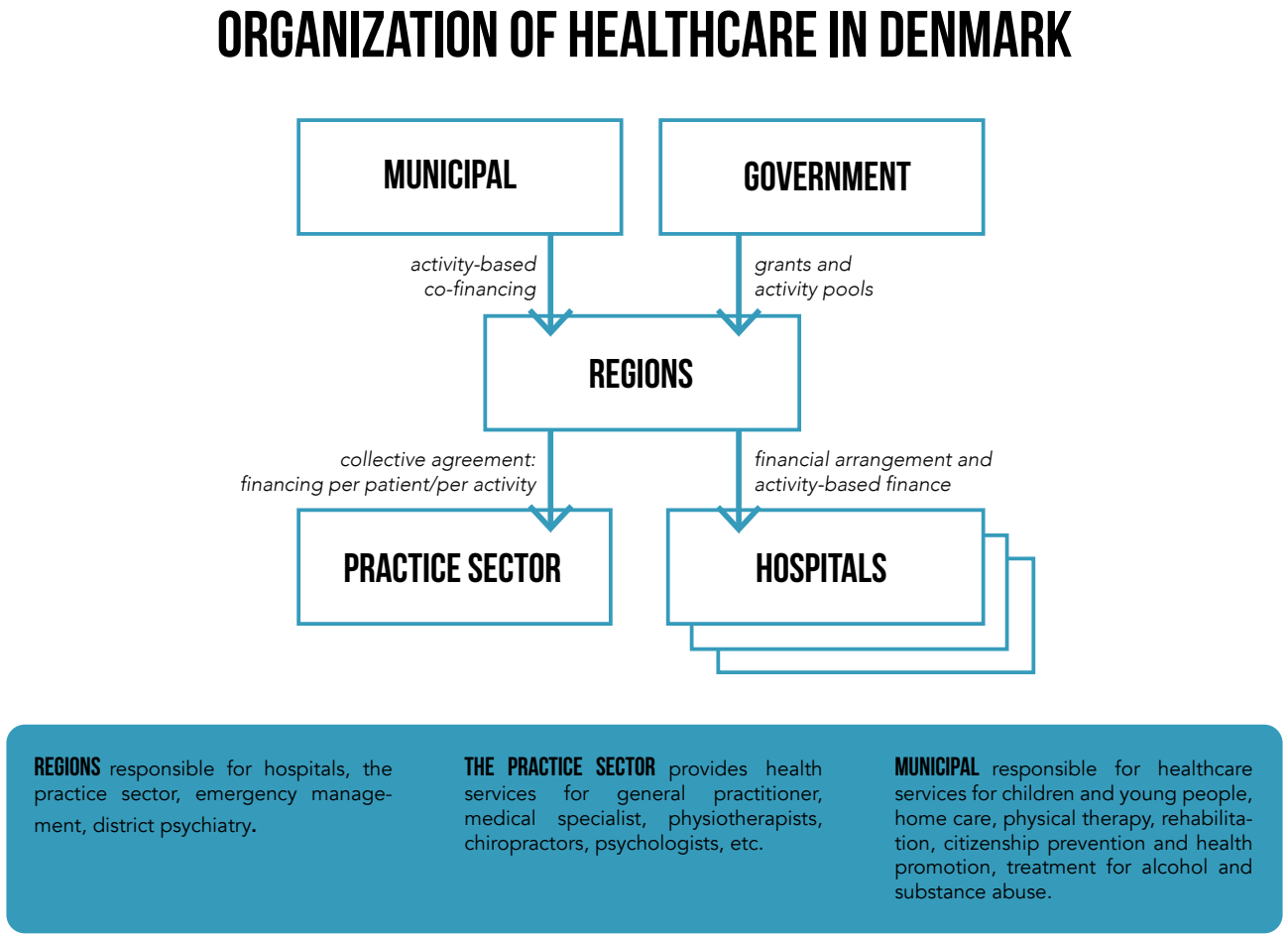


Figure 3: Organization of healthcare in Denmark. Own illustration with inspiration from (Det Digitale Råd, 2015).

In the 1980s and 90s, Denmark had a supply-oriented healthcare system, Generation I (frame management), where it was an acceptable premise for the counties to apply waiting lists to comply with the officially agreed framework for healthcare costs. Today, the healthcare system operates based on the framework of Generation II, which is oriented towards more demand-sensitive healthcare, more activity, free choice and short waiting times. In line with the introduction of free choice, extended freedom of choice and treatment guarantee, the management methods have evolved, and have resulted in a more demand-sensitive system, than previously. Today, patients have become "consumers" in the healthcare system requiring easier access, more treatment opportunities, and involvement to useful information so that conscious choices can be made. The management tool of Generation II, such as activity pools, productivity measurements and treatment guarantees in each way support a greater production of healthcare, but they do not support coherence (Danske Regioner, 2007).

These management tools have optimized production at the individual departments and the individual hospitals - i.e., sub optimizations instead of overall optimization of the course of treatment for patients' throughout the healthcare system. These approaches are also found in the practice sector, where the incentives for a number of years have supported the production of multiple benefits to the patient, as part of the payment to the general practitioners is done according to the services they provide in the patient treatment (Ibid).

A very large group of these inquiries do, however, not provide a sufficiently precise diagnosis and treatment, instead; the majority of patients are passed on in the treatment system and may find themselves tossed between treatment offers (Guldager, 2009). Here, it is also essential to state, that it may be difficult for the general practitioners to quantify the degree of the experienced pain for the patient, and evaluate the progressive pain condition, and further, identify whether or not the patient is at risk of developing a chronic and more generalized pain condition (Ibid.). When general practitioners are unable to discover any objective finding, they diagnose patients based on symptoms and criteria set by the healthcare system, thus a standardized process.

This is also the case with generalized chronic disorders, such as those associated with the musculoskeletal system. Unfortunately, this generates, often that you end up with a very heterogeneous group of patients with a wide variety of treatment needs. At present, there is no strategy for addressing these issues, at least not in the public sector. The existing initiatives are all in the private sector, which is typically associated with a significant individual payment (Ibid.).

According to Morten Sodemann, senior physician at Odense University Hospital, and Professor of Infectious Diseases at the University of Southern Denmark; as doctors become more and more specialized, it results in creating some artificially vulnerable patients because the healthcare system in Denmark is not geared to patients having more symptoms, more diseases, or maybe they have an unfamiliar condition (Cuculiza, 2018). Simultaneously, Morten Sodemann wonders why there are no guidelines for how general practitioners should cope with patients who are particularly vulnerable and have more symptoms or disorders (Cuculiza, 2018). Morten Sodemann elaborates by stating:

"We have 245.000 guidelines in Denmark. However, there is not a single guideline for what I should do with a patient, who has a problem which cannot be solved in ten minutes, even though this represents 10 percent of patients. 10 percent for whom we have no plan B. The vulnerable becomes more and more vulnerable, and those who were not already susceptible in the beginning, are going to be due to the way we organize ourselves" (Cuculiza, 2018).

As it is highlighted by Morten Sodemann, most general practitioners thus learn to choose the "easy solution" and pass on the patient in the system. Unfortunately, general practitioners have become increasingly aware that this is acceptable, as it has become very easy for most professional to define that *"this or that is not within my discipline"* (Cuculiza, 2018). The consequence is that most patients are seen as a *"middle-class standard patients"*, where there are tables of diagnosis and differential diagnosis which needs to be identified. A way of seeing patients which, according to Morten Sodemann, can lead to the fact that the diagnosis and subsequent treatment is not tailored to fit the individual patient.

The patient may not be able to afford the treatment, do not understand the treatment or the underlying reason for it, and therefore, drop in and out of the treatment process. These conditions lead to the inequality of healthcare, as we see today (Cuculiza, 2018).

Physiotherapist and pain therapist Simon Kirkegaard points towards another dimension regarding the understanding of diagnosis and treatment processes, being, that even though we in literature have acknowledged that pain and disorders are much more than a simple equation, where the consequences are visible, and the intensity of the pain is reflected by the severeness of the injury, we still lack to adjust to this in practice (Kirkegaard, 2015a).

"This new understanding raises questions regarding treatment, which either addresses only biological factors, withoutv considering an interdisciplinary collaboration, or divides pain experiences into either being biological or psychosocial. According to modern pain science, one can never make this division of pain" (Kirkegaard, 2015a).

1.1 RESEARCH QUESTION

Given the fact, that there is no preventive process which can minimize these disorders, it then becomes essential to consider the treatment process of musculoskeletal disorders. Currently, the paradigm which constitutes the treatment of musculoskeletal disorders has resulted in a treatment process where more implications are present. Most importantly, the system is advocating for a linear treatment procedure, which focuses on the "standard" patient and hence, the treatment which is provided within the professional field, is structured accordingly. This has the consequence that patients with musculoskeletal disorders are not provided with an adequate diagnose which results in further complications and lengthy treatment processes, and for this reason, it also impacts the quality of their everyday life. As presented previously, the current configuration has a significant impact on the socioeconomic resources used for treatment within the Danish healthcare sector, as the number of patients with musculoskeletal disorders is yet significantly increasing, and account for 25 percent of all consultations to general practitioners. Furthermore, as presented, musculoskeletal disorders also have a vast impact on the economy in terms of lost production costs due to absence from work, and early retirement. Thuswise, since there is no coherent approach planned to address these issues and provide an adequate course of treatment for patients with musculoskeletal disorders, we have come to the following research question:

HOW CAN WE CONCEPTUALIZE A MORE HOLISTIC APPROACH, AMONGST THE ACTORS, WHOM ARE RELATED TO THE NETWORK OF PATIENTS WITH MUSCULOSKELETAL DISORDERS, IN AN EFFORT TO MAKE THE TREATMENT PROCESS MORE SOCIALLY AND ECONOMICALLY SUSTAINABLE?

2 RESEARCH STRATEGY

The objective of this chapter is to provide the reader with an explanation of how we aim to perform the study in order to answer the research question. Naturally, the point of departure of this research strategy is the research question, and to answer this, a number of sub-questions and underlying postulations have been selected to be examined and answered as well. These are illustrated in figure 4.

The objective is to understand the underlying aspects of musculoskeletal disorders and identify whether or not, the configuration of the current regime within rehabilitation, is composed in a way that accommodates the significant and still increasing number of patients with these disorders, and which benefits society in the long run.

To fully understating the etiology of musculoskeletal disorders, more specifically those associated with neck pain as this was the starting point of the project, the thesis will firstly investigate and shed light on the biomechanical and physiological aspects to understand what and why different pathophysiological processes can be triggered, respectively.

Recent research has discovered and demonstrated that the smallest functional units of the muscle, the motor units, can be activated by physical as well as mental stress. Psychological and psychosocial factors on and off the job, muscle pain, and illness behavior might consequently form a vicious circle with increasing sensitization and pain symptoms. Eventually, the individual will become chronically ill.

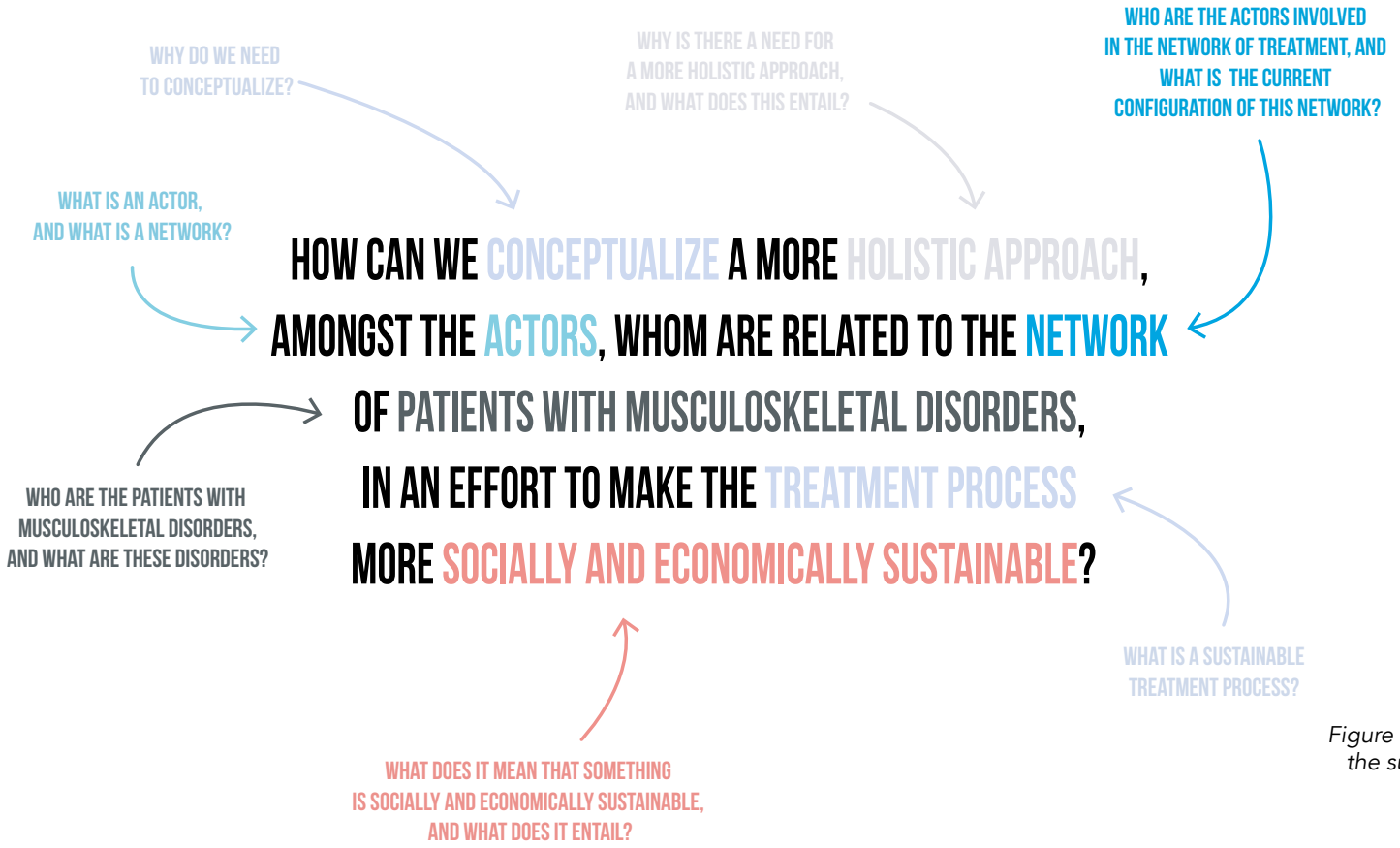


Figure 4: The research question and the subquestion emerging from it. Own illustration.

An imperative feature of psychological stress, which could be pertinent to its role in the etiology of neck pain, is that might be more lasting or chronic than the physical aspects. Stressful conditions such as low job satisfaction, low status, fear of losing one's job, family conditions, and more psychological elements, all influence the individual more or less continuously, whereas the physical conditions, for some individuals, might vary. Henceforth, these aspects will also be investigated and elucidated in this thesis through scientific research, and most importantly, through interviews with key researchers within this field.

The health sector in Denmark is not an organically coherent, limited entity, but a broadly branched network constituting of different organizational forms, stakeholders, and functions, which can be extremely difficult to review and describe. The various health care professionals do not have the same power position. While the general practitioners, due to professional autonomy and high placement in the hierarchy, have a significant impact on health policy decisions, other professional groups have less professional and employment autonomy, and thus, less power in the healthcare sector. Such a complex and branched organizational structure means that decision-making processes become opaque and the basis for decisions is rarely made explicit, which might have an impact in the diagnosis and treatment structure. Subsequently, the next stage of the thesis will present an overview of the different entities which have, or might have, an impact of both the diagnosis process as well as the treatment process of patients with musculoskeletal disorders, namely, neck pain. Here, it is first essential to discover the current actors within this configuration and dive into their practices to form an insight into the treatment paradigm of musculoskeletal disorders in Denmark, and how the current network is composed.

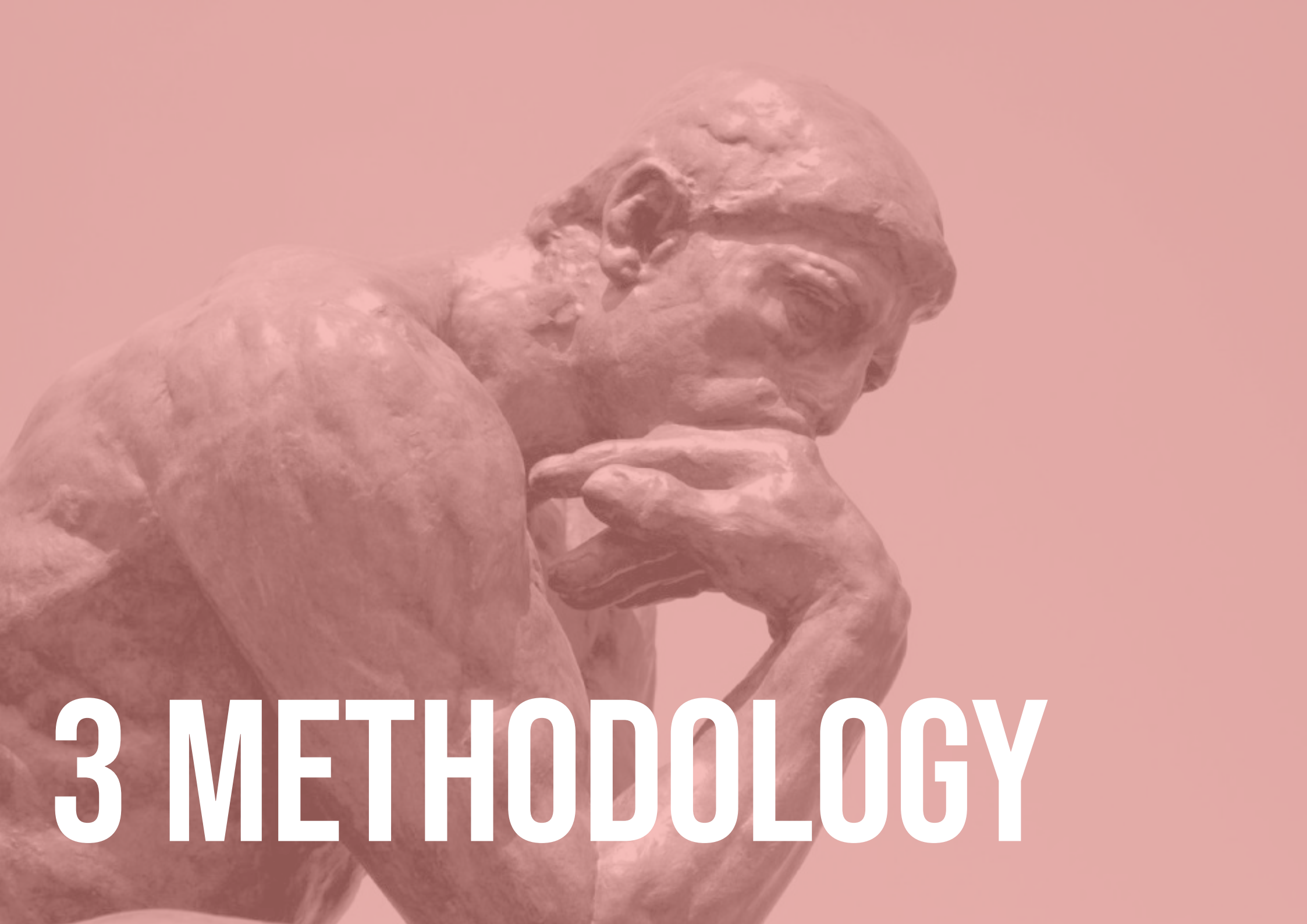
The following stage of the thesis will present a relatively new understanding of pain that challenges the current approaches and configurations in the healthcare sector. This new paradigm has arisen with the aim of having the patients in focus and create the best possible framework from diagnosis to treatment. Here, all elements, that may affect the treatment process are investigated and addressed.

Henceforth, there are a significant number of elements which needs to be investigated to understand how such a new paradigm could emerge, mainly in the private sector. What are the advantages and challenges of such a configuration, and is this more socially and economically sustainable than the current configuration in the public sector? What does it mean that something is socially and economically sustainable, and what does it entail? Which actors are involved, and how is the hierarchy amongst these? What is a patient, how is the patient considered and what differentiation is there between the current and the new paradigm? To address these elements and illuminate them in the thesis, a series of field studies in two private treatment clinics, FYSIQ and KIApro, including observations and interviews have been conducted. The new paradigm will be presented through two case studies which will highlight the above-mentioned questions.

The analytical discussions in the thesis will present the current network establishment and point towards existing tensions which prevent transdisciplinary collaboration and knowledge sharing between the relevant actors. This will be followed by a presentation of the "ideal" paradigm which speaks for cross-disciplinary collaboration to point towards the potential and advantages of such an approach as well as the cooperative challenges such paradigm might meet, respectively. Here, the new paradigm will also be presented in context to the existing network configuration. For that purpose, the concept of Actor-Network Theory was chosen to analyze, and discuss, the field with focus on essential concepts such as translations, agency, and interessement devices and how these would help enroll actors and mobilize the necessary commitment and create a more dynamic and coherent approach in the healthcare sector to patients with musculoskeletal disorders. This also is in alignment in context with the wishes of the Danish Regions, and the ambition that the agreements in the field of practice support the focus on quality development and assurance in the individual practice area and at each individual level, to thereby ensuring that patients receive high-quality treatment, regardless of their illness (Regioner, 2018).

Subsequently, this will be followed by presenting a conceptualization, being the answer to our research question. To define a conceptualization which works within a societal context, we must consider the subject of interpretive flexibility.

Hence, the concept must be defined at a level where it is detailed enough for the relevant actors to be able to understand and implement it in their own contexts, while still making it flexible enough, so it fits more than one context. Furthermore, it is paramount to state, that in all this we want to embrace an alternative approach, than much of the literature we have reviewed, as we are more concerned with the individual: how do we consider social sustainability from the patient's point of view, thuswise, advocating for the quality of life of the individual, while at the same time striving for economic sustainability on a societal scale?



3 METHODOLOGY

A review of philosophical considerations is a vital aspect of the research process, since it opens our minds to further possibilities, that can lead to an enrichment of our research skills as well an enhancement in our self-assurance that we are using the appropriate methodology. As suggested by Remenyi et al. (1998), central to the questions of "How to research?" and "What to research?" is the perspective on "Why research?" (Holden et al., 2004). This perspective is established upon the researcher's assumptions regarding the inter-related concepts of ontology (reality), epistemology (knowledge), human nature (pre-determined or not), and finally, methodology. The science of research necessitates that philosophy is considered as a fundamental parameter to "why research", this is, because if we, as researchers, do not perceive that there is a reality, the utilization of a nomothetic or idiographic methodological approach, opposes the research project's philosophical underpinning. This form of inconsistency is fallacious to research standards, thus undermining the very nature of the research discipline (Holden et al., 2004).

Whatever sociological persuasion, a researcher will find that these assumptions are consequential to each other, that is, the view of ontology effects the epistemological persuasion which, in turn, effects the view of human nature. Consequently, choice of methodology logically follows the assumptions already made. Here, it is essential to state that we as researchers are aware of the fact that our philosophical assumptions have had a significant impact on what we chose to research in this thesis given our academic interests. In the following, we will cast a ray of light on some of the philosophical discussion we have found to be most important for the reader to understand the approach we have entered the field of research with.

3.1 SOCIO-POLITICAL POINT OF DEPARTURE

Considering the form of study is crucial as it influences how the research is performed and executed. This thesis is classified as an empirical study, as we set out an explorative journey aiming to enhance and comprehend the field of study, which also means that the theoretical framework of the thesis, and also how the methodological elements are managed, play a significant role in relation to the outcome. This particular approach to research features the following elements; a research questions which is to be answered, a defined target behavior, population or phenomena and finally, a process which is described in such a detailed level that anyone reading it should be able to perform the study as well (Cohen, 1995).

In simplicity, empirical studies refer to experiments, meaning, that the researcher collect and measure certain phenomena and from this, knowledge is derived from actual observations and experiences in the field, which have been conducted firsthand by the researcher. Easterby-Smith et al. (1991) argue, that the way these experiences are perceived and defined at least depend on three different elements. These elements are; the matter of theme or subject under study, the researcher self and the context the researcher is part of, and finally, the various actors who are part of the study.

The first element is relevant, as it tends to guide and direct the choices that are made on the subjects of methodology, theory, and methods utilized during the research. It can be affected by societal, cultural or scientific evolvements of patterns and structures, for instance, Scandinavian researchers tend to be influenced towards the use of qualitative methods, in particular (Alvesson and Deetz, 2000). The second element, considered by Easterby-Smith et al., points towards that the social class and the paradigmatic competences of the researcher, meaning, how the research problem is perceived and defined and further, how it is studied, can and will often be affected by other actors.

The last element stresses that the way the researcher relates and interacts with the actors in the field of research, as well as the different possibilities and limitations during the research can often be influenced by what actors that are involved and furthermore, how these are studied. It is a necessity to be aware of these three elements as it will affect the collecting and perception of the primary data, hence, the overall outcome of this study. Consequently, this study is based on both primary data (gathered with the methods utilized in the thesis), as well as secondary data (empirical data collected by other researchers).

Taking departure in this framework, it can be determined that we as researchers are under the influence of certain conditions, such as our educational background, as we are of the belief that reality is influenced by social relationships and perceptions. Naturally, this has influenced the way we have conducted this thesis primarily due to prior theoretical inspiration, that is, Actor-Network Theory (ANT). Further, we are also influenced by our supervisor who is also of certain beliefs and convictions, and this must be considered, as the advice we take on from the supervision must be in compliance with our own social beliefs. Moreover, the various meetings with relevant actors have also had an influence on the thesis, as these professionals are mainly driven by evidence-based research, which is profoundly different from our own standpoint, as we are more radical humanists.

3.2 SOCIOLOGICAL PARADIGMS

All studies are conducted within a particular social reality, and before being able to understand the complexity of a given reality, it is essential to cast a ray of light on the topic seen from a philosophical perspective (Burrel and Morgan, 1979). It is a necessity to accumulate what social realities the field of research is constructed around as this profoundly influences both the collection of empirical data as well as the possible future implementation of a solution. People are thinking differently, and it is essential to find a way to communicate, act, and create dialogues across these boundaries. For this reason, this section will elaborate on different sociological paradigms, based upon the framework developed by Burrell and Morgan (1979), as well as clarifying our social philosophical belonging.

In their book "Sociological Paradigms and Organisational Analysis" Burrell & Morgan present one of their main acceptances to be that:
"All theories of organisations are based upon a philosophy of science and a theory of society" (Burrell and Morgan, 1997)

Concerning this, the authors state that even though organization theorists are not always utterly explicit about their underlying assumptions, which define their beliefs, at least they all take a stand on each of these topics. Concerning this thesis it matters as, whether or not the different parties are aware, they all bring a different frame of reference which defines how they approach and perceive the nature of the social world (Ibid.).
From this, the authors conceptualize social science in four sets of assumptions which relate to ontology (nominalism vs. realism), epistemology (voluntarism vs. determinism), human nature (interpretivism vs. positivism) and methodology (idiographic vs. nomothetic). In continuation of this, it is defined that ontological and epistemological instructions and assumptions of human nature are prioritized over methodological discrepancies.

Based on these four subjects the authors define a framework which consists of two dominant dimensions, being social theories emphasizing regulation and stability vs. those which emphasize radical change, and individualistic (subjective) theories vs. structural (objective) theories (Ibid.). The authors coalesce these dimensions into a matrix where each quadrant presents a sociological paradigm from which the social scientist can adopt a specific research approach, to generate various concepts and different analytical tools.

It is crucial to stress that all four paradigms are mutually exclusive and that one can not exist within another, instead, they should be perceived and understood as alternatives. Burrell & Morgan defines the four paradigms in the quadrants as the "functionalist," "interpretive," "radical structuralist" and "radical humanist" (Ibid.). The illustration below visualizes the four different sociological paradigms, as well as a description of each.

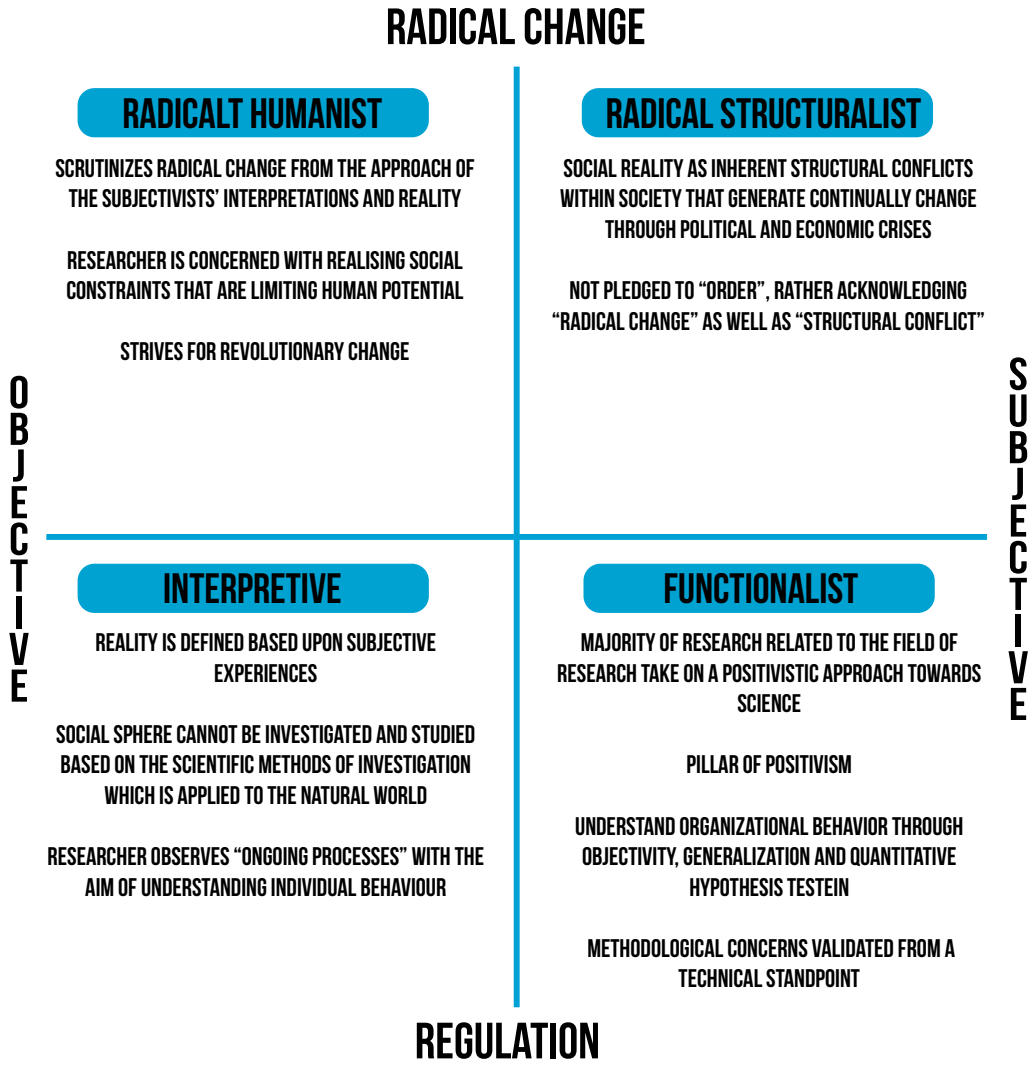


Figure 5: Four sociological paradigms. Own illustration with inspiration from (Burrell and Morgan, 1979).

3.2.1 OUR POSITION AS RESEARCHERS

Taking on the framework of Burrell and Morgan, and their subjective-objective dimension, we perceive both ends as extremes; hence, our interpretation of society will always be somewhere in between. Nonetheless, we want to distance ourselves from ontological realism, that is of the perception that the social world can be considered on equal terms as with the natural world. Instead, we are of the belief that the social world is influenced and dependent on humans and their perceptions.

In continuation of this, we also take on the approach of anti-positivism, meaning, that we find it incorrect to believe that the social realm can, and should, be studied merely with the framework of natural scientific methods. In relation to human nature, we believe that the constructed social reality will mainly be created by individuals. However, these individuals will take part in shared contexts, creating networks, and therefore, we also assume that the sum of all individuals in such a network, will define a somewhat shared social reality, which as well will influence the individual's perception of their own social world.

In this way, we, at least to some extent, belong within the sociological paradigm of interpretivism. It has already become apparent that the field of research is definitely not to be considered as being simple and straightforward, rather, it is constructed by a complexity of social elements. In such situation, it becomes beneficial to apply idiographic qualitative methodologies, as it aims to understand the meaning of contingent, unique, cultural and subjective phenomena.

Relating back to Burrell and Morgan, we want to challenge the fact that the incumbent paradigm within the treatment of musculoskeletal disorders is as sustainable as can be, which means that we mainly belong to the paradigm of radical humanists, as we to some extent take on the sociology of radical change. This due to the fact, that we are of the belief that something that seems to be held together, might as well be falling slowly apart.

By devoting ourselves to the side of radical change, in the matrix of Burrell and Morgan, it is only natural that we want to explore more of the aspects which have constructed the status-quo. Hence, we desire a deviation from the established paradigm, we wish to raise questions and take on a critical stance towards the existing paradigm within the field of treatment of patients with musculoskeletal disorders. This will be achieved by applying different methods in both a pragmatic and strategic manner, essentially ensuring social and economic sustainability within the field of research.

Before being able to discuss the possibilities of doing so further, it is a necessity to elaborate a bit on the development of the concept of sustainability, and especially, the social element of sustainability, as this is central for the focus of research.

3.3 CONSIDERATIONS OF SUSTAINABILITY

Today, the concept of sustainability has become a broad multi-focal approach which is exploited in various ways, and often, with equivocal understandings (McKenzie, 2004). Nonetheless, one of the most well-known and prevalent definitions of sustainable development originates from the Brundtland report, which was published in 1987 by the World Commission on Environment and Development. It was not until this publication that the concept of sustainability was commonly recognized (Kuhlman and Farrington, 2010). This definition points towards a threefold responsibility including human, societal and environmental aspects. The definition being:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987).

Since the Brundtland report which explains that the concept of sustainability is not only related to the natural living environment, the definition of sustainability has further evolved into three main categories, and it is a necessity that these at all times are in harmony, whilst they at the same time are interdependent, these being ecological, social and economic. In this context, the environmental aspect of the concept sustainability focuses on the environment which we live in. The financial aspect focuses on creating economic growth, which does not pose an adverse effect on the environment nor humans. The last element, the social aspect, is related to welfare and social equity.

