Rehabilitation in light of different theories of health

Outcome for patients with low-back complaints
- a theoretical discussion

by

Lena Grönblom-Lundström
ABSTRACT

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Outcome for patients with low-back complaints
– a theoretical discussion

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The aim of this thesis was to investigate if the outcome of rehabilitation efforts is depending on what view health care has in relation to what need of care people have and if the outcome for different groups of patients with low-back complaints (specific versus non-specific complaints) is various successful. The outcome is measured in length of sick leave, number of spells and granted sickness and disability pensions.

This thesis combines a theoretical analysis of different theories of health with studies of two empirical materials. One material comprises a group of individuals with low-back complaints (specific versus non-specific complaints) from a nationwide survey of Living Conditions conducted by Statistics Sweden in 1981. The other material comprises a sample of individuals on sick leave due to low-back complaints or other kinds of complaints than low-back complaints. The outcome of these studies are measured as to what extent people with low-back complaints are granted a disability pension (Paper III) and which the characteristics are of those on sick leave due to low-back complaints compared to those with other kinds of complaints (Paper IV). The results from Paper III revealed a difference concerning socio-economic group and granted disability pension between those with specific, non-specific and frequent low-back complaints. Those with non-specific and frequent low-back complaints were to higher extent manual workers and disability pensioners. The results of Paper IV reveals also a socio-economic difference besides that those with low-back complaints had longer sick leave periods and more spells.

What does these results indicate? Are non-specific and frequent low-back complaints not successfully treated within the health care system? Is this due to how these matters have been identified? Are these individuals truly disabled due to their low-back complaints, if so how are they assessed and treated? I believe that the notions of health and disease as well as the social context in which people act influence the outcome of rehabilitation. If people judge their health as bad (here due to low-back troubles) and in need of health care and the health care system do not recognise their need when not identified as diseased a problem arises. These individuals claim that their ability to work is hampered due to the low-back complaint and the society has an obligation and needs a legitimate solution for those individuals that cannot support themselves due to ill health. This obligation makes a demand on the health care system.

If non-specific complaints are assessed as non-medical problems, from a biomedical point of view, health care lacks measures to take care of these people if they ought to be taken care of within the health care system at all. But this outcome (a disability pension) may also indicate that people suffer from a “true” illness although not defined by objective findings. If that is the state one may ask if there is a lack of sufficient diagnostic procedures and measures as well. A rehabilitation approach stemming from a humanistic social perspective might lead to a more favourable outcome for people with low-back complaints, whether or not these complaints have been identified in a biomedical sense, as this perspective take into account both the goals, the resources and the social context of that individual.

This thesis has paid attention to the matter that conceptual notions, which seldom are considered within clinical praxis, are of vital importance for the outcome of rehabilitation. Health care falls short especially when it comes to non-specific and frequent low-back complaints and this may be due to the biomedical model being used too strictly within a domain where other models, here exemplified as Pörn’s Theory of Health, might result in a more favourable rehabilitation outcome for the individual.

Keywords: Low-back complaint, self-report, sickness absence, social class, education, occupation, physical capacity, work capacity, work environment, social support, ADL, perceived health and smoking.
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The thesis is based on the following papers*:


Paper III. Grönblom-Lundström L, Janlert U. Self-reported low-back complaints in a random population sample. Specific versus non-specific complaints. (Submitted)

Paper IV. Grönblom-Lundström L, Janlert U. Low-back complaints and other complaints as a reason for sick listing. A comparative study regarding work-related factors, socio-demographic factors, leisure-time, social support and perceived health. (Manuscript)

*The papers will be referred to by their Roman numerals I -IV.

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INTRODUCTION

The starting-point of health care is ill health or illness, and the main goal of health care is to restore the patient to good health. Health, disease and illness are thereby the most central notions within health care. All activities included in health care services, prevention, diagnoses, nursing, rehabilitation, receive their meaning in light of the phenomena of health, disease and illness. People seek biomedical advice when they feel ill, have formulated a need, a need of care and request it. Peoples' needs/requests of care can be seen as a process influenced by their social situation and cultural attitudes, resources in the social network, knowledge and level of education (Figure 1).

The patients' needs are both biomedical and personal. It is important to know what kind of essential needs the patients have developed and learnt to satisfy within their daily routines. This is especially important when a rehabilitation plan is developed. The health care staff have their needs to fulfil both professional and personal. Like a social and human activity health care work is formulated as teamwork between the patients with special needs and the health care personnel with their special needs. Diderichsen et al have shown that a need of care, request of care and utilisation of care not always coincide with each other in an ideal way. The system identifies which cases are to be assessed as "normal cases" (diseased in a biomedical sense), in care in the long run (placed in a care queue), in need of coercive care, as people who over utilise care or is not entitled to receive care at all (not diseased in a biomedical sense) (Figure 2).
Figure 1. The path to care utilisation is a process influenced by different factors.

- Microorganisms
- Unemployment
- Isolation
- Housing environment
- Working environment
- Traffic environment
- Geographical distances, costs
- Waiting time
- Attitudes

**Society:**
Social class, social and material network, culture, values

**Individual**

No care-utilisation
Other request than of care
Other need than of care
No request of care
Need of care
Formulated need
Disorder, shortcoming, problem
Request of care
Care-utilisation

Social and cultural attitudes
Resources in the social network
Knowledge/education
Income

- Resources in the social network
- Housing environment
- Working environment
- Traffic environment
- Geographical distances, costs
- Waiting time
- Attitudes

Introduction
In the concrete need of help the single individual is confronted with the health care system. This confrontation is explored in the field of strain between the wishes and the needs of the individual and the interpretation of the situation by the health care system. How the patients’ experience of being ill is valued and assessed depends on how illness, disease and health are defined and understood within the health care system. I will now present different ways of defining these matters.

Theories of health, disease and illness
The most common definition is that which, from a biological perspective, defines health in terms of the absence of disease. Within this perspective of health diseases are to be defined first and they are defined as pathophysiological changes, divergent from the normal or natural function of the body organisms. These findings are often seen as possible causes of disease. In order to cure a patient the findings have to be diminished or eliminated. The central aspect of health care, seen through this perspective, the biomedical perspective, is to detect diseases by identifying
measurable findings divergent from the mean. The higher the grade of measurability the more specific the problems are. The more specific the problems are the more suitable they are for biomedical treatment, according to this tradition. Sometimes the findings are not the cause of the disease but caused by the disease. A lumbar disc herniation may cause weakness in the thigh (measurable finding), and by training the weakness the cause of it will not diminish but perhaps the symptoms caused by it. People with less specific problems (no or few, uncertain measurable findings) are per definition already in health, and accordingly of no need for treatment.

However health can also be defined from a humanistic social perspective. Whitbeck, Pörn, Nordenfelt and Seedhouse have all developed humanistic definitions of health and disease.\textsuperscript{1,11-14} Within this perspective man is viewed as a human being in a goal directed action in a social context. Their definitions differ slightly. According to Whitbeck\textsuperscript{12}, a person is in good health when he or she has the psychophysiological capacity to act or respond appropriately in a wide variety of situations. By ‘appropriately’ she means that the action is supportive of, or at least minimally destructive to, the agent’s goals, projects and aspirations, etc.\textsuperscript{12} Indeed she argues that a high level of health is compatible with having some disease, and that health corresponds both to other aspects of social well being and to happiness. Whitbeck also points out a specific class of conditions that often affects the experience of health. She calls these ‘conditions of self-alienation’ – motivational disturbance, weakness of will, self-deception and remorse/selfhatred.\textsuperscript{12} Nordenfelt defines a person to be in good health if her or his intentional acts, within standard circumstances, are related to her or his vital goals, which should constitute a minimum of happiness.\textsuperscript{1} Seedhouse states that health is essential to people’s fulfilment. Since this is the case all that has to be said is that health is desirable.\textsuperscript{14} He sees health as foundations for achievement; bad health is equal to very few or no foundations for achievement with many liabilities, and optimum health equal to full foundations for chosen and biological achievement with no liabilities.\textsuperscript{14} The degrees of health in between make it possible to talk of a person having fair or even good health in the presence of liabilities such as disease, injury and illness.\textsuperscript{14} Pörn defines health in terms of a person’s ability to act according to her/his goals or aims in life, taking into consideration the physical and mental resources as well as the surroundings in which he or she acts.\textsuperscript{13,15-17}
They all define disease as a physical or mental process that tends to cause ill health by limiting a person's ability to act or possibility to fulfil wanted actions. Here disease does not receive its status as a disease because of its statistical abnormality. The identification of the abnormal functioning implies that its relation to ill health has been observed at the personal level.