3.3.1 SOCIAL SUSTAINABILITY

Stephen McKenzie touches upon the subject of social justice in the paper "Social Sustainability: towards some definitions":

"In principle, any community or organisation that adopts the 'overlapping circles' model should immediately include social sustainability as a concern equal to environmental or economic sustainability. In practice, this has not been the case" (McKenzie, 2004).

The author continues explaining that even though the role played by the social has been included in the definition of sustainability in the "triple bottom line" by John Elkington (1998), social justice is rarely equal to the economic and environmental incentives (McKenzie, 2004). He argues that the underlying reason for this is that sustainability has mainly been developed by consultancy firms (such as Elkington's company SustainAbility), who are hired to "arrive at indicator systems for their tripartite corporate reporting" by large companies. In this sense, social sustainability is much harder to quantify than both economic growth and environmental impact, which have the consequence, that it is often the neglected element of sustainability (McKenzie, 2004).

In the above-mentioned paper, McKenzie aims to define the social element of sustainability. However, the author stresses that it is problematic to determine a single useful definition and instead more approaches should be adopted to ensure a holistic approach towards social sustainability. Nonetheless, he describes social sustainability as:

"… A life-enhancing condition within communities, and a process within communities that can achieve that condition" (Ibid.)

In relation to this, the author presents features which should be conceived as indicators of this specific condition including aspects such as equity of access to key services (including health, e.g.), equity between generations, value creation and protection of disparate cultures, widespread political participation of citizens, awareness of social sustainability cross generations, tools for community responsibility to identify strengths and needs, and further,

means for the community to be able to fulfil its own needs when possible, and finally, tools for political advocacy to meet the needs which cannot be reached by community action (McKenzie, 2004).

McKenzie argues that these points are for discussion purposes only, and they are not intended to be complete. Instead, his primary goal is to cast a ray of light on the fact that it is problematic to define social sustainability as an independent element with no reference to the studies of environment and economy (McKenzie, 2004).

Taking departure in the definition of social sustainability, as McKenzie presents it, it is fairly ambiguous, and furthermore, it allows for a fair amount of individual interpretation. Consequently, to unfold the concept of social sustainability, where the patient is placed in the center, it is a necessity to investigate what *"life-hancing conditions"* for the patients entail, within the given treatment *"community"*, and what *"process"* within this treatment *"community"*, that makes it possible to achieve this *"life-enhancing condition"*.

3.4 THE INFLUENCE OF ACTOR-NETWORK THEORY

Easterby-Smith et al. (1991) define that one's social-political standpoint is defined by three elements; the matter of theme or subject under study, the researcher self and the context the researcher is part of, and finally, the various actors who are part of the study. Building on the premisses of Easterby-Smith et al., and that this thesis is of an empirical kind, it becomes crucial to investigate the elements that are pre-influencing us as researchers when entering the field of study. Given our social belong within the sociological paradigm of radical humanists we are highly prone towards utilizing a qualitative approach towards the research under study. Concerning this, Actor-Network Theory (ANT) enables us to enter the field of research with a certain qualitative framework, as it defies some common epistemological convictions by discarding essential subject/object, culture/nature, or society/technology distinctions. Whether people or objects, entities are not fixed and do not have significance in and of themselves, rather, they achieve this through relations with other entities. As stated by Law:

"if differences exist it is because they are generated in relations that produce them, not because they exists, as it were, in the order of things" (Law, 2001).

Many authors have argued that the key to ANT's development is because it is more a method for studying the world, rather than a theory which yields some level of inference and hypothesis development (Latour, 1994; Latour, 2005; Dicken et al., 2001; Murdoch, 1997a).
As previous clarified, we assume that the social reality is constructed, to some extent, on the premise of the individual's perceptions of the world, and applying ANT as a methodology allow us to "study the world", rather than testing a pre-defined hypothesis. In that sense, Latour (1999) further argues that from its very conception, ANT was positioned as a method to learn from actors themselves without imposing on them a prior definition of their world-

building capacities (Cowan et al., 2009; Latour, 2005).
ANT can be mobilized in social scientific, and especially sociological research, particularly concerning what kinds of knowledge-practices it enables and what kinds of methodological possibilities it opens up for (Ruming, 2009). According to Cowan et al. (2009) research, centered on ANT, benefits from its reflexivity, and the researcher's ability to *"pick-and-mix from different methodological jars"*. The ANT approach differentiates from preceding network paradigms *"by embracing a list of potential entities much wider than models of action and practice, which limit the heterogeneity of network associations in order to present a unified picture of interconnected entities"* (Ruming, 2009; Yeung, 2000). In this sense, there are no fundamental characteristics of any actor; instead, to recognize their agency, it is essential to follow the lines of association that bestow them agency and to explore those associations that allow it to operate (Ruming, 2009).

Considering ANT as a methodological premise, we, as researchers, are required to follow the network, to trace the circulation constituting an identity or reality (Latour, 2005; Murdoch, 1995), or to follow the actors (Law, 1991; O'Neill and Whatmore, 2000). Within the ANT framework, actors are considered to engage in their own *"world building activities"*, and hence, researchers should avoid methods which impose a unilateral definition of actors' interactions – *"we cannot identify networks of association before we enter the research network"* (Law, 2003). Latour (2005) also supports this approach and states that *"the task of defining and ordering the social should be left to the actors themselves"*. Therefore, since actor-networks are fundamentally the chains that give rise to natural and social realities, it makes great sense that the process of tracing network associations is the central premise of ANT methodologically (Dicken et al. 2001). ANT implies that social relations are not to be seen in isolation, but instead as always existing in relations with all types of extra-social networks among humans and non-humans, which need to be recognized and made evident (Latour, 1993; Michael, 2000).

For ANT there is no "society" as such, in the sense of a domain consisting solely of relations between human subjects, as these relations are always mediated and transformed and even enabled by non-humans of varied types, whether objects, materials, technologies, animals or eco-systems (Nimmo, 2011).

As opposed to positivist readings of research methodology, ANT supports research practice which is heterogeneous and messy, primarily since that is how research tends to be, but more essentially, because that is the characteristic nature of the world itself: untidiness (Law, 2003; Law, 2004). Also, this fits well with the anti-positivists position we have taken on as researchers, believing that the social realm should be studied on the basis of something that goes beyond natural scientific methods. Still, this is not to say that this position remains unchallenged. Whittle and Spicer (2008) argue that the ANT premise still *"tends towards an ontological realist, epistemologically positivist and politically conservative account"*.
The study of actor networks is, therefore, the study of associations between different materials and relations through which orders and hierarchies are made and unmade, and through which society is held together and made durable (Gabriel and Jacobs, 2008; Latham, 2002; Latour, 1986). It is these associations that any ANT methodology must recognize and follow.

As explained by Law (1994), ANT is inherently semiotic and focuses on order and meaning throughout the pursuit of agendas – *"all entities achieve their significance through their relations with others"* (Gabriel and Jacobs, 2008; Law, 2000a). In ANT, there is a central concept, enrolling, which refers to the process by which actors constitute others in their own agency. Therefore, all actors involved draw things together, albeit in specific ways and styles (Law, 2000b). In addition to the realization that actors achieve their form as the consequence of the relations in which they are located, they are also performed in, by and across these relations, thereby creating the process of translation (Bryson et al., 2009; Law, 1999).

As a methodology, ANT allows the possibility to recognize those that we enroll and mobilize for the purpose of translation and to contemplate how these impact on the outcome of the research – *"we enroll and translate as much as an actor in the research network"* (Ruming, 2009).
Law (2000c) argues that this is one of the fundamental premises of the ANT argument: that when a (network) object is performed, so too, is a (network) world created (Ruming, 2009). This relational actor identity has significant methodological implications given that all research is the translation of a situated and selective network created by the researcher (Ruming, 2009).

Hence, research and methodology become a series of translations of network actors in relation, where we first build a network (research field) and then translate the findings. The power of the translator is that it speaks on behalf of these actors, yet does not necessarily need to speak in a fashion, or pursue goals, of its constituents, we tell stories different to those that our research subjects would express, for our own purposes.

4 METHODS APPLIED

As elaborated in the research strategy, several methods and tools need to be applied, in order to reach the aim of conceptualizing a more sustainable treatment process for patients with musculoskeletal disorders. Hence, this chapter will highlight the choices that have been made in regards to what methods should be applied in the research study, as well as an explanation of the methods and their relevance, respectively.

4.1 RESEARCH OF LITERATURE

The initial literature research began in December 2017 and was followed up in February 2018 by researching broad information through scientific papers, reports, and articles to gain a broader understanding of the field, with the following being the main topics: anatomy of the neck and related factors, typical neck pains, differences between neck pain, typical methods of treatment, consequences of pain, statistic of musculoskeletal disorders, treatment and experts related to the field. This initial research was a necessity in order to explore the scope and the current configuration of the network within the field of research.

The search was initiated on TU Delft and AAU library databases and was supplemented with similar research on all the libraries in the Copenhagen area. Both searches were conducted in Danish and English, respectively. This lead to statistics from the Danish Health Authorities, more books on anatomy- and pain-related topics, as well as authors, mentioned repeatedly in literature and as references. From this point, especially journals and articles by the authors became key elements as they provided insight in the many different research topics related to the field, and further, an initial perception of the aforementioned authors and their expertise. This made it possible to arrange meetings with relevant actors and to structure these based upon the knowledge which was gained of the different actors' strengths and possible limitations.

4.2 ETNOGRAPHIC STUDIES

With the objective of understanding and familiarizing ourselves with the field of study, the primary research data supporting this master thesis is ethnographic fieldwork. Fetterman defines ethnography as *"the art and science of describing a group or culture"* (Fetterman, 1998).

Ethnography is a social science research method which is often defined as distinct from other forms of research due to its heavy use of qualitative data collection. Though, one key guiding principle of ethnography is the commitment to direct experience with a population or community of concern thereby exploring cultural phenomena. This continuous exposure and engagement with a research setting, rather than the specifics of methodology alone, which distinguishes ethnography from other research approaches (Schensul et al., 2012). Ethnographic research differs from clinical or laboratory-based experimental research where most aspects of the environment are controlled, and where various researchers can use the same tools and can expect to achieve the same outcomes if the study is reiterated (LeCompte and Schensul, 2012). Even when ethnographers use the same tools, shifting circumstances beyond the researcher's control might generate different outcomes which needs to be identified and explained.

Furthermore, the researcher might discover that the field of study has changed so much over time that using the same instruments as in a previous study would become inappropriate (Ibid.). Ethnography is conducted in naturalistic settings such as organizations, institutions, and communities conducive to direct interaction with the people, events, and social phenomena constituting the research setting (Schensul et al., 2012).

To support the ethnographic research, there has been developed a variety of perspectives, methods, and tools to ensure that researchers applying this approach genuinely learn to understand the world through the eyes of the field of study. Applying these tools is referred to as the field experience, in which the "field" becomes the locality where the research is taking place.

Yet, it is significant to understand that "the field" is a complex notion rooted in scientific epistemology (Ibid.). This entails that the researchers leave the world of the familiar to enter into a new sphere, a sphere in which they are not familiar nor customarily actors.

The researcher might enter the field expecting one set of circumstances and find another, or might encounter rapid changes while operating in the field. These circumstances necessitate flexibility, the ingenuity to utilize from ongoing changes in the situation for comparative purposes, as well as the aptitude to obtain information from different sources to verify and illustrate their explanation of a specific cultural phenomenon, respectively (Schensul et al., 2012; LeCompte and Schensul, 2012).

When an ethnographer enters into the field of study, that presence adds a "new person" to the scene under consideration. This researcher will naturally be unfamiliar with the norms for behavior in the scene. Hence, there is a high potential for disabling everyday activity and interaction. People in the field site will be curious about the researcher, they also might be suspicious, self-conscious, or surprised by the presence, which could "pollute the environment". This might result in a modification of everyday routines, or even that information is hidden from the researcher (Schensul et al., 2012).

To overcome these obstacles, the researcher must be present in the environment for long periods of time. This is essential to provide ample opportunity for engendering respect and affection among people in the research settings, and thereby gaining the requisite trust so that people will go about their daily business without feeling threatened by the presence of researchers (Schensul et al., 2012). It is essential to state that ethnographic studies which incorporate theory into research are both deductive and inductive.

As highlighted by LeCompte and Schensul, (2012) and Emerson et al. (1995), ethnographers engage in bottom-up inductive thinking: *"they generalize from concrete data to more abstract or general principles by drawing from their data and experience in the site while simultaneously thinking deductively from the top down. This means that they apply more general or abstract ideas from theories that are relevant to their work or already known information from the study site to the concrete data they have collected. These theories often come from the work of other researchers, from the investigators' own discipline, or from knowledge about the study problem and study site drawn from primary or secondary sources, initial visits to the field, and local key informants"* (LeCompte and Schensul, 2012).

To gain a more accurate impression of the field of study, it was further significant for us to keep in mind not to affect the actors' thoughts and responses during the fieldwork. Consequently, several methods needed to be applied in order to amass empirical material which can illuminate and contribute answering the research question. The methodical choices will be argued and justified both in terms of their relevance independently and in relation to each other, respectively.

4.3 OBSERVATIONS

In ethnographic research, observation is one of the key practices, and can both form the base of the study or be combined with interviews (Atkinsson and Hammersley, 1994). Observation involves the systematic noting and recording of events and behaviors in the social setting of the studied field. The observational record is referred to as field notes, which constitutes of detailed, nonjudgmental, concrete descriptions of what has been observed.

There are two main types of observations. The first, participant observation entails being in the setting of study as both observer and participant, whereas the second, direct observation, involves observing without interacting with the objects or people in the settings of study. Further, there are also two ways of observing people in the field of study (Wagner et al., 2012). The researcher can use covert observation, that is when those being observed are unaware that they are being observed. In research, this approach is rarely appropriate due to ethical reasons, etc. Nevertheless, in situations where knowledge of being observed would, somehow, incite participants to change their actions or to act differently than they usually would, it might to some extent be regarded as appropriate (Ibid.).

The preferred approach of observing is overt observations, where participants are well aware of the fact that they are being observed, and where the researcher explain the purpose of the observation beforehand. Gold (1958) listed four stances which the researcher may take when conducting observations in social settings.

"The complete participant" is where the researcher is a member of the group of people under study. Here, the researcher is actively involved in the settings and in studying other group members without their knowledge. In this stance, there lie two problems (Wagner et al., 2012). First, as mentioned, the group members in the particular field of study are not aware of that they are being observed, which could lead to that some members might be reluctant to disclose information to another group member. Occasionally, people are more apt to disclose personal information with a stranger or with someone they are not likely to see in the future, rather than to share such information with a group member, who might blunder and disclose personal information to other group members (Ibid.).

The second stance, "the participant as observer" involves the researcher who is a group member observing other group members who are well aware that they are being watched and with the purpose of the study. Here, the disadvantage is that other group members are less likely to divulge personal details. Consequently, there is a tradeoff in regards to the depth of data the researcher can collect and the level of confidentiality available to group members (Ibid.). The third stance, "the observer as participant" is where the researcher participates in the social setting under study, without being a group member. Yet, group members are fully aware of the purpose of the research, which often leads to that they are more likely to be open with the researcher since he/she is not a member of their group (Ibid.). The researcher participates in group activities and is thereby better able to understand what is being observed.

Lastly, "the complete observer" stance is where the researcher can observe the settings and group under study without participating, and where participants are unaware of being observed. This is typical in situations where the researcher observes a public event in full view of the public, although they might be unaware of being observed (Ibid.).

According to Czarniawska performing studies in "observant participation" is *"no doubt superior to all other types"* (Czarniawska, 1998).

It is significant to stress that observation is not a clear and unproblematic way into the minds of the observed, and the pitfalls of making sense of verbal communication itself are more or less unavoidable, as what is typically observed is people engaging in conversation. It is further worth mentioning that the stance of the researcher in the observation setting, that is, how you position yourself as a researcher, is an essential consideration for the validity of the study. This is because the quality of the data the researcher can collect and the relationship with those who are being observed are affected by how the researcher is positioned within the research setting (Wagner et al., 2012).

In this thesis, we found that the proper approach was to combine participant observations with follow-up interviews with the actors involved, and thereby shed personal light on the observed conditions, conversations, and phenomena, as this is in compliance with the method of ethnographic fieldwork. In continuation of this, we also applied the technique of fly-on-the-wall, which enables us as researchers to place ourselves in a non-obtrusive position to observe and listen from a distance. This observation technique is particularly beneficial in situations in which observations can affect user behavior, for instance, when observing a course of treatment between a physiotherapist and a patient (worksheet, 2). Discretion and note taking are both key criteria for successful observation. By using this observational technique, it was possible to acquire knowledge in the early stages of the thesis, of the practices in the field of study and which actors to put focus on based on the perception formed and experienced while observing the field and the actors present at that particular time.

4.3.1 THICK-DESCRIPTION

The term thick-description was firstly used by Ryle in his philosophical work (1949) and later by Geertz (1973) who applied it in the field of ethnography to argue that study of cultures is profoundly an interpretive process which necessitates thick description of social behaviors, structures, and practices (Holloway, 1997). Thick description integrates details of social interaction with the broader cultural patterns which animate specific actions with meaning. As argued by Geertz, thick description requires that researchers not only describe an action, such as briefly contracting one's right eyelid, but also to interpret that action, as a blink, a twitch, or a wink, possibly deployed conspiratorially, in rehearsal, or for deception (Holloway, 1997). Geertz described this as a way of providing cultural context and meaning that people place on actions, words, things, etc. Hence, the objective is to provide sufficient context so that a person outside the culture can make meaning of the behavior and give the information provided meaning (Holloway, 1997). Also, in that way that, when looking back at an observation, it will be possible to regain the feelings and atmosphere which was present on the day of observation (worksheet, 3, 4, 5, 6).

4.4 INTERVIEWS

When collecting qualitative data and when aiming to clarify the observations made, interviews are among the most familiar and advantageous strategies. The diverse qualitative interviewing strategies in common use arose from different disciplinary perspectives resulting in a wide variation in the approaches. According to Dingwall (1997), interviews can be compared to observational techniques, as the respondents usually will engage in "impression management", concerned with bringing the occasion off to an extent which will demonstrate their competencies as a member of the group or community investigated in the field of research. The interview situation is moreover under the influence of the appearance and the performance of both the interviewer and respondent, respectively. Factors such as gender, age, education and physical appearance must all be regarded as "playing a role".

These are very challenging to neutralize and account for in the interview situation, and in the interpretation of the outcome, respectively. Alvesson and Deetz (2000) express the significance of being reflexive in the research situation as well as in the interpretation of the material gathered. There are three fundamental types of research interviews, these being, structured, semi-structured and unstructured. Structured interviews are, essentially, verbally administered questionnaires, where a list of predetermined questions are asked, with a slightly or no variation at all, and with no scope for additional questions to responses that warrant further elaboration. Here, data analysis typically tends to be more straightforward, since the researcher can compare and contrast different responses given to the same questions. On the other hand, unstructured interviews are more guided conversations. The researcher has complete freedom to alter the questions from respondent to respondent, and thereby be able to follow whatever lines of inquiry which are found to be most appropriate, depending on the responses given by each respondent. The researcher exerts as little control over the interaction as possible. Usually, unstructured interviews are very time-consuming and can be challenging to manage due to the lack of uniformity. Additionally, it requires that the researcher should possess in-depth knowledge and skill on the subject. Lastly, there are semi-structured interviews which are often regarded as the sole data source for a qualitative research project (Coffey and Atkinson, 1996).

Semi-structured interviews are organized around a set of predetermined open-ended questions, with other questions emerging from the dialogue between the researcher and the interviewee. It is essential that the researcher possesses superb listening skills and be skillful at personal interaction, question framing, and gentle probing for elaboration. Significant volumes of data can be gathered through semi-structured interviews, yet, these are time-consuming to analyze.

The interviewees were deliberately chosen based on their contextual knowledge and direct connection with the field of research or on hand practice. The interviews were conducted with professors and researchers within the field of neck/back injuries, physiotherapists, clinical experts, a doctor, a psychologist, a social worker, and an insurance agent. At the beginning of each interview, the interviewees were presented with a short description of what the thesis was about without revealing too much information.

For the majority of the interviews, the semi-structured approach was used; however, the unstructured approach was also used as well as phone interviews in the case with the social worker and insurance agent. By using the semi-structured approach, it was possible to create a sound foundation when attempting to understand the field and answer the research questions.

This type of interviews aided the creation of an understanding of the respondents' perceptions toward their personal role, the challenges they experienced, and their context to the field of study. The semi-structured approach of the interviews decreases restraints and thus urges the respondents to speak intuitively. A semi-structured fishbone was prepared beforehand to have a structure of essential subjects to cover the needed information. As mentioned, this approach provides the interviewees with an opportunity to reveal their genuine thoughts since they are not restrained by structured parameters, mainly due to the open-ended questions which allowed unexpected, relevant information to emerge. All interviews were transcribed afterwards (workseet, 7, 8, 9, 10, 11, 12, 13, 14).
v

4.5 THE ROLE OF EXPERTS

As the empirical data in this thesis relies on expert accounts, it is essential to take some precautions when assessing the statements, both to understand what the experts state as well as what they leave out.
Goldman (2001) discusses how to assess which of experts in the same field/ domain to find more credible and sets up different situations, where it is the responsibility of the hearer (novice) to assess the expert statements and choose which is more reliable. It is a prerequisite for the argument that the novices trust the expert statement at the first encounter, as well as in our empirical interviews unless the specific knowledge of the expert were examined before an interview. Thereby, the credibility of the expert is affected by the empirical discoveries made by the listener (novice). But is the novice able to make a justified assessment of the credibility of rival experts?

The expert is described by Goldman as being one who *"has the (cognitive) know-how, when presented with a new question in the domain, to go to the right sectors of his information-bank and perform appropriate operations on this information; or to deploy some external apparatus or data-banks to disclose relevant material"* (Goldman, 2001). Goldman provides 5 sources of evidence that helps the novice to select which putative experts to trust:

1. SUPPORT OF THEIR VIEW BY CONTENDING EXPERTS AND NOT THEIR RIVAL'S.
2. OTHER PUTATIVE EXPERTS AGREE ON THE ARGUMENT/SUBJECT OF QUESTION.
3. FORMAL CREDENTIALS OR OTHER APPRAISAL.
4. THE EXPERT'S INTEREST OR BIAS ON THE SUBJECT OF QUESTION.
5. THE EXPERT'S PAST TRACK-RECORD.

4.6 CODING AND GROUNDED THEORY

To code and categorize the empirical material, we have chosen to apply parts of grounded theory in our research, however, in the way that we found it to be most beneficial for the research purpose. Given the fact that grounded theory usually considers a predefined field of interest, it deviates from our research approach, as we are more iterative in our way of defining the field of research. The consequence is that we have merely applied the method with the aim of comparing the knowledge we have gained from each interview with actors within the field.
Grounded theory was initially developed by sociologists Barney G. Glaser and Anselm Strauss in 1967. Their claim was that *"theories built inductively from empirical grounds are more useful – and more interesting – than those deduced from other theories or speculations"* (Czarniawka, 2014).

When applying grounded theory, the researchers entitle the empirical material, in our case the interviews, to create associations and categories while the research is conducted, and thereby, not in advance (Czarniawka, 2014).

The categories can involve problematics in the field, shared beliefs, common interests and can be changed as more knowledge and empirical data is gathered. It becomes an emerging story moving back and forth from desk- to field research. Moreover, Glaser and Strauss argue that because of the constant changes in social realities, it thus becomes more important to build new theories rather than verify existing ones (Ibid.).

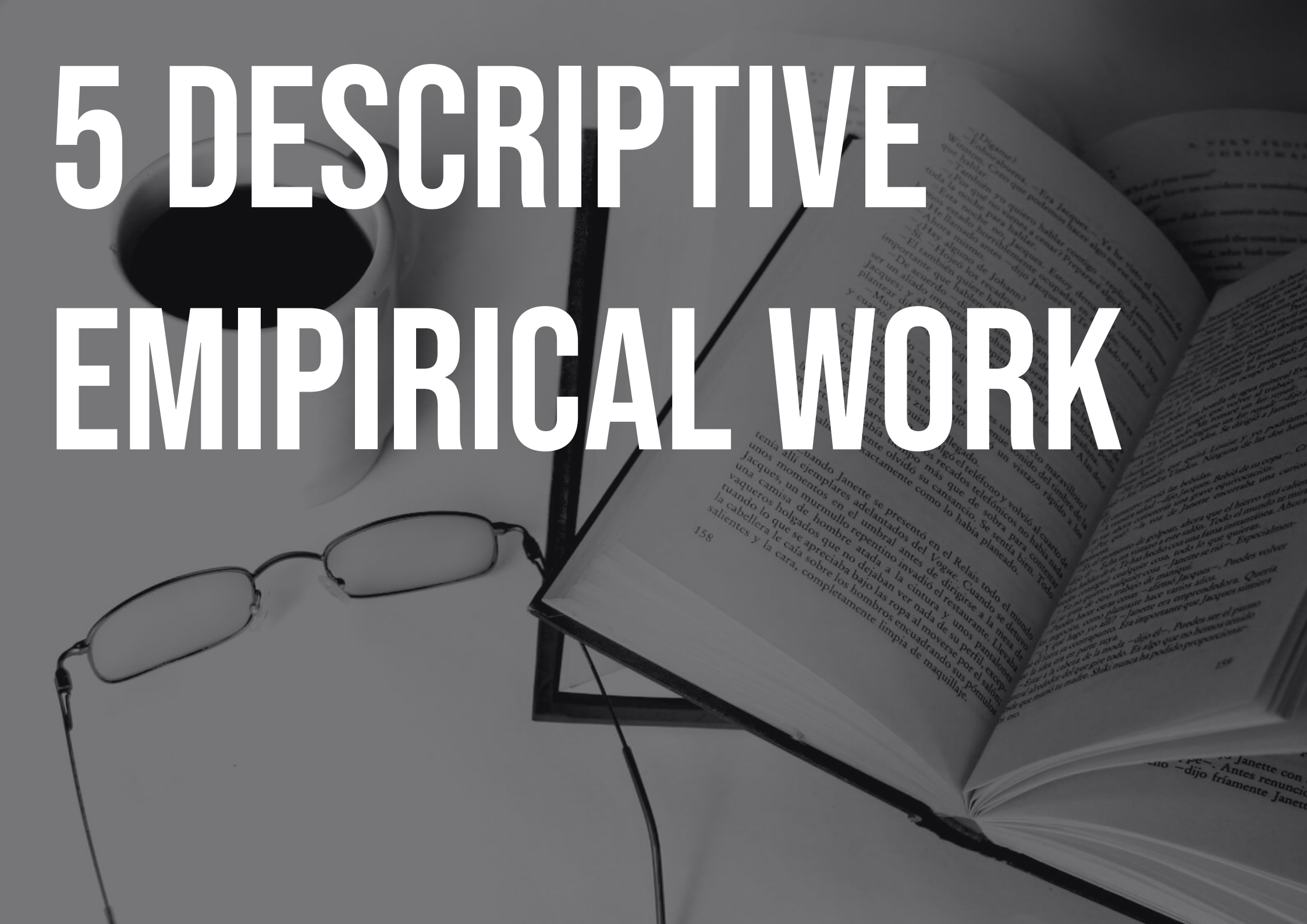
When conducting research through grounded theory, the researchers must begin by choosing a site, where the subject of the research is present, and collect as much accessible information as possible. Hereafter, the researchers should find another location where the subject is present and collect all the available data here as well. If the subject is still valid in both sites, the researchers should continue gathering information in different sites, until the empirical material points towards and unanimous problematic or when time runs out (Ibid.).

Grounded theory has been under some points of critique, such as the risk of misinterpretation and the method's time-consuming nature. Nevertheless, by taking departure in this approach, it becomes possible to manage vast amounts of collected material and thereby, create a shared understanding of the field amongst the researchers (Ibid.).

To process the empirical material gathered in the field coding can be conducted. Coding is an iterative process, which takes place on several occasions, according to when new content is gathered. This requires that the researchers transcribe interviews to collect every statement, and thereby, not miss valuable information, which might have appeared irrelevant at first sight (annex, 1). As described by Coffey and Atkinson (1996), coding is used to help sort and categorize vast amounts of qualitative data, by placing tags or labels on groups of statements to prepare the material into analyzable units (Coffey and Atkinson, 1996). In this thesis, the coding was performed in five overall rounds, however, not chronologically but as an overlapping process.

In round one, the conducted interviews were transcribed. The transcriptions were performed word by word to ensure that no unidentified important knowledge was left out. The first round of coding lead to an extensive amount of categories where all statements were reviewed by us all. Some categories overlapped, and the end result seemed unmanageable. Secondly, the categories were re-examined and made into new categories and groupings. In this round, the categories that overlapped were revisited and divided into new groupings and categories until as few statements as possible overlapped or were without a category. Apart from the new categories and groupings also statements that seemed essential, or worth to revisit later, were highlighted with a marker for easy access later in the process. The third round of coding was conducted following the last transcriptions of interviews, which had been made after the second round. In this round, the categories were changed accordingly and prepared in groupings relevant for the empirical analysis. This further lead to broader categories and groupings than prior. The categories and groupings were divided applicable to the disposition of the report in round four, thereby making it easier to find quotes and statements appropriate to the content of sections in the thesis. Lastly, round five enabled a distribution of the coded material amongst us. The intention with the division was that material should be applied as inspiration and data for the various sections in the thesis (worksheet, 15).

5 DESCRIPTIVE EMIPIRICAL WORK



Most people have been injured in some way which has been associated with pain and have reacted differently in a given situation due to the incident, which means that most of us think of pain as having a direct causal relation with injuries. For more than 350 years the biomedical pain model has been the predominant model of explaining pain as it has been the most simple equation of explaining pain, where both the cause and the consequences are visible, and further, the intensity of the pain reflects the severeness of the injury (Engel, 1977). Since pain often occurs as a consequence of being injured in some way, and since people learn and adapt through experiences, it is natural to assume that pain appears and derive from the physical part of the body, and that the underlying injury is the cause of such pain.

This explanation is also known as the biomedical pain model which equals injury with pain and vice versa. This is not per se false, as this will often be the explanation of the pain we experience through life, however, at some point, some researchers began to question the biomedical understanding when observing pain without injury and injury without pain, such as phantom pain (Ibid.).

Consequently, the understanding of pain has developed a lot, especially over the past 20 years, which has been a major epiphany for many practitioners as it, in theory, has made it easier to treat patients, especially patients experiencing long-term or chronic pain (Ibid.).

In relation to the shift in the perception of pain, we find it essential to present sections which investigate and present biomedical elements related to neck pain. As neck pain was the starting point for this thesis, we find it relevant to elaborate on the anatomy of the cervical spine, and further, the symptoms and triggers of pain. It is important to state, that the argument for maintaining focus on neck pain is threefold. Firstly, much of the empirically collected data takes departure in neck pain. Secondly, since neck pain is part of the generic group of musculoskeletal disorders, many symptoms and triggers of neck pain and other musculoskeletal disorders are similar. Lastly, for the objectives we wish to mediate, musculoskeletal disorders, as one group, is unnecessarily complex to unfold.

In continuation, we will elaborate further on the concept of pain perception, by presenting relevant research which defines factors that influence this. This will indicate that literature, has moved from a biomedical understanding of pain, towards an understanding which also embraces psychosocial aspects, hence, the biopsychosocial understanding of pain.
Withal, an exploration of the professions in the field related to the treatment of patients with musculoskeletal disorders will be presented. Their working structure and the current state of collaborative relations will be unfolded, as it is considered to be the predominant paradigm defining current treatment procedures.

5.1 ANATOMY AND PAIN

The following section will present a mechanical description of the cervical spine, neck pain and the related triggers and symptoms. The underlying reasons for presenting and diving into these mechanical descriptions is that they currently dominate the biomedical perception of pain, thus, the current treatment process practiced in the Danish healthcare sector.

For a large part of the 20th century, cervical spine disorders had a secondary role to low-back pain within this field of research. However, over the last two decades, the focus has to some extent shifted, and there has been a rapid increase in interest and research into cervical musculoskeletal disorders. The reason for this is that neck pain is beginning to rival low-back pain in its frequency, hence an increase in the economic and social costs as a consequence (Jull et al., 2008). Much of the literature within this field of study indicate that in the 1980s and 1990s, knowledge gained from low-back pain studies and incidents was merely extrapolated and applied to cervical musculoskeletal disorders in diagnostics and treatment (Ibid.). However, later studies found this form of practice to be inadequate, since the cervical spine is very dissimilar both anatomically and biomechanically from the lumbar spine, in accordance with the different functional roles that these regions have. Despite the fact, that the muscle systems in the two regions have some similarities, they also have vast differences.

The cervical structure has an unique neurophysiological connections to the vestibular (includes the parts of the inner ear and brain that help control balance and eye movements) and the oculomotor systems (interconnected regions throughout the central nervous system that interact to control various eye movements), (Jull et al., 2008; Conn, 2016).

The structure of the cervical spine is vulnerable to trauma, which for instance can occur in a motor vehicle crash in ways not experienced in the low back. Further, the psychological factors related to neck pain are often rather different from those related to chronic low-back pain (Jull et al., 2008). However, the psychological factors and the consequences they have for patients will be elaborated in depth later in this chapter.

The increase in the incidences of neck pain might be associated with many factors. This could, for instance, be the advances in technologies in the workplace, thus the changing nature of work, the increased use of motor vehicles, as well as the rapid rise of information technology and use of computers which occupies many hours in sedentary, sustained postures (Ibid.).

ATTENTION

Due to the theoretical description presented in the next section, we have chosen to explain some of the words further in (annex, 2). The words which are elaborated in the worksheet is indicated by:
word*

5.1.1 ANATOMY OF THE CERVICAL SPINE

The vertebral column, consisting of a coordinated series of 33–34 vertebrae separated from each other by intervertebral disks, divided into five "sections": cervical, thoracic, lumbar, sacral and coccygeal (Menchetti, 2016).
The cervical section is made up of 7 vertebrae, the thoracic section of 12, the lumbar section of 5, the sacral section of 5, and finally, the coccygeal section which is made up of 4–5 vertebrae, as indicated in the figure below (Ibid.).

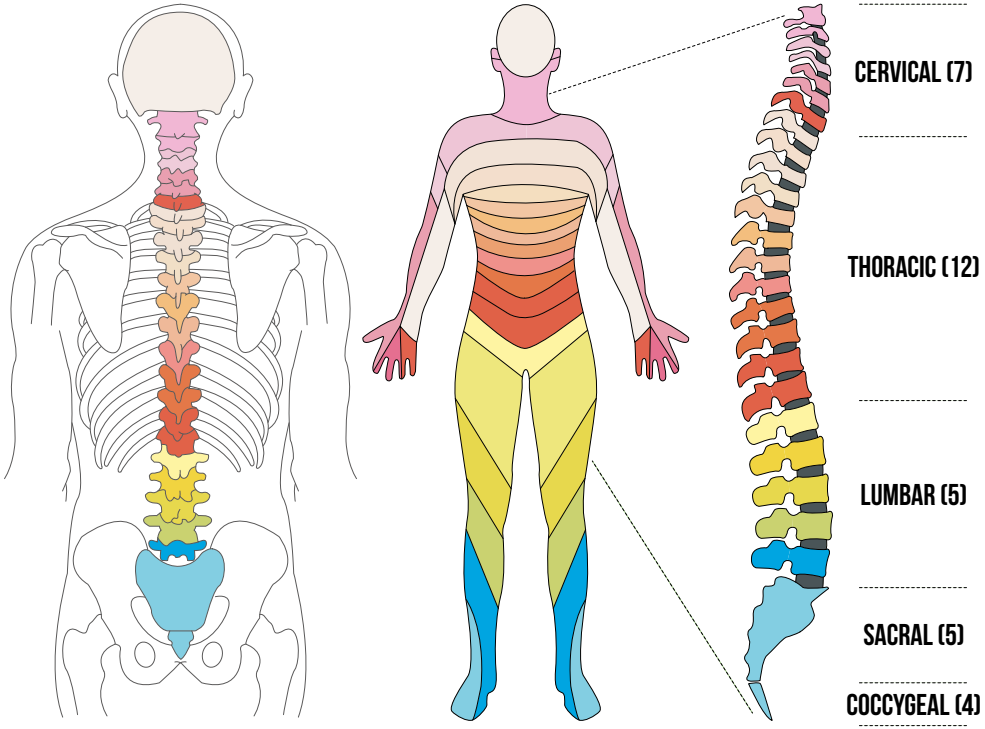


Figure 6: Illustration of the cervical spinal. Own illustration.

Functionally, these vertebrae form a single structure which serves the purpose of maintaining the upright posture and balance against the gravity and allowing the locomotion in six directions, and every other kinetic movement of forces applied and to resistance (Menchetti, 2016). This is because the two requirements of the spine are rigidity, due to the static efficiency and protection of spinal cord and nerves, as well as flexibility for the kinematics of the spine.

Vertebrae are interconnected by facet joints which allow mobility in the spine. Intervertebral **discs*** separate the individual bones thus providing additional weight-bearing support (Todd, 2011).

Different from the rest of the spine, there are openings in each vertebra in the cervical spine for the arteries (blood vessels carrying blood away from the heart), together with the spinal canal that carries the spinal cord. The arteries running through these openings transport blood to the brain (Ibid.).

The cervical spine is designed to support the head and to permit maximal motion in three dimensions without damaging the spinal cord. The three axes of motion are flexion/extension (floor to ceiling), lateral bending (shoulder to shoulder) and axial rotation (turning side to side), (Todd, 2011). Notwithstanding the flexibility of the cervical spine, there also exists a high risk of injury from sharp, sudden movements, for example, whiplash-type injuries. The high risk deriving from these types of injuries is due to the limited muscle support which exists in the cervical area as well as this set of bones and soft tissues, as this part of the spine has to support the weight of the head. Hence, sudden, sharp head movement can cause damage (Slosar, 2018).

5.1.2 BIOMEDICAL SYMPTOMS AND TRIGGERS OF NECK PAIN

Neck pain is characteristically described at the base of the cervical spine or along the upper border of the **trapezius*** muscle. Typically, this may be accompanied by a headache. Further, some patients will also experience neck stiffness, thus lack of full neck motion. For elderly patients, this might be a result of osteoarthritis of the cervical spine (Mushlin et al., 2010). Common symptoms related to neck pain typically involves one or more of the following:
Sharp pain is the type of pain can be localized to one spot and triggers a stabbing or stinging feeling. This type of pain often occurs in the lower levels of the cervical spine. General soreness typically occurs in one spot or area on the neck and is described as a tender or achy feeling.

Radiating pain is the type of pain which can radiate along a nerve from the cervical spine into the shoulders and arms (Shim, 2016). The intensity of this type of pain can vary, and this nerve pain is described as a searing feeling. There are also symptoms such as tingling, numbness, or weakness. These can go beyond the cervical spine and radiate into the shoulder, arm or fingers and typically encompass a pins-and-needles sensation (Ibid.). If these symptoms are present, they can often cause trouble with gripping or lifting objects.

5.1.2.1 BIOMEDICAL SYMPTOMS OF NECK

The symptoms associated with neck pain vary depending on whether a nerve has been compressed, and at what level of the cervical spine this is occurring. For instance, if a disc herniation is compressing a nerve root at C5-C6, then the symptoms could be different from a disc herniation at another level of the cervical spine since those nerves travel to other parts of the body (Ibid.).

As mentioned, symptoms such as numbness, tingling, or pain in the arm might occur. This might be a result of disk herniation, particularly at the level of C5-C6, which produces pain in the shoulder tip and trapezius, radiating toward the **anterior upper arm***, forearm, and thumb (Ibid.). Below is a description of some of the symptoms which might occur depending on which nerve root that has been compressed in the cervical spine: C1 and C2. The two nerve roots at the top of the cervical spine control the head. An irritation to these nerves might cause headaches (Ibid.). C3 and C4. These nerve roots help regulate the diaphragm, which is the sheet of muscle that stretches to the bottom of the rib cage, hence vital for breathing. Thus, an irritation to these nerves could harm breathing. The C4 nerve root can radiate pain to the lower part of the neck and to the shoulder (Ibid.).

If the nerve root of C5 is impinged or irritated, pain and weakness can be experienced in the shoulder and at the top of the upper arm. If this nerve root of C6 is impinged or irritated, weakness can be experienced in the biceps and wrist. Furthermore, pain, tingling, and numbness can radiate through the arm to the thumb (Mushlin et al., 2010; Shim, 2016).

Compression of the C7 nerve root can produce pain at the shoulder blade, the pectoral area, and *"medial axilla with radiation toward the* **posterolateral upper arm***, elbow and forearm, and palmar surface of the thumb and index finger"* (Mushlin et al., 2010). Moreover, there might also be a sensory impairment, for example, numbness or **dysesthesia*** in these areas. Lateral herniation between C7 and T1 cause *"pain at the medial side of the forearm and sensory loss in the medial forearm and the ulnar nerve distribution of the hand"* (Ibid).

5.1.2.2 BIOMEDICAL TRIGGERS OF NECK

Physical stressors, poor sleeping habits, or poor posture can cause neck pain. However, the newer understanding of pain includes more than the mechanically influences described above, in fact, this understanding also addresses that factors such as stress, anxiety, or depression should also be considered as triggers of neck pain (Ibid.).

Nonetheless, the most common mechanical causes of neck pain, such as strains and sprains, typically heal within a few days or weeks:
"A strain is when a muscle or tendon has been irritated by overuse or overextension. Correspondingly, a sprain is when a ligament has been irritated by overuse or overextension" (Shim, 2016).

Perhaps the most typical type of mechanical pain is caused due to sleeping in an awkward or atypical position, thus overextending the neck, also referred to a "crick" in the neck (Ibid.). Sports injury are also often related to neck pain. This could, for instance, be triggered if the individual moves the neck suddenly or in an unusual way, or by collision or fall. A typical sports collision injury is a stinger (burner or nerve pinch), which occurs when nerves in the neck/shoulder are impacted. Thus, pain, numbness, and weakness can radiate down the shoulder, the arm, and the hand (Ibid.). Another significant mechanical trigger of neck pain is poor posture. If the head is tilted forward often and for long periods of time, the muscles, tendons, and ligaments of the neck need to work harder. Poor posture can be problematic throughout any activities, including working at a computer, watching TV, reading a book, etc. (Ibid.). The most feared injuries are whiplash injuries.

In such an injury, the head and neck are forced backward and forward instantly with a great deal of force, often seen in car accidents involving rear-end collisions (Mushlin et al., 2010). As a result, the soft tissues along and near the cervical spine can be torn or ruptured. Often, neck pain symptoms subside gradually, however, there are also a vast majority for whom neck pain symptoms become persistent as a condition termed as chronic neck pain.

Chronic pain, which originates from a neck injury, is one of the unresolved puzzles of science due to the complexity of the nervous system and the difficulties associated with finding the trigger points of pain. This is also supported by Thomas Graven-Nielsen, Professor at Aalborg University, Faculty of Health Sciences and Head of the Research Center CNAP (Center for Neuroplasticity and Pain), who states the following.

"Worldwide, every fifth adult has chronic pain, which we still do not fully understand. We have a presumption that chronic pain is associated with changes in the central nervous system, but we do not yet know the mechanisms so we cannot handle them" (Ringgaard, 2016).

When having pain in the body, for instance, in the neck, the nerves send signals which activate neurons in the spinal cord. These signals run up to the brain:
"The signals run through flexible structures through the body in a complex signal network. In the case of patients with chronic neck pain, their system does not work properly. There is somehow some amplification of the signals. Yet, there is still much we do not understand about what is happening at the central level. This is why we still have trouble treating chronic neck pain" professor Graven-Nielsen explains (Ibid.). Another significant factor is the invisibleness of these type of pains:

"Chronic pain is an invisible disease that is difficult to get recognized in the healthcare system and the society. It is hard to convince people that you have pain when you cannot see it on a scan image" states Professor Inge Ris Hansen, PhD at the University of Southern Denmark, Department of Sport and Biomechanics and practicing physiotherapist, (Ringgaard, 2016).

5.2 THE BIOMEDICAL APPROACH OF TREATING PAIN

In this section, the healthcare professions related to musculoskeletal disorders who are establishing the current institutionalized situation will be explained in relation to their professional role, their understanding of the treatment of patients, and the division that exist in the practices of the professions.
Patients with musculoskeletal disorders undergo treatment in the Danish healthcare system. Some seek treatment from the general practitioner directly, which can provide a referral to enable them with the possibilities of subsidies, whereas others seek treatment from other professions, however, in such situation they must cover the total cost themselves (Sundhed.dk, 2012a; Sundhed.dk, 2012b). It is an individual choice for the patient, whether they seek advice and treatment from the practitioner first, and it highly depends on the situation and context they are situated within. Typically, the treatment of musculoskeletal patients consists of either medication, exercises, passive and active treatment by a physiotherapist, and a guideline of how to prevent the pain recurring, or a combination of multiple treatments, depending on the pain (Sundhed.dk, 2017b).

5.2.1 FROM GENERAL PRACTITIONER TO DIAGNOSIS

If the first consultation is between the patient and the general practitioner, the conventional process will be that the patient explains the pain to the general practitioner. The patient will try to explain the anamneses as detailed as possible for the general practitioner to design an appropriate treatment.
The general practitioner set aside approximately 10-12 minutes per patient to diagnose and plan an effective treatment, or send them on in the system if this is needed from their viewpoint.
For patients suffering from musculoskeletal disorders, this would typically entail medication, simple exercises or more alternative methods, such as acupuncture, depending on which clinic the patient is assigned to (Sundhed.dk, 2017b).

Since the general practitioners are often the first professionals who consult with the patients, they are also functioning as gatekeepers to other professions through referrals, thus passing the patients along in the system if their treatment or medication is inadequate. The general practitioners collaborate with other professions in the healthcare system, and they are allowed to officially provide referrals to the patients, which then grant them subsidies to attend other professions in the healthcare system; however, not all pains and disorders are approved to be referred.
An extensive study conducted by Dew et al. (2005), based on both quantitative and qualitative data, of delayed diagnosis on psychological diseases in New Zealand indicated that the general practitioners were especially responsible of misdiagnosing because they prescribe 75 percent of all referrals to other professions. They discovered that general practitioners prescribed referrals based on biomedical diagnoses, and thereby, referred to the wrong profession, prolonging the patient's course of treatment (Dew et al., 2005).
Misdiagnosis, delayed diagnosis and malpractice can happen due to a problematic interaction or relation between the patient and the general practitioner. Wentzer (2015) describes five scenarios where the relationship between the general practitioner and the patient can affect the evaluation and diagnosis. The five scenarios are illustrated in figure 7 in the following page.

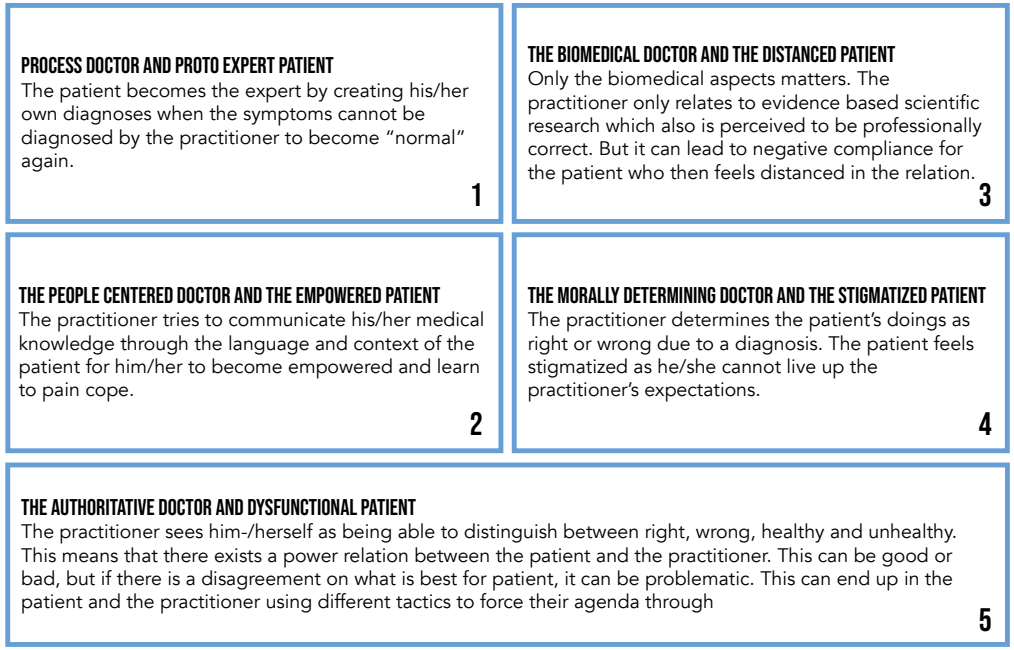


Figure 7: The five scenarios of interaction between the general practitioner and the patient. Own illustration with inspiration from (Wentzer, 2015).

In the context of the research question of this thesis, scenario three and five are relevant to note. Scenario one, two and four are concerned with a different set of diseases than the musculoskeletal disorders. The relationship between the general practitioner and the patient is essential to consider in this thesis, as the patients with musculoskeletal disorders are dependant on the general practitioner to provide a proper diagnose and plan an effective course of treatment. If the general practitioner only relates their diagnosis on biomedical evidence, and thereby, does not apply the biopsychosocial understanding of pain into their diagnose, they risk planning an inadequate course of treatment, thus, prolonging the treatment which may cause an aggravation of the disorder.

5.2.2 REFERRALS

As mentioned in the previous section, referrals are given to patients when the treatment offered by the general practitioner is insufficient to cure or relieve the patient from the pain. General practitioners can refer to other professions, such as physiotherapists and psychologists. They prescribe the referral to the patients based on their diagnose, or if they have a specific hypothesis of the diagnose. It differs depending on the given situation, whether the practitioners prescribe the referral immediately or if they prefer treatment with medicine, exercise, etc. first.

Referrals are crucial for patients because treatment from professionals such as physiotherapists, and psychologists can be very expensive. However, subsidies from the healthcare system covers up to 40 percent of the treatment at a physiotherapist, and up to 60 percent of the treatment at a psychologist if the patient has a referral from the general practitioner (Sundhed.dk, 2012a; Sundhed.dk, 2012b).

5.2.3 PROFESSIONEL COMPETENCIES AND COLLABORATION

In this section, the relevant professions in the Danish healthcare system concerned with the treatment of a patient with musculoskeletal disorders will be elaborated upon, with the aim of understanding their various roles and competencies. Further, it will be elaborated how they can be referred to, how they are remunerated and how individual professionals shape their practice to fit the treatment of specific patients.

5.2.3.1 THE GENERAL PRACTITIONER

The general practitioner is at the center of the Danish healthcare system, and they function as "gatekeepers" unless other circumstances send the patient directly to other professions (physiotherapists, etc.), and therefore, the general practitioners are the ones with the holistic overview of a patient's process, progress or setbacks. Every Danish citizen is entitled to enroll a personal general practitioner or a clinic (Sundhedsstyrelsen, 2016).

General practitioners are educated to diagnose, treat minor diseases with medication, as well as advising about the medicaments, and send patients to other professions (physiotherapists, psychologists, etc.) if their competencies are not adequate to treat the patient (Ibid.). In approximately 10 percent of their consultations, general practitioners prescribe the patient with a referral to a different professional in the healthcare system.
This is equivalent to allocating approximately 40 percent of their patients to another profession a year (Ibid.). In 2007, Danes consulted with their general practitioner 38,5 million times, which is equivalent to seven consultations per citizen a year (Ministeriet for Sundhed og Forebyggelse, 2008; Sundhedsstyrelsen 2016).
In continuation of this, the general practitioner may be regarded as an expert within overall and common diagnoses. It is also within the ethical foundations of the general practitioners to ensure that the treatment process of the patient is kept coordinated, hence, ensuring that the patient feels taken care of. The general practitioner can choose to take on-going educations to expand their competencies to improve the process and in some cases, treat more diseases themselves. They are also capable of conducting preliminary examinations and blood tests to diagnose and to be used in the process by other professions (Sundhedsstyrelsen, 2016).

General practitioners are remunerated for every patient enrolled at their clinic, and furthermore, granted remuneration for different activities (annex 2). The activity-based remuneration advocate that general practitioners perform tasks on their own, of which they could have given a referral to other parts of the Danish healthcare system for (Ministeriet for Sundhed og Forebyggelse, 2008).

5.2.3.2 THE PHYSIOTHERAPIST

The physiotherapists are experts in treating musculoskeletal pains, injuries (from sports, accidents, etc.), arthritis as well as neurological diseases. The physiotherapist also creates rehabilitation programs for patients with cardiovascular diseases, diabetes, COPD and cancer, and they are an integrated entity in the Danish healthcare system (Sundhed.dk, 2017b). The physiotherapist assesses the patient by asking about their anamneses, where patients explain their symptoms and disabilities, which forms the baseline of the assessment (Ibid.).

Next, the physiotherapists will examine the function of joint movement, muscular coordination, strength and structural pain to provide an ability diagnosis followed by a treatment plan for the patient. The physiotherapist treats patients with musculoskeletal disorders by following two overall methods: passive manual training and active training. The passive training involves massage of joints and muscles to reduce pain in affected areas, and is recommended to be used along with active training as passive training alone is not effective, when dealing with patients suffering from these disorders (Telvig, 2018). Active training is a program of exercises created by the physiotherapist with the aim of strengthening muscle structures, create a general fitness program for the patient or improve the patient's posture in work life and daily life conditions.
The physiotherapist can offer individual, group, or home training exercises with the overall goal of implementing the exercises to the patient's daily life to prevent the pain from returning (Ibid.). Apart from the passive and active treatment, general information and guidance is also an important aspect of the physiotherapeutic work. To create a mutual understanding between the patient and the physiotherapist, pain education and guidance to cope with pain are to be used, though, with a little to moderate evidence, as a part of the whole treatment process together with supervised active training (Ibid.).
Depending on the diagnosis and condition of the patient, a treatment process at a physiotherapist will typically be 3-10 consultations in a timespan of 1-3 months. At the end of the treatment, the physiotherapist is entitled to send a discharge summary to the general practitioner stating the results and recommendations that the treatment resulted in (Andersen, 2008; Sundhed.dk, 2017b).

Referrals to physiotherapists can be given to people who are covered by the Danish healthcare insurance (Region Sjælland, 2015). It is recommended that the referral entails a diagnosis and description of the clinical symptoms, current medication, results of examinations or special needs for the patient (Sundhed.dk, 2012a; Andersen, 2018).

The physiotherapist is also remunerated through an activity-based agreement. Patients who are insured through the National Health Insurance receive subsidies, while the physiotherapists also treat some patients free of remuneration, and instead they receive payment from either the Government or private health insurances (Sundhedsstyrelsen, 2017d), (annex, 3).

5.2.3.3 THE CHIROPRACTOR

The chiropractor is educated to treat patients with musculoskeletal disorders by using their hands to correct muscles and joints in the cervical spine, lower back, arms and legs (Sundhedsguiden.dk, 2017). The chiropractor examines and evaluates the patient by conducting a series of tests, involving a thorough examination of the affected area by inspecting joints and muscles, examine the position of the joints, and test joint movement, respectively. Additionally, the examination can be supported by X-ray, a measure of blood pressure as well as an anamnesis (Dansk Kiropraktor Forening, 2018a; Sundhedsguiden.dk, 2017). Following the evaluation, the chiropractor is licensed to give the patient a diagnosis of his/her condition to plan the further course of treatment (Dansk Kiropraktor Forening, 2018b).

The chiropractor treats the patient by manipulating and mobilizing joints. To manipulate joints the chiropractor makes a sudden movement in the affected area, making the joint exceed to its natural extent for a short period, and this has the consequence, that the joint creates an audible, cracking sound. Mobilising joints implies the chiropractor to move the joints in a light maneuver. These methods cause a momentary relief of the pains in the affected areas (Sundhedsguiden, 2017). After the diagnosis and treatment, the chiropractor will assist the patient in preventing further pains and disorders to occur, by working with both their natural posture and working posture. The chiropractor can also hand out exercises for the patient to do at home, and call in for consultations to check up on the patient (Ibid.).
In opposition to the other professions presented earlier, patients are not able to receive a referral from the general practitioners to the chiropractor. In spite of this, patients can receive subsidies even though no referral has been prescribed. Every Danish citizen is entitled to receive subsidies through the National Health Insurance, yet, patients are not granted the same amount of subsidies when referred by general practitioners to a physiotherapist or psychologist (Dansk Kiropraktor Forening, 2018a; Sundhedsguiden.dk, 2017). The subsidies for chiropractic treatment is approximately 18-20 percent of the total treatment costs. However, if a patient is covered by other insurances which cover chiropractic treatment, they can receive more subsidies (Larsen, 2018).

The chiropractor is, as the physiotherapist, remunerated on an activity-based agreement. The prices vary depending on whether it is the patient's first consultation in three years, which makes it more expensive, or if the patient needs further examinations or other services like X-rays, ultrasound, supervised training (Dansk Kiropraktor Forening, 2018a), (annex, 4).

5.2.3.4 THE PSYCHOLOGIST

The psychologists treat patients with psychological issues through conversations or therapy, either individually or in groups. Their job is to help patients through difficult periods of their lives, accidents or other traumatic experiences, in order for the patients to regain the mental state of mind they had before an incident. The treatment that the psychologist provides naturally differs depending on the patients; thus, most will have a preliminary conversation to determine how the treatment should be planned, and which goals should be set for the treatment. As previously mentioned, musculoskeletal disorders can cause immense pain for the patients. Furthermore, pain can trigger stress which ultimately might lead to health problems like heart diseases, obesity, diabetes, depression, and anxiety (American Psychological Association, 2013). A psychologist can help the patients to cope with their pain through meditation or other relaxation techniques, as well as psychotherapy.

Since stress can trigger or at worst, increase the experienced pain, it becomes essential to manage stress, as it might help the patient to diminish and cope with the pain (Ibid.).
If the psychologists plan on treating the patient with psychotherapy, they tend to use one, or a mix of the categories of therapy illustrated in figure 8.

HUMANISTIC THERAPY	This approach focus on helping the patients understand their feelings, worries or interests, and though that, change their behaviour or way of thinking. This can help patients handle conflicts and feelings.
COGNITIVE THERAPY	This therapy focus on what the patients think rather than how they behave, as dysfunctional thinking leads to dysfunctional behaviour. If you change the negative way of thinking, you thereby change the behaviour accordingly.
BEHAVIOUR THERAPY	This approach focus on learning as the cause of normal and abnormal behaviour. People are affected by the surroundings and if they are changed, new stimuli will change the behaviour. This approach is used on patients with phobias.
NARRATIVE THERAPY	This approach focuses on the patterns of communication and the interaction between relatives (family for example) and discovers the problematics which a certain chain of narratives or behaviour has created and maintained.
PSYCHOANALYSIS	This approach is characterized by having relations as a whole in focus. Through conversations with the patient, the psychologist will attempt to change problematic behaviour and feelings.

Figure 8: Table of the five common forms of psychotherapy and how they differ from each other. Own illustration with inspiration from (American Psychological Association, 2018; Dansk psykoterapeutforening 2018)

Some patients reach out to a psychologist when they have an urgent need to speak to someone about their issues, and others are referred by their general practitioner. However, only if they suffer from one of the following 11 indicated in figure 9 below.

1. **BEEN A VICTIM OF A ROBBERY, VIOLENCE OR RAPE.**
2. **BEEN A VICTIM IN A TRAFFIC ACCIDENT OR OTHER ACCIDENTS.**
3. **ARE A RELATIVE TO MENTALLY ILL PEOPLE.**
4. **SUFFERS FROM A SERIOUS DISABLING DISEASE.**
5. **ARE A RELATIVE TO A PERSON WHO SUFFERS FROM A SERIOUS DISABLING DISEASE.**
6. **ARE A RELATIVE TO A DECEASE.**
7. **HAVE ATTEMPTED SUICIDE.**
8. **HAVE PERFORMED AN ABORTION AFTER THE 12. WEEK OF PREGNANCY.**
9. **HAVE BEEN A VICTIM OF INCEST OR OTHER SEXUAL ASSAULTS BEFORE THE AGE OF 18.**
10. **HAVE A LIGHT TO MODERATE DEPRESSION AFTER THE AGE OF 18 OR**
11. **SUFFERS FROM LIGHT TO MODERATE ANXIETY, OR LIGHT TO MODERATE OCD AND ARE BETWEEN THE AGE OF 18 AND 38.**

Figure 9: 11 conditions of referral. Own illustration with inspiration from (Sundhed.dk, 2012; Hansen, 2017).

The process for a referral to the psychologist is initiated when the general practitioner assesses whether or not the patient needs psychological treatment, however, only if the patient suffers from one of the 11 conditions. The referred course of treatment covers 12 sessions and can be prolonged by 12 more if needed.

If the psychologists does not believe that the patient is responding to the treatment, they refer the patients back to the general practitioner for a reassessment. If the patient does not respond to the treatment due to a more serious psychological condition, the psychologist can also refer the patient to a psychiatrist (Mortensen, 2017).

However, even if the patient has been exposed to one of the 11 reasons, the patient cannot be sure of getting a referral, as it is the general practitioners decision whether or not the patient is in a critical state of mind which might be triggered by the specific conditions (Psykologer i Danmark, 2018). According to Danish healthcare law, the subsidies are targeted patients suffering from one of the previously mentioned conditions. Moreover, there has to be a clear need of treatment (indication) which is assessed by the practitioner in order to make the referral.

The indication has to include an overall assessment which entails: patient's resources and difficulties, patient's preferences, wishes and motivation for the psychological treatment, difficulty of the patient's symptoms, sustainability of the patient's social network and patient's vulnerability, actual life situation and former difficulties (Mortensen, 2017).

Private psychologists can set their own rates, which means that remuneration differs within this profession. However, the rates are timely defined with the length of a consultation being between 45-60 minutes (Psykologer i Danmark, 2018). The average rate at a private psychologist is at approximate 1008 DKK per consultation, yet, if the patient suffers from one of the 11 conditions which can activate a referral from the general practitioner, the patient's own payment can be reduced by up to 40 percent of the total rate (Larsen, 2017).

5.3 PSYCHOSOCIAL FACTORS RELATED TO PAIN

Previously a biomedical description of neck pain and related triggers have been presented, as well as the professions who are related to the treatment of musculoskeletal disorders. These descriptions mainly point to a mechanical approach towards injuries and pain. However, more recent literature has pointed towards, that the understanding of pain must be expanded, as the injury does not always equal the intensity of pain (Kirkegaard, 2015a). The following section will elaborate further on this subject.

5.3.1 A PARADIGM SHIFT IN THE UNDERSTANDING OF PAIN

In 1977 George Engel introduced the biopsychosocial (BPS) model for disease, which later was subsequently transferred to pain (Borrell-Carrió et al., 2004). This model for explaining pain have the biomedical pain model integrated as a part of it; however, it also has more added elements and elaborates how pain occurs differently and how some become long-term, or even chronic, to some people (Engel, 1977). The elements of the model is shown in figure 10.

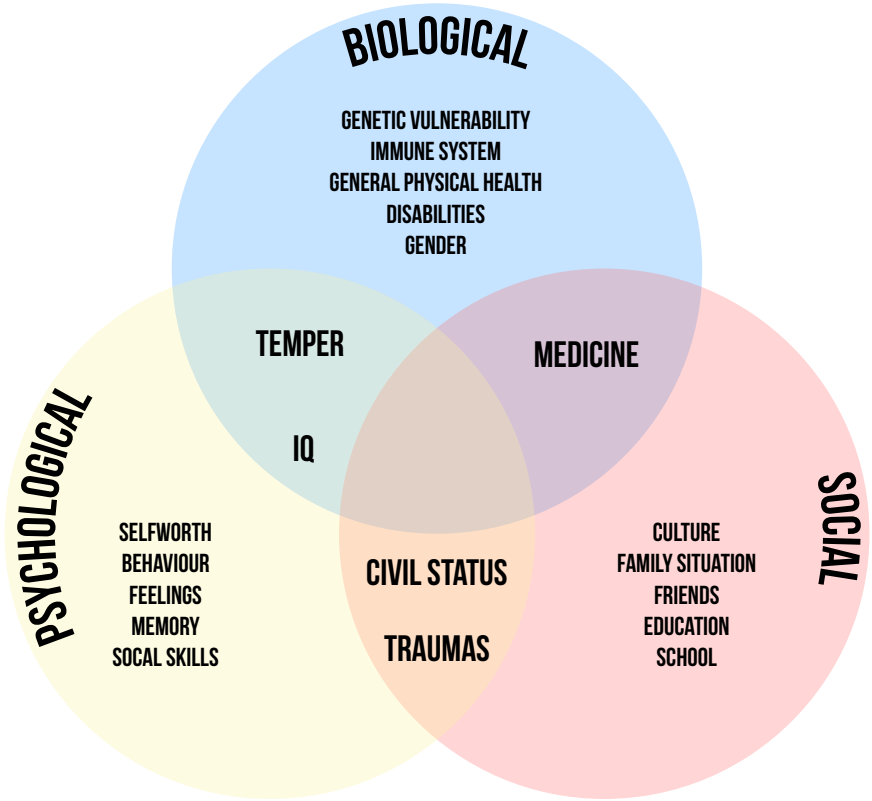


Figure 10: the biopsychosocial pain model. Own illustration with inspiration from (Engel, 1977).

The pain which is experienced always has a biological, a psychological and a social side and all three elements contribute, to some extent, to the experience. As a result of this new understanding of pain, the International Association for the Study of Pain (IASP) in 1979 developed the following definition of pain: *"Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage"* (Burket et al., 2008).

Also, Lorimer Moseley, Professor of Clinical Neurosciences, leading the Body in Mind Research Group based at University of South Australia, emphasizes a paradigm shift in the understanding of pain: *"Pain is an unpleasant conscious experience that emerges from the brain when the sum of all the available information suggests that you need to protect a particular part of your body"* (Avemarie, 2017).

Consequently, literature argues that the understanding of pain has changed fundamentally since Engell cast a ray of light on the subject back in 1977, which has made it much more complicated (Kirkegaard, 2015a). It will always differ what types of components from the different categories in the pain model (bio, psycho and social) that are apparent and have an effect on the experienced pain. Literature underlines that the more dreadful an experience has been, the higher the risk that the given experience will change the way one acts, behaves and communicates afterward.

Therefore, it is highly important that the psychosocial factors are addressed as well in the treatment process of the patient to reduce the personal costs of being involved in an undesired episode. If pain was assimilated with a structural condition, it would be fairly hard to dispose the pain once present, which means that many would be forced to live a life with constant pain. However, since pain is an output from the nervous system and the brain, it is possible to affect this output with the appropriate treatment. When applying the BPS pain model approach in the treatment process, it is of uttermost importance that "whole person" is treated, which means that anything affecting you as a human being, may be crucial and relevant for the individual experienced pain. This approach is essential because the patient is placed in a position where you have an active, controlling and central role, also known

as the patient-centered approach. This is in contrast to the older biomedical understanding of the treatment process, which is more of an expert-centered treatment approach, and of the belief that there is always one specific reason for one's pain. The consequence of this understanding is that humans become objectified. Since it is merely about uncovering the underlying reason for the pain, in order to "fix" the patient, it has the consequence that the role of the human becomes somewhat passive. The more modern understanding of pain treatment focuses considerably more on how to help the patient to live a better life after the injury, rather than uncovering the specific element which has caused the pain. Even if this shift in paradigm does not necessarily guarantee that the patient will be completely free of pain, it at least provides hope and opportunity of living a better life by focusing on different, and more, parameters in the treatment process (Engel, 1977).

5.3.1.1 CAN PAIN BE MEASURED?

It has now been emphasized that pain cannot be compared to a particular condition in the body, and further, that pain is an output from the brain and that it cannot be measured. The most precise measurement until now has been scanning the brain while a person experiences pain. However, not even this "shows" the pain; the only thing it proves is activity in the brain, which still only indicate that the person could possibly be experiencing pain, but like any other emotion, pain can only be felt and experienced in our own consciousness. Today, it cannot be scientifically explained how our consciousness functions, the only thing which is a fact is that everything we as people experience and feel is in our consciousness. Love, hunger, curiosity, anger, joy, sadness; all elements that are seen, heard and felt. These parameters are being produced by our brain, as an output of interpreting all the signals the brain receives. Therefore, it makes it very hard and complicated to understand and explain pain as it can not be measured or proven by any experts, it is merely a subjective matter (Moseley, 2007).