In this thesis Pörn's Theory of Health will be more thoroughly described. The capability of an individual, at a certain instant, to act in accordance with her/his goals in life and within her/his social context, is the core of Pörn's health concept. The environment affects opportunities and limits the capability to act and also to attain knowledge. Pörn defines man (human beings) as acting subjects in goal-directed actions within a social context. In his theoretical model of health he has constructed an action chain or loop which explains what has to be accomplished before a planned act can be realised. His model includes four entities - the actual resources, the information system, the decision system and the realisation system. The information system includes the perception of our selves. Here the picture of ourselves is developed, on which all decisions will be made. The decision system is preceded by an emotional process where also the attitudes, values and norms of the society (health care system included) will be taken into account. If there is more than one goal to act upon the person has to prioritise. A decision to act leads to an intention to act and to the realisation system where an intentional act is made possible or not possible to carry out.

It seems too that people's judgement of their health is built more on the functional aspect, e.g. the possibilities to carry out their daily activities than on organic changes in some part of their body. In that way people's judgements seem to be more like the notion of health described by the social-humanistic perspective than by the biomedical perspective.

The notion of disease and illness in theory and practice
To have a disease and to feel ill are not comparable entities theoretically. The relationship between the concept disease and illness, from the biological viewpoint, is that illness is a state that refers to a disease. The biological perspective always proceeds from a defined disease. According to this perspective a disease is an illness only if it is serious enough to be incapacitating, and therefore is (i)
undesirable for the bearer; (ii) a title to special treatment; and (iii) a valid excuse for normally criticizable behaviour.

The humanistic social perspective defines illness merely as an experience of being ill that as well as diseases can cause ill health by limiting the person’s ability to act. People become functionally disabled not only because of diseases and injuries but also because of illness. The only difference for the health care system is that the disability can be explained in one case (measurable findings) but not in the other (no or few measurable findings). This situation leads us to the following questions: a) is the explanation or lack thereof due to the accuracy of the measuring instrument(s) or b) is it due to the knowledge of what to measure and how to measure it?

People define the words health, disease and illness in other ways. People’s understanding of disease has a qualitative and a quantitative aspect. The qualitative aspect is about what kind of processes that are normal or non-normal to call disease. The quantitative aspect is about how much of suffering/symptoms that has to come about before one calls oneself or others as sick. These opinions are only partly formed by the biomedical science and practice. People’s opinions of disease seem to vary depending on what is seen as normal or not, whereas the normal is estimated by the person’s experiences in daily life.

The notion of health as ability
How are the notion ability and disability defined in relationship to the different theories of health? As stated earlier health can be defined as an opposite to disease (the biomedical perspective) or as a concept of itself (social-humanistic perspective). In the latter case health is defined as the ability to fulfil wanted actions and diseases as well as illnesses can cause ill health by lowering the ability to fulfil these wanted actions.

Pörn and Nordenfelt have both proposed definitions of health as ability. What is then ability? Pörn defines health as an ability to act. To be in good health is to have the ability to act upon goals in life in relation to physical and mental resources and to the social context within which we acts. A person has ability or is able if he or he has the resources needed, given standard conditions, to perform the corresponding act. Desire, decision and choice are of importance for the exercise of an ability. How then is a goal defined? According to Pörn a goal normally comprises two or more
projects (sub-goals) preferentially ordered by the person, and a project comprises two or more tasks ordered in various ways. A goal, which does not appear as a project in a more comprehensive goal, is called a dominant goal, in which the person (the agent) has determined what to become or continue to be (life-plan). In the projects of his life-plan the agent has defined his project selves.\textsuperscript{20}

The ability to attain or realise a goal breaks up into the abilities to complete each one of the projects and tasks that the goal contains. The repertoire of the agent is the collection of abilities of the agent. Pörn talks about generic abilities, abilities described by referring to types of action/activities, i.e. a person (A) can swim, A knows how to prepare boys at a match. With every ability he associates a more or less comprehensive range of circumstances or situations in which the person can exercise it. Abilities are often qualified as abilities to do things well. The environment in which these actions/activities are carried out offers more or less favourable opportunities for action. The environment is not only external. There is also an internal environment; i.e. the decision environment, which comprises beliefs, desires, evaluations and emotions.\textsuperscript{19,21} The perception of the agent is the foundation of the agent’s system of beliefs (cognition). First of all the situation has to be assessed (SA — situation assessment), secondly a goal has to be formatted (GF — goal-formation), thirdly the goal has to be integrated (GI — goal-integration) and fourthly lead to an intentional activity (IA), which effects can be evaluated in the next situation-assessment. Data from each step affect the belief-formation, which on the other hand affect the situation-assessment, the goal-formation, the goal-integration and the intentional activity. In every phase of this complex action dynamics the agent acts on the basis of the resources he/she believes he/she has and within the limits of the resources he actually has. They can at certain times appear to be restricted, at other times enriching. In order to understand the integration of abilities it is important to measure the ability to complete each one of the projects and tasks that a person’s goal contains of.\textsuperscript{19,21}

Nordenfelt’s\textsuperscript{22-24} general proposal is as follows: A person is healthy, if and only if that person is in a bodily or mental state which is such that the person has the second-order ability to realise her or his vital goals given a set of standard or otherwise reasonable circumstances. Ability, he claims, is not an absolute concept; it has to be specified. First the agent has to be identified, secondly the project or goal of that agent and thirdly the circumstances in which the agent is able to attain this goal. One can have ability with respect to a specific
action but not with respect to another. What then is a vital goal of a person according to Nordenfelt? He suggests that it is a state of affairs, which is necessary for the realisation of this person’s state of minimal long-term happiness. Many of the things that human beings hope to realise or maintain belong to their vital goals. Nordenfelt gives some examples; for instance taking an exam, getting married and having children, as well as simply maintaining elements in the status quo such as retaining one’s job and remaining in touch with one’s nearest and dearest. He also states that certain things that people happen to want to do not always belong to their vital goals. He writes about trivial wants (casual wants that does not matter if they are not fulfilled), counterproductive wants (wanting to get drunk) and irrational wants (wants which are in conflict with other, more important wants).

What then are standard and reasonable circumstances? Any ability presupposes a set of circumstances in order to result in action. This set is sometimes called the opportunity of the action. Nordenfelt illustrates this with an example: A person (A) is ascribed the ability to climb Mount Everest. This does not mean that A climbs Mount Everest if he tries, under all circumstances. If a group of soldiers were to prevent A from climbing then he would not climb even if he tried (no standard circumstances). When it is said that A is able to climb Mount Everest it is presupposed that a set of situations exclude the one where someone has built a road on the slope (anyone can climb a mountain by car), and include some reasonable variations of it regarding, for instance, assistance and climate.

What then is a second-order ability? Nordenfelt states that many first-order abilities that people have are acquired through a long process of training and learning, such as professional abilities and abilities to run households. The relationship between a first-order ability and a second-order ability is given this formal characterisation. A person (A) has a second-order ability with regard to an action F, if and only if A has the first-order ability to pursue a training programme after the completion of which A will have the first-order ability to do F. A second-order ability is to acquire an ability for the performance of a certain task. Nordenfelt concludes that the kind of ability required by a healthy person is a second-order ability. 22-24

How is disability to be understood within the health care system? A disability due to ill health can be understood as a lack to fulfil desired aims in life at the time viewed from a humanistic social
perspective. A person needs abilities to act, and these abilities must be wanted by the person, and, be necessary and sufficient for the act in question. To become healthy again requires that the person regain wanted and necessary abilities. A disability occurs when the repertoire is inadequate, the environment is inappropriate or the goal profile is unrealistic, or in terms of a combination of these. To regain a functional ability includes an activity. Activities on the other hand comprehend acting. How people act differ due to their ability to put their plans into action as earlier stated.

The biomedical perspective always proceeds from a defined disease. A disease can result in disability. In order to cure or alleviate the effects of a disability the disease has to be defined first. If on the other hand a person has not been identified as having a disease he/she is healthy per definition. The biomedical perspective has difficulties in dealing with persons with an expressed functional disability that is not a result of an identified disease.

Pain is one of the most frequent explanations for suffering and disability, which seriously impairs the quality of life for millions of people throughout the world. Pain is also the most common expression of illness, disease or injury, which motivates a patient to seek biomedical help and advice. Pain falls into the category of subjective data that cannot be simultaneously shared and reported by anyone other than the person experiencing it. Due to these claims it is difficult to generally measure and value pain. Everyone experiences pain sometimes, and usually the pain can be explained, and satisfactorily treated. Problems arise when pain becomes chronic and affects the ability to effectively perform desired actions thereby affecting health as it is here being defined according to the humanistic social perspective. A person lacking measurable findings but who is still feeling ill may theoretically be in good health according to the biomedical perspective.

Social class and ill health
Social class is here defined according to a system of socio-economic stratification (SEI) developed by Statistics Sweden. This system includes both working and non-working people and contains many dimensions; those in labour are divided in employed and entrepreneurs and employed are divided in non-manual workers and in manual workers. These categories are broken up according to what level of qualification the position has, not according to what education the individual that holds the position has. In this thesis
professionals constitute higher salaried employees, white-collar workers medium and lower salaried employees, blue-collar workers skilled and unskilled blue-collar workers and farmers and entrepreneurs constitute all kinds of scales (small, medium and large). Housewives, sickness and disability pensioners and long-term unemployed are those not in labour (non-working people) within this socio-economic system.

To suffer from pain or to have a decreased functional ability is a serious deficiency. If this suffering and functional disability is due to illnesses that are socially determined then it is even a more serious deficiency. To measure health in the sense of "well-being" rather than to measure morbidity is not an easy task. Analysis about differences in ill health and social causes to ill health brings up the question about the definition of health and disease/illness. Most studies concerning social class and ill health are based on morbidity (illness/disease) and mortality rates. Descriptions of professionally defined ill health in society (disease) are mostly about a group of patients of some kind, e.g. people who pay a visit to health care. Information about the state of health and differences in health between groups in society of those who do not visit health care is therefore missing. Analysis of ill health in society (illness) is to a high degree based on self-reports in nation-wide studies about people's health. Another way of measuring ill health in society is by data from the social insurance system as illness/disease is a reason for sick leave and early retirement pension. Data from these kinds of studies are strongly influenced by changes in the regulation system or by different interpretations of the rules. Data includes information only about people concerned with the insurance system, and is therefore not suitable as a complete measure of ill health in the society.²

Social class is an abstract notion, a model that can be used to understand how society works and why people have different circumstances. People in different social classes and people with different class origin differ in e.g. upbringing, morbidity and mortality, income, housing conditions and social mobility. To what social class a person belongs to has a great impact on ones chances in life, the frames within which one is free to act.²

Blue-collar workers have a 50-100% greater risk for a longstanding illness than white-collar workers and professionals and the differences have not changed since 1960s. Work environment and conditions during upbringing seem to play an important role for
the maintenance of these differences in illness between social classes. These results are based on self-reports and include people 16 years and older who in a nation-wide investigation reported to have a longstanding illness of some kind. To have a decreased working capacity and a functional disability was also socially determined. The most important factor behind class differences in physical health was class differences in the physical work environment.²

The mainstream of contemporary research into the social patterning of health focuses on the mechanisms of social differentiation in health. The two main explanations are that (1) lower strata are exposed to various factors detrimental to health, e.g. harmful work conditions, life styles, general stress, and (2) people suffering from ill health tend to go down socially and cannot reach higher strata. These tendencies may also exist simultaneously and interrelated, which can produce vicious circles of ill health and social exclusion (marginality).²⁸

Manual workers seem to be exposed to “double suffering”, not only in that there is a relatively high prevalence of long-term illness among them, but also in that the impact of illness upon them is greater than it is on non-manual workers. It is also possible that manual workers are more likely to face personal economic difficulties as a consequence of illness, and are more apprehensive of illness as a result.²⁹

Chronic illness may also have adverse social and economic consequences. Much of the recent research on social factors and health has focused on the etiological role of socio-economic conditions. However, chronic illness may have social and economic consequences, for instance unemployment or exclusion from the labour market, and financial difficulties.³⁰

Rehabilitation

Rehabilitation will here be more closely discussed, as it is a part of the health care system and concerns actions to diminish disability caused by illness or disease. Rehabilitation is usually used as a notion of coalition of all biomedical, social and psychological measures that aim at helping sick and injured to regain the best functional ability and conditions for a normal life as far as possible. Rehabilitation therefore has a dual aim, biomedical and social. There is no coherent definition of the notion of rehabilitation. Most of the definitions emphasise that it is a question of re-
establishing the working capacity of the handicapped person and of improving the possibilities to manage on their own, and that this demands different practical tasks to obtain. In practice one usually distinguishes between biomedical, psychological, social and occupational rehabilitation. This implies that different professional actors may work from different definitions.31

The word rehabilitation comes in fact from “re” in Latin, which means again and from “habilitas”, which means fitness. Rehabilitation can thereby be understood as activities, which aim at regaining fitness. Rehabilitation in a biomedical context has by WHO been defined as all measures that aim at reducing the effect of circumstances that reduces the function as well as at integrating individuals socially. Rehabilitation does not only refer to training of the individual and to measures that adapt the individual to the surroundings but also to measures that adapt the surroundings to the function of the individual.32

Different interpretations of the notions of disease lead to different views of the role of rehabilitation. Rehabilitation according to a biomedical model indicates a defined disease; all biomedical efforts are directed towards the consequences of defined diseases. Rehabilitation according to a humanistic social model indicates merely ill health and its implications in life. Rehabilitation in that perspective has it advantages as it takes into consideration the ability to act in the social context. This could imply that “rehabilitation is to treat, assist or guide a patient to achieve, maintain or increase her or his ability to perform desired acts as far as possible in relation to actual resources and circumstances”. This brings up the notions of ability (actual resources), goals (desired acts) and social context as Pörn’s theory of health emphasises.
Physical therapy
Physical therapy is a part of rehabilitation. The goal of physical therapy is to regain, maintain or improve a functional ability by means of various methods. The joint denominator for all patients in need of physical therapy is a functional disability. The goal of physical therapy has not changed over time. The aims are still to rehabilitate people in order to help people regain their lost abilities. The knowledge in physical therapy is partly based on movement science. Physical therapy is about human body in movement and about changes that cause disturbances in that movement. The knowledge behind several physiotherapeutic methods derives mainly from biomedical theories but also from praxis. Some of these praxis-based methods have later on been identified as methods derived from a biomedical theory, and others not. The biomedical perspective has dominated physical therapy. In recent years other methods have been developed that take into account other aspects besides biomedical such as behavioural, social and political.

The role of physical therapy
In physical therapy, movement (activity) is the central aspect. The role of physical therapy has been described by Hislop and by Kukkonen and Muuri. Hislop states that physical therapy is a clinical discipline but that the precise role of this discipline is rarely understood and that no coherent philosophical paradigm exists. Hislop defines health as a smooth functioning between interrelated systems or levels, ranging from cells and tissues to family and society, whereas disease is the result of any perturbing force that upsets the balance within one level or between levels. Knowledge about the levels is derived from different sciences. Physical therapy must therefore be seen as interdisciplinary.