5.3.1.2 INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH

In compliance with the biopsychosocial understanding of pain, a holistic model for measuring health and disabilities at an individual level, and on a societal level, has been developed by the World Health Organisation's (WHO). This model was developed in a collaborative process with the aim of creating a single generic measuring instrument to be applied cross-sectionally - across borders and cultures, respectively (WHO, 2018a). WHO's classification of diagnoses, the ICD-10, classifies diseases and is used as a tool for diagnostics and treatment. The ICD-10, however, only contributes minimally when assessing the patients' needs for treatment on an individual and societal level; how the citizen acts in daily life with aspects such as, the need for rehabilitation, workplace conditions, personal assistance or other conditions of the disease or disorder (WHO, 2018b). The framework is representing a broad view of functioning and disability (participation, activities, body functions and structures), and it requires that environmental factors are accounted for as well, as it influences the functioning of the human being. Consequently, the International Classificatin of Functioning, Disability and Health (ICF) framework classifies all elements that influence functioning and disability, as well as physical, social and environmental factors that are influencing the patient, as illustrated in figure 11 below.

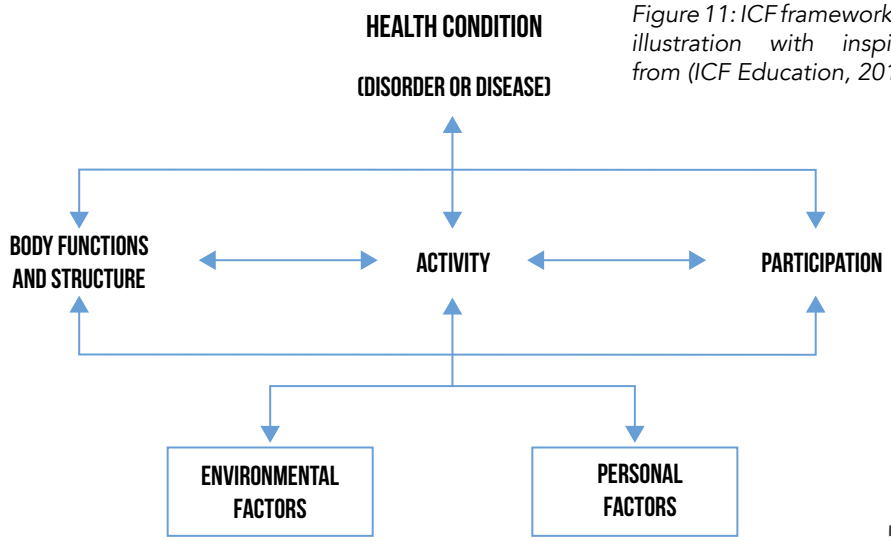


Figure 11: ICF framework. Own illustration with inspiration from (ICF Education, 2018).

The elements of "body functions and structure" refer to the physiological functions (including mental functions) and the body's anatomical structures, such as organs and limbs. Within this subject, is described losses or changes, respectively, from normal body function and structure that lead to weakness or constraints for the individual (Nielsen et al., 2017). The aspect of "activity" refers to a patient's performance of tasks or actions at the individual level, where activity limitation is the difficulty the patient has in connection with the activity. Activities may include walking, cooking, etc. (Ibid.). "Participation" refers to involvement in daily life activities, such as, work, school, day center, where participation constraints are the difficulties that may be associated with involvement in daily life (Ibid.). "Environmental factors" are related to the physical, social and attitudinal environments in which people live in. The factors are thus external to the individual and can have both positive (promotional) and negative (inhibitory) influence on functional ability (Ibid.). "Personal factors" are not classified within the ICF framework, but are included in the figure because they are essential and significant for the person's behavior and coping ability. The personal factors consist of features of the individual, which is not part of health or health-related conditions. These factors may include gender, ethnic background, age, habits, lifestyle, etc. (Ibid.).

5.3.2 BIOPSYCHOSOCIAL FACTORS INFLUENCING THE PAIN

As previously elaborated, in a treatment process of a patient, one should not divide the three different categories involved in the BPS pain model, and the elements of the ICF framework, from the human experience of reality. Pain is always complicated to deal with, why it is critical one is not biased towards a relation between pain and biological factors, nor should one be biased towards a relation between pain and psychosocial factors; in this context, both pre-assumptions are equally misleading (Engel, 1977).

Simon Kirkegaard makes the comparison between the human body and life in general and a car; when something is not working properly, we try to replace parts immediately.

He stresses that it is neither beneficial for practitioners nor for patients to focus on single factors in order to understand and explain how humans physically and mentally function:
"We do not function as cars, and a single factor is not capable of defining who or what we are, and how we experience the world - nevertheless, a single factor can of course be of great importance" (Kirkegaard, 2015b).

Kirkegaard continues by explaining that instead, we should consider humans as complex ecosystems, which are constantly influenced by biological, psychological and social factors. By embracing the "whole human" rather than focusing only on a single factor, it becomes easier to make sense of how a treatment process should be formed.
"The physical wellbeing is essential, but it is equally important that you are doing well in life …. Thus, treatment should deal with all factors in order to ensure that both you and your body are doing well and that the balance in your ecosystem is maintained" (Kirkegaard, 2015b).

The next paragraphs will elaborate on some of the common biopsychosocial factors that are most relevant to musculoskeletal patients. It will be highlighted how these factors affect both the pain experienced as well as the general well-being of the patient. The explanation of the factors is based upon literature as well as qualitative interviews performed by the research team. It is crucial to investigate these factors as we are taking on the perspective of the patients well-being. To investigate what well-being is for the patient's, we must first identify the variety of factors that influence the individual.

5.3.2.1 NOICIEPTION

Nociception is the sensory nervous system's feedback to specific damaging, or potentially damaging, stimuli. What happens in nociceptive stimulation, being intense chemical, mechanical or themfal, is that the sensory nerve cells (nociceptors) produce a signal which moves along a chain of nerve fibers via the spinal cord and finally, to the brain. Nociception is relevant in this context, as it triggers more psychological and behavioral responses, which often has the consequence that the experienced pain becomes subjective to the human (Portenoy and Brennan, 1994).

Nerves which perform as some sort of alarm system for the body, are referred to as both nociception, danger signals or protection signals. Mistakenly, many people often refer to these nerves as pain nerves, because they are often associated with pain experience. This is fundamentally wrong because these signals thus indicate that pain merely derives from the body, which is incorrect as previously highlighted (Kirkgaard, 2015b).

When an injury occurs, the nociceptors will send signals to the brain, which in most cases will have the consequence that we will experience pain. In case of an injury the body will initiate an inflammation process, which is the first step striving to heal the body. This process will increase the sensitivity of the nerves in the surrounded area of the injury. This is why it is not only the damaged tissue which is sensitive after an injury, but also the surrounding tissue.

The nerves can adjust their sensitivity in such a way less stimulus and impact is needed before they send "protection" signals to the brain (Ibid.). Many different factors can affect the sensitivity of the body's' "alarm system", however, these will not be elaborated further as a detailed description is not a necessity to understand the possible influence of nociception in relation to pain. In case of long-term (or chronic) pain, the pain may be partly explained by the fact that there are still nociceptors signals in the body, they are, however, not transmitted to the brain due to the injury in the body (Ibid.).

5.3.2.2 DISASTER THINKING AND FEAR-AVOIDANCE BEHAVIOUR

As human beings we have a desire to understand the things we experience; consequently, we strive to categorize and put the experiences into small boxes. Being able to do so makes it easier and more simple to enjoy these experiences as we can quickly assess and conclude whether we are at risk or not, and further, how we should deal with such experiences.

A typical reaction to not understanding one's own pain is insanity and anxiousness. Sometimes the pain can derive from out of nowhere, and, in such a situation, it is natural to have less confidence in your body and to feel weaker and more fragile. The more the feeling of being scared and out of control increases, the greater the risk will be to "think the worst of the pain" you experience, which is often referred to as disaster thinking. In order to minimize the risk of experiencing the pain, you unwittingly become afraid to move, in terminology known as fear-avoidance. The fear-avoidance model of exaggerated pain perception is illustrated in figure 12 (Lethem et al., 1982).

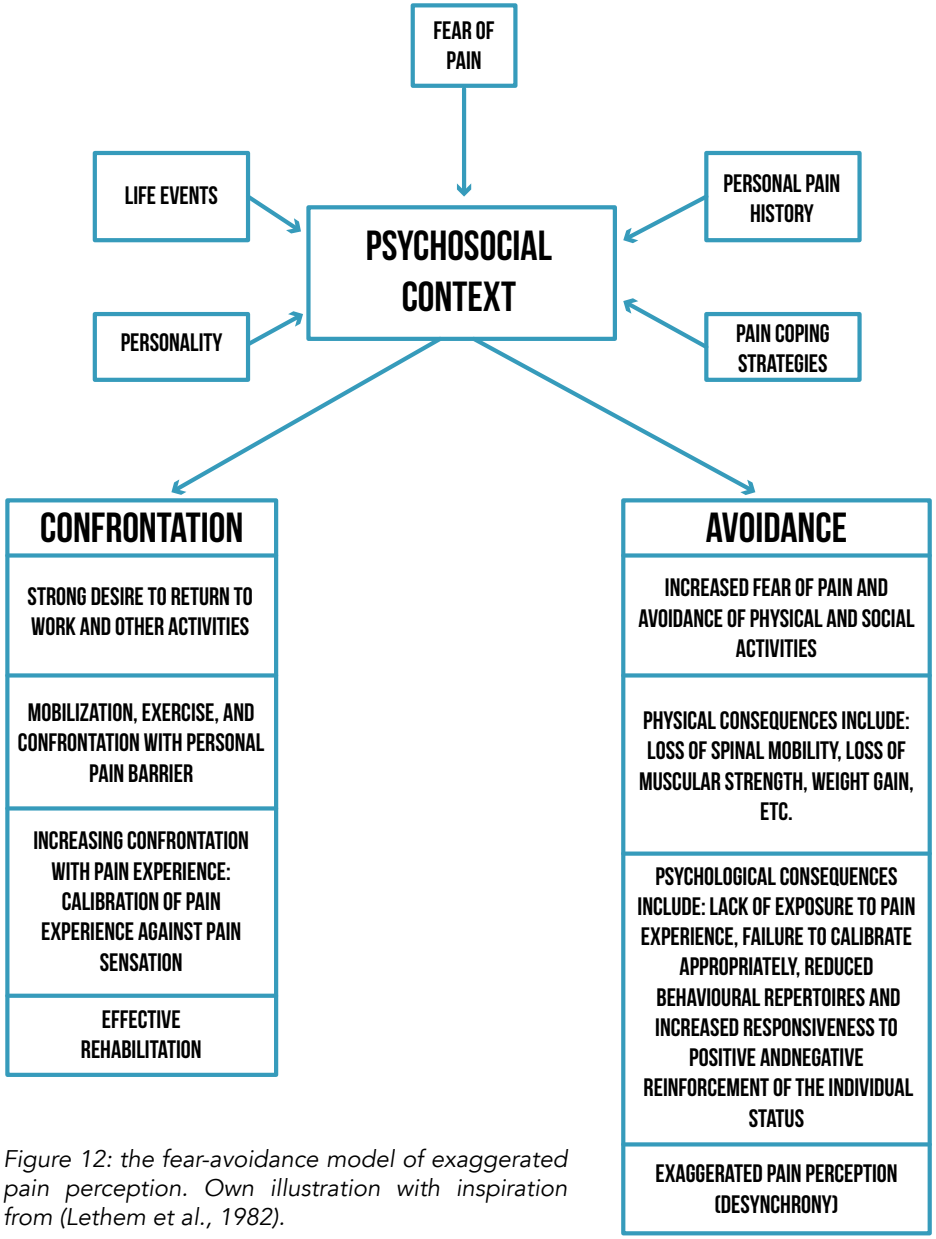


Figure 12: the fear-avoidance model of exaggerated pain perception. Own illustration with inspiration from (Lethem et al., 1982).

Over time the result will be that you get less and less comfortable doing certain things, and an increasing number of activities will start to feel painful which essentially will limit what a person will be able to do painlessly. Fear-avoidance behavior thus initiates a vicious circle which leads to reasonably low activity levels since the person becomes afraid to move, as moving equals pain.

During the meeting with general practitioner Jette Willenstrup, an example of fear-avoidance and how it affects the patients, was presented:
"… Some of the patients show up with recurrent problems. It is often the ones who are mentally fragile. It does not require much.. The neck pain easily becomes long-term. They struggle to workout by themself. They are almost afraid to! 'Auch, it hurts badly'. This is what in terminology is referred to as 'fear-avoidance' … They can not get out of the situation themself. And these are the ones who get chronic neck or back pain" (Willenstrup, 2018).

Literature points towards that both disaster thinking and especially fear-avoidance have proven to be fairly accurate markes to predict the risk of developing long-term (or chronic) pain. However, contrary to what one might assume, the body's structures are not very good at predicting who are the most at risk which again questions the massive focus on biological factors in the treatment process (Rainville et al., 2011; Wertli et al., 2014).

5.3.2.3 BELIEFS AND PERCEPTIONS

Beliefs and perceptions make it easier to commit to life and make the right decisions. Convictions are crucial to make the brain capable of interpreting the signals humans continuously receive through senses (taste, hearing, sight, smell, feel), why it is important that people have the most realistic beliefs as possible (Kirkegaard, 2015b).
Physiotherapist Lotte Telvig gave an example of how beliefs and perceptions play a huge role in the rehabilitation of patients by saying that even if the structural damage is identical, for instance, cognitive challenges, dizziness, lack of concentration, proprioceptive challenges :
" … They are exposed to the same accident, but the two outcomes are fundamentally different. 'What convictions, thoughts and beliefs did I bring to this treatment process?'" (Telvig, 2018).

Also Inge Ris Hansen indicated, based on her clinical experience, that she has noticed a sad development:
"It is not about how you physically feel, it is about how you mentally react to it. And how you mentally react to it is highly influenced by context, culture and perceptions" (Hansen, 2018).

5.3.2.4 SOCIAL CIRCLE AND RELATIVES

During interview with professor Inge Ris Hansen it became apparent that relatives and the social circle have a significant impact on the general well-being, as well as the rehabilitation process, of the patient:
" … the relatives and the social circle surrounding the patients can be very supportive. If this is the case, it can make miracles happen, but if the surroundings are extremely negative, the outcome can be a really difficult situation for the patient" (Hansen, 2018).

Also how the social circle perceives and talks about the pain is critical for the success rate of the patients rehabilitation process. If the patient is in an environment where no one really believes they are in pain, and they constantly have to prove themselves, they are struggling every day to keep the balance in their life. Hansen stated:
" … This, because you constantly have to justify that you have reduced ability to function and that you are in pain" (Hansen, 2018).

Hansen concluded by saying that it is not always the amount or the intensity of the pain that is paramount for the patient's well-being, it is the context, the culture, the relatives and the social circle.

Also physiotherapist Kristina Lykke expressed the importance of this subject during the interview:
"It is important to me to stress that nothing should be seen and investigated in isolation. It is often very related to the social circle and the context of the patient. What matters is how all of it is connected" (Lykke, 2018).

Psychologist Marie Hjalmarsson, who is collaborating with the clinic FYSIQ in treating patients, also highlighted the relation between social context and how the patient perceives pain:
"… Sometimes it [the pain] is related to mental aspects. As an example: you have been in pain for a long time. You are melancholic and sad and you are experiencing complications in your social life, and the outcome of this is pain in the back. This is the visible symptom showing that 'my life is bad'. But the underlying reason for the pain is related to many different aspects" (Hjalmarsson, 2018).

5.3.2.5 JOB, ECONOMY AND INSURANCE CLAIMS

During the interview with Marie Hjalmarsson she explained how social relations in interconnection with jobs can play a major role in the rehabilitation process of the patient, as these factors are part of the foundation of well-being for humans:
"Some, with reference to the injury or the accident they have been involved in, may lose their job and they may have an insurance claim which still needs to be dealt with. Some of their social ties may be damaged, because now they do not have a job anymore and everything at home is miserable. Their entire life foundation is essentially falling apart. In cases like this, it becomes obvious for us [practitioners] that this is definitely something that needs to be dealt with at first" (Hjalmarsson, 2018).

Hjalmarsson continued by clarifying that, even though it is not often given the recognition it deserves in the rehabilitation process, insurance claims tend to be an enormous barrier for treating patients due to personal economic incentives for the patient:
"If it [insurance claims] has not been dealt with, it is doubtful whether or not it is possible to relieve the patient of the symptoms of the condition. It seems limiting for the patient if they do not get the economic compensation they feel entitled to. We will gallantly try to talk about it with the patient, but for many people it is something they do not wish to admit" (Hjalmarsson, 2018).

She concludedd by stating that the foundation of well-being is home, social relations, and economy and if these elements are not in balance, it becomes such a critical disturbing element in the rehabilitation process that no matter what the professional does, nothing will help (Hjalmarsson, 2018).

During the meeting with professor Jan Hartvigsen, he several times stressed the importance of having a job. Being outside the labor market is not a desirable in the society we live in, he stated. According to Hartvigsen it is essential to have a job as it gives you access to everything in society, especially money and health insurance is crucial, and being without a job is simply bad whatever the underlying reason is. He also expresses that having a job ensures that people have a higher quality of life:
"If they maintain a position within the labour market, they will generally do better. It is really bad if you get off work on a sick leave … Then you become even more marginalized. You lose money. And as a consequence of all this, you lose quality of life" (Hartvigsen, 2018).

Chiropractor Mette Kilsgaard agreed with Hartvigsen and stated:
"... It is a big grief for humans not being able to work and have a job" (Willenstrup, 2018).

She continued by expressing that being self-supporting is highly related to Maslow's hierarchy of needs and that sometimes people get scared if they are not able to be economically independent, since this is what matters the most to people (Willenstrup, 2018).

5.3.2.6 STRESS

What biologically happens when we are stressed is that the body separates various stress hormones, where the two most well-known are adrenaline and cortisol. The hormones prepare the body to perform to its maximum potential, which is why it is crucial in many everyday situations. However, it is essential to be in balance otherwise we are at risk, and being influenced continuously by stress hormones could be an example of such. It is important to be aware that the body does not distinguish between physical or mental stress, and the latter form could be caused by our thoughts and overthinking alone as the hormones will still be released (Ibid.). It is known that stress can make the pain experienced worse, as the nerves, especially those that are damaged, become more sensitive to the hormones that are produced when a person is stressed. This is a vicious circle to start; when the brain concludes that you are threatened because of this "unexplained" pain, it will cause you to produce more stress hormones, which again will activate the nerves, that sends danger signals, telling your brain that you are in danger (Butler and Moseley, 2003).

In literature, stress is often referred to as physical, mental or emotional stress that causes bodily tension or mental concerns. Stress can both be considered and understood as either negative or positive, as it is a reaction from our body which is preparing itself for struggles and challenges. However, it is at all times very individual what is perceived to be stressful - it often depends on whether or not you feel that the situation is manageable or not in the long run, whether it is something you have chosen yourself and finally, if you feel that you are the master of the situation (Kirkegaard, 2015b).

Most of us will experience at some point in our life that we are stressed, and it does not always entail that it is troublesome to overcome. Nonetheless, Vachon-Presseau and co-authors conclude in their article "The stress model of chronic pain: … " that long-term stress is not considered expedient and it is associated with an increased risk of various diseases and conditions. Being stressed for a more extended period of time affects the brain, and there is a direct relation between this and the intensity of the experiences pain (Vachon-Presseau et al., 2013).

General practitioner Jette Willenstrup supported this argument during the interview:
"... If you are part of an accident, it is known that those who are stressed already will experience more severe symptoms. It is related to the nervous system" (Willenstrup, 2018).

Psychologist Marie Hjalmarsson also expressed that stress is one of the most prevalent illnesses and that:
"Stress is cumbersome to deal with in pain treatment within physiotherapy" (Hjalmarsson, 2018).

She continued by explaining that especially patients who are involved in a traumatic experience are often affected by some biological stress. This has the consequence that it becomes more difficult to work out, relax and what generally happens is that you get hyperactive and more vulnerable (Hjalmarsson, 2018).

Professor Inge Ris Hansen also stated that stress often is a part of the multicomplex problems which can make it more difficult to treat the patients. Especially post-traumatic stress can be essential to deal with immediately when initiating a rehabilitation process:
"The ones who are really depressed or are diagnosed with post-traumatic stress … You are not capable of doing anything as a physiotherapist before you deal with this. They are really miserable" (Hansen, 2018).

5.3.2.7 QUANTITY AND QUALITY OF SLEEP

Not having the amount of sleep need, or not sleeping properly, can highly affect how we as humans thrive in our everyday. Often the result will be getting more irascible, touchy and generally more sensitive. Further, this is also applicable to our pain threshold, which becomes markedly lowered by either the lack of sleep or disturbed sleep. Consequently, this affect that humans more easily experience pain and that the experienced pain increase in intensity (Kirkegaard, 2015b).
A study performed by Auvinen et al. proves that getting insufficient quantity and quality of sleep profoundly impact cognitive functions, memory skills,

energy levels, muscle growth, risk of injury, the number of inflammation markers, general performance levels, obesity, longevity as well as pain (Auvinen et al., 2010). More studies have investigated how reduced quality and quantity of sleep can be used as a factor in predicting pain. In one sleep experiment, they exposed people, with no initial pain, to nights of only four hours of sleep; the result was that after two nights they experienced spontaneous pain, and the more nights this experiment was executed, the more the experiences pain increased (Finan et al., 2013). The conclusion of another study, conducted among a group of 12-18-year-olds, proved that the risk of being injured increased by 70 percent if exposed to less than eight hours of sleep a night (Milewski et al., 2014).

Also, during the meeting with psychologist Marie Hjalmarsson, she explained the relation between the lack of quality and quantity of sleep and the treatment process of patients. She has experienced becoming frustrated because nothing happens; the patient does not improve. Instead, the patient keeps experiencing pain, and then finally, she realized that it was all because the patient did not sleep, and had not been sleeping properly for three months, and when realizing so, it made the treatment process easier to manage (Hjalmarsson, 2018).

At the interview with Inge Ris Hansen, she also stated that sleep was one of the main factors when striving for a successful outcome in the rehabilitation process:
"If they lack both quality and quantity of sleep, it has a big impact" (Hansen, 2018).

However, Hansen stressed that she was not considering the sleep factor in isolation, because her experience was that it was often a multicomplex problem which was affected by more factors, and not only the lack of sleep (Hansen, 2018).

5.3.3 PATIENT-CENTERED CARE

As empirical work and literature have pointed towards in the abovementioned sections, we have deviated from a predominant biomedical paradigm which is of the belief that pain is to be perceived as a phenomena reflecting the seriousness of the injury, which it has been caused by (the biomedical model of pain). Instead, the new paradigm presents an understanding where the experienced pain is, to some extent, influenced by three elements, these being, the subjects of biological, psychological, and social factors (the biopsychosocial model of pain), which has led us into advocating the patient-centered treatment model. The principles behind this type of care date back to the ancient Greek school of Cos, which was concerned with the circumstances of each individual patient (Crookshank, 1926). More recently, approaches which are akin have started to emerge in more fields of human endeavour; the notion of physical diagnosis and deeper diagnosis of Balint (1964), Rogers' client-centered therapy (Rogers, 1951), Neuman and Young's total-person understanding to patient issues (Neuman and Young, 1972), the disease-centered versus the patient-centered medical practice discussion by Byrne and Long (Byrne and Long, 1976), and finally, the prior explained biopsychosocial pain model of Engel (Engel, 1977). In the early 1990's, the concept of patient-centered care developed by Gerties and colleagues started to become more popular and accepted within hospital settings (Gerties, 1993). In the context of Gerties and colleagues, the patient-centered approach does not imply that the general practitioner abdicates control to the patient (Laine, 1996), rather, it indicates that they collectively must find common ground in the understanding of what the unique needs are of the patient (Glass, 1996). Previous research indicate that the benefits of patient centered care is the results it encounters in *"the duration of the office visit remaining the same"* (Roter et al., 1997; Kaplan et al., 1989), *"better patient satisfaction"* (Roter, 1989), *"higher professional satisfaction"* (Roter et al., 1997), and *"fewer malpractice complaints"* (Levinson et al., 1997).
Consequently, the core of patient centered care is that it focuses on the holistic needs of each individual patient by empowering the patients to become more active participants in their own treatment. However, in order to ensure this, all healthcare providers must become advocates of patient-centered care (OMA, 2010).

5.4 TWO EMPIRICAL CASE STUDIES

This section will present two empirical case studies of how the paradigm shift has practically been incorporated in the understanding of the experienced pain in their treatment processes, however, in fairly different manners. Both case studies have tried to build their treatment processes on the premises of patient-centered care. On the basis of these case studies, this thesis will firstly explore, analyze, and discuss the successful outcomes of implementing this thinking within practical settings. This will be achieved by investigating the subjects of establishment and core values, the professional configuration of the network of each business, the approach they take on the treatment process, and finally, their understanding of patients, and what it means, within their frameworks, to "cure a patient".

5.4.1 KIAPRO

5.4.1.1 ESTABLISHMENT AND CORE VALUES

KIApro is a healthcare consultancy, which was founded in 2007 by Jørgen Kilsgaard and Mette Kilsgaard, based on their years of chiropractic experience in both the healthcare sector as well in the labor market. The approach KIApro takes on treatment is a method which they define as *"... a 360-degree study which is combined with a labor-market clarification"*. This method was developed in 2003 in a research project in which Vejle County, the National Research Center for the Working Environment (NFA), and the University of Southern Denmark all collaborated. The method developed was tested in four municipalities in the former Vejle County. This was the starting point for the creation of KIApro as a company, where the business model is based on this method, thereby ensuring a systematic approach to an unique treatment process for the patient when work life becomes a challenge for the individual.

KIApro applies this method in all their business cases, and they prioritize ongoing development of processes and methods within their field of expertise, hence, the labor market. The main focus of KIApro is, through coordinated, time-limited and effective processes, with documented effect, to help people return to everyday- and working life after experiencing health-related problems (KIApro, 2018a).

During interview with Mette Kilsgaard, co-founder and CEO of KIApro, she expressed that the research conducted in 2003 on cross-disciplinary collaboration in processes of treating patients, proved:
"In addition, to the fact that people had far less sickness absence, which was the objective, they scored on all other parameters as well; higher quality of life, less use of medicine, less readmissions, fewer visits at general practitioners offices. Everything had become significantly better. Our company emerged based on this" (Kilsgaard, 2018).

KIApro receives referrals from general practitioners through the extended free hospital or private health insurance. KIApro has three clinics, which are located in Herlev (Copenhagen), Aalborg and Kolding, respectively. The clinic in Herlev, where the fieldwork was conducted is defined as a clinic specialized in pain. This particular clinic is a voluntary offer under extended free hospitalization, and can, therefore, be considered as a supplement to public clinics specialized in pain. KIApro has three different customer segments: companies, insurance- and pension companies and job centers. They help companies and their employees when health problems, or lack of well-being, challenges working life. They also provide treatment to incapacitated insurance- and retirement customers to return to work either after an accident or general health implications. And finally, job centers are customers as KIApro aid citizens on the edge of the labor market, to return to the labor market (KIApro, 2018c).
However, it is critical that KIApro is often perceived as the "last" solution for some of their customer segments, particularly job centers and insurance/ pension companies. These particular customer segments tend to seek "cheaper" solutions at first, and when they find that these do not "cure" the patients, they turn them over to KIApro.

Concerning this, Kilsgaard provided the following statement:
"When patients are referred by the job centers, they have typically been on sick leave for a half or a full year, sometimes for 2 or 3 years. It is the same with patients who are referred by insurance companies; they arrive here, the earliest, after half a year of sick leave….. It is related to the fact, that we are not the cheapest offer. So they try something cheaper first" (Kilsgaard, 2018).

This is a dysfunctional financial calculus, as the initial "cheaper" solutions are often the most inefficient, and the consequence of this is low patient satisfaction. Moreover, they also the end up being the most expensive solutions, as the patients enter a vicious circle of inappropriate treatment leading to an aggravation of the disorder, and essentially they need to be treated by KIApro. Kilsgaard also defined that KIApro is often considered as *"the last hope" and that they have the reputation "if KIApro cannot fix it, no one can. This is both good and bad"* (Kilsgaard, 2018).

5.4.1.2 PROFESSIONAL CONFIGURATION

KIApro is offering a particular service, which they define, as *"a work-related rehabilitation"*. They also stress that they have helped to develop the concept, as well as systematic methods and setting the standard of service provided in Denmark during the past 10 years. In this sense, work-oriented rehabilitation is defined as *"a time-limited, planned process of clear work-related goals and instruments where several actors collaborate to provide necessary assistance to the patient, in the effort to achieve the best possible function- and work-related outcome"* (KIApro, 2018d).

Therefore, the clinic in Herlev offers a "comprehensive multidisciplinary treatment course", where they tailor each treatment process based on the context of each individual (KIApro, 2018e). Further, all decisions are made in a holistic, coordinated and coherent process across the relevant actors and sectors. The clinic is staffed with a wide range of expertise - both in the fields of healthcare, the social- and employment sectors, as well as consulting expertise within occupational health- and workplace processes. These expertises consists of the following professions; general practitioners, chiropractors, physiotherapists, psychologists, workplace consultants, nurses, and social workers.

During the interview Kilsgaard further stated: *"... There is not one [professional] person at our clinic who is more important than the rest. And if I had to mention one, it would be the social worker because it is our vision, the company's vision, to keep people at the labor market for as long as possible"* (Kilsgaard, 2018).

KIApro has through experiences learned that it is more effective to embrace the approach of multidisciplinarity between different sectors and organizations. This process not only significantly increase the chances of having people return to their everyday and working life faster, but it also enables knowledge sharing, thus becoming a learning process amongst professionals. However, Kilsgaard states that it is of uttermost importance that the employees are aware of their limitations to succeed with such a configuration. She continues by explaining that not only do each professional need to be skilled in their own field, they also need to trust assumptions made by other team members:
"Many are of the belief: 'multidisciplinarity.. I do not need to be that skilled.' But this is a very wrong interpretation. Because, in order to ensure that the professionals stay within their own frame of reference, they must be sure that their colleagues are in complete control over the process, too. As soon as you start thinking 'the psychologist did not manage that depression well at all', the social worker begins to interfere, and then it becomes a mess. So.. You must be very skilled, so that all the team members know, that once you have declared something 'that is the way it is'" (Kilsgaard, 2018).

Another critical element is that KIApro supports management of flatly structured teams, as this, according to Kilsgaard, is a crucial element in order to get the best possible multidisciplinary outcome.
"As soon as a hierarchy is in place, where one possess more power than others, the rest of the team will not dare to open up about concerns or observations they have made" (Kilsgaard, 2018).

Also, the concept of feedback guidance becomes essential in the explanation of the success of the treatment process at KIApro. In all simplicity, feedback guidance means that they define a plan according to the knowledge possessed at the given time. Kilsgaard expresses that it is essential to determine goals and directions because, without these, it will be an ongoing process which will "last forever", and when setting these goals, it is essential to follow up.

If these goals are not reached, one must then ask: What happened since we did not make it? Did I, as a professional, misinterpret something? Did the patient follow the guidelines which were set from the beginning? Or did any external elements influence the process, which we did not manage to discover at first? If the goals are not reached, it is then essential to re-make the plan and keep an open dialogue with the patient, and from this, the treatment process continues. In relation to this, Kilsgaard stated:
"It is actually fairly simple and logical, however, many tend to forget it because our everyday life is so busy and stressful, and we do not have sufficient mental resources to unfold it at a detailed level.. And who knows, 'it may be better next week, or the week after that anyway'" (Kilsgaard, 2018).

Consequently, Kilsgaard stated that the most important competencies in their teams are proactiveness from the professionals, that they are not full of self-importance, and finally, they must be skilled within their professions.

5.4.1.3 TREATMENT APPROACH

Since KIApro is aiming for a multidisciplinary treatment approach, where all professions are being equally heard, it is a necessity that their treatment in practice deviates from the standard biomedical approach, which has been described previously in this thesis. For that reason, KIApro applies ICF (International Classification and Function, Disability and Health) as the overall frame of reference.

By using ICF in symmetry with this classification, it becomes possible to assess the resources and limitations of the patient, and thereby, create development goals and action plans for the patient. The approach allows KIApro to manage physical, psychological and social problem areas into an active plan for the patient (Nielsen et al., 2017).

Figure 13 illustrates the delegation of responsibility of each profession in relation to the ICF framework. First of all, the disorder, or the disease, is defined by the aforementioned ICD-10 codes, which are used by all general practitioners (Kilsgaard, 2018).

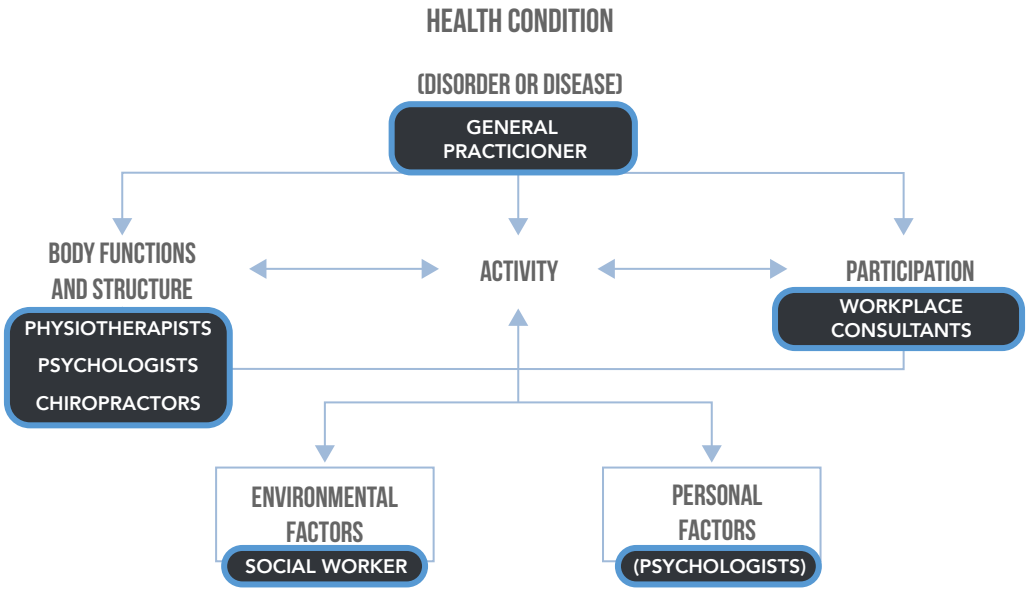


Figure 13: The framework of ICF, which is used to make a function assessment (ICF Education, 2018) as well as the responsibilities of each professions in relation to the framework (Kilsgaard, 2018). Own illustration.