Kukkonen and Muuri agree with Hislop that physical therapy is a clinical discipline and that its theory arises from certain concepts and their interrelations. They see physical therapy treatment as a dynamic process in which a person’s physical activity and functional ability are maintained and promoted. They claim that the patient’s decision to seek biomedical care is influenced by her or his experienced need of care and the estimated benefit of that care. They also claim that the factors controlling functional ability include the patient’s social conditions and the use of biomedical care.
Hislop advocates a humanistic social perspective of health where disease is seen as a force that may upset the balance between levels. But she does not discuss illness as a force, which as well can upset this balance. Kukkonen and Muuri seem to advocate the same perspective as they bring up social conditions as factors controlling functional ability and the patient’s decision process in seeking biomedical care.

Assumptions underlying physical therapy intervention

What assumptions underlie physical therapy interventions? Are these assumptions mainly focused on treatment methods and their accuracy, or do physiotherapists have assumptions about which patients seek biomedical care and about those, which do not? Most of the assumptions about physical therapy practice are about methods used.

Gordon claims that any therapeutic approach aimed at rehabilitation of neurological patients, in this case, is based on assumptions regarding how the central nervous system (CSN) controls movement. The originators or proponents of a particular approach often explicitly state these assumptions. For example, most of the established neurophysiological approaches to treatment assume that recovery from brain damage follows a predictable sequence, similar to the development of normal motor behaviour in infancy. These assumptions lead to specific recommendations concerning the progression of patients through a sequence of treatment activities. Most of the assumptions underlying therapeutic approaches are, however, implicit, that is taken for granted. Gordon continues. For example, practice of some act will lead to a greater skill. One underlying assumption is that repetition in some way “strengthens” appropriate synaptic connections in CNS. In order to develop a meaningful critique of therapeutic approaches in physical therapy, it is first necessary to identify the assumptions on which they are based. From these assumptions, physiotherapists can begin to understand the overall theoretical model, that is, the set of assumptions, both explicit and implicit, guiding particular therapeutic approach. The important role of scientific theory is to provide an underlying model that guides the integration of practical ideas into a coherent treatment philosophy. Gordon continues that, without an understanding why physical therapy treatments work, physiotherapists proceed on the basis of a kind of superstition, or pseudoscience. In other words, physiotherapists are unable to separate the essential aspects of what they did from those aspects that did not help but where originally
part of the procedure by chance. Thus, physiotherapists must continually repeat exactly what they have done without knowing precisely what it was that achieved the beneficial effect. Treatment then becomes ritual. By identifying the theoretical basis of a therapeutic procedure, physiotherapists can begin to analyse and understand why it works. Only in this way can physiotherapists improve their procedures for helping patients Gordon concludes.

Gordon talks about an ability to choose an appropriate technical method for the problem in question, and in that I agree. He seems to talk about physical therapy methods from a biomedical perspective, meaning that if we can understand why we choose certain procedure(s) or method(s) and have the knowledge to perform it correctly the patients will be helped. But I think there is more to it than to choose the right procedures in helping patients restore or maintain their physical or functional abilities. To help people regain their lost abilities includes also a will of the patient to use the regained ability in a desired way.

Towards a philosophy of physical therapy

What is “behind” physical therapy, what are the underlying bases or ways of thinking? The concepts physiotherapists hold, both explicitly and implicitly, appear to underlie the rationale and hence the practice of physical therapy. These concepts have to do with science, the biomedical model of illness, a holistic view of the patient and an empirical attitude towards physical therapy practice claims Pratt. The concepts to be considered here as underlying the practice of physical therapy are those that imply a certain kind of knowledge about people and the world they live in. At the same time such knowledge is also bound up with an orientation to this world, a way of looking at things. For example, how much of what we understand is in the eyes of the beholder and how much is “really there”. A physiotherapist’s understanding of a patient’s symptoms is an entirely different thing from the patient’s actual experience of disability or illness. However, this example anticipates some of the main ideas in science, which physiotherapists would hold to be true and relevant to their practice, implicitly or explicitly.

A fundamental principle of science is that there is some kind of natural order in the world. This means that events and objects occur in regular and predictable ways. In physical therapy the physiotherapist attempt to understand the ways in which their individual patient’s body functions on the grounds that most
human bodies function in similar ways. Such a natural order is the very basis of physiotherapists' action according to Pratt. Another principle of science and of its application to physical therapy is that knowledge of the natural should be objective. This implies that what one person observes or discovers ought also to be verifiable, at least in principle, by a second and third person. Physical therapy seems to take a broadly objective approach in its practice. Treatment mostly focuses on body "objects" such as limbs, spine, joints and muscles. But it is also true that very few, if any, physiotherapist treat their patients merely as a body object. Most physiotherapists try to treat their patients as persons. Such an approach is non-objective in that it acknowledges the mind and more importantly the will of the patient. This leads us, claims Pratt, to focus on what kind of models would be beneficial for physical therapy - the biomedical model, the social model or perhaps a holistic view.

The biomedical model's strongest position is the assumption of invasion or attack by some harmful agent or circumstance causing pathological change (measurable findings) in a previously well or uninjured person. The biomedical model treats the body as a mechanism - albeit a complicated one whose entire function is still imperfectly understood. This model seems most appropriate in the case of injury, post-surgical care or hip replacement but is only partly appropriate in the treatment of certain incurable or chronic conditions in dealing with physically handicapped people or with those whose illness appears to have some kind of psychological "overlay".

This can be interpreted in another way, namely that the definition of disease as presented in the biomedical model can be used in the identification of diseases but not in the identification of what is to be called ill health. Incurable and chronic conditions may be seen as signs of ill health, therefore another model than the biomedical model would be preferred, namely the humanistic social model.

Roberts claims that the concept of normality, deviations from, which are abnormal, is fundamental to the biomedical model. This also underpins, claims Roberts, much of the explanation given by physiotherapists of their practice and shows how closely it is linked with this model. Much of physical therapy is based on the belief that there are normal ranges of functional ability, normal ways of performing activities, normal patterns of movement and activity. Physical therapy to a large extent deals with deviations from these
normal limits and attempts to return the instigator of abnormal movements to within the framework of normal.\textsuperscript{38}

The social model builds on the concept of disability as being socially determined rather than belonging to an individual disabled person. So long as disability is centred to an individual, as it is in the biomedical model, then resources are directed towards solving the problem presented by that individual — including the development of rehabilitation professions. If disability is determined by society, then resources have to be redirected towards making society less disabling — by changing the physical and psychological fabric of society states Roberts.\textsuperscript{38}

Roberts also talks about the theory of holism that Jan Smuts developed. That theory is based on the belief that certain wholes are greater than the sum of the parts. Holism has become increasingly attractive as a model upon which physiotherapists, and others, can claim their practice is based. However holism contradicts so much of what is fundamental to the biomedical model that the meaning of the word has been re-formulated.\textsuperscript{38}

The 1990 Oxford English Dictionary defines holism as “The treating of the whole person including mental and social factors rather than just symptoms of a disease”. This later definition happened in reaction to accusations that medicine was too reductionist. Roberts\textsuperscript{38} claims that holism in its true sense is incompatible with the biomedical model. Pratt\textsuperscript{37} states that in philosophy holism is essentially opposed to reductionism, which asserts that a valid analysis is obtained only by considering the function of successively smaller parts. Thus in science, in using the biomedical model, and in much of physical therapy, a reductionist approach (as in the assessment and treatment of joint and muscle function) is implicit, claims Pratt. This approach has it limitations and physiotherapists are well aware of it when face to face with an individual patient. A holistic view of a patient is that of a person taken into entirety and in the environment within which he/she exists; it is of an integrating being.\textsuperscript{37}

The holistic approach, according to Pratt implies that a patient’s problem is in the context of the rest of ones life; ones physical difficulty is appreciated in relation to day to day needs, ones hopes, aspirations (or lack of them), ones relationships with, and attitudes towards others as well as to oneself, and in general to what is important to one. The holistic approach means that the
physiotherapist has to use all ones resources to establish the best possible helping relationship. But how much do physiotherapists use the holistic approach Pratt asks. A rough answer would be “not much”! Pratt continues to state that physical therapy training is science-oriented and that clinical treatment at least employs the biomedical model. Post-basic training in physical therapy also seems to be more reductionist than holistic in its flavour. The prevailing emphasis in these courses, claims Pratt is in “specialist” areas of physical therapy such as manipulation, intensive care, new technology or particular morbid conditions, rather than on communication and counselling skills.37

Both Roberts and Pratt emphasise the holistic model rather than the biomedical model as the basis of physical therapy. They bring up the difficulties in physical therapy that the methods used in physical therapy praxis mostly derive from biomedicine and that the understanding of the patient (the individual) demand another kind of knowledge than the biomedical one. Here it is of importance how the different notions of health, disease and illness receive their meaning.

Cott et al39 have proposed a Movement Continuum Theory of Physical Therapy which describes the unique approach of physical therapists to movement rehabilitation that incorporates knowledge of pathology with a holistic view of movement which includes the influence of physical, social and psychological factors. They emphasise that there remains a lack of consensus on the definition of what constitutes physical therapy and its contribution to the health care field despite the progress of having achieved many goals towards an equal footing with other health care professions. The purpose with their work was to develop a theory that met certain criteria. The key concept in their theory is movement and consists of eight principles of which three basic principles are paramount to the science of movement and are shared with other disciplines. They state that humans are not simply passive, mechanical things but thinking, feeling, responding individuals with needs and desires that provide the drive or motivation for them to move. Movement is also influenced by physical and social factor external to the individual. They claim that the social environment provides multiple influences on an individual’s movement. Economic and political environments influence movement in a broader context. Economic considerations include the individual’s social economic status and society’s economic climate. Legislation regarding accessibility and eligibility to programmes such as health and other
The other five principles conceptualise movement within physical therapy. They state that movement levels of the continuum are interdependent. That there is a maximum achievable movement potential (MAMP) at each level of the continuum and that each human being within the limits set by the MAMP has a preferred movement capability (PMC) and a current movement capability (CMC) which in usual circumstances are the same. Pathological and developmental factors have the potential to change the MAMP and/or to create a differential between PMC and the CMC. The focus of physical therapy is, according to them, to minimise the potential and/or existing PMC/CMC differential. They state that therapeutic movement modalities, therapeutic use of self, education, and technology and environmental modifications are involved in the practice of physical therapy.

Cott et al is in favour of an overall holistic approach as they bring up notions about the social context in which people act. But are there other factors than pathological and developmental factors that can interfere with MAMP or create differentials between PMC and CMC? The preferred movement capability may be influenced by goals set by the individual meaning that it can be even lower than the current. The differentials between the PMC and CMC may be of the character of both can/can not and may/may not. Other techniques can be used besides technical physical therapy methods to solve these differentials.

This brings up the questions of what kind of techniques exist within physical therapy. Physiotherapists are trained to measure physical resources such as mobility, strength and co-ordination. Most of the techniques in use are more or less of a biomedical origin. These techniques have been developed to minimise the potential and/or existing PMC/CMC differential as Cott et al suggest. But most of the patients in physiotherapeutic care or within any health care modalities do not have pathological measurable changes; they simply experience ill health and may be functionally disabled at the moment. This is the crucial point in physical therapy. The technical methods are needed but there is a need of another competence as well as the goal of physical therapy is to rehabilitate people in order to help people regain their lost abilities.
Low-back complaints as an example

In this thesis low-back complaints will be used as an example for the theoretical discussion. Patients with low-back complaints are the largest individual patient group that is referred to physiotherapy treatment in primary care settings. In a newly done survey concerning patients in physical therapy treatment about fifty percent of the outpatients received treatment for back complaints. The most common denominator for patients suffering from LB complaints is simply pain, measurable or not, and its probable consequences such as reduced physical ability and capability for work.

Volinn suggests that LB pain is one of the least understood conditions of pain, and it may be due to how this condition is understood within the Western biomedical tradition. Volinn's hypothesis is that the reason why back pain disability has remained largely unexplained is that the focus in studying it has been too narrow. In the sense, that when a patient presents a pain it immediately induces physicians and other health care practitioners to treat symptoms rather than to step back, examine the patient's social environment, and trace the manifold of factors implicated in the aetiology.

Specificity of the complaint

Theories concerning pain that have had difficulty in explaining pain have changed during the years, from biomechanical explanations to an apprehension that long-term pain has mainly psychosocial reasons. Others share this apprehension. In a report concerning LB pain, 20-30% of long-term LB pain was due to biological (organic) causes. If organic deficiencies cannot be pointed out the problems usually are described as 'functional' and viewed as caused by psychosocial problems. The treatment is directed towards the pain behaviour indicating that people have to learn to live with their pain.

The interpretation of the phenomenon in terms of specific and non-specific complaints is of interest as it can be interpreted to occur "in" the individual or "in the interaction between the person and the health care system". Who decides what is to be called specific or not? Specific complaints viewed in light of the biomedical perspective are interpreted as having measurable findings that non-specific complaints do not show. These findings are so to say "in" the individual, either as measurable physiological changes or as something that cannot be explained physiologically. The humanistic social perspective does not separate specific from
non-specific complaints it views complaints as disturbing forces that tend to lower the ability to act in a desired way.

**Duration of pain/disability**

The duration of the pain/disability can be both due to the severity of the complaint but also due to how it is understood within the health care system and to how it has been dealt with by the health care system and by the person her/himself. If minor back pain is seen as occasional by the health care system but not by the individual, a discrepancy occurs. If the health care personnel see major pain as severe but not the individual a discrepancy also occurs. How different grades of pain/disability are understood both by the health care system and the individual is influenced by theories utilised. Health care in a biomedical perspective values pain/disability in relationship to measurable physiological changes. The humanistic social perspective view pain/disability by valuing the ability to act according to desired goals.

People experience pain/disability in a similar way as the humanistic perspective pleads. They value their pain/disability in relation to their social context in the sense of how much they are bothered by the pain/disability in their every day life at the moment. The patients' understanding of illness is shaped by her or his socio-economic status, education, occupation, and religion and past experience. Cultural influences and believes about the cause of the illness or disability, the meaning of the illness, what the person should do and also how the person and others should act determines actions.

**Sickness absence**

Sickness absence is of major concern today because of its high costs. To have the possibility of a paid sick leave due to ill health is a fundamental right in a modern welfare state. At the same time there are doubts about the relations between sickness absence and a person's biomedical status. Sickness absence is a phenomenon influenced by different factors at the level of the individual as well as at societal levels. If absence is viewed as a voluntary behaviour, influenced by factors such as shared attitudes to work or the employees' satisfaction with their jobs, it is an industrial design problem rather than a health problem. If – on the contrary – sickness absence is a reflection of ill health, it is a health problem with profound economic impact. In order to take proper measures it is therefore of great importance to know if sickness absence is best
viewed as a measure of morbidity or as a manifestation of job dissatisfaction or other problems non-biomedical problems.

Marmot and collaborators discuss the desire to evaluate the outcome of biomedical care not only in terms of disease abatement but also in terms of social and physical functioning and perceived wellbeing. It is in this context that sickness absence should be seen they say. If healthy functioning for people in stable jobs is, by definition, attending for work; then absence from work indicates some lack of functioning – whether the causes are psychological, social or physical.45

Sickness absence in the form of sick listing has increased during the last two decades in Sweden. In Sweden the total costs for the consequences of low-back pain was about 29 billions SEK 1995, out of which 27 billions SEK constituted costs for sick listing and early retirement pension.43 These costs are of the same character even in other countries. In Victoria, Australia, a state with 4.3 million people, the workers compensation system paid out £ 142 million in claims for back pain 1996-97, and this figure has tripled in one decade.46 It has been assumed that an important factor behind this increase is a general change in attitudes in society towards health and illness, quality of life and work and in leisure time, authorities and goals in life. Morbidity and mortality are affected by various circumstances at different structural levels, that is, at the level of the individual as well as at group and societal levels. Most of the studies on sickness absence performed thus far have been focused on the individual.47

LB complaints are one of the most common reasons for sick listing. The costs for low-back pain are three times higher than for all cancer diseases.45

LB pain usually has a benign course. Patients with chronic pain are roughly twenty percents of the patients with acute LB pain, but they consume eighty percent of the costs for LB pain disability.48

The efficacy of specific comprehensive programs and the correlation between LB pain problems and absenteeism is not yet clear. Few randomised prospective studies have been done to show the efficacy of any treatment methods used for patients with LB pain of more than eight weeks’ duration.48
Economic aspects of back pain interventions have received little attention, although several authors have proposed the need for cost-effectiveness evaluations. Some of the intervention studies done seemed to produce cost savings due to reduced absenteeism.  