Nonetheless, Kilsgaard stated that this type of diagnosis is not what KIApro particularly is concerned with:
"So, the way you are diagnosed here [KIApro] is not so much related to the blood samples you take, or the x rays, rather, it is based on these aspects [the five other aspects of the ICF framework]. That is why one's ability to function is the most interesting aspect" (Kilsgaard, 2018).

In continuation of this, Kilsgaard stressed, that it is the physiotherapists, psychologists, and chiropractors who speak with the patient about aspects related to "body functions and structure" (Ibid). She further stressed that it is not the responsibility of one professional to open a dialogue with the patient in regards to the "activity" element, rather, it is a shared responsibility among the professionals (Kilsgaard, 2018). Also, since KIApro is specialized in getting people back to the labor market, it is the workplace consultants who are dealing with the element of "participation" (Kilsgaard, 2018). The three components explained above are assembled under a shared umbrella, which provides a dynamic interaction that describes the functionality and functional

impairment, which is in compliance with the primary focus of the treatment process at KIApro. Nonetheless, they still incorporate professionals in their team, the social workers, who deal with the "environmental factors" (Kilsgaard, 2018). The one element which KIApro is rarely dealing with is "personal factors", and the reason for this is simply that it relates to aspects which are often impossible to change. Nonetheless, in some cases, psychologists can have an impact on, for instance, if the patient suffers from disorders such as ADHD or bipolar (Kilsgaard, 2018). In practice, it is not all treatment processes at KIApro which needs a multidisciplinary approach. Kilsgaard explained that naturally, they would try to explore the possibility of addressing the patient's treatment process with as few professions as possible. Depending on the customer segment, it will vary what profession is the one "welcoming" the patient with an interview.

Nonetheless, often, it will either be the nurse or the social worker, and if they define that it is a somewhat complicated case, KIApro will initiate a multidisciplinary treatment process (Kilsgaard, 2018). If such process is initiated, each professional will have a personal conversation with the patient, with the duration of approximately an hour. Who of the professionals the patient consults with first depends on the type of patient. If it is a patient who is sent by their employer in a early stage of their disorder, they often start by consulting with a nurse, a physiotherapist or a chiropractor, depending on the disorder. However, if patients are referred by job centers, they will start out by consulting with a social worker. In continuation of this Kilsgaard stated, when relating to patients with musculoskeletal disorders, it will often be either a nurse, chiropractor or physiotherapist who will initiate the dialogue with the patient.

Additionally, a sister company of KIApro has developed an application where patients can define their disorders beforehand, and then apply to be contacted. Based on the description which the patients provide, they will be contacted by the most relevant professional.
Thereafter, this is followed by a process where all employees will take part in a conference where they discuss the patient's situation and the next steps in the course of treatment.

Kilsgaard explains that the underlying reason for why this entire process is executed within one day, is because it makes it harder for patients to maintain a facade, since it is such an intense procedure, which essentially makes it easier for the team to reveal any non-physical implication which could hinder the treatment process (Kilsgaard, 2018).

Patients do not participate at these conferences, since the professionals need to have an open and honest conversation, and if the patient is present, the professionals will have to consider how their findings are presented and expressed. In most cases, the team manages to agree on a treatment course, but in case they do not:
"At this conference, it is not the general practitioner, unlike what many think, that decides [the course of treatment]. It is the social workers who have the final saying, as we are interested in seeing people return to the labor market" (Kilsgaard, 2018).

5.4.1.4 UNDERSTANDING OF PATIENTS

All KIApro's projects and processes are based on creating coherence by being able to maintain one's job, or returning to working life because in their view, work life is valuable for human beings. KIApro presents that they desire to influence the societal debate in this direction too, since they are of the belief that *"it is through our work we are daily confirmed of our values as humans"* (KIApro, 2018b).

In continuation of this, KIApro states their mission to be *"helping people, with either temporary or chronic disability, to return to everyday life, back to work, and back to the labor market"* (KIApro, 2018b).

These people are also the target group of KIApro. KIApro is of the belief that people with health issues, who are incapacitated, are entitled to perceive a quick explanation of their condition, as well as a labor-market clarification, so that all uncertainties one may have, can emerge into feeling safe and hopeful regarding the treatment process as this is in continuation of their mission as a company.

Hence, they define their own values to be highly related to working life, as they consider this to be essential for human health and wellbeing (KIApro, 2018b). Consequently, the goal of their treatment, and hence, their definition of a "cured" patients is, that the patient can enter the labor market again and continue working. They state that *"people prefer to be self-reliant, however, sometimes you can be put in a situation where it becomes difficult to maintain, or find the way back to working life"* (KIApro, 2018b).

Further, uncertainties and a lack of coherent professional approach can often make it even more difficult. Also during the meeting with Kilsgaard the subject of the importance at maintaining one's job was highlighted:
"... It is kind of a religion for us; being self-reliant, it is the best thing for humans. You may not be able to cope it at some point to all the chaos going on, but in the long run, this is what is best for you" (Kilsgaard, 2018).

She states that age, gender, ethnicity, prior personal history, diagnosis etc. do not really matter in this context *"if they can get back to work, it is all the same, it simply keeps those awful thoughts at a distance. They are caught up with something that neglects the presence of pain"* (Kilsgaard, 2018).

5.4.2 FYSIQ

5.4.2.1 ESTABLISHMENT AND CORE VALUES

FYSIQ is part of the umbrella organization named FysioDanmark, which is the largest chain related to physiotherapy and training in Denmark. FysioDanmark consists of more than 65 clinics distributed throughout Denmark, which has more than 600 physiotherapists employed. The respective clinics all have distinctive names, and in our case, it was FysioDanmark's departments in Amager, Copenhagen, named FYSIQ, where the research for the thesis was conducted. As a company, FYSIQ consists of six clinics operated by five partners. The owner of FYSIQ, Flemming Enoch, is also chairman of the board in FysioDenmark.

Three clinics are without health insurance grants, and three have an agreement with health insurance. The clinics have 40 physiotherapists and a number of other health professionals employed. Some of these physiotherapists are on lease contracts; others are functionary employed. Currently, two of the clinics each have four interns. In addition, there are more than 30 physiotherapist students in study-related work at the clinics.

According to FYSIQ's webpage their values on which they wish to be evaluated upon, are credibility, respect, empathy, and quality. Further, they define their goal to be helping patients with musculoskeletal issues to better care and recovery, as well as helping with creating long-lasting healthy lifestyle changes with an active level of exercise, through evidence-based physiotherapy and treatment customized to the single patient's need and wishes (FYSIQ, 2018a).

5.4.2.2 PROFESSIONAL CONFIGURATION

FYSIQ is a physiotherapy clinic in the classical sense, meaning, that they treat their patients in the conventional way, grounded on evidence-based treatment. However, they have also expanded their business model by offering fitness and health programs with dietists, coaching, personal and mental trainers. They have a specialized sports department for treating sports injuries, rehabilitation, and a fitness center. They further offer specialized physiotherapy for women, body and mind training courses including pilates and yoga as well as a specialized unit within physiotherapy for children. FYSIQ also have programs for neurological physiotherapy within Parkinson Syndrome, Sclerosis, and Hemiplegia.

The patients are referred to the designated expert from the first consultation, and if not, they will be, if the physiotherapist conducting the initial consultation suspects the diagnosis to be under another specialists domain (FYSIQ, 2018a).

In treating musculoskeletal disorders, FYSIQ has physiotherapists employed who are specialized in the field of musculoskeletal treatment, for instance, Lotte Telvig who is DipMPT (Musculoskeletal Physiotherapy) and specialized in neck injuries.

According to The Danish Society of Musculoskeletal Physiotherapy, the specialists within musculoskeletal physiotherapy (DipMPT, MP, MF) view patients and their accompanied issues as complex and multidimensional by nature. The organization educates physiotherapists in becoming specialists and researchers within the field of musculoskeletal disorder. They further emphasize that they educate in how to *"practically embrace the complexity and encourage a multidimensional approach to the examination and treatment, that also include and adapt the individual patient in a biopsychosocial context"* (Dansk Selskab for Muskuloskeletal Fysioterapi, 2017).

This approach is also acknowledged by Lotte Telvig who stated, that when treating patients with musculoskeletal disorder, they must recognize that many of the patients might suffer from psychosocial issues and challenges, which correspondingly must be taken into consideration when providing treatment.

During the interview with Telvig, it became apparent that FYSIQ has recently initiated an informal collaboration with psychologist, Marie Hjalmarsson. Hjalmarsson, a former employee in KIApro, is to assist in treating those patients who do not progress in the "conventional" process of treatment conducted by the physiotherapists (Telvig, 2018). Hjalmarsson is the owner of the clinic Mastering Mind, which is located in the same building as FYSIQ's (in Taarnby, Copenhagen). Furthermore, Hjalmarsson also has collaborations with other private companies within the healthcare field, such as PrimaCare and Gouda Travel Insurance (Mastering Mind, 2018).

As it was discovered through the meeting with Hjalmarsson, her role as a psychologist was incorporated into FYSIQ, based on her own initiative. Her approach to physiotherapy was that the patient treatment in FYSIQ could possibly have more than the mechanical issues to address. She managed to present and create an understanding of the essence of this significant element to the owner, Flemming Enoch (Hjalmarsson, 2018).

Since then, FYSIQ has worked towards the goal of instructing the physiotherapists to use some time addressing the patients well-being, and thereby, enable the physiotherapists to better detect if patients could be affected by some psychological aspects, which challenges them in their daily life and thus, prevented them from conducting a course of treatment. This has resulted in a closer collaboration between the different entities in FYSIQ, Hjalmarsson explained further by stating:
"They [physiotherapists] now discuss with the patients, 'okay, so you have been mentioning these issues for a long time, perhaps it would be a good idea to… [speak with a psychologist]'" (Hjalmarsson, 2018)

According to Hjalmarsson, the objective behind the collaboration is that the physiotherapists will become better prepared to detect these patients at an early stage, and if the physiotherapists are not able to manage possible implications by themselves, Hjalmarsson will partake in the treatment process, however, only with acceptance from the patients.

5.4.2.3 TREATMENT APPROACH

The patients are usually referred to FYSIQ either by the general practitioner, insurance companies, or by own initiative. The first consultation will typically entail a conversation with the patient where the physiotherapist aims to locate the trigger point of the pain and initiate a suitable course of treatment. The patient gives her/his anamnese and explains about past injuries or incidents according to questions from the physiotherapist. The questions are formed to exclude severe diseases as cancer before proceeding with physiotherapeutic treatment.

The following text piece will present an excerpt from a thick description conducted at an initial consultation, concerning elements about these severe diseases in the conversation between a physiotherapist and a patient with pain in the right arm.

"The physiotherapists ask about former illnesses as cancer, diabetes and such. All the critical diseases are listed. She states 'no', however, her cholesterol was a bit high at some point. The physiotherapists asks if she attends the mandatory screenings. She replies, that she does. The whole vibe in the room is getting a bit gloomy with all these questions about very critical diseases. The physiotherapists then states that she is just trying to remove all 'the bad guy' and continuous: 'smoking? exercise?'" (worksheet, 3).

The patients are to answer questionnaires prior to the first consultation in which the subjects above also are included, as well as a questionnaire named 'Startback' which assesses whether the patients´ are in the risk zone of getting chronic pain, how complicated the treatment process is perceived to be, and how high a risk there is for long-term treatment. The Startback program was developed primarily for patients with lower back pain, but is being used by FYSIQ for other musculoskeletal disorders, despite it not being standardized. The physiotherapist will take outset in the answers and they base the conversation upon the answers in Startback. Telvig stated that the consultation can enable deep conversations between the physiotherapists and patients.

She also stated that:
"We are not psychologists, but we become close with our patients, because we spend quite some time with them - that is for sure" (Telvig, 2018).

According to Telvig, approximately 25-30 percent of the patients could benefit from receiving treatment by a psychologist, and that they thus *"recommend our own psychologist in the clinic"* (Telvig, 2018).

However, Telvig also stated that in some cases, the physiotherapists are able to speak with patients about the psychosocial problematics that can be present in connection with musculoskeletal pain and diseases. By having "investigative" dialogs with the patients, the physiotherapists are then opening "the eyes of the patient" towards the need for help, in addition to the mechanical aspects of their body.

This results that some patients choose to "voluntarily" seek help from a psychologist, or in other cases, the physiotherapists from FYSIQ take contact to Hjalmarsson, and explains the situation of the patient, which hereafter is recommended to call and speak with Hjalmarsson personally. Hjalmarsson explained by stating:
"So we [physiotherapists and herself] have an initial conversation, and I actually experience that we become better and better at discussing and addressing these issues, because I am a part of the workplace, so they know me" (Hjalmarsson, 2018).

The internal relations between the professionals at FYSIQ, as well as their individual responsibilities in relation to the treatment is visualized in figure 14.

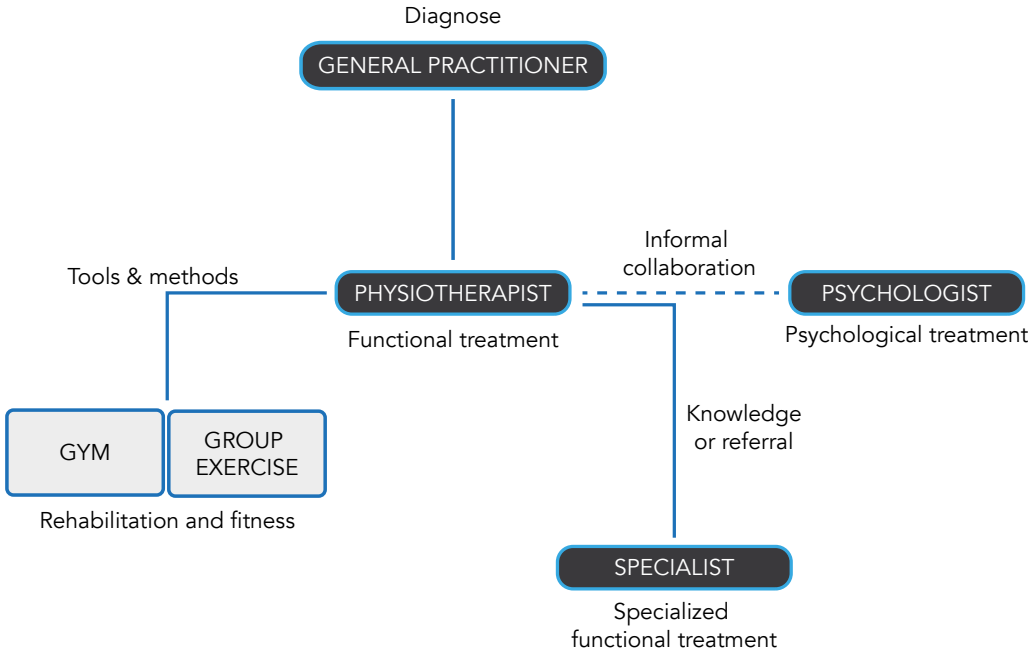


Figure 14: Professional configuration and relations amongst the actors at FYSIQ. Own illustration.

5.4.2.4 UNDERSTANDING OF PATIENTS

When the patients are referred to FYSIQ by general practitioners, insurance companies, etc., the physiotherapists can evaluate the patient and plan the course of treatment instantly. However, the physiotherapists initiate the first consultation by enabling the patient to give an anamnesis *"because we will have to figure out whether the patient suffers from any severe health issues which are not within the domain of the physiotherapist"* (Telvig, 2018).

FYSIQ describes five steps defining their treatment process and, which a patient can expect when initiating a course of treatment. The five steps can be seen on the figure 15.

1 FIND AN ANSWER TO THE COURSE OF PAIN OR DISEASE AND WHY IT IS PRESENT.

2 INFORMATION REGARDING THE PAIN OR THE DISEASE AND A PLAN FOR THE COURSE OF TREATMENT.

3 TREATMENT TO REDUCE OR REMOVE PAINS OR DISCOMFORTS.

4 REHABILITATION TO REDUCE THE RISK OF THE PAIN OR DISEASE ARISING AGAIN.

5 GUIDANCE IN PHYSICAL ACTIVITY AND OTHER HEALTH RELATED PARAMETERS.

Figure 15: Five steps of treatment by FYSIQ. Own illustration with inspiration from FYSIQ (FYSIQ, 2018b).

Essentially, these five steps give reason for when FYSIQ considers patients to be "cured". That is when the pain has either been reduced or completely removed, to such an extent that the patient manages to function in their everyday life on equal terms as before the situation, which caused the pain, occurred. However, the service provided by FYSIQ does not necessarily end when the patient is defined as "cured". FYSIQ tries to initiate physical activity to the patient, by promoting their fitness centers, with the aim of reducing possible aggravation of pain or disease.

Telvig, elaborated on how their goal relating to the patient is reached:
"And then by engaging people in an active way of life, we have done a vast effort in making people responsible for their own future and to prevent all kinds of diseases that might occur" (Telvig, 2018).

As these two case examples have pointed out, actors in the private sector have acknowledged the malpractice which is performed in the public sector, since patients are not perceived in accordance to the BPS model of pain, and thus, created clinics with business concepts directed towards change. At present, the practiced performed at the public sector advocate for a mono sequential approach for the treatment of patients with musculoskeletal disorders, therefore, to achieve the objective of applying a more holistic approach for treating these disorders, we argue that there is a need for reconfiguring the current paradigm. Consequently, the following chapter will elucidate the theoretical framework of this thesis, which later will pave the way for creating the groundwork for the conceptualization.

6 THEORETICAL FRAMING

To understand and locate where to interfere in the complex network that exists within the field of study, Actor Network Theory (ANT) is chosen to investigate how new configurations can be established to substitute the current configuration. The present network consists of powerful actors constituted in a stable configuration where the actors are interdependent upon each other to keep the configurations and relations stabilized. Furthermore, to accommodate the actors in a re-configured network we wish to apply the framework of Carlile (2004) for sharing domain-specific knowledge across boundaries in a translation process (Callon, 1986). ANT alone might turn out to be insufficient with the aim of creating a foundation of an effective re-configuration, therefore, a fruitful composition with the departure of Carlile's framing and arguments, will create a common platform for the powerful actors to cohabit in an actor network configuration. Carlile's framework will support the relations between actors, which will contribute to the stability of the re-configuration. Hence, ANT which provides the holistic approach, will be supported by a framework focusing on local relations in the field of study.

6.1 ACTOR-NETWORK THEORY

Actor-Network theory (ANT), is also recognized as the enrolment theory of the sociology of translation. This theory arose during the mid-1980s and was primarily developed by Bruno Latour, Michel Callon, and John Law and can be described by highlighting that it is a theoretical frame for exploring collective socio-technical processes, whose spokespersons have paid specific attention to science and technologic activity (Ritzer, 2004). ANT privileges neither natural (realism) nor cultural (social constructivism) accounts of scientific production. Instead, ANT considers that science is a process of heterogeneous engineering in which the social, technical, conceptual, and textual are juxtaposed and or translated (Ritzer, 2004). Thereby, the theory aims to amalgamate the description of the social as well as the material elements of technologies through a single conceptual framework, hence, making it a socio-technical approach, respectively.

This is further described by Law (1999):
"Truth and falsehood. Large and small. Agency and structure. Human and non-human. Before and after. Knowledge and power. Context and content. Materiality and sociality. Activity and passivity…all of these divides have been rubbished in work undertaken in the name of Actor-Network Theory" (Law, 1999).

What differentiate ANT from classic sociologist views, is that stable societal worlds not only consist of social elements, but also highly of associations between these. As explained by Latour (1986):
"Society is not what holds us together, it is what is held together. Social scientists have mistaken the effect for the cause, the passive for the active, what is glued for the glue" (Latour, 1986).

He concludes by using a metaphor to emphasize the importance of the associations:
"Making society hang together with social elements alone is like trying to make a mayonnaise with neither eggs nor oil – that is, out of hot air alone" (Latour, 1986).

One of the main reasons for applying ANT as the theoretical framing of this thesis, is due to the ability provided to the researcher, namely, the ability to observe a network without any previous notions of the distinctive actors and the different relations that are at stake, which upholds the current network configuration. Here, actors are included in a network that consists of numerous heterogeneous elements, and it is through actions that the network and different actors are affected (Law, 1992). Hence, by applying ANT an analytical tool, we will be to identify and analyze a more holistic aspect of the network within the Danish healthcare sector and the various relations which exist in regards to the treatment of patients with musculoskeletal disorders.

Although ANT is often referred to as a theory, we believe that it necessary to mention that it has to be seen as a less traditional theory, given the fact, that ANT is not a standard theory that one may avail of on equal level with other theories, according to which one afterward can analyze all the collected empirical data (Ritzer, 2004).

ANT is not considered to be a complete template which can be used to interpret the reality. Instead, ANT should be considered as a method to provoke and influence the way in which one can perceive the research or the field of study or in ANT words, the network. Additionally, one might say that ANT is not aiming to place reality into small boxes; instead, the reality is considered by relations, relationships and negotiations (Latour, 1986; Latour, 1992).

Thus, a dynamic perspective of the network can be elucidated in which devices and relations move, and recurrently creating new ones or updating previous ones. By applying the framework of ANT, it is possible to analyze the vital relations occurring crisscrossing of both human and non-human actors related to the treatment of patients with musculoskeletal disorders. Further, ANT emphasizes the importance of prioritizing these on an equal level, since both might have a correspondingly significant influence on the network. Often, Actor-Network theorists purposefully use the term "socio-technical network" or "heterogeneous network" to overcome what they see as a needless duality between human and non-human actors.

Although philosophically radical, this ontological leveling originates from empirical observation of activities in labs, field tests and research centers where texts, technologies and humans altogether play an equitably important role in the construction of actor-networks, respectively (Callon & Latour 1981; Latour 1987; Law 1994). This can particularly be advantageous when a solution for the network relating to these issues is to be established. Before doing so, this requires incentives to activate a translation process in the network and thereby push actors in the desired direction, in our case, towards a treatment process which is more socially and economically sustainable, respectively.

6.1.1 HUMAN- AND NON-HUMAN ACTORS

When applying ANT, it is important to recognize that an actor is not an actor until it acts. In principle, an actor can be anything as long as it can be ascribed to an action, as this is how it is defined. The term actor can be used for a person, object, machine, animals, etc. since all are treated equally in an analytical sense.

As described by Law (1992): *"an actor is a patterned network of heterogeneous relations, or an effect produced by such a network"* (Law, 1992).

This definition is elaborated further by Latour who states the following: *"An actor in ANT is a semiotic definition – an actant – that is something that acts or to which activity is granted by another…an actant can literally be anything provided it is granted to be the source of action"* (Latour, 1996).

Actors enter networked associations, which in turn define them, name them, and provide them with substance, action, purpose, and subjectivity. Additionally, it is also imperative to state that there can be a large differences between the different actors. Nevertheless, during field, empirical, and literary work, the researcher must find evidence for such matter. When stating that actors have the power to change other actors, ANT thereby agrees with mainstream sociology. In this thesis, the analysis will be based on the concept of human and non-human actors.

6.1.2 NETWORK

By deploying the concept of actors, the focus has been shifted towards the actions rather than the entity that is the source of this action, the term network emphasizes the results of these actions. When two or more actors are related, they form an actor-network, each node and link is semiotically derivative, making networks local, variable, and contingent. Analytically, ANT is interested in how networks prevail over resistance and strengthen internally, gaining coherence and consistency and become stabilized.

Also, how they organize (compare elements) and convert (translate) network elements *"how they prevent actors from following their own proclivity (become durable); how they enlist others to invest in or follow the program (enroll); how they bestow qualities and motivations to actors (establish roles as scripts); how they become increasingly transportable and "useful" (simplify); and how they become functionally indispensable (as obligatory points of passage)"* (Ritzer, 2004).

The notion of actor networks highlights that for an observer, what seems to be an actor might in fact, be an entire network (Czarniawska, 2006). Law (1992) emphasizes that an actor is also, and always, a network. An actor-network is perceived through shared inclusion of human and non-human participants in a network through negotiation and translation processes (Hassard et al., 1999).

6.1.3 AGENCY

The understanding of agency is captured in the concept of an actor, which is a fundamental concept to the comprehension of materiality. The concept encompasses that hypothetically, anything has agency and that there is no distinction in the ability of human, machines, animals, technologies, etc. to act. Agency is realized through networks and in connotation with other actors. Latour stresses that agency is not something that can be possessed by any actor, it is merely through a sequence of translations, where actors have been enrolled in other actors' interests that the agency occurs and exists and as a mere result of this (Latour, 1986). In this thesis, it is essential to identify which actors possess agency, and how this is transferred within the current paradigm of treating patients with musculoskeletal disorders.

6.1.4 SPOKESPERSON

The definition of a spokesperson is someone who is committed to the cause in such as matter that he/she can speak on behalf of others. When choosing a spokesperson who should speak on one's' behalf, one should define some strategic choices, while also selecting the possibilities for innovation and the issues to be solved. The importance of finding a good spokesperson is stressed in the following quote:
"The rule is simple: once the spokespersons, whose weight in supposed alliances is considerable, have been recruited, make them permanently interact. The fate of the innovation depends on the spokespersons' constant negotiations, on trials of all sorts which they will inflict upon each other, on contradictory existences which they mutually assert" (Akrich et al., 2002).

The element of spokesperson will be of paramount importance in regards to defining who should enroll the actors related to a more sustainable treatment process of musculoskeletal disorders, and thereby, achieve the desired configuration.

6.1.5 INTERESSEMENT DEVICE

In this thesis, the concept of interessment devices is used as a non-human actor, with the aim of inspiring and later initiating a process of change, in this perspective, within the current biomedical paradigm of treatment of patients with musculoskeletal disorders. An interessement device can enroll or eliminate essential actors, who have a share in the network and thereby, a change can occur (Callon, 1986). As non-human actors, interessement devices can emerge in various forms depending on which context and what actors need to be included in the change (Ibid.). Interessement devices can occur as workshops with actors, information, physical objects, directions from important actors or other non-human entities. The objective of inserting interessement devices in different contexts is to provoke reactions from the actors. In this thesis, the aim will be to present the analytical findings and the conceptualization as interessement devices to create the desired approach towards a more social and economic sustainable treatment process of patients with musculoskeletal disorders.

6.1.6 THE TRANSLATION PROCESS

The translation process of ANT is a multifaceted process of negotiation during which meanings, claims, and interests change and gain ground. The translation process thus has a political meaning, which refers to the pursuit of interests or specific interpretations, frequently involving acts of persuasion, power plays, as well as strategic maneuvers, respectively (Nicolini, 2010). Nevertheless, the translation process also has a geometric meaning, as it includes the mobilization of human and non-human actors *"in different directions"*, the result of which is *"a slow movement from one place to another"* (Latour, 1987).

Lastly, it has an imperative semiotic meaning, which concerns the transformation of meaning that occurs during the movement of the actors in question. Thuswise, all the actions currently existing, or used to exist in a network are caused by a variety of translations (Latour, 1992). Thereby, a translation of the network makes it possible for actors to affect other actors in a way that make them relate to their own interests and objectives.

According to Callon (1986) a network is established through a four step process: "problematization", "interessement", "enrolment" and "mobilization". In this thesis, the process of translation will lead the way towards developing and implementing the conceptualization desired to reconfigure the current network of treatment of patients with musculoskeletal disorders towards a more holistic and sustainable treatment approach. During the first step, "problematization", the researcher identifies the problem and presents it to each actor at stake. As the researcher works to build the network, negotiations will take place with relevant actors regarding the roles they may play within the network, here the second step "interessement" is presented. In this step, the researcher has to convince the actors that it will be beneficial for them to join the network. Here, it is critical to remember that networks are constantly changing and moving, and that the stabilization of a network only occurs when you are able to punctualize yourself, hence, an Obligatory Passage Point has been created. The characteristic of an Obligatory Passage Point is, that it forces actors to relate, however temporarily, to a specific element in the network. In the third step, "enrolment", actors have accepted the roles they have been designated, and they are consequently enrolled in the network. Also, spokespersons are established to interest and speak on behalf of actors and alliances – human as well as non-human. The final step, "mobilization", then occurs as others external to the network (allies) move to support it. This also concerns the upholding of the network by ensuring that spokespersons act according to its interests. However, this process is not unproblematic as controversy may unenroll the actors or remove the support of the external allies in the act of "treason" (Callon, 1986).

6.2 SHARING KNOWLEDGE ACROSS BOUNDARIES

The integrative framework of managing knowledge across syntactic, semantic and pragmatic knowledge boundaries by Carlile (2004) highlights how to avoid misunderstandings that happen when the common knowledge is insufficient to share and assess other actors' domain-specific knowledge. Apart from avoiding misunderstandings, the framework helps setting the stage for a transdisciplinarity approach, which defines that every member participating in a collaboration must be able to perform work in a transdisciplinary way, by being mediators and establishers of cross-dialogues between the different fields and communities within a constructed team, while allowing new knowledge to be embedded within one's own knowledge. At the same time they must keep a holistic view of the process at the same time, hence, transdisciplinarity can be considered as an extension of interdisciplinarity. Many different professions, with their own domain-specific knowledge, are present in the Danish healthcare system. Although they share the field of practice, much of knowledge is embedded within their individual domains, such as their understanding of the patients, pain perception and how to treat the patients, accordingly.

Carlile's framework of managing knowledge across boundaries can help set the frames for the professionals to share and assess each other's domain-specific knowledge between them. The knowledge boundaries between actors are created when actors from different occupational communities (Schein, 1996) share knowledge between them. Carlile's framework describes the processes required when managing knowledge sharing and assessment across the three boundaries, being syntactic - a common knowledge allows knowledge to be directly transferred, semantic - an interpretive approach between actors with common knowledge allows knowledge to be translated and pragmatic - actors have different interests and will need to transform their knowledge in order to create common knowledge.

Common knowledge is defined as knowledge that allows communication between actors and is shared between the actors at stake and helps creating a mutual platform to receive, deliver and communicate knowledge, for example, a shared language.

The domain-specific knowledge defines the knowledge attached to a specific domain of practice or interest, which is not shared by actors in other occupational communities. The framework is useful for environments with different actors holding domain-specific knowledge. As mentioned above, each of the different professions in our field of research carries their own domain-specific knowledge, however, within the same occupational community.
We argue that different knowledge is embedded within the actors' different practices and, therefore, the framework is still applicable.

6.2.1 DIFFERENCES, DEPENDENCES AND NOVELTIES

Three properties of knowledge at a boundary is identified: "differences", "dependences" and "novelties". "Difference" defines the difference in the accumulated knowledge, or the difference in type of domain-specific knowledge. When multiple actors are to create a new product, the process often requires different knowledge both in type and amount. Difference can be in *"levels of experience, terminologies, tools, and incentives that are unique to each specialized domain"* (Carlile, 2004). Therefore, it is important to note that knowledge can be embedded within practices.

"Dependence" defines the relation between the multiple actors with different knowledge – domain-specific or not - working together. Carlile refers to Litwak and Hylton's (1962) definition *"as a condition where two entities must take each other into account if they are to meet their goals"* (Carlile, 2004). Difference in knowledge alone has no consequence, meaning that, if the actors are not dependent on each other, no sharing and assessing of knowledge is necessary.

When the amount of difference and/or dependence in domain-specific knowledge increase, more effort must be put into sharing and assessing the knowledge. Moreover, when the third property of knowledge "novelty" is introduced the common knowledge must often be developed to accommodate the new needs, issues or assignments:
"When novelty arises there is often a lack of common knowledge to adequately share and assess domain-specific knowledge at a boundary" (Carlile, 2004).

When domain-specific knowledge is shared and assessed across a boundary with no common knowledge boundary objects can help the process (Star, 1989). The boundary between actors can vary when novelty occurs, and therefore, the common knowledge varies as well and consequently becomes weaker as a boundary object. Carlile emphasizes the capacity of the common knowledge and the ability of the actors as being important aspects. An issue occurs when an actor does not have the ability or the will to abandon knowledge when novelty occurs. This reuse of knowledge, especially from a powerful actor, can lead to other actors constrain themselves and their ability, as well as their capacity of knowledge. This path-dependency of knowledge puts the stronger actor in a position where only his/her domain-specific knowledge is shared without developing a sufficient common language.

6.2.2 TRANSFER, TRANSLATION AND TRANSFORMATION

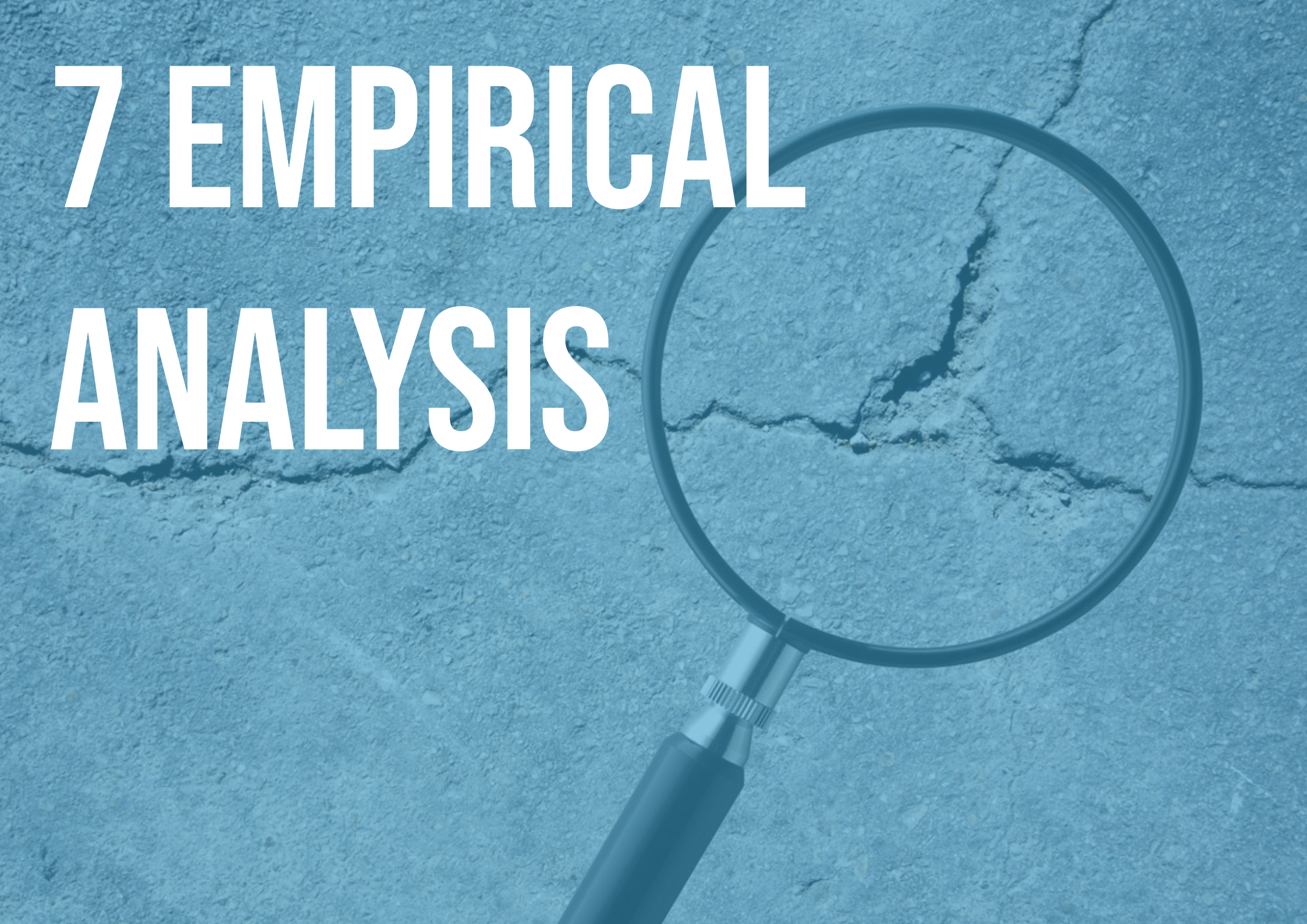
With differences, dependences, and novelties introduced to the framework, Carlile presents a model of which represents the type of effort required to managing knowledge when the amount of difference, dependence and novelty increases. Three approaches to manage knowledge are introduced to the model: "transfer", "translation" and "transformation" of knowledge. These approaches derive from linguistics' syntactics, semantics and pragmatics but focus merely on communicating knowledge across boundaries.