Physical therapy treatment of low-back pain

The great diversity of assessment and treatment approaches is well recognised by most physical therapists. Instructors responsible for orthopaedic courses in physical therapy curricula often struggle to introduce a variety of assessments and treatment approaches, even if the various approaches conflict with one another or lack a scientific basis. Advances in evaluation and treatment methodologies and increased understanding of the pathological process usually lead to a decrease in the frequency of health problems and to improvement in the effectiveness of the interventions. The opposite seems to be the case with low-back disorders – as the understanding increases the problems appear to multiply. Waddell have encouraged his physician colleagues to reconsider their traditional approach towards back problems. Waddell claims that low-back pain is a benign, self-limiting condition that is so common that it could be interpreted as a normal occurrence. He asks if current methods of intervention are appropriate for a disorder that in reality might be considered a fact of life. According to Waddell medical assessment and treatment should be influenced more by the patient’s distress and illness behaviour than by the actual physical disorder. In practice both conservative and surgical treatment for a poorly understood condition such as low-back pain, is determined to a much greater extent than most physicians realise, or would like to admit, by the person’s distress and illness behaviour. De Rosa and Porterfield claim that physical therapists should recognise this same dilemma. Waddell also claims that physical treatment directed to a supposed but unidentified and possibly non-existent noxious source is not only understandably unsuccessful but failed treatment may both reinforce and aggravate pain, disability and distress. DeRosa and Porterfield also believe that failure to recognise the natural history of low-back pain and the utilisation of inappropriate treatments may result in conversion of simple low-back pain into low-back disability. Therefore, before initiating therapeutic interventions the clinician must be able to recognise the difference between a low-back pain and low-back disability. Most treatment models are based on the pathology of specific tissues. But are such models adequate for the diagnoses of activity-related disorders DeRosa and Porterfield asks. Tissue-related diagnoses are
usually based on radiographic or other imaging findings, or on pathophysiologic hypothesis. At least thirty percent of asymptomatic individuals, however, show abnormalities in the lumbar spine. DeRosa and Porterfield believe that to identify with any certainty the exact tissues involved in most low-back pain is virtually impossible. They suggest that the physical therapist’s focus should not be on identifying the tissues that are fault, but rather determining the mechanical stress or combination of stresses that provoke the familiar symptoms.\textsuperscript{50}

One of the most important decisions the physical therapist makes following an examination of a patient with low-back pain is whether the history and physical examination are consistent with activity-related injuries to the low back. This decision allows differentiation between activity-related mechanical disorders and non-mechanical disorders.\textsuperscript{50} De Rosa and Porterfield say that classification of a patient’s symptoms and history into meaningful, easily understood groups helps provide direction for therapeutic intervention and allows for rational application of treatment. They believe that the more complex a classification system is, the less chance that measurements obtained with the system will be reliable. They propose that most patients with activity-related low-back pain can be placed into one of the three categories – acute injury, re-injury/exacerbation of previous injury and chronic pain syndrome. With chronic back pain they do not mean the time dimension. Many patients with symptoms of many months’ or even years’ duration can still have treatable low-back pain. They claim that in the patient with true chronic pain syndrome, there is no longer a relation between application of forces generated in the physical examination and the pain response. Anguish, disability, illness behaviour, emotional upheaval and discouragement instead compound the patient’s complaints. The focus of treatment for this group of patients should be on augmenting function and on increasing physical activity, especially if changes in functional range of motion and physical work capacity could be measured and provided as feedback to the patient. DeRosa and Porterfield recognise fully that socio-economic and symptom-magnification factors must be considered.\textsuperscript{50}

Frost and Moffett\textsuperscript{52} claim that the aim of traditional physical therapy is to localise the exact area of pain and to
ask questions about the site, nature and severity of that pain. Therapists then proceed with various forms of treatment in which the patient has a passive role, e.g. mobilisation, manipulation, traction, electrotherapy and heat. Relief of pain is often the primary objective of treatment and this is usually considered before relating to functional activities. However, this may not always be the most effective and appropriate approach, especially for patients who have long-standing chronic pain they claim. Advantages of a more active approach are to be preferred and the patients should be encouraged to be more responsible for their own management. Physiotherapists should be aware of that passive treatments, as well as some advice, might for some patients lead to reduced activity and fear of spinal movement.

Skelly states that physiotherapists actively should research, rather than merely be aware of the influence of socio-economic and psychological factors. He claims that educational establishments are allowed to maintain their narrow perspective, which historically, has defined health care as something done by experts to patients within a hospital, divorced from everyday life, and where the primary and preventive health care are thought of as a few extra exercises. The only exception occurs, he claims, when patients are sports people or because they have an interesting condition. He also says that physiotherapists compound the social, and inevitably, the political irrelevance if they do not fully consider the psycho-social influences which affect physiotherapeutic outcomes. Instead of avoiding socio-economic and psychological factors physiotherapists need to investigate them most urgently, in terms of their daily practice, their research methodology and use of collective resources of the profession.
Problems faced in clinical practice

Physical disorders or disabilities that affect daily life make people seek health care. Health care providers on the other hand identify health according to other kinds of measurements. In light of the biomedical perspective health/ill health is identified in relation to objective findings. But people's identification of their state of health is merely due to the experience of the distress the troubles has brought about. This distress can be relative to both biological markers and social and psychological factors and people are influenced by their social context. In physical therapy treatment as in all rehabilitation programs the social circumstances as well as the definitions of health and disease are vital parts to be considered as they may affect the outcome for the individual and may differ in definition between those who utilise and those who provide care.
AIM OF THE STUDY
The aim of this thesis was to investigate if the outcome of rehabilitation efforts is depending on what view health care has in relation to what need of care people have and if the outcome for different groups of patients (specific versus non-specific complaints) is various successful.
MATERIAL AND METHODS

Paper III

The Survey of Living Conditions carried out by Statistics Sweden 1980-81 has been used, as the basis of Paper III. This survey is a nation-wide survey that has been performed since 1974. The main aim of it is to chart the living conditions of the Swedish people. The selected individuals are interviewed in their homes, by lay interviewers, about their living conditions (i.e. housing, health, occupation, work environment, economic situation and leisure time). The Statistics Sweden educates the interviewers. The interviewers use a questionnaire consisting of about 150 questions, and the interview lasts about 60 minutes. The selection to this survey in 1980-81 consisted of about 15 000 individuals sampled from all permanent residents in Sweden, aged 16-74. The response rate in 1980-81 was 86%. The sample in Paper III consisted of the 9 337 individuals who were of working age (i.e. 20-64 years).

Statistics Sweden has elaborated a socio-economic classification system called Swedish Socio-economic Classification (SEI). This system includes both working and non-working people. In this sample the individuals are divided into six socio-economic classes - professionals, white-collar workers, blue-collar workers, farmers, entrepreneurs, housewives/males, sickness and disability pensioners and long-term unemployed. In Paper III, however, the sample did not include students, old age pensioners and military conscripts. Farmers have been combined with blue-collar workers, as they are a very small group. Long-term unemployed and sickness and disability pensioners are also presented as one group because of the group of long-term unemployed being so small and share some important characteristics.