When the differences and dependences are known, a transfer of knowledge can be sufficient.
"When common lexicon (knowledge) sufficiently specifies the differences and dependences of consequence at the boundary, the boundary proves 'unproblematic'; the primary concern is one of 'processing' or transferring knowledge across it" (Carlile, 2004).

When novelty increases the current common knowledge becomes insufficient to transfer knowledge and the semantic boundary appears between the actors. A translation process (not to be confused with Callon's four steps of translation from the ANT framework) must be initiated to share and assess other actors' domain-specific knowledge. Translation in Carlile's framework means that someone, or something, have to interpret and explain the novel knowledge to make it a part of the common knowledge.

However, sometimes an interpretation is insufficient, if the actors' interests collide, and thereby, create a barrier to establish the common knowledge. When novelty occurs in the actors' interests it leads to difference in interests but indifference in dependence, hence, the boundary transforms from semantic (translation) to pragmatic (transformation). This means that both the common and the domain-specific knowledge must be transformed:
"at a pragmatic boundary, actors must be able to represent current and more novel forms of knowledge, learn about their consequences, and transform their domain-specific knowledge accordingly" (Carlile, 2004).
The actors must be willing to let go of hard-won knowledge to transform into common knowledge. If a group of actors succeeds with the framework and new differences, dependences or novelty arise, it is crucial to iterate the process and not take the newly developed common knowledge for granted, as assumed similarities can affect and corrupt how knowledge is shared and assessed across boundaries.
Consequently, the framework of Carlile will pave the way for describing how the different professions must act transdisciplinary in regards to the patients, and further, use the interdisciplinary approach with other professionals. This will consequently be elaborated further in the discussion of the conceptualization, as this framework will be applied because it is necessary to consider how the collaboration amongst the professional should be practiced.

7 EMPIRICAL ANALYSIS



This chapter will present an analysis of the descriptive empirical material, which is based upon literature review, interviews, observations and experiences, which will give voice to narratives and disputes encountered in the field of research. The analysis is to provide a description of the current interactions and relations amongst the various actors. Additionally, this knowledge is used to help define tension points in the current configuration of the network. Further, it is the intention that the knowledge gained from this, becomes useful when we open up for a discussion of how the network can be translated into a reconfigured network in the next chapter.

A holistic framework will make the outcome of the analysis more precise and trustworthy, why it is a necessity to underline that this analysis is based upon the knowledge and data which we have managed to obtain within the timeframe of the project. Lastly, different field conditions and logistical constraints experienced, such as access to significant information and data, for instance, from patients, were also important factors to consider.

Based on the information provided in the previous chapters, we can now argue that several tension points are in practice hindering a translation from the existing biomedical paradigm towards the biopsychosocial paradigm. The two case studies from KIApro and FYSIQ has proven that alternative, however, private, approaches can function within the current regime. Nonetheless, it also became apparent that not all elements from these cases are functioning optimally, that is, from a socially and economically sustainability standpoint.
Prior chapters have proven that many different aspects influence the prevalent understanding of how patients with musculoskeletal pain disorders are treated. We acquiesce that more factors, than the one chosen to investigate further, influence the outcome of such a process.

Nonetheless, we have chosen four main tension points, which we have found to be the most relevant to focus on in both the analysis and conceptualization in order to structure a desired reconfiguration of the current network. The four main subjects are: the financial system which includes remuneration, the complexity of defining a diagnosis, the professionals' perception of patients and what it means to be "cured/treated" and finally, the competencies of the professionals.

To present a comparison between the two case studies and the prevalent regime of the treatment process for people with musculoskeletal disorders, it is a necessity that we first describe the current configuration of this network. This will be based on the theoretical framing of this thesis, that is ANT. The theoretical framing will enable the process of mapping out actors, human and non-human, who influence the current configuration. Firstly, the analysis will present an illustration of the entire network as currently perceived, thereafter, we will investigate the individual actors by exploring their roles, identities, interests, interrelations, and how these affect the network.

7.1 THE CURRENT NETWORK

The following section will present a description of the current network configuration within the predominant, biomedical paradigm of the treatment process for patients with musculoskeletal disorders. It is essential to stress that the network constitutes of more actors than what is illustrated in figure 16, however, to maintain the analysis within the focus area of the thesis, we have chosen to focus on actors who are actively taking part in treating the patients (the practice healthcare network). Hence, actors such as social workers, job centers, etc. (the municipal healthcare network), who are not directly involved in the treatment within the current network, have been omitted. Nonetheless, these actors have still been illustrated in the network, since we acknowledge that their interrelations to the actors within the practice healthcare network provide agency and influence the current configuration.

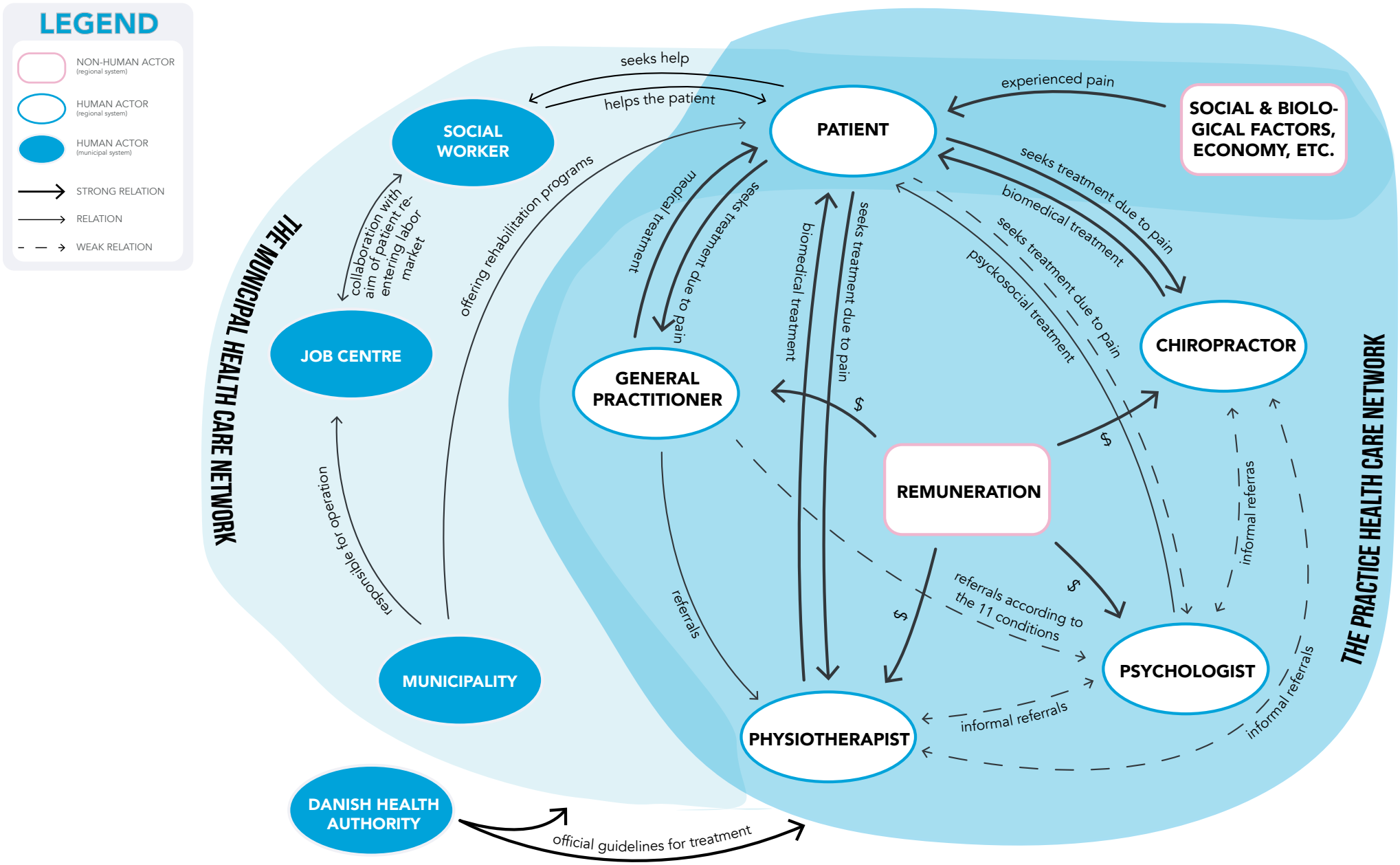


Figure 16: Illustration of the current configuration of the network with both human and non-human actors, as well as relations amongst these. Own illustration.

The current configuration of actors who are a part of the treatment process of patients with musculoskeletal disorders are placed within the regional healthcare system. The Danish Health Authority creates guidelines, recommendations and plans of action for the healthcare system and advice the regions and the municipalities towards establishing the processes of treatment. Taken departure in these circumstances, it is evident that the Danish Health Authority possesses the most significant agency, which they then pass on to the Regional- and the Municipal healthcare systems, respectively.

Patients with musculoskeletal disorders will typically start treatment by consulting with their general practitioner to be diagnosed and either receive medical treatment or a referral to a physiotherapist for further treatment, if the general practitioner determines that this is the best solution. When being referred to a specialist such as a physiotherapist, it is the patient's responsibility to initiate contact to schedule the first consultation.

For this reason, we argue, that the general practitioner distribute agency to the patient, as it is up to the individual to contact either a physiotherapist or chiropractor directly with no referral, however, the patient will not be granted subsidies and must, therefore, cover the total costs of treatment themselves. In this current configuration, the patient is subject to a mono sequential process of treatment, meaning, that the patient move from one professional to another to receive treatment. However, an important aspect of the current network is the weak relation, which exists between the general practitioner, chiropractor, and physiotherapist to the psychologist. The general practitioners will only provide patients with a referral to a psychologist if they suffer from one of the 11 conditions described in the empirical research (page 50).

As previously highlighted, "social and biological factors, economy, etc." have a significant impact on the patient, as these are non-human actors that influence the experienced pain. Factors such as losing a job, bad family relations, tragedies, stress, sleep patterns, etc., can all impact the experience of pain, which essentially will influence the results of the, often biomedical, treatment. Naturally, these factors impact the patients differently, depending on how well they are mentally equipped.

As Mette Kilsgaard, from KIApro, stated:
"It is a fact, and it is applicable for all psychological disorders and pains, the better mental capacity, the better a management of pain" (Kilsgaard, 2018).

Consequently, some professionals see the need for the expertise of the psychologists and therefore, initiate an informal collaboration, thus these are illustrated as the weak relations in the network. Some physiotherapy clinics recommend their patients to see a psychologist if they feel that the patient could benefit from such treatment. However, as it is on the initiative of the individual, agency from professionals are again passed on to the patient. This has the outcome that, the more agency distributed to the patient, the more peripheral the professional will become. Some informal collaborations are managed between chiropractors and physiotherapists, yet, some physiotherapists (often the ones higher educated and with extensive experience) take upon the psychological elements on themselves as part of their biomedical treatment.

In this context, it is the municipal sector that is responsible for providing the patient with a potential rehabilitation program. However, the agency of utilizing these offers are distributed to the social worker, who is to help navigate between the municipal offers and the job centers. These relations are related to the patient who is on the edge of the labor market. The remuneration, as a non-human actor, defines the guidelines of action of which the health professionals are subject to. Remunerations are action-based and granted, apart from salary. The remuneration affects the professionals indirectly by the fixed set of actions, which activates the remunerations, in which, the healthcare professionals act accordingly.

7.1.1 TENSION POINT 1: THE HIERARCHY OF THE TREATMENT PROCESS

The hierarchy of the public healthcare sector derives from a history of the Danish welfare system where everyone is granted free access to the general practitioner. Thus, the general practitioner is the gatekeeper of specialists, as they are accessed through referrals, if patients are to save money on the treatment as well as getting the right treatment for their condition (Willenstrup, 2018). We argue that this system works for patients with diagnosable diseases but for the diffused and complex condition which often applies to musculoskeletal disorders, the current hierarchical approach is insufficient to successfully treat all patients in a sustainable procedure. Some, of course, will recover, but patients with weak social, biological and economic resources are somewhat lost within the practice of a mono sequential process.

As Kilsgaard also expressed in relation to this subject:
"Many in the public healthcare system, and possibly also in some private treatment companies, consider their working structure to be interdisciplinary, but in reality, it is sequentially monophasic, meaning that they [patients] move from one profession to another, and no one speaks with each other about the patient" (Kilsgaard, 2018).

The overall objective of the welfare policy, related to the healthcare sector, is that it should contribute to a healthy population. As presented previously in the thesis, the healthcare sector is a complex system encompassing a variety of strong professions, diverse institution, and organizations, as well as a wide range of possibilities and offers within preventions, treatment, research, etc. Throughout the years, incentives have been sought adapted to support the desired development in the healthcare system, particularly economic incentives have been used to promote the desired behavior (Danske Regioner, 2007).

At present, we argue that there is a partial contradiction between the management tools such as incentives, the health policy objectives on the one hand, and the optimal handling of future challenges such as increasing number of patients suffering from complex musculoskeletal disorders, on the other hand. The management of patients with musculoskeletal disorders challenges the current practice of biomedical treatment-thinking, which characterizes the existing paradigm, that is, a patient seeks treatment for either pain or injury, a patient is admitted and treated, and a "cured" patient is discharged.
As it was presented in the descriptive material, individual actors in the health sector, are rewarded only for the services they deliver to the patient without any connection with the rest of the treatment process. The reward is only given for treatment, and hence, it does not support referrals to other professions in treating the patient, or that the patients should not be treated at all. When political systems advocate financial incentives to encourage the production of services, it is natural that the healthcare sector will primarily produce the services that are measured and which can be linked economically. This has the consequence, that actors within this network, do not have the incentive to promote coherence, collaboration or change the course of treatment.

One of the disadvantages of the current system is that everyone, from the general practitioner to the hospital departments, has an incentive to hold on the "easy-treated" patients and pass on the "heavy and complex" patients; it is about making the treatment cheaper than the tariff, because it is economically worthwhile for the professional.

Another critical point is that incentives are created to increase activity within one's own professional arena - while there is no incentive to cooperate across departments, across sectors or across professions. These concerns were also discussed during the meeting with Mette Kilsgaard from KIApro who stated:
"And a physiotherapist or a chiropractor, or a practitioner for that matter, will not be provided with remuneration if they, for instance, called the patients workplace to ask 'do you have a workplace consultant'. They are not rewarded, therefore, they do not do this. It is the public healthcare system which is the problem, because if you are to create a coherent process, you have to create some incentives for the professionals to work across professional boundaries" (Kilsgaard, 2018).

Kilsgaard further acknowledged that there is a need for a holistic approach in the healthcare sector to accommodate the needed course of treatment for patients, for instance, those suffering from musculoskeletal disorders:
" … we also have a public treatment system, which is actually not that bad, as long as you are guided in the right direction from the beginning. That is why I am of the belief that 'there is no need for more money in the healthcare sector, rather, there is a need for a more coordinated approach'" (Kilsgaard, 2018).

The health policy objectives such as high quality, patient involvement and context between financial benefits are, at best, not supported and, in some cases, even counteracted by the financial management tools in the healthcare sector. The activity provided in the healthcare system is signaling that activity, and not quality, care, coherence, etc. is the primary point of focus. To support the values and objectives of the healthcare sector, we argue that there is a need of altering the management concepts and incentives to promote transdisciplinary collaboration and make the professionals acknowledge that there is exigency to go beyond professions.

7.1.2 TENSION POINT 2: DIAGNOSING THE COMPLEXITY OF MUSCULOSKELETAL DISORDERS

As for now, the first professional that the patient meets is often the general practitioner who is subject to the general guidelines of treatment developed by the Danish Health Authority. The general practitioner has 10-12 minutes of consultation, from when the patients enter the room to unravel the symptoms, diagnose the patient and plan the further process (treatment, referral, etc.). This timespan can, of course, be sufficient, but in some instances, the interaction between the practitioner and the patient can be unsatisfactory and can lead to a misdiagnosis or a delayed diagnosis (Wentzer, 2015).

In continuation of this, Wentzer points towards that general practitioners focus mainly on biomedical aspects of the patient's anamenses, which has the consequence that they, objectively perceived, take less responsibility for the patient's social and psychological context. Therefore, the general practitioners are unable to explore and investigate the "whole person".

Jette Willenstrup, a general practitioner in Copenhagen, stated *"we have a limited time span, so sometimes it takes a while before I go: "My God, there it is! That's the problem"*. Willenstrup touched upon the fact that the limited time of consultation sometimes are not sufficient to fully understand the mental, psychological, social elements as well as the amount of resources a patient has, which affect the experienced pain. Furthermore, with the fixed guidelines of when it is legally acceptable to make a referral to the psychologist, the psychological aspects of the diagnosis are in danger of being neglected. She further stated that referrals to psychologists should be equalized with other referral requirements:
"I believe that it should be more equalized [referrals to psychologist and physiotherapists]. It would enable us with a better possibility of helping those who are mentally fragile" (Willenstrup, 2018).

The current configuration and limitations set between professions might essentially lead to improper referrals and medication.

It is questionable why referrals to a psychologist are dependent on very restrict parameters, which essentially requires that the patient must be profoundly influenced by psychological factors, considering the fact that consultations by general practitioners are very time-limited, as this often has the consequence that they do not manage to take the human factors into consideration. This is particularly unintelligible when considering that much research and literature underline that it is a necessity to incorporate psychological aspects in the treatment of musculoskeletal patients, as it is currently not part of the predominant treatment process in the public healthcare sector (Hansen, 2011).

The practitioner and physiotherapist, sometimes also the chiropractors, treat the musculoskeletal patients and take on the responsibility of the "whole" person, and thereby, the competencies of a psychologist are not present at the moment in the treatment process in the public healthcare system, except under special circumstances, such as private initiatives.

Furthermore, when the general practitioner decides to refer to a physiotherapist, possibly after treating the patient unsuccessfully with medication and painkillers, then the physiotherapist receives the general practitioners' report of the patient entailing symptoms, diagnosis, and reason behind the referral. However, the first consultation at the physiotherapist will typically consist of a conversation, where the physiotherapist will try to understand the condition of the patient through an anamnesis, tests of motor functions and questionnaires (worksheet, 3). Apart from the vast duplicative amount of effort this process entails, a vast responsibility is added upon the patient's shoulders, meaning, that they have to describe and explain their symptoms multiple times.

In summary, musculoskeletal disorders are difficult and fairly complicated to diagnose (Sundhedsstyrelsen, 2017), the process of explaining/unravel the symptoms can be a lengthy procedure involving the patient being sent back and forth from the general practitioner to the physiotherapists or chiropractor and back to the general practitioner. It is precarious for the professionals to diagnose the complexity of musculoskeletal disorders, and the processes in the current configuration makes it challenging to approach patients holistically. The biopsychosocial understanding of pain demands a collaborative effort to define a proper and accurate diagnosis or plan of treatment, with no overall guidance on how this should be performed in practice.

7.1.3 TENSION POINT 3: THE PERCEPTION OF A "CURED/TREATED" PATIENT

As it became apparent during the case study of KIApro, their business areas and projects are all based on creating coherence in maintaining or returning patients to the labor market, as they believe this to be valuable and irreplaceable for all people.

To some extent, one might believe that there is some truth to this, yet, within this context, when it comes to patients suffering from various disorders, there are other aspects which should be weighted higher, for instance, a more general picture of their quality of life.

KIApro has a business concept, and just as any other company, they need to meet and fulfill certain criterias and deliver a product. In this context, the product is the patient, which is to be returned to the labor market in order to serve society. We want to argue, that KIApro, to some extent, views patients as a ''mean" to achieve their own business objectives, as Kilsgaard stated:
"because our vision, the company's vision, it is to keep people in the labor market to the greatest possible extent" (Kilsgaard, 2018).

The liberal ideology currently forms the political doctrine in Denmark, here, freedom is a keyword in the liberal view of human nature and society, in the sense that every individual is responsible and able to control his/her own life (Nielsen, 2013). The prerequisite for a good society is that each person feels personal responsibility for making an effort and contributing to society. However, with their approach, the ideology that KIApro practices can be regarded as mechanical materialism view of human nature. Within this doctrine, the individual is nothing in him-/herself but predetermined by the material world. Man is an object and is controlled by its environment. The development opportunities within this human view are purely objective of the individual, both positive and negative development comes through manipulation and management (Nielsen, 2013).

This further contradicts the approach of patient-centered care, which, in continuation of the deontological and social sustainability arguments, emphasizes that individuals must always be perceived as an "end", meaning, that one must not take advantage of individuals to obtain own benefits. As defined by the German philosopher Immanuel Kant, founder of the deontological philosophy:
"act in such a way that you treat humanity whether in your own person or in the person of any other, never merely as a means to an end, but always at the same time as an end" (Kant, 1993).

The perception of KIApro might result in that patients return to the labor market even though they may not be completely "cured", because according to KIApro, a patient is "cured", when they are able to return to the workplace, or start in a new position. This takes place because KIApro cannot continue to have a long course of treatments, given their customer segment, they are "forced" to have a profitable "product", because if it is too expensive for the customer, they are not reluctant to deliver more patients. In this context, KIApro has also established a workplace where some patients can work until they are ready to return to the labor market. Regarding this, Kilsgaard stated: *"some of them [patients] pack spices, and some can work at the front desk with some tasks. As soon as they are fairly sturdy, they are sent to a real workplace"* (Kilsgaard, 2018).
Once again, this statement underlines the problematics of KIApro's interpretation of when a patient can be termed "cured", as they believe that returning to the labor market is part of the course of treatment.

We want to argue that one of the limitations with a private company, such as KIApro, is that it is driven and influenced by their customer segments, which essentially highly impact the perception of what a "treated/cured" patient actually is. We are not arguing that being part of the labor market is not essential for human beings, we are merely saying that returning to the labor market does not equal a "cured" patient. Consequently, we emphasize that a "cured" patient entails much more than the parameters KIApro utilizes as measurements, an approach which embraces the "whole person", all biopsychosocial elements, is a necessity aiming for the most social sustainable treatment process for patients.
Contrarily, FYSIQ has a patient understanding which enables them the possibility to maintain a more holistic understanding of the context of the patient, such as better health, psychological factors and generally higher quality of life. Nonetheless, they still acknowledge and consider the importance of patients returning to the labor market, however, on equal terms as with other parameters. Although patients may need to live with their pain, FYSIQ considers the patient as being "treated/cured" when they can function in their everyday life on equal terms as before, in continuation of this, if this means that the patient still experience pain to some extent, they must learn to be in control and focus on other aspects that can bring joy.

With this approach, FYSIQ also aims to prevent patients from having other diseases and disorders later in life, regarding this approach, Telvig stated: *"so, for the office assistant who drives back and forth to work and suffers from neck pain... if I am capable of making her come here twice a week to exercise, then I am happy. She is 48, undertrained, weights 10 kg more than recommended, if I can have make her workout and focus on her health, then I am happy, because this will possibly prevent her from having diabetes in 10 years"* (Telvig, 2018).

The understanding of patients is undoubtedly the strong point of FYSIQ, and we argue, that from the patient's point of view, it is a more socially sustainable patient understanding as it aims to "treat/cure" the whole person, rather than only focusing on returning to the labor market.

7.1.4 TENSION POINT 4: COMPETENCIES AND RECOGNITION OF PROFESSIONS

We have previously stated that musculoskeletal pains and disorders are complex and many-sided, which would benefit from a treatment approach which allows more and different professions to be included. Furthermore, we have elaborated how literature argues that research has moved away from the previous understanding of pain, which was perceived only to be influenced by biomedical elements, to a new understanding which emphasizes the significance of the biopsychosocial elements as well. During this thesis, we have come to understand that in practice, the new understanding of pain is managed and practiced differently. Some physiotherapists acknowledge not only their patient's physiological condition but also the influence of the psychological aspects, however, the management of such patients varies depending on the physiotherapists, thus, a differentiated approach to the patient. For instance, Inge Ris Hansen, professor, and physiotherapist, has a perception that the psychological aspects are part of her profession and responsibilities.

When asked whether or not she felt more pressure and responsibility when dealing with patients which are affected by psychological factors, she stated:
"I believe it to be my responsibility as well. I think that physiotherapy is a wider field than what it is often perceived as today. I also try to educate my colleagues about how wide the profession is" (Hansen, 2018).

Lotte Telvig, physiotherapist specialised in musculoskeletal neck pain, agrees with Hansen, but also recognizes that for some physiotherapists it can be difficult to manage such patients:
"yes, they [physiotherapists with little practical experience] would probably feel that it is quite challenging and think: 'Oh God, how can we treat this patient and how will their condition get better?'" (Telvig, 2018).

Mette Kilsgaard, co-founder of KIApro, also affirms that many professionals perceive themselves to be experts, why they want to embrace many aspects which are influencing the patient. She stated:
"because health professionals want to do it all by themselves, they are all experts" (Kilsgaard, 2018).

Contrary to the beliefs of professor and physiotherapist Inge Ris Hansen, physiotherapists and daily leader of FYSIQ, Lotte Telvig, co-founder of KIApro and chiropractor, Mette Kilsgaard, physiotherapist Kristina Lykke is of another perception. Often, she finds it difficult and frustrating if the patient is influenced by psychological factors, since it requires her to act as a "mini-psychologist." In relation to this, Lykke stated:
"I cannot be something that I am not. But I can be the one who helps to push the treatment in the right direction and tell the patient: 'I think you need cognitive therapy, to see a psychologist'" (Lykke, 2018).

Lykke further stated, that in such situation, she perceives it to be part of her responsibility to informally recommend the patient to see a psychologist and further, inform the general practitioner of the situation:
" … it is my job to inform the general practitioner that I have spoken with the patient, and that I have informally recommended a psychologist" (Lykke, 2018).

What we see here is, that even though many arguments point in the direction of professionals taking on a substantial amount of responsibility regarding the patients, some do stand out and express a willingness to set boundaries of their own expertise. Further, during our research, another dimension related to this was discovered, being that the communication and collaboration between the different profession could be improved. During the interview with general practitioner, Jette Willenstrup, she stated that:
"Not all physiotherapists write me back when the treatment ends, which means that I then become disconnected from the process" (Willenstrup, 2018).

Nonetheless, Willenstrup also stated that some physiotherapists write back to her with suggestions for further treatment, but it is far from everyone in her network:
"Telling each other what we mutually observe… I think they [the specialists] could be better at this. If they became better, it would not upset me" (Willenstrup, 2018).

Willenstrup further problematizes that the responsibility cannot be given to the patient because:
"If you send them to the physiotherapist and they observe and decide that something must be done, then they [the patient] have to inform us" (Willenstrup, 2018)

In continuation of the discussion of the actual responsibility of each professional, and the absence of communicative feedback, we argue that biomedical professions tend to be biased towards negligence of the profession of the psychologist. Often they are of the belief, that self-help and activity alone, which are considered part of their treatment, are able to directly influence psychosocial implications and factors in a positive direction, as stated by Roos et al., (2015):
" … professionals can also play a central role in the prevention of psychological and social consequences of musculoskeletal diseases and injuries by promoting self-help and the message that, for the vast majority, work and physical activity will result in a higher quality of life with less pain rather than worsen the situation" (Roos et al., 2015).

Subsequently, we argue that the competencies a psychologist possesses is indirectly belittled and rather than acknowledging the need for a psychologist in complex treatment processes, some physiotherapists tend to advocate and assume cross-disciplinary responsibility despite their lack of education and skills, which naturally is required in such professional settings. This commonly applies to professionals who have been in the field for an extended period of time, and often higher educated, while newly educated, or professionals with little practical experience, are often less willing to take on the subject of elements which are not directly part of their expertise.

During the case study of KIApro, it became apparent that their treatment approach is built on the premises of ICF, and therefore, they allocate professional responsibility according to this particular framework. Thus, KIApro manages to "distribute" the different elements of the ICF approach to the professionals who are experts within their specific field. Meaning, that they all acknowledge the competencies of each other, while they also recognize their own limitations of expertise.

Also, psychologist Marie Hjalmarsson who are collaborating with FYSIQ, stated that it is favourable if the physiotherapists, for instance, listens and are compassionate about a patient, as long as it is within their on field of expertise. Hjalmarsson continues:
"if they start asking about things and give advice about something specific, then they must be realistic and consider if it is a subject they are capable of managing. For example, if the patient opens up for something more profound you could essentially open up for something, that you are not able to handle [as it is not part of their expertise]" (Hjalmarsson, 2018).

Consequently, the negligence of others' expertise has the consequence that it, in practice, becomes troublesome to perform treatment according to the biopsychosocial understanding of pain. That due to the fact that, the professions who have expertise within the subjects of psychological and social factors, are often not given the recognition it requires to fully adopt a holistic treatment approach, since some professions have the perception that they are capable of uncovering all aspects of a course of treatment, ultimately hindering a transdisciplinary collaboration among professionals.

7.1.5 TOWARDS A CONCEPTUALIZATION: THE LACK OF TRANSDISCIPLINARY COLLABORATION

As highlighted in the previous tension point, the lack of reciprocal professional recognition influences the incumbent regime of a public, including both municipal and practice, healthcare treatment processes. We thus argue that the treatment process do not live up to the debates and definitions that have been presented in newer literature, which provide a more holistic approach to how pain should be perceived and managed and treated. Thuswise, this is reflected in the practiced treatment process in the public sector, which has resulted in that various private treatment establishments with alternative approaches have been initiated, such as KIApro.

To utilize a more holistic treatment approach in practice within the public healthcare sector, we argue, based on our empirical findings and the analysis, that a transdisciplinary professional collaboration is a necessity to provide a more socially and economically sustainable treatment process.

The analysis has pointed towards that - the complexity of diagnosing and very restricted referrals processes, different perceptions of what a "cured" patient is, policies advocating economic incentives, and, insufficient communication and recognition amongst the professions - are all parameters which influence the current collaboration in the network.

Taking into consideration what both the literature review, the empirical findings and what the analysis has proven, we want to argue that to achieve a socially and economically sustainable treatment process in the public healthcare sector, a transdisciplinary conceptualization amongst professionals is a necessity, where they not only collaborate, but also learn from each other. Based on aforementioned, and the case studies, we argue that a conceptualization which promotes collaboration amongst professions, must be build on very precise conditions for it to be sustainable and function in the long run; high level of

professional respect, mutual trust and clarified disciplines. We acknowledge that striving for such public transdisciplinary teams will create new tensions points; political agendas and economic incentives for the professionals, how to collaborate in practice, who should be involved and the current hierarchy within the network, as well as knowledge sharing across professional boundaries.

In continuation of this, we must consider that the professionals, who are related to the course of treatment, belong to a different sociological paradigm than the one we find ourselves situated in. The functionalist paradigm is considered to be the primary and most extensive for research of disease studies, and is in much literature considered as the pillar of positivism (Burrell and Morgan, 1979). It takes the standpoint of rational human action, and assumes that one can understand behavior through objectivity, generalization and quantitative hypothesis testing. In practice, this has the consequence that concerns are often validated from a technical point of view, instead of allowing different interpretations of reality, hence, what is considered to be valid and what is not. Consequently, the actors related to the field of research take on a positivistic approach towards science (Ibid.), which means that we must define precise and convincing interessement devices. This is essential as the interessement device must be impossible to disregard, regardless of predetermined sociological belongings, to successfully implement the concept on a societal scale.

Bearing this in mind, the following chapter will illustrate and describe how the "ideal" configuration, of such transdisciplinary teams, should operate within the network. We will, based on the framework of Carlile and the translation process related to Actor-Network Theory, address how these "newly created" tension points can be met and tackled.

8 DISCUSSION OF CONCEPTUALIZATION

This chapter will present a conceptualization which will be discussed based on the objective of creating a holistic approach for facilitating transdisciplinary collaboration amongst actors who are related to treatment of patients with musculoskeletal disorders, and thereby achieve the primary purpose of creating a socially and economically sustainable approach, by having patient-centered case as the point of focus.

Additionally, it is a necessity to stress, that the intention is not to conceptualize what patients the professionals should include in a transdisciplinary treatment process, and further, we do not intend to define at what time each patient should participate in a treatment process as this. We do not possess the expertise to define the diagnosis and plan a course for patients, instead, we highlight that the concept we intend to mediate, must include interpretive flexibility for the professionals to be capable of making this decision depending on the context.

In continuation of this, we intend to build the frames and guidelines for how a transdisciplinary collaboration can work in local communities, as we have experienced through empirical research, that these local communities already tend to have informal collaborations since fewer professionals are present to cover the patients' demands. It is important to bear in mind that incentives and organizations that work well in one place may be inappropriate elsewhere. For instance, The Capital Region does not face the same challenges as the Region of Northern Jutland; there are different population contexts, differences in geography, differences in cooperation patterns with municipalities, difference in number of general practitioners, physiotherapists, and number of specialist practitioners, difference between their perception of pain, and lastly, there is indeed a difference in the population's behavioral patterns.

For this reason, we, therefore, emphasize the importance of interpretive flexibility when developing local networks among existing professionals. Hence, the concept must be able to adapt to the specific context to ensure that the knowledge about patients stays local among the professionals who consulate the patients regularly. Additionally, we strongly acknowledge the expertise and competencies of each professional within the local communities, why it will be the same professionals that are included in the collaborative treatment process, as in the current network configuration. We stress that a different approach to the treatment process which emphasizes patient-centered care, is beneficial for all parties, however, for this to be executed in practice, stronger collaboration amongst the professions is necessary. The competencies that are needed in such a transdisciplinary team is already present in most local communities, nevertheless, frames and guidelines for how such a collaboration can be established are missing.

8.1 THE IDEAL NETWORK

Based upon the findings from the empirical descriptive work, as well as the tension points in the analysis, we argue, that the ideal network must be patient-centered and include the subjects of biological, psychological, and social factors. Hence, the biopsychosocial (BPS) model of pain must be accepted and utilized in practice. Literature has further emphasized that applying a patient-centered approach has more positive outcomes for a treatment process; such as better patient satisfaction (Roter, 1989), higher professional satisfaction (Roter et al., 1997) and fewer malpractice complaints (Levinson et al., 1997).

From this, we further argue, that taken the stand which allows us to act on behalf of the patients' point of view, significantly improves the parameters of social and economic sustainability, respectively.

The illustration in figure 17 presents the ideal network for a treatment process of patients with musculoskeletal disorders, needless to say, the patient is positioned in the center of the network, as we argue that this network configuration is socially sustainable and utilize the concept of patient-centered care.

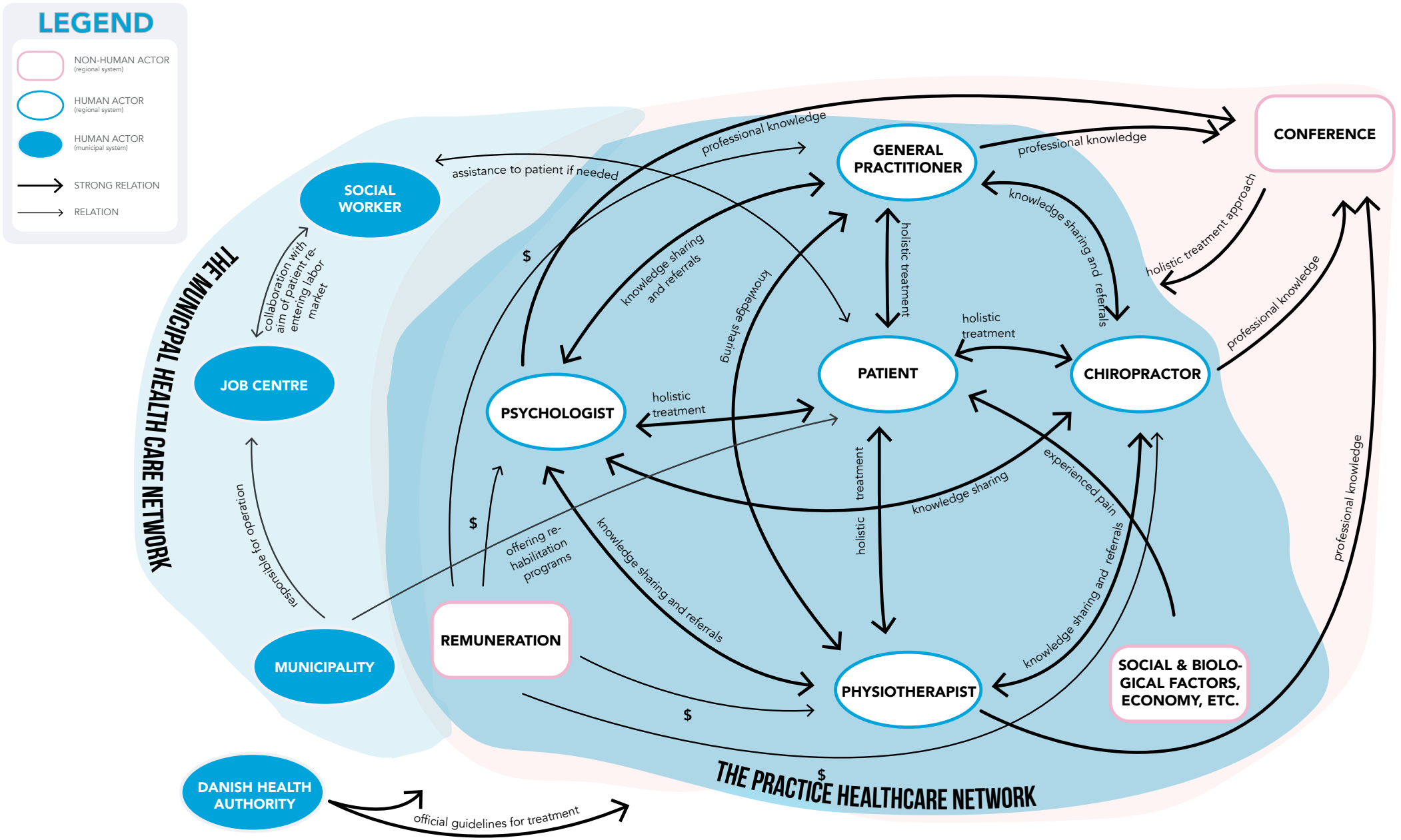


Figure 17: Illustration of the ideal network configuration with both human and non-human actors, as well as relations amongst these. Own illustration.

8.1.1 CONFIGURATION OF THE IDEAL NETWORK

As in the analysis of the current network, it has been decided to illustrate the municipal healthcare network and the practice healthcare network, respectively. We acknowledge that the two spheres are strongly interdependent, and that the relations are mutually influenced. Despite this, we have chosen to focus on the practice healthcare network in the discussion of the conceptualization, as these actors, the professionals who directly provide treatment, have been the primary focus throughout the thesis.
The sphere of the practice healthcare network includes five human actors, being the general practitioner, the psychologist, the physiotherapist, the chiropractor, and finally, the patient. Further, it contains three non-human actors, being remuneration, factors influencing the experienced pain for the patient and the conference. The relation between the professionals in the ideal network is highly influenced by the patient-centered care approach; they must establish a common understanding of what patients should be included in a transdisciplinary treatment process. The empirical findings and the analysis have indicated that a transdisciplinary collaboration amongst the professionals is not necessarily beneficial in all treatment processes, instead, it can sometimes hinder the progress of the course of treatment.
Kilsgaard from KIApro underlined this by the following statement:
"if you immediately notice red flags [patient is affected by more well-known elements; being either biological, psychological or social, or a combination], I would say that interdisciplinarity should be utilized from day one. But if you do not notice it immediately, it is better to start with 'light arms' [fewer professions]. Because, you can quickly invent and illuminate disorders, and the consequence will then be that interdisciplinarity will actually extend the process. So it is not always the more, the merrier. So, timing is important in this context" (Kilsgaard, 2018).

Taking departure in this, we argue that it is of uttermost importance that the network possesses flexibility, as the ideal network must both work under circumstances where transdisciplinary collaboration is not desired, while it must also work in a context where collaboration is needed to treat the patient. This means, that the relations amongst the actors must be "adaptable" according to the individual patient. If a transdisciplinary treatment approach is a necessity, the relations among the professionals will be that they all bring professional knowledge to a conference, where they discuss and investigate the patient, and from this, plan the course of treatment. In a situation where team collaboration is not a necessity, the relations amongst the professionals will be referrals and knowledge sharing of the patient by phone or via online platforms.

In practice this means that whomever of the professionals the patient meets at first, the shared understanding must provide a common ground for the individual professional to assess what type of patient it is within the established framework.
The common ground is strongly related to the non-human actor which is the conference. If the professional actors are of the belief, based on evaluation and/or knowledge sharing with each other, that a transdisciplinary collaboration should be initiated, a conference were each professional physically participate must thus be established. Here it is important to state, that the location of the conference might vary, depending on the local context, such as facilities, easiest access in terms of distance, etc.
It is also a collaborative decision who of the professionals should be included in the specific treatment, and this decision should be evaluated based on what parameters from the ICF framework the patient is affected by. Further, prior to the conference, each of the included professions must have spoken with the patient for approximately 30-60 minutes. Taking departure in the consultations with the patient, and the professional knowledge each profession bring, the discussions and evaluations at the conference define the future plan of the treatment process. All decisions at the conference must be made in a holistic and coordinated process across the relevant actors, which entails that it is a necessity that the structure amongst the professionals is "flat", and no hierarchy is present. It is crucial that these decisions are built on experience, this means that initially, all patients must be perceived by all the professionals as "novelties". They must perceive all treatment processes to be of unique construction which they learn from, and thus, essentially transform this into shared knowledge they can bring into the future treatment processes.

The framework of Carlile (2004) has been applied to highlight the importance of sharing and assessing knowledge between professionals and establishing the new knowledge as syntactic, and semantic to develop the competencies and resilience of the configuration. In the current configuration, formal lines of communication through referrals are practiced through the general practitioner as the "project manager" of the patient's course of treatment, and further, as the gatekeeper to access other professionals. The referrals function as the professionals' vocabulary and platform of communication. However, as the general practitioner and the other professionals are experts within their own domains, the referrals only transfer knowledge accordingly across a syntactic knowledge boundary. After the referral is sent, no more knowledge will be shared among the professionals, because each domain will take over and apply their knowledge with like-minded. We thuswise argue that the ideal network should support knowledge sharing and assessment across syntactic, semantic as well as pragmatic boundaries between the actors to supply them with new knowledge, and thereby, enable them to assess which patients should be provided with transdisciplinary treatment.

Taking departure in Carlile's framework, the properties of knowledge is called "difference" and "dependence". "Difference" related to the actors' levels of expertise, terminologies, tools, and incentives, which will differentiate from each other. "Dependence" is defined as the dependency on each other's specialization within their respective field to support the holistic treatment of the patient. The third property of knowledge, to enter at a boundary between actors, is the novelty of the conditions, which in this network is the patient.
Since all actors are part of the Danish healthcare system, the foundation of sharing and assessing knowledge is already established through education and common terminology. The specialized knowledge in each profession can, if not syntactically transferred, be semantically translated through the specialist in possession of the specialized knowledge. This grounds a set of common knowledge that can be applied when assessing and treating the patients.

In the beginning, a vast number of different patients will represent novelty, and therefore, a broad distinction of patients will need to be assessed by the professionals. As the professionals collectively assess the patients, new shared knowledge of patients who have been through the treatment process in the re-configured network will be formed. The higher amount of "difference", "dependence" and "novelty" will demand a higher effort of knowledge sharing and assessing from the actors. When a novel patient enters and creates a pragmatic boundary between the professionals, a transformation of knowledge must be initiated between the professionals. This necessitates the professionals to listen to each other and assess the knowledge each team member possesses, which means, to conclude on which course of treatment the patient should participate in, the professionals must transform their embedded knowledge and thereby give up on existing methods or practices. This phase is essential for the conference to function optimally, because if the professionals are not willing to abandon their hard-won knowledge through education and previous experience and learn from each other, it might lead to a selection of the wrong course of treatment for the patient at stake. Perceiving the patient as a boundary object can facilitate this process and start the negotiations, and lastly, help transform the knowledge of the professionals.

Therefore, it is of uttermost importance that the team keeps establishing common knowledge, and thereby heighten their effectiveness in the course of treatment for patients. Furthermore, an iterative process must be taken into action with the aim of streamlining the criteria for patients of whom would benefit from entering a transdisciplinary course of treatment.

When a novel patient enters the network and creates a pragmatic boundary, it is important to send the novel patient through the transdisciplinary course of treatment. When the professionals share and assess knowledge across the pragmatic boundary at the conference, the newly acquired knowledge must be included as part of the common knowledge, so the guidelines of treatment can be defined for this specific type of patient; making the pragmatic boundary syntactic or semantic. In the future, when similar patients enter the network, the professionals will already possess the knowledge required to decide whether or not the patient should be enrolled in a transdisciplinary course of treatment and further, what professions that should be responsible for the patient's course of treatment. This due to the fact, that the shared understanding enables the professionals to assess patients syntactically or semantically, thus, transfer and translate knowledge between in between the professions.

The common knowledge is thereby continuously developed and it is important that every novel patient is assessed at the transdisciplinary conference, until a situation where no novelty occurs, thus making it an iterative process. This process is illustrated in figure 18.

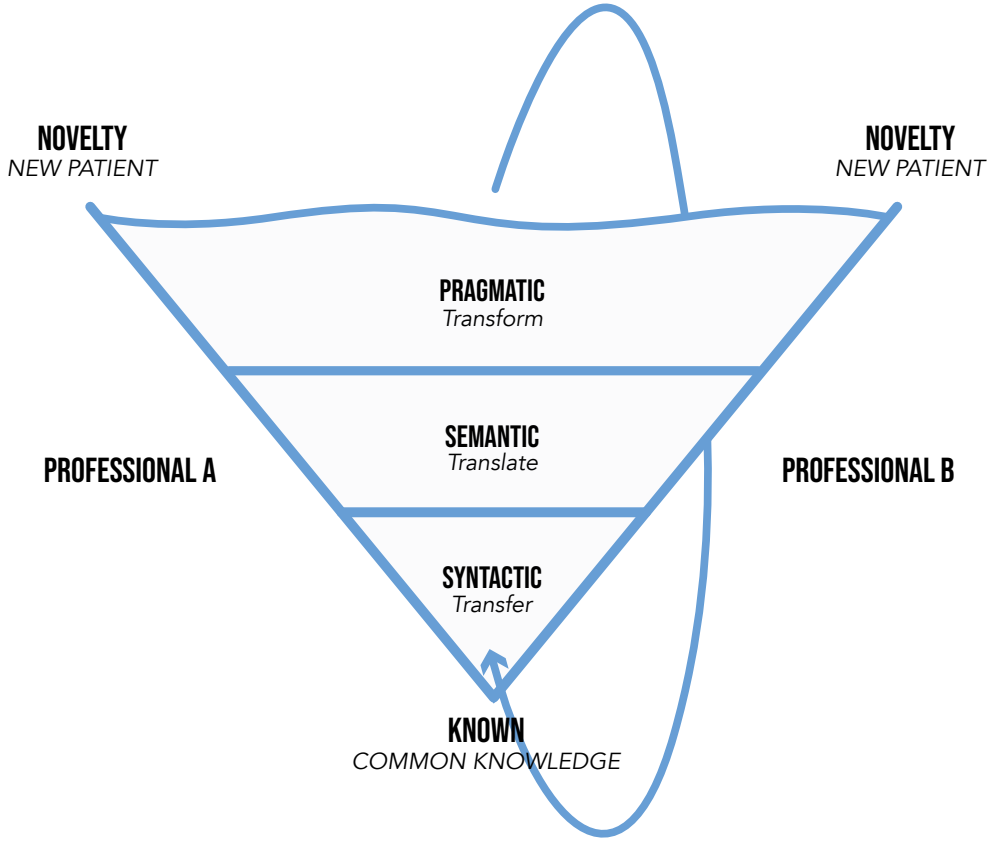


Figure 18: Carlile's framework for managing knowledge across boundaries. Own illustration with inspiration from (Carlile, 2004).

However, as the collaboration between the professionals must be considered as a novelty, as well, there is a chance that the course of treatment decided for a pragmatic patient at the conference, does not treat the patient properly at first. Consequently, this may hinder the progress of improving the patient's condition. In such case, the professionals implicated in the planned course of treatment must call in the other professionals for a new conference to reconsider, and possibly redefine, the course of treatment, making it an iterative process. It is important to emphasize that the process of finessing the common knowledge between the professionals can be a lengthy process, nevertheless, effective when the common knowledge is developed in such a degree that only a few novel patients appear.

The case study of KIApro showed that one of the parameters which influenced the successfulness of knowledge sharing amongst the professionals, was mutual respect. As Kilsgaard states, not one of the professions was more important than the rest; it is the collaboration between the actors who influence the effectiveness of the treatment course. In order to achieve a transdisciplinary treatment process, this is also a crucial element, as it enables knowledge sharing and learning from one another, as the framework of Carlile points out. Further, by utilizing a "flat and non-hierarchical" structured team, it ensures that each individual has a saying and are equally heard. Concerning this, it is paramount that the constellation of the ideal network must be constructed on the premise that they all are aware of their individual roles, including expertise and limitations of such, while also acknowledging the expertise of other professionals. We see that a private company such as KIApro functions properly, and has success because they have managed to establish clear boundaries which is also executed in practice. As Kilsgaard also stated, taking part in a transdisciplinary team, not only means that each professional needs to be very skilled, it also means that they must trust the evaluation made by another team member.

8.1.2 THE "CURED" PATIENT

The focus point of the ideal network is undoubtedly the human-actor - the patient. Based on the knowledge acquired, we argue that for some patients, it is in their interests to have a course of treatment involving different professions. Firstly, the involvement in such a collaborative course of treatment will exclude the current mono sequential procedure, where patients are moving from one profession to another, before having the proper diagnosis or treatment. Naturally, it is in the patient's interest to be diagnosed as early as possible and thereby avoid further complications. As it became apparent during the meeting with psychologist Marie Hjalmarsson, many patients might not be aware if there are psychological elements which are hindering their course of treatment. Henceforth, by engaging in these collaborative teams, patients will be provided with the proper diagnose, and all aspects related to the BPS model of pain will be evaluated. In this way, referring back to the German philosopher, Immanuel Kant, it is a necessity that the network considers the patient as and "end", meaning, that the professionals must at no times perceive the patient from the viewpoint of their own benefits. Rather, this ideal network must, trough knowledge sharing and collaboration, ensure a holistic treatment approach.

Given the arguments presented above, and the social sustainability definition by McKenzie, we argue, that the benefits for the patient by engaging in a transdisciplinary treatment process must be considered as *"life-enhancing"*, as it aims to increase the quality of life for the patient in more parameters. Hence, the treatment process is to be considered as the *"process within the community that can achieve that condition"* (McKenzie, 2004). Henceforth, the incentive for the patient to participate in the network is, that the professionals focus on "curing" the whole patient, rather than specific isolated elements, such as returning to the labor market.
Based on the analysis of this thesis, we have decided to situate the patient in the center, as the aim of this network in a patient-centered approach, where the "whole person" must be evaluated, which include both biological, psychological and social aspects, in order to increase quality of life for the individual, being the *"life-enhancing"* element.

Consequently, the patient must partake in the treatment process, until the point where he/she is completely relieved of pain, or to such an extent, that he/she manages in their everyday life to biologically, psychologically and socially cope with either a long-term or chronic pain. Hence, this is what we define as the "cured" patient.

8.1.3 FINANCIAL INFLUENCES

Based on our findings, we argue that in the ideal network the "referral" system amongst the professionals must be changed, as this is critical for an effective treatment process, if a transdisciplinary treatment approach is not necessary for "curing" the patient. It is especially the relation between the general practitioner and the psychologist which is influenced by fairly strict referral guidelines since the general practitioner must only refer to a psychologist if the patient suffers from one of the 11 condition (page 50).

However, as general practitioner Jette Willenstrup strongly emphasized during the interview, it would be better if the condition of when it is acceptable for the general practitioner to provide referrals to a psychologist was equalized to when it is acceptable to provide referrals to a physiotherapist. The ideal network defines that the relation between the two professions must be reinforced, in the way that other arrangements must be defined between the two. We emphasize that changes and re-negotiation regarding this subject must be made. In relation to this argument, we also highlight that the relations between patients and psychologist, and vice versa, must be stronger. Currently, one session at a psychologist costs a patient approximately 1000 DKK, and only with a referral from the general practitioner can this cost be reduced. In such situation, at best the patient can end up "only" paying 40 percent of the total cost. Seeking treatment from a psychologist is thus fairly expensive for the individual, which according to psychologist Marie Hjalmarsson, has the consequence that many patients simply do not seek treatment as it is too expensive. The reinforcement of the relation between the psychologist and the general practitioner is thuswise important for patients who would benefit from psychological treatment, but does not need treatment by more professionals, hence, a transdisciplinary team.

The important non-human actor, remuneration, possesses significant agency related to economic incentives, and hence, highly influence how the professionals act in the course of treatment. In the ideal network it is desired that the professions are not as greatly influenced by remuneration, hence, the way they are currently economically rewarded by the healthcare system. Currently, the general practitioners are remunerated based on an incentive system that contains three elements. The general practitioners receive - in addition to a small fixed amount - a fee for each registered patient and for each performed service. The differences between tariffs provide an economic incentive to classify the services and patients in the most profitable categories. This way of rewarding professionals is firmly established within the healthcare sector, and we acknowledge that changing this financial system is currently out of our reach. However, we strongly emphasize that it is the current financial structures which hinder a translation into the ideal network, meaning, that actors, and the network, are unable to benefit from professional knowledge sharing, more equal distribution of patients among the professionals, more social sustainable treatment process for the patient, higher patient satisfaction, societal, economic reductions, etc. We further highlight, that changes within remuneration, which should not be activity-based but rather quality-based, and referrals, is the obligatory passage point which will manage to reconfigure the current network into the ideal network. If economic structures keep advocating for activity-based remuneration, actors will not have the economic incentive to engage in collaboration or redeploy treatment to other professionals.

Consequently, we recognize that we are merely capable of stressing the importance of changing the current financial structures; hence, we are unable to directly influence changes at the present time. Nonetheless, certain elements of the ideal network can still be translated and initiated by establishing informal collaboration between the professionals, which then will be translated and integrated into the current network, and ready to be deployed further, when the remuneration system is altered, and thereby, achieving the objective of implementing the ideal network. Since the ideal network is not possible to configure at present, it thuswise makes sense to translate parts of the current network, and thereby enable the aspect of patient-centered care, which we have argued to be one of the main elements with the aim of achieving a socially sustainable treatment approach.

8.2 THE TRANSLATED NETWORK

Considering the financial constraints of transforming the current network into the ideal, which has been elaborated in the prior section, we must consider a different approach of re-configuring the current network. The aim of this is to achieve the desired objectives by making it more sustainable, and by considering the translated network as a contemporary configuration, this can ultimately be achieved. Hence, the actors must participate in informal collaborations, which equipt and prepare them by allocating specific roles and relations to each actor, which is in alignment with the formalized roles they will be assigned in the ideal network. This translated network is illustrated in figure 19.

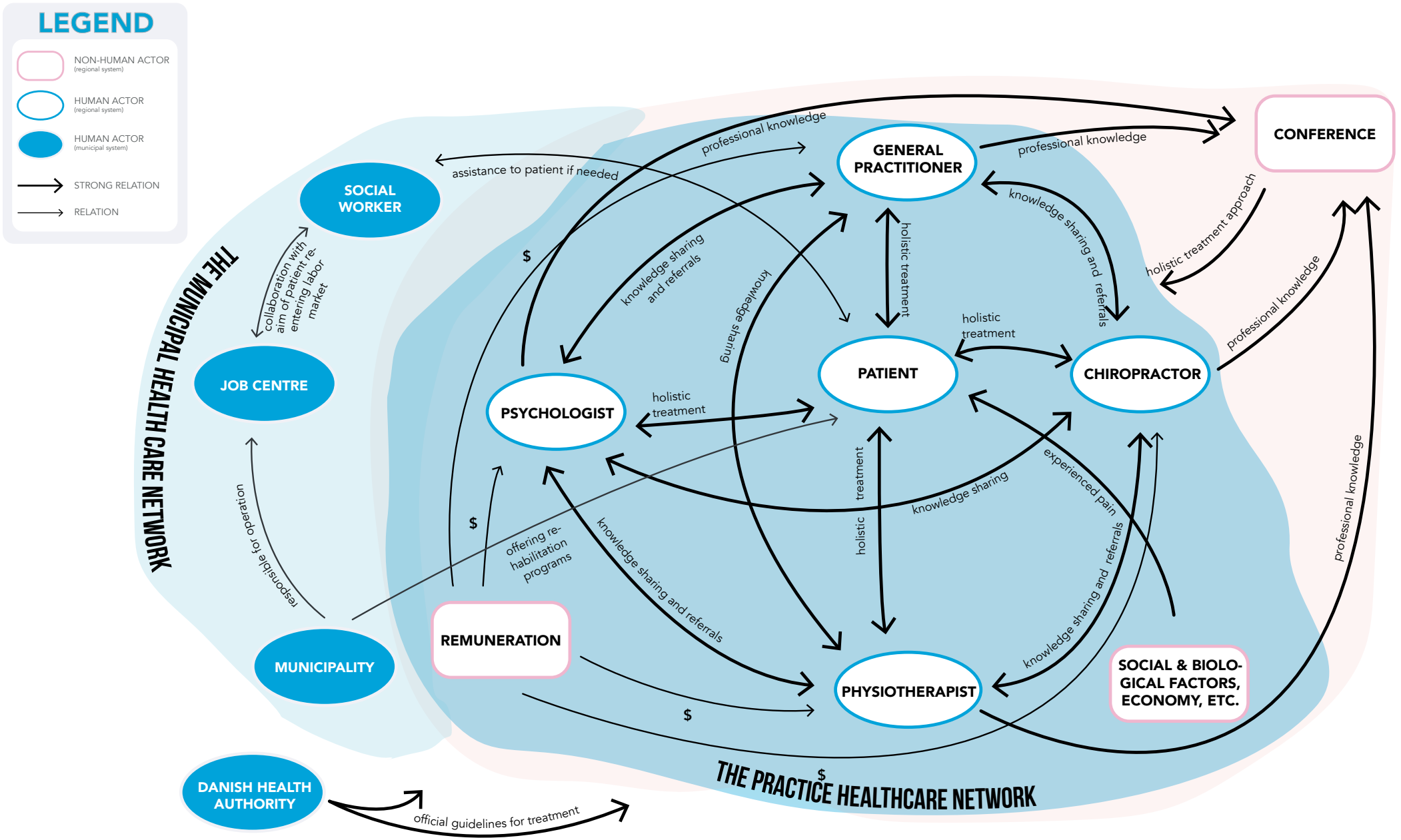


Figure 19: Illustration of the network we intend to translate the current network (page 79) into. With both human and non-human actors, as well as relations amongst these. Own illustration.

8.2.1 CONFIGURATION OF THE TRANSLATED NETWORK

In the translated network, we argue that the course of treatment must not be based on mono sequential procedures where agency and initiative are distributed to the patients, rather, we aim to avoid this. In the translated network the non-human actor "informal conference" differs from the non-human actor "conference", belonging to the ideal network, in the way that an informal conference does not necessitate that the professionals meet in person, instead, the conference can be held on Skype, Vsee, or similar software enabling video calls. This type of informal conference still allows the professionals to discuss and evaluate the patients, however, it will initially be easier to execute in practice, as logistical constraints, such as traveling time, who should host, etc., will not need to be considered.

Also, a critical difference between the network we desire to translate into, and the ideal network, is that is not as "flatly and non-hierarchical" structured. The actor who possesses the most agency in the translated network, is the general practitioners, as they are the ones who must ultimately determine if a transdisciplinary treatment course must be initiated in the local community. However, we stress, that the strong relations between the general practitioner, the phycologist, the physiotherapists and the chiropractor are important for knowledge sharing and evaluations of the patients' needs. If the patient consult one of the other professions first, and the professional evaluate that the patient might be influenced by more than one element of the BPS pain model, the respective professional should initiate a dialogue with the general practitioner. We strongly emphasize that, despite the fact that it is the general practitioner who has the final saying, the strong relations of knowledge sharing amongst the professions should be heard and evaluated in relation to such decision. We stress that this is not ideal in the long run; however, the most optimal starting point is to establish informal collaboration amongst the professions, as these are defining the cornerstone for patient-centered care. For this purpose, we have decided to exclude the Municipal healthcare network, as the roles and relations we desire to re-define is situated within the practice healthcare network. The actors who are included in the translated configuration mainly remain the same, what differs is, that we must reinforce some of the weak relations in the current network, while simultaneously weaken others.

8.2.2 THE PROCESS OF TRANSLATION

Within the framework of ANT, translation is a process which bridges the gap between the different aspect that are combined in a network, with the strength that the focus is not on the actors themselves, but rather on the roles and relations they are prescribed. As Callon and Latour describe: "translation involves creating convergence and homologies by relating things that were previously different" (Callon and Latour, 1981). We believe that there are various entities and relations built into the current network, which is why translation will be the process by which of these elements are related to the network which desires change, hence, the process by which "the identity of actors, the possibility of interaction and the margins of manoeuvre are negotiated and delimited" (Callon, 1986). Additionally, the translation process should be considered as the general movement of development and change over time - how are actors shaped to believe the same thing as us? And how are we able to transform the network to meet our goal? Thus, ANT makes it possible to focus on the numerous aspects of translation, which are enacted by the process of reconfiguring a network. In the following, we will cast a ray of light on the translation process of re-configuring the current network.

Given the fact, that we desire to establish a process of translation of the current network, new roles and relations will appear for the actors whom are involved. To deal with these newly created tensions, and convince each actor that a transdisciplinary treatment approach is the most beneficial, not only for patients but also for their respective professions, we must first present a problematization consisting of the elements presented previously, namely, the lack of: knowledge sharing, transparency regarding economic benefits, mutual acknowledgment of professions, etc. In the following, we have chosen to present a general problematization, as the tensions in the translated network are highly interdependent.

8.2.2.1 PROBLEMATIZATION

The virtuous elements of Generation II, such as short waiting times, increasing activity and high productivity, need to be maintained, but new management tools need to be developed to create a more holistic approach to the understanding of patients and pain, and to create a transdisciplinary course of treatment for patients with musculoskeletal disorders. In the Danish health magazine "Helse", it is emphasized by the vice chairman of the organisation FAKS (Union of Chronic Pain Patients), Sidse Holten-Brossing, that the symptoms of musculoskeletal disorders are affecting the patients very individually, and that the most effective way to treat these patients is by approaching a patient-centered interdisciplinary treatment. It is stated in the article that:
"she [Holten-Brossing] is calling for easier access to the public pain centers, where specialized professionals work in collaboration. Today, a patient will have to be thoroughly evaluated by the general practitioner, a process which can last several months. When the patient is granted the referral, there is a long waiting time to be accepted into one of the pain centers in the country" (Jensen, 2018).

In constitution of the statement presented above, we argue that this is yet another incentive for establishing many informal local communities, as this will reduce the waiting time for patients who are in need of a transdisciplinary treatment process.

Furthermore, the Danish Health Authority has published recommendations for unraveling symptoms and treating patients with musculoskeletal disorders. In this publication, they argue that a cross-sectional course of treatment is preferred. The Danish Health Authority recommends that treatment should include different actors in the healthcare sector, and further, that it should be facilitated by the general practitioner, who refers to professionals needed for the individual patient. Furthermore, the report concludes that the communication between the actors is essential for a coherent course of treatment and that it should be conducted electronically, which hinders optimal exploitation of transdisciplinary knowledge sharing. This publication draws attention to the understanding that something must be done to provide a successful course of treatment. However, there are many "should's" in the publication, and the responsibility for facilitating and deciding the course of treatment is still placed on the general practitioner and not on the network, and collective collaboration (Sundhedsstyrelsen, 2017c).

The viewpoint of a more collaborative approach is shared by the vice chairman of the Danish Regions, Stephanie Lose, and the chairman of healthcare in the Regions, Ulla Astman. In an article published in Altinget (internet based media of Danish politics) they argue, that development in the Danish healthcare sector should be focused on the citizen:
"in the regions we are striving towards a structure of the Danish healthcare sector which does not reward the individual sector based on productivity and profit. We desire incentives and structures of collaboration that promote the common assessment of, how the division of labor, and common solutions for citizens, should provide the most 'health' for the money" (Lose and Astman, 2018).

Further, they state that they miss flexibility and adaptability in the development of politics and that the current concept where political workforces agendas through, is unsustainable as the agendas are not even relevant for four years.

The same viewpoint is shared by other experts as well. In an article published by DR.DK, nurse Camilla Blach Rossen, from the Hospital in Silkeborg states that:
"All healthcare professionals are very busy. They perform an effective treatment for the patients, when they meet them. However, there are not time to follow up, and they do not know what the others do. That means, that a lot of information and knowledge is squandered" (Reimer and Nielsen, 2018).

Consequently, the Danish Health Authority recognizes that something must be done in the Danish healthcare sector in relation to treatment and organizational structure. They emphasize that they are currently working on new recommendations for unravening symptoms and treating patients with functional disorders, including musculoskeletal disorders. In their writing they touch upon that disorders are complex, thus, it is difficult to diagnose. Further, they have initiated a task force with the aim of discovering how the healthcare sector should be organized to meet the patients, and offer the best possible treatment.

The project was initiated in September 2016 and expected the recommendations to be finished by the first half of 2018, however, no results have yet been published (Sundhedsstyrelsen, 2017a; Sundhedsstyrelsen, 2017b).

Taken departure in the arguments above and the descriptive material presented, we have come to understand that diagnosing patients with musculoskeletal disorders is associated with high complexity. Currently, only the general practitioner possesses the agency of defining a diagnosis for the patient. However, our findings and the analysis have stressed that assessing the complexity of elements which are affecting patients with musculoskeletal disorders can rarely be done within the standard timeframe of 10-12 minutes. The consequences of this are that the patients often find themselves in a vicious circle, where they are the ones suffering from the mono-sequential procedures that are dominating the healthcare sector currently. This results in low level of patient satisfaction, while it is also costly for society, as the patient keep recurring in the system. At worst, this may lead to malpractice of the patients, and the responsibility of this is exclusively placed on the professional. However, we argue that there is an underlying reason for this discourse, which is that the general practitioners are often highly overloaded with patients. Today, a general practitioner has an average of 1634 patients, which is 80 more than in 2009. At the same time, more than 13 percent of general practitioners have more than 2000 patients. Worst is the problem in Northern Jutland, here the general practitioner has 1809 patients on average, meaning less time for each patient (Quass and Olsgaard, 2017). This means that in every third municipality, the general practitioners have more patients than the "permitted" number, 1600, which is stipulated in the agreement with the Danish Regions.