Variables in Paper III

The main variables were low back (LB) specificity and frequency of the complaints in relation to sex, age, socio-economic class, physical workload, physical ability, ADL, mental job-strain and psychological demands, social support, self-reported health and smoking. Some of these variables were combined into an index, this to reduce the amount of variables which in a meaningful way depend on each other, and to diminish risk for mass significance. In the physical work load-index, the physical ability-index and the ADL-index the ‘yes’ replies have been given different weights (1 or 2 marks). This is because it is assumed that, bathing and dressing
have another kind of impact on a person’s functional ability than being able to shop, cook or clean. Not being able to climb stairs, board a bus and to walk a short distance are also variables that have a greater impact on a person’s functional ability than not being able to run a short distance.

The grade of the complaint applies to the severity and frequency of the LB complaint. Two questions in the Survey of Living Conditions 1980-81 were used to measure the frequency and the severity of the complaint: "How often are you bothered by your complaint?" and "Are your complaints - slight, moderate, severe or very severe?" Here people bothered by their complaint often or all the time, despite the grade of severity, are called the group with frequent complaints.

The physical work load-index applies to physical demands and workload. Two questions in the questionnaire measured the physical workload. One question contained eleven sub-questions of which six will be used here: "Is your work monotonous?" "Does your work involve many repetitive and one-sided moments? "Are you, in your work, forced into bent, twisted or in another way unpleasant work-positions? "Is your work of the kind in which you daily become sweaty due to physical effort? "Are you exposed to violent shakings or vibrations in your work? "Is your work of the kind that gives you great opportunities to learn new things? The respond alternatives “yes, all the time” and “yes were coded as 2 marks, and “sometimes and never” as 0 marks. The other question was about the dimensions of heavy lifting "Does your work demand heavy lifting?" and if so, "Does it demand heavy lifting - daily, sometimes during the week or rather seldom?" The respond alternative daily was coded as 2 marks and sometimes during the week or rather seldom as 1 mark. It is assumed that exposure of a heavy workload every day has a greater impact on a person than being exposed sometimes, rather seldom or never. The answers were dichotomised as < 4 marks = 0, and > 4 marks =1 (high physical workload).

The physical ability-index applies to four questions in the questionnaire concerning the physical ability “Can you run a short distance (100 m), if you are in a hurry?” “Can you climb stairs without difficulty?” “Can you board a bus easily?” and “Can you walk a short distance at a brisk pace (5 minutes)?” The answering categories were yes and no. Not being able to run a short distance is not here estimated as having the same value as the three other
categories, therefore a no reply to that question was calculated as 1 mark, and not being able to climb stairs, board a bus and walk a short distance as two 2 marks each. The answers were dichotomised as ≤ 3 marks = 0 and > 3 marks = 1 (reduced physical ability)

The ADL-index applies to one question in the questionnaire concerning five items, purchase of provisions, cooking, cleaning, dressing and bathing. The answering categories were yes and no. Not being able to purchase provisions, cook and clean is here not estimated to have the same value as not being able to dress and bath independently, and therefore not being able to purchase provisions, cook and clean were coded as 1 mark each, and not being able to dress and bathe as 2 marks each. The answers were dichotomised to ≤ 3 marks = 0 and > 3 marks = 1 (reduced ADL)

The mental job-strain variable applies to mental job-strain and psychological job demands. Questions measuring these factors were: "Do you have a hard time getting going in the morning?" "Do you feel tired during the day?" "Do you feel tired during the evening?" "Do you have sleep disturbances?" "Do you suffer from frequent headaches or migraine?" "Is your job hectic? " and "Is your job psychologically demanding?". The answering categories were yes or no. Only individuals at work the week before the interview answered these questions. The psychological job demand measure has been developed by Karasek. If a person had reported one or two 'yes' replies to the questions "Is your job hectic?" or "Is your job psychologically demanding?" in addition with two or more ‘yes’ replies to the questions about tiredness, sleep disturbances and headaches he/she was classified as having high mental job strain.

The social support variables apply to the amount of social stress and the possibility of support. Questions measuring these factors were "Is there anyone else in your household who is handicapped or has a long-standing illness, and therefore has needed daily supervision or care during the past three months?" and "Who is responsible for most of the care and supervision of her/him?". "What happens if you become ill, do you have anyone who can take care of you daily and help you with your tasks - go shopping, cook, go to the chemist’s?" If the respondent was responsible for most of the care of another person in the same household, and if the respondent had no one that could help her/him daily, he/she had poor social support.
Material and Methods

The health variable applies to how the overall health is judged by the person himself and compared to others of the same age. Questions measuring the overall health were "How do you judge your general state of health?" (Good, bad or something in between) and "How do you judge your general state of health compared to others of the same age?" (Better, worse or something in between). The answers were good/ better and something in between = 0, and bad/worse = 1 (poor health).

Questions regarding smoking apply to the amount of tobacco consumed. Questions measuring this factor were "Do you smoke daily?" ("How much?") and "Have you smoked daily during some period of your life?" The answering categories were never smoked, smoked before, smoke a maximum of 10 cigarettes or 14 grams of tobacco per day and smoke a minimum of 11 cigarettes or 15 grams of tobacco per day.

Paper IV

The population in Paper IV consisted of all individuals (N= 49,539), 20-64 years of age, who in 1991 belonged to a local health insurance office in northern Sweden. The sample in Paper IV consisted of all individuals, born on day 5, 15 and 25, who had been on sick leave due to low-back pain that year (low-back group, \( n_1 \)=404 - 204 women and 200 men), and of a random sample of individuals born on the same days, who had been on sick leave due to other complaints than low-back pain that same year (reference group, \( n_2 \)=460 - 240 women and 220 men). Information about these individuals was collected from the sickness records held by the local health insurance office. A questionnaire was sent to each individual comprising questions about education, state of health, social support, work environment, leisure time activities and smoking habits.

Variables in Paper IV

Variables obtained from the sickness records were; age, sex, length of sick leave (the last period of sickness absence in 1991), number of spells during the year, doctors' certificate, occupation classified as the socio-economic groups, professionals, white-collar workers, skilled and unskilled blue-collar workers, entrepreneurs, farmers and students/unclassified. In Paper IV entrepreneurs, farmers and students/unclassified were expelled from the statistical analyses because of the groups being so small (n=1, 2 and 10). Professionals
and white collar workers constitute one group called *professionals* and skilled and unskilled blue-collar workers another group called *blue-collar workers*.

Variables obtained from the questionnaire were education divided in elementary school, upper secondary school, university college and other kind of education. In the analyses elementary school and other kind of education constitute one group of education (*lower education*), and upper secondary school and University College another group (*higher education*). Perceived health was measured according to the questions “How do you judge your general state of health?” and “How do you judge your general state of health compared to others of same age?” Questions measuring social support was “If you get ill, do you get help”, “someone appreciates what you do for them”, “someone to turn to when in difficulties”, “supportive other person”, “someone to share feelings with”, “someone to comfort you”. Work-related factors were divided in (a) *work environment;* work load (in the sense of having to much to do), type of working task (degree of difficulty), working tasks stimulating/engaging, wish to change working tasks, opportunity to autonomy, opportunity to influence working speed, (b) *work-related problems;* tiredness after work, collaboration at work place, contact with workmates, workmates’ appreciation, superiors’ appreciation of working tasks, superiors telling you how they judge your work performance, (c) *working capacity* reduced due to the complaint (those at work) or reduced capacity to do things you like to do (those not working), and (d) *anxiety* due to work environment; worry to be stricken by an accident at work, anxiety about violence and reprisals at work, anxiety for illness at work, anxiety to cause an accident at work, anxiety to cause expensive damage at work, anxiety for re-organization at work, anxiety for new techniques at work, anxiety for economy measures at work, anxiety for re-localization of the working place. Leisure time activities were measured as sedentary leisure time, moderate exercise, regular exercise and hard exercise/competition. Smoking was measured as smoking daily, earlier smoking habits and years as a daily smoker. The last variable was if the person had received an early retirement pension.
Classification of symptoms