As mentioned in the analysis, given the configuration of the healthcare system, patients are more than ever considered as "customers" meaning, that there is an increasing demand for medical evaluations, for instance, with general practitioners. Figure 20 illustrates the region-specific population numbers and number of annual consultations with general practitioners (Hagelund and Olsen, 2016).

	DENMARK	CAPITAL REGION	REGION OF SEALAND	REGION OF SOUTHERN DENMARK	REGION OF CENTRAL JUTLAND	REGION OF NORTHERN JUTLAND
POPULATION (MILLION)	5,7	1,8	0,8	1,2	1,3	0,6
CONSULTATIONS IN GENERAL PRACTISE SECTOR (MILLION)	20,2	5,7	3,0	4,5	4,6	2,1
GENERAL PRACTITIONERS	3.513	1.062	495	790	825	341

Figure 20: National and region-specific inputs. Own illustration with inspiration from (Hagelund and Olsen, 2016).

Studies have shown a tendency towards patients feeling that the general practitioners do not take musculoskeletal disorders seriously and that patients have an experience that they are not to be "cured" (Foster et al., 2012). Other studies also show that some general practitioners do not follow guidelines for the treatment of musculoskeletal disorders, which may lead to a more costly process (Cottrell et al., 2010; Foster et al., 2012).

As highlighted, the general practitioners in Denmark are heavily congested with the number of patients and the short consultation time, which means that there is not enough time to follow the guidelines or provide the proper diagnose, which unnecessarily deteriorates the patient's health condition. There is an international tendency to more closely include other professionals than the general practitioners in connection with medical evaluation, diagnostics, and treatment for musculoskeletal disorders. It is proposed, for example, by Deyle (2006) that physiotherapists are an obvious group of health professionals to involve in the work. It can be assumed that, for instance, by including other professions as physiotherapists' competencies in relation to diagnostics, the waiting time for medical evaluation may be shortened and more time will be released for the general practitioners, which will be advantageous for patients and on a socioeconomic perspective.

However, our findings have proved that specific relations and arrangements amongst the professionals in the Danish healthcare sector are currently hindering a closer collaboration, and hence, before this collaboration is established, it is not possible to reap the benefits of such. Our analysis has pointed out that the predominant hierarchy amongst the professional actors,

is currently defining the distribution of tasks, procedures, and responsibilities favoring the general practitioner.

As it was presented during the interview with general practitioner Jette Willenstrup, general practitioners view themselves as being on top of the professional hierarchy, meaning that they do not take "orders" from others:
"there are many [physiotherapists] who write me 'we would like you to do this and that'. And one thing that we, as general practitioners, do not tolerate is when other professionals try to dictate what we should do" (Willenstrup, 2018).

We wish with our concept to provide a setting and a framework where knowledge and advice in relation the patient can be freely distributed and shared. At present, the chiropractors do not have strong relations to other professional, especially the general practitioners, since patients can consult with a chiropractor without a referral. This also presents a problematization, if the network of including various professionals, is to be implemented. During the interview, general practitioner Jette Willenstrup presented the following statement:
"if some patients have neck- or back pain, I might tell them 'perhaps you should visit a chiropractor'. But there is no referral needed. Therefore, we have no collaboration with these professionals as no referrals are made, which also means that they do not write us" (Willenstrup, 2018).

With the current constellation, chiropractors are excluded from other professional networks, which essentially has the consequence that qualitative knowledge within each profession is not mutually exchanged.

However, this hierarchy not only influences the collaboration and respect among the professions, it also has a major impact on the patient's satisfaction of the treatment process. In studies that have examined patients' satisfaction of being medically evaluated and treated by a physiotherapist, overall patient satisfaction has been found - in some cases, to be more satisfied than the control groups, who were treated by general practitioners (Bath and Janzen, 2012; Desmeules et al., 2012). Furthermore, as we have previously argued, these professions alone are unable to incorporate all aspects which are needed in order to achieve a holistic patient-centered approach. Hence, when considering both the patient-centered care approach and the BPS understanding of pain, the negligence of the psychologists' competencies becomes problematic. During the interview with psychologist Marie Hjalmarsson, she expressed the need for collaboration amongst the professionals:
"well, it is not really that widespread [professional collaboration]. But is has been recognised, that if approaching the treatment process with the patient in the center, and if we [professionals] help each other out, it really pays off … Of course it takes time to sit down and meet, this is why it is not done at the moment. It is time consuming. But, I am absolutely convinced, that the time it takes, will be given back in the treatment process. So yes, most definitely, there is a lot of potential in collaborating more" (Hjalmarsson, 2018).

Further, Hjalmarsson highlights that one of the main issues related to the lack of collaboration is that the patient is often forced to choose between the general practitioner, physiotherapist and the psychologist. She stresses that if the patient is put in this situation, they will usually deselect the psychologist, and instead choose the cheapest option, despite the fact that a different treatment might be more beneficial. She states, that economy is a huge barrier, and that closer collaboration between the professionals might be an answer to this, as the patient is not forced to pick amongst the professionals; instead, they can perceive a holistic treatment.

8.2.2.2 INTERESSEMENT

We have now discussed some of the tensions and problems for each actor who should take part in the translated network. To establish the new relations, the actors must adapt to new roles, and before entering into these roles, the actors must be presented with one or more interessement devices. Hence, the interessments which are necessary to enroll each actor will be discussed and presented in the following.

In terms of the general practitioners, clear interessements are the opportunity to have fewer returning patients, the possibility of including more patients to their clinics, and most importantly, provide an adequate course of treatment for patients with musculoskeletal disorders.

Thereby general practitioners will address current constellations and issues related to this, which is within the ethical rules and interest for general practitioners.

Currently, the country average of consultations with each general practitioner is 5745 a year. As figure 21 indicates, it is mainly the Region of Zealand and Region of Northern Jutland, where general practitioners have most consultations a year (Hagelund & Olsen, 2016). As it is indicated in the report by The National Institute of Public Health, patients with musculoskeletal disorders make 25 percent of all consultations to general practitioners (Statens Institut for Folkesundhed, 2015). Thus, it will be within the interest of general practitioners to engage in transdisciplinary collaboration, and have a more rapid medical evaluation, diagnosis, and treatment for patients suffering from these disorders.

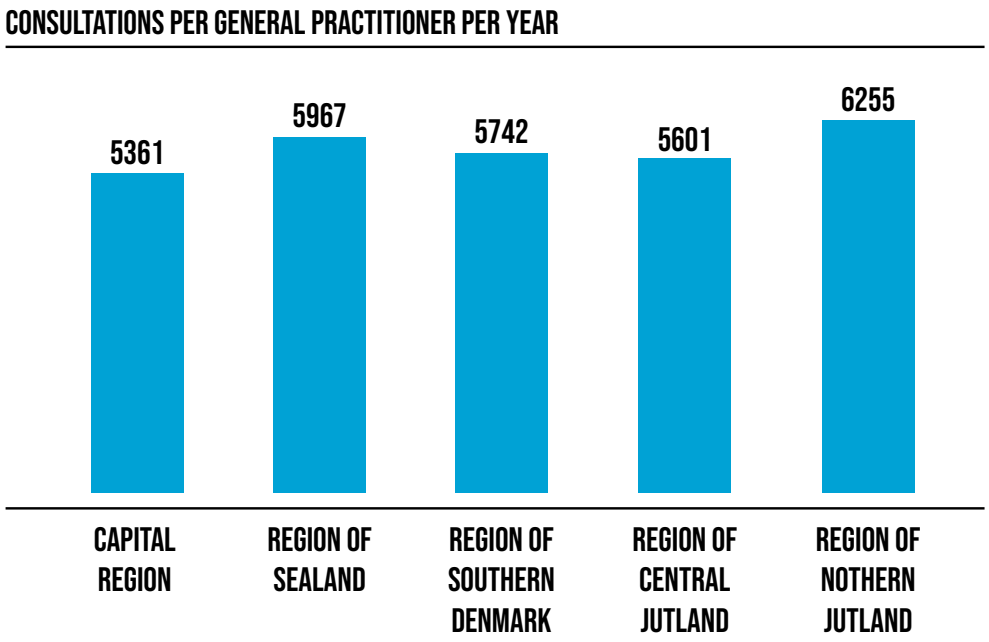


Figure 21: Consultations per general practitioner per year. Own illustration with inspiration from (Hagelund and Olsen, 2016).

This has resulted in that some medical clinics have started to have physiotherapists assigned to provide medical evaluation and a diagnose patients with musculoskeletal disorders, e.g., in the city of Bøvlingbjerg, which is in the Region of Central Jutland, and Tårs, in the Region of Northern Jutland, respectively. In the two cases, a physiotherapist is assigned as a consultant 5-10 hours a week and paid on an hourly basis (Hagelund and Olsen, 2016).

As it is presented in the analysis, conducted by the consulting firm Incentive on behalf of Danish Physiotherapists, there is a possible economic benefit if general practitioners are part of a collaboration (Ibid.). The economy depends on a number of factors, such as how many patients the physiotherapist consults with, whether the general practitioner enables more patients to his practice, how much physiotherapist should be paid, etc. At present, a general practitioner receives a basic fee per associate patient of DKK 100,74 per quarter, corresponding to 403 DKK a year for each associated patient (Ibid.). Thus, by collaborating with other professions and involving them with patients with musculoskeletal disorders, the general practitioners will have more time for other patients, and they will be able to include more patients, which is also an interessment device for the Danish Regions, as the healthcare system will be able to embrace more patients that need treatment.

In the study performed by Incentive, the calculations are based on the fact that the physiotherapist takes over half of the consultations for musculoskeletal disorders, which means that at a national level, 203 additional patients can be assigned for each general practitioner (Ibid.). Incentive has further counted on different scenarios, and in almost all situations the general practitioner will achieve an economic gain between 50-100.000 DKK a year in remuneration.

This is both in the interest of the physiotherapist as they can have a more significant role, and the Danish Regions as it again allows the system to provide the patients with the needed treatment, while also proving an economic incentive for the general practitioner. By providing these figures and examples, we argue against the current understanding that it is not economically beneficial for professionals to collaborate across professions.

In fact, based on the presented arguments, we believe that our conceptualization of having a transdisciplinary approach for treating patients with musculoskeletal disorders, not only enhances the medical evaluation, diagnosis, and treatment, but it can also be economically beneficial. For instance, for general practitioners, by enhancing knowledge sharing among professions, and finally, it is sustainable from a social and economic perspective. Simultaneously, as simplified in the examples, physiotherapists, and chiropractors as well, can have a more significant role in a transdisciplinary collaborative approach and thereby achieve more professional recognition and respect, which indubitably is within their interests.

To address the current problematics such as lack of including the BPS model of pain, long waiting time for treatment, etc. within the current public domain of treatment for patients with musculoskeletal disorders, a number of private clinics which encompass an interdisciplinary treatment approach, such as KIApro, have been developed (Guldager, 2009).

Further, it has been proven that within the context of the company, these private initiatives are economically successful. Hence, it is also within the interests of professionals to embrace the conceptualization provided and establish transdisciplinary teams and thereby, maintain patients within the public domain. Also, the psychologist is related to these incentives, as it is in their interests to gain more recognition of their professionals competencies. Furthermore, by taking part in a constellation of such team, they will be provided more patients, and at the same time, they will gain knowledge across other professional boundaries.

The strong incentive for patients to seek such a course of treatment is that, not only does this patient-centered approach prove to ensure more patient satisfaction in relation to the bond between the professionals and the patient. There is also the positive outcome that often the patient will not be recurring in the system, as our findings have proven this treatment process to be more time efficient. Considering the "life-enhancing" possibilities this treatment approach offers the patient, it also becomes essential to consider how many patients this concept might be relevant for.

Previously, we have indicated that 25 percent of all consultations in Denmark, 20,2 million, are due to musculoskeletal disorders, this account for 5,25 million consultations a year (Danmarks Statistik, 2016; Danske Regioner, 2016). In average, every citizen in Denmark seeks consultation 3,5 times a year in the general practice sector (Ibid.). Taken this into account, this equals that 1,5 million Danish citizens, affected by musculoskeletal disorders, seek treatment within this sector every year. However, not all these patients are influenced by factors which relate to more aspects of the biopsychosocial model. Professor Jan Hartvigsen points towards, that approximately 20 percent of these patients are *"complex and troublesome to treat"* (Hartvigsen, 2018). This means that every year, 300.000 patients with this type of disorder, are difficult to treat, and hence, would benefit from a transdisciplinary treatment process. In relation to this, Mette Kilsgaard from KIApro expressed, that not all these patients are possible to "cure", as 10 percent of patients are unwilling to be treated, and 10 percent are incapable of participating in a treatment process. However, 80 percent, equivalent to 240.000 patients a year, would benefit from this concept of treatment, which corresponds to 4,2 percent of the Danish population. These 240.000 patients should not only receive a biomedical treatment from either the general practitioner or the physiotherapists, rather, they should receive a holistic treatment, which embraces the patient as a "whole person", by acknowledging the influence of more aspects, such as psychological and social factors. This treatment approach is to ensure, that agency is not passed on to the individual patient, reinforcing mono sequential procedures, instead, the professionals must guide the patient through the treatment process, while still ensuring that the patient is placed at the center. Hence, if the professional possesses the agency, the outcome will be that they take more responsibility for the patient.

Consequently, we argue that this is a crucial interessement device for, not only the patients who are affected by the musculoskeletal disorders and who are now provided with the appropriate treatment but also for the general practitioners. Furthermore, this should also be considered as an interessement device for the Danish Regions as this essentially will increase productivity and efficiency in the healthcare sector in the form of a holistic approach towards treatment, and thereby, decrease the vast costs associated with the current dominating mono-sequential structure.

Thus, this conceptualization will simultaneously equip the Danish Regions and the general practitioners for the yet increasing number of patients with musculoskeletal disorders, and be in alignment with their ambition of providing a more dynamic course of treatment for patients in the Danish healthcare sector respectively.

Despite the fact that we have previously acknowledged that we are unable to translate the current network into the ideal network, where predominant financial structures highly reinforce prevalent practices and procedures, it is a necessity to stress, that this thesis is intended to be used as an interessement device for the Danish Health Authority. This thesis has presented both a description of the current issues related to the incumbent regime, while also stressing incentives for each actor involved in the network. Consequently, we argue that a transdisciplinary approach to treatment processes of patients with musculoskeletal disorders is both beneficial for each practitioner, on a societal level, and for the patients, respectively.

8.2.2.3 ENROLMENT

Once interessement has been achieved by the actors involved in the network, and the actors form alliances and become locked into their roles, it is paramount to transform this into actual participation. This can be achieved through different types of tools or techniques. In this phase, we will still function as spokespersons to interest and speak on behalf of the concept of transdisciplinary collaboration amongst professionals in the treatment process of patients with musculoskeletal disorders. We will do so by facilitating meetings and workshops in already locally established networks, where we aim for them to accept their roles and establish a common understanding of the novel patients. We will further express the importance of them utilizing video calls via relevant software programs.

8.2.2.4 MOBILIZATION

In this phase, the actors have initiated alliances and negotiations, and we as researchers must leave the network, as the actors must be able to mobilize and act as spokespersons for the network by themselves. It is essential to ensure, that the enrolled actors do not work according to own interests and end up in the act of "treason," which could be the case if an enrolled actor should disagree and act against the plan of action. However, as this translation process is on a strategic level, the mobilization phase can at this point only function as a plan of "qualified assumptions". Assuming that the most important actors have been interested and enrolled in the translated network configuration, it makes sense to ensure that "the masses" follow. This is critical, as it secures that the link between our goals and the heterogeneous entities in the network are in balance. To achieve mobilization of the network, it is therefore highly important to "test" the network by establishing informal collaborations in local contexts, and follow up on these to ensure that these networks succeed and maintain enrolled. However, one may never assume the guarantee of establishing such concepts in a different context. The success of the network must always be perceived as contemporary, and the actors must continuously re-configure themselves into the network. The contributing actors can at all times, since it is informal collaborations, "escape" their intended roles without notice, and the holistic constellation of the network will be influenced, if this turns out to be the case. Thus, this conceptualization is "empowered" by the enrolled actors, and it is therefore of uttermost importance to maintain their interests in the network.

9 CONCLUSION

9.1 CONCLUSION

In this master thesis, we have chosen to focus on the treatment of patients with musculoskeletal pain and disorders. These disorders are characterized as a diffuse and complex condition, thus, hard to evaluate and diagnose within the current structure of the healthcare sector. Furthermore, the mono-sequential processes which are currently dominating the practice in the healthcare sector, means that the patients often find themselves going back and forth between the different professionals. The consequence of this, is lengthly treatment processes, which often do not embrace all the aspects that impact the experienced pain, hence, the patient. Further, the thesis has found that the patients often remain within the healthcare sector for a longer timespan, as the course of treatments are not as effective as they could be. Essentially, this is neither ideal for the professionals, the individual patient or on a societal level, as it is economically costly for society. Therefore, to achieve the objective of solving this, we defined a research question (page 17) for this thesis.

In order to conceptualize a solution, answering this research question, it is necessary to reconfigure the network of actors related to the treatment process of patients with musculoskeletal disorders. Consequently, the conceptualization takes on the approach of patient-centered care, which embrace the biopsychosocial understanding of pain, which is both more socially and economically sustainable. The ideal course of treatment process for patients affected by musculoskeletal disorders, is illustrated in figure 22.
The course of action in the ideal concept demands, first of all, that the patient is willing to seek advice in regards to treatment. Hence, the patient must contact one of the professionals and plan the first consultation. Hereafter, if the given professional finds that this is a patient who could possibly be influenced by complex biological, psychological and/or social factors, the professional must initiate contact to other professionals in the local community to establish a collaborative treatment process.

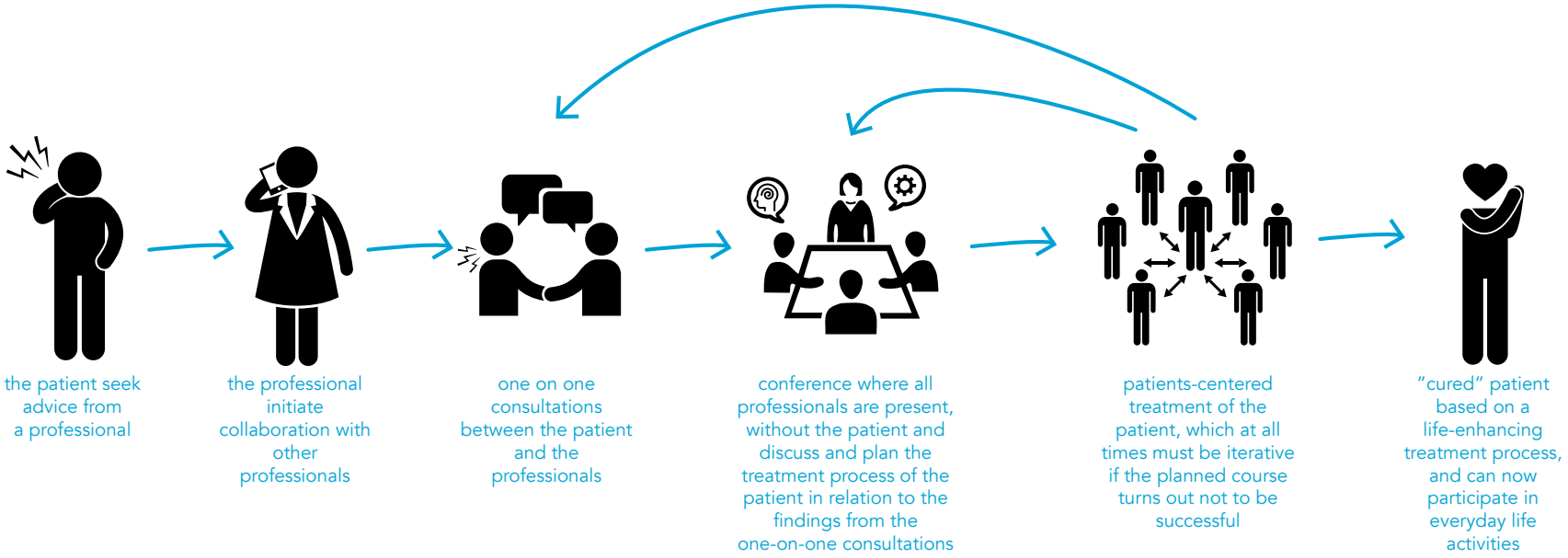


Figure 22: The ideal course of treatment for patients who are affected by musculoskeletal disorders. Own illustration.

All the professionals must be able to recommend the patients to this collaborative treatment process. In this process, it is paramount that the professionals engage in the collaboration, accept flat hierarchy settings and differences and dependencies, reach a shared understanding of patients in order to define, if the specific patient is applicable to enter the collaborative course of treatment.

Additionally, the professionals must create a shared understanding of when a patient is "cured," to an extent, that it makes sense for the patient to leave the course of treatment. This setup makes it possible for the professionals to transfer, translate and transform knowledge to establish a shared understanding of patients with musculoskeletal disorders, who would benefit from entering a transdisciplinary course of treatment. The criteria for the implementation of this concept is thus succeeded, when the professionals have accepted the formal collaboration and start participating in the treatment process, apace with novel patients entering the network.

In practice, when one of the professionals has initiated this collaboration, the patient must participate in consultations with each of the professionals, in order for them to evaluate the patient within their field of expertise. Next, the professionals are to sit down and discuss what they individually have discovered in the initial consultations with the patient, and from this point, they must plan a course of treatment for the patient. At this conference, the professional who recommended the specific patient to the collaborative network will start out by presenting his/her evaluation of the patient. After this, they will each take a round where they present their results. This is to initiate a flat hierarchy discussion, which must continue until the point where they have figured out what cause of treatment the patient should participate in. Naturally, the next step is to start the patient-centered treatment process.
If the course of treatment does not lead to a progress in the patient's condition, an iteration must be initiated where the professionals can either have new individual consultations with the patient, or meet directly at the conference again, and discuss a new course of treatment for the patient. The result of this treatment process, must essentially be a patient who is "cured" to the extent, where they are either biologically, psychologically and socially capable of coping with long-term pain, or completely relieved of pain.

The development of the conceptualization, enabling the professionals to engage in formal collaborations in the network, was based on the investigation made of how to improve the course of treatment for patients with musculoskeletal disorders, through the empirical work, the empirical analysis and discussion of the conceptualization. To unfold the field of musculoskeletal disorders, a thorough investigation and understanding were inevitable. Hence, a description of the anatomy of the cervical spine, the symptoms and triggers of neck pain, the psychosocial factors related to pain and the professional actors who treat patients with musculoskeletal pain, factors affecting them and the relationship between them have all been investigated and discussed. Moreover, as actors were interviewed, starting with the physiotherapists and professors, more actors such as general practitioners, psychologist, chiropractors, etc. were presented, consequently, making the field of research considerably broader than what was first assumed.

Based on the descriptive empirical work and the empirical analysis, we found that a conceptualization was needed. The concept was established to solve the four tension points identified in the analysis. The first tension point indicated that the treatment process was influenced by a hierarchy of the professionals, which thus, made it troublesome to manage the psychosocial and fragile patients, who do not fit into the mono-sequential course of treatment, that is currently present in the Danish healthcare system. Every Danish citizen is offered free access to the general practitioner, who is regarded as the "project manager" of the course of treatment, and hence, the gatekeeper to other professionals in the healthcare system.

This is managed through a referral system, which merely functions for patients that have been prescribed a definite diagnosis. However, as presented in the thesis, musculoskeletal disorders are diffuse and complex to diagnose, and therefore, the current configuration does not fulfill the needs of patients who suffer from these disorders. Furthermore, some professionals have not yet accepted the new paradigm, the biopsychosocial understanding of pain, and insist on treating the patients according to the former and prevalent biomedical understanding of pain. This means that the patients with musculoskeletal disorders are mainly treated biomedically, and the professionals are, for this reason, often unwittingly, neglecting the psychosocial conditions of which such

patient could be exposed to. At present, general practitioners are remunerated based on their actions, giving an economic incentive which advocates that they treat patients themselves, hence, the remuneration does not encourage the general practitioner to provide referrals to other professionals. Thereby, the focus is on internal activity rather than qualitative patient-centered care and coherence, and it is contradictory to preserve this configuration as the number of patients with musculoskeletal disorders continues to increase.

The second tension point concerns the complexity of the musculoskeletal pains and disorder as being difficult to diagnose. Referring to the empirical material which has been collected, musculoskeletal disorders can be diffuse, and composed of both physical and psychosocial aspects. In the current configuration the patient, if not referred directly to a physiotherapist or chiropractor by insurance companies, will initially encounter the general practitioner first. Here, the general practitioner will only have a limited time span to evaluate and diagnose the patient to plan a further course of treatment. When the patient consults with a physiotherapist a chiropractor, the empirical work has indicated that some professionals take on the responsibility of treating the patients not only biomedically, but also psychosocially. However, they do not possess the same competencies as an educated psychologist; therefore, there is a high risk of touching upon subjects which they are not equipped to manage. A collaborative effort to evaluate, diagnose and treat the patients must be taken into practice; however, no framework or guidelines are created by the Danish Health Authority to support and manage this.

In continuation of this, the third tension point indicated that there is an absence of coherency amongst the professionals in the perception of what a "cured/treated" patient entails. As it was presented in the case study of KIApro, they regarded patients as "cured" when they were capable of (re) entering the labor market.
In contrary, the other case study of FYSIQ presented a different understanding of when patients were considered to be 'cured'. Here, this understanding entitled that the patient achieved better health, better state of psychosocial aspects, and higher quality of life, respectively. Further, FYSIQ also considered the return to the labor market as an essential aspect, yet, on the same level as the other parameters. Based on these findings, we argued, that the most socially sustainable for the patient, leans more towards the "cured" perception as presented by FYSIQ, as they aimed to treat the patients in a holistic approach, rather than focusing on one parameter only, hence, returning to the labor market.

Tension point four explored the competencies of the professionals, and how they mutually recognize each others' professions. Throughout the thesis, it became apparent that the biopsychosocial understanding of pain is practiced and managed differently by the professionals. Some of the more experienced physiotherapists, recognise the biopsychosocial understanding of pain, but still take on the responsibility of treating all aspects of the patients themselves. Other physiotherapists find it difficult to treat patients who are influenced by psychological elements in their course of treatment, and therefore, they prefer to advise the patient, and the associated general practitioner, to seek professional treatment from a psychologist instead, and thus, recognize the competencies of the psychologists. As no formal guidelines of communication are currently established between the professionals, it makes it harder for them to establish an effective platform for knowledge sharing of patients.

To create a concept directed towards solving these tensions, it was concluded that a reconfiguration of the network, accompanied with Carlile's framework of sharing and assessing knowledge across boundaries, would establish the foundation to evaluate, diagnose and treat patients with musculoskeletal disorders in a more social and economical sustainable approach. After presenting the conceptualization, we defined that by taking departure in the translation process of ANT, we would be able to create problematization, interessement, enrolment and a mobilization of the relevant actors.

As described previously in the thesis, general practitioners are heavily overloaded with the number of patients affiliated to their clinics, which also has resulted in that the number of consultations have increased to a national average of 5745 a year for each practitioner. In total, patients with musculoskeletal disorders make 25 percent of all consultations to general practitioners, which should be considered as a problem for general practitioners, mainly as many patients with these disorders are recurring patients, given the fact that they are not provided with adequate medical evaluations, diagnosis, and treatment, respectively.

In continuation, the interestments process included the following aspects; fewer recurring patients, a dynamic and holistic collaboration with other professions enabling knowledge sharing, an economic profit, and most importantly, the possibility to provide proper treatment for patients with musculoskeletal disorders, which should be within the work ethics and responsibility of general practitioners.

Considering the physiotherapist and chiropractors, the problematization was that these professions are not given significant recognition in relation to their expertise when treating patients with musculoskeletal disorders, as the current hierarchy within the field is highly favoring the general practitioners. At present, a chiropractor is not included in the referral system, which means that they do not have a substantial relation to other professionals, particularly general practitioners, having the consequence that no knowledge is mutually shared. Nonetheless, this hierarchy not only has an impact on the professional collaboration and respect among the professions, most critically, it also has a vast effect on the course of treatment for patients with musculoskeletal disorders. As a response to the current misconstrued definition of patients suffering from other elements than the biomedical aspects, there are a number of private clinics, such as KIApro, who have been established. These clinics acknowledge the complexity of elements impacting the patients, hence, to "cure the patients" the course of action entails a construction of collaborative teams where more professions are included, e.g., interdisciplinary teams. These clinics keep rising in the private sector and can thrive because the waiting time for consultation in the public sector is, at worst, two years. Consequently, we argued that this should be considered as a problem for the professionals, as this means that the number of patients seeking treatment at public clinics will be reduced.

Studies have indicated, that patients who are treated based on professional collaboration, are generally more satisfied with the treatment they receive, as one professional is unable to achieve a holistic patient-centered approach. As previously elaborated, striving for patient-centered care entails that the competencies a psychologist possesses, should be included in the treatment process. The current absence of collaboration forces the patient to choose between the different professions, and due to these circumstances, psychologists are often deselected since patients rarely receive subsidies for consulting with these professionals.

For this concept to be successfully utilized in the long run in the healthcare sector, we highlight the importance of enrolment of the professional actors, as well as them being able to mobilize the translated network and taking on their new roles and relations. Consequently, this thesis argues that a transdisciplinary collaboration amongst the professionals enables a more holistic, effective and sustainable course of treatment which will be invaluable for the patients, and the society in general, respectively.

9.2 REFLECTION

Throughout the thesis, we have continually highlighted the significance of social sustainability and regarded it as the point of focus; it might consequently seem strange that no patients have actively been involved in the process. As it has been described various times, our focal point is based upon patient-centered care and the biopsychosocial pain model, since this is the most beneficial aspect for patients, while it at the same time is economically beneficial for society in the long run.

There are two main reasons why inclusion and participation of patients did not have a more significant role in the descriptive and analytical parts of the thesis. Firstly, throughout the interviews, we have been presented with several well-augmented opinions which highlighted that there will always be patients who are not highly interested in being "cured", for instance, due to insurance cases which are still underway, etc. As the psychologist from FYSIQ, Marie Hjalmarsson, stated:
"Something which was a barrier was patients who had an ongoing insurance case. If this was not resolved, they might not be willing to be 'cured', because it would possibly limit the chance of receiving the desired compensation. We had many patients who knew that they had to be 'sick' until the compensation was released, afterward, they were ready to be 'cured.'" (Hjalmarsson, 2018).

This argument was also supported by Mette Kilsgaard, from KIApro, who stated the following;
"I believe it is a normal distribution; 80 percent here, and 10 here and here. There is 10 percent who are able [to be cured] but does not desire it, these are the ones who need to be 'whipped'. Then, there is 10 percent who are unable to, but are very much willing" (Kilsgaard, 2018).

Hence, the remaining 80 percent are those who have the desire and ability to be "cured".

Throughout the thesis, we have on various occasions considered how to define the type of patients we aimed to focus on, thuswise, we raised the following questions: Does it make sense to help patients who do not require help? Taken departure from the social and economic sustainability perspective, does it even make sense to focus on these patients? This was debated, and consequently, in continuation of the quotes presented above, we determined that focusing on patients who wanted help, and were willing to (the 80 percent), would naturally make the most sense. For this reason, one can also argue that the conceptualization we have presented and discussed throughout the thesis, has the prerequisite that the patients to be treated have a desire to become "cured".

Bearing this in mind, it is significant to state that we have to a great extent attempted to include patients. Despite this ambitious attempt, we, unfortunately found that it was very challenging to fulfill this in practice. Therefore, this provided another reason for why the patient's perspective is not directly included in the thesis.

In the early stages of the thesis, we attempted to use "cultural probes", precisely for the purpose of understanding and investigating the patients perspective, thereby, actively involving them in the empirical findings. The objective was to start out by sending and gathering data from eight patients, through the already established contacts to the physiotherapists. One of the physiotherapists who were to deliver four probes to the patients never responded. The second physiotherapists "only" managed to deliver three probes within two weeks. The patients were meant to have the probes for only one week; however, the process from delivery to patients to collection stretched over four weeks, which naturally was not ideal, particularly considering that one patient had not completed the probe sufficiently. For a theoretical review of the method of "cultural probes" we refer to (worksheet, 16). Also, to view the construction of these probes, and the intention with them, we refer to (worksheet, 17, 18, 19). To view the three answers from patients, we refer to (worksheet, 20, 21).
Before initiating the process, we were conscious about that using the method of "cultural probes" consume elapsed time, which was in short supply in the tight, four-month, schedule of the thesis. Therefore, we now recognize that

we have been too ambitious on behalf of the actors we intended to involve in this process. Before using probes, the most significant aspect is to ensure that users understand and maintain focus throughout the data collection process. This is not trivial, as probes are very much a hands-off data collection technique.

Perhaps our probes were too intricate and detailed to complete, especially considering that the target group was patients who suffer from pain on a daily basis. Another aspect which might have hindered the successfulness of these probes, is that we have perhaps not managed to interest the patients to such an extent that they have recognized the importance of their responses. Lastly, one must also consider the fact that our contacts did either not deliver the probes, or provided them late in the process which naturally has influenced the successfulness of this method as well. Furthermore, the physiotherapists were functioning as a mediator between the patients and us, and perhaps this was a strategical error, as they might not have disseminated the purpose and importance of these probes to the patients appropriately.
Regardless of the underlying cause, we must conclude, that despite the intentions of including the patients' point of view in the process, the information we received from the responses were not detailed to such an extent that it could be included as qualitative data in the thesis.

As previously elaborated, many of the actors who have been included in this thesis belong within a paradigm that acknowledges evidence-based research; hence, they belong to the sociological paradigm: functionalist. This has profoundly impacted the research of this thesis, as our educational background promotes problem-based learning and creativity in many aspects. For this reason, we have tried to incorporate the concept of "design games" with the desire of collecting data which was not solely based on interviews. For a theoretical description of "design games", the advantages it possesses and why we intended to apply this method, we refer to (worksheet, 22). We acknowledge that the interviews conducted within the framework of this thesis have provided us with a lot of qualitative knowledge, which has been highly beneficial for the conceptualization we have presented. However, a concept such as "design games" provide a different setting and environment for collecting data, hence, it is valuable as it often opens up for tacit knowledge sharing and creative engagement of actors. We argue that it could have brought more, or different, knowledge to this thesis, Nonetheless, the actors we spoke with were not familiar with this method, and despite the effort of explaining the benefits of this method, it might have seemed "unprofessional" or "unserious" from the actors point of view. Consequently, we did not succeed to apply "design games" in this thesis, to such an extent, that it provided qualitative data which could have been used.

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