In Paper III one question in the Survey of Living Conditions was used to measure the presence of a self-reported long-standing illness; "Do you suffer from any long-term illness, after-effects from an accident, disability or other ailment?" If the answer to the question was "yes" the interviewee was asked to report the kind of illness he/she was suffering from as accurately as possible. The self-reported complaints were then coded according to the International Classification of Disease, 8th revision (ICD-8). A person other than the interviewer set the ICD codes. The selected complaints in this study were; 'a slipped disc', 'back out of line', 'sciatica', 'lumbago', 'back feeling sore', 'a worn out spine', 'compression of a vertebra', 'aching hips and legs', 'rheumatic pain in back', 'low-back pain', 'bad back', 'low-back trouble' and 'back ache'. These complaints referred to the ICD codes 725, 353, 717, 713, 787 and 728 respectively. The LB complaints were identified according to their ICD codes set by Statistics Sweden. A sub-sample (n=339) of individuals coded with one of these selected codes was investigated as to the words used to describe the complaints. The six ICD codes were described by the interviewee as; 'a slipped disc' or 'back out of line' referring to the ICD code 725, in this sub-sample the proportion of the two terms were 64% and 36% respectively; 'sciatica' (100%) referred to ICD code 353; 'lumbago' (83%) or 'back feeling sore' (17%) to ICD code 717; 'worn out spine' (65%) or 'compression of a vertebra' (35%) to ICD code 713; 'aching hips and legs' (71%) or 'rheumatic pain in back' (29%) to ICD code 787; and 'low-back pain', 'bad back', 'low-back trouble' and 'back ache', here called 'lumbalgia' to ICD code 728. In Paper III the complaints have been ranked according to an assumed grade of measurability (positive X-ray, clinical signs) besides experienced symptoms, i.e. 'a slipped disc' has the highest ranking then follows 'sciatica', 'lumbago', 'worn out spine', 'aching hips and legs', and 'lumbalgia' (Table 1). This ranking has been made in accordance with the biomedical perspective of health, which definition of disease proceeds from objective measurable findings. This to explore how an assumed outcome of this view would look like (measured number of sickness and disability pensions). It is here assumed that the reported complaint 'a slipped disc' exhibits a higher grade of measurability due to positive x-ray findings and clinical signs (e.g. positive Lasegue's test) than the reported complaint 'sciatica', and 'sciatica' exhibits a higher grade of measurability than 'lumbago' and so on.
Table 1  A schematic picture of the ranking procedure.

<table>
<thead>
<tr>
<th>ICD code</th>
<th>Self-reported complaint</th>
<th>Assumed grade of measurability</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>725</td>
<td>Slipped disc</td>
<td>Symptoms, positive X-ray, clinical signs</td>
<td>Specific complaint</td>
</tr>
<tr>
<td>353</td>
<td>Sciatica</td>
<td>Symptoms, clinical signs</td>
<td>Specific complaint</td>
</tr>
<tr>
<td>717</td>
<td>Lumbago</td>
<td>Symptoms, clinical signs</td>
<td>Specific complaint</td>
</tr>
<tr>
<td>713</td>
<td>Worn out spine</td>
<td>Symptoms (positive x-ray?)</td>
<td>Non-specific complaint</td>
</tr>
<tr>
<td>787</td>
<td>Aching hips and legs</td>
<td>Symptoms</td>
<td>Non-specific complaint</td>
</tr>
<tr>
<td>728</td>
<td>Lumbalgia</td>
<td>Symptoms</td>
<td>Non-specific complaint</td>
</tr>
</tbody>
</table>
Eighty-nine persons out of the 1068 persons in Paper III, who had reported a LB complaint, reported more than one kind of LB complaint, and are here ranked according to the highest priority code. If a person reported both ‘lumbalgia’ and ‘a worn out spine’, he/she was coded as ‘a worn out spine’. Thus ‘lumbalgia’ becomes the only group where nobody had reported more than this complaint. In Paper III ‘a slipped disc’, ‘sciatica’ and ‘lumbago’ are called specific LB complaints, because of their assumed higher grade of measurability, and ‘a worn out spine’, ‘aching hips and legs’ and ‘lumbalgia’ are called non-specific LB complaints.

In Paper III it is further assumed that the individuals using the words ‘a slipped disc’ describe a complaint referring to pain in the lower back and down one leg. It is also assumed that when using the words ‘a slipped disc’ a professional (physician or other biomedical staff) usually has assessed it as that. It is further assumed that people describe ‘sciatica’ as a pain radiating down one leg; ‘lumbago’ as severe pain and stiffness in the lower-back; ‘a worn out spine’ as a feeling of being worn out; ‘aching hips and legs’ as unspecified pain in both legs besides back pain, and ‘lumbalgia’ as a sense of fatigue and pain in the lower-back region. Here it is also assumed that these self-reported complaints are comparable to conditions, with the same labels that persons, who have been physically examined, have shown.

In Paper IV the low-back complaints were not classified. People with any kind of low-back complaints were compared to people with other kinds of complaints.
RESULTS

Results of Paper III

The distribution of the different LB complaints in relation to the variables is described in Table 2. The distribution of white-collar workers, farmers and blue-collar workers, entrepreneurs, housewives and long-term unemployed was almost the same in the population sample and among those reporting a LB complaint. Professionals were underrepresented and sickness and disability pensioners were over represented in the group of LB complaints compared to the population.

Age standardised prevalence rates of LB complaints

The prevalence rates (PR) for the six LB complaints varied from 0 to 8.3 per cent among the men, and from 0.3 to 9.4 per cent among the women (Fig. 3). The non-specific complaints showed an increasing social gradient for both men and women, which the specific complaints did not. The highest prevalence rates for all three non-specific complaints were seen among the sickness and disability pensioners (Fig. 3).

Odds ratios of LB complaints

Men showed a significantly lower frequency of reporting ‘lumbago’ (OR=0.61) and ‘aching hips and legs’ (OR=0.74) than women (Table 3). The frequency of reporting any kind of LB complaint correlated with age, especially when reporting ‘a worn out spine’, where the odds ratio for 60-64 year olds was 17.84 (Table 3).

‘A slipped disc’, ‘sciatica’ and ‘a worn out spine’ did not correlate with socio-economic classes but ‘lumbago’, ‘aching hips and legs’ and ‘lumbalgia’ did. ‘Sciatica’ and ‘lumbago’ were the only complaints, which were not associated with an increased risk to become a sickness and disability pensioner (Table 3).

In Paper III the grade of severity (slight, moderate, severe or very severe) did not correlate with either specific or non-specific complaints but the frequency of the complaints (often, all the time) did. In Table 4 two logistic regression models are presented where the odds ratios for having specific, non-specific and frequent LB complaints are calculated, one in relation to age, sex and socio-economic class (Model A) and one complemented with the other variables (Model B).
Table 2

The distribution of reported low-back complaints in relation to sex, age, socio-economic class and other variables in the Survey of Living Conditions in Sweden 1980-81. The figures refer to the number of observations.

<table>
<thead>
<tr>
<th></th>
<th>Slipped disc</th>
<th>Sciatica</th>
<th>Lumbago</th>
<th>Total of specific complaints</th>
<th>Worn out spine</th>
<th>Aching hips and legs</th>
<th>Lumbalgia</th>
<th>Total of non-specific complaints</th>
<th>Group with frequent complaints</th>
<th>Total number of LB complaints</th>
<th>Total number of individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Male</td>
<td>79</td>
<td>31</td>
<td>37</td>
<td>147</td>
<td>75</td>
<td>85</td>
<td>219</td>
<td>379</td>
<td>281</td>
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<td>23</td>
<td>50</td>
<td>145</td>
<td>81</td>
<td>124</td>
<td>192</td>
<td>397</td>
<td>335</td>
<td>542</td>
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<td>20-29</td>
<td>11</td>
<td>8</td>
<td>10</td>
<td>29</td>
<td>7</td>
<td>27</td>
<td>59</td>
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<td>30-39</td>
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<td>6</td>
<td>23</td>
<td>48</td>
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<td>29</td>
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<td>91</td>
<td>155</td>
<td>125</td>
<td>223</td>
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<td>14</td>
<td>28</td>
<td>97</td>
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<td>68</td>
<td>98</td>
<td>222</td>
<td>215</td>
<td>319</td>
<td>1829</td>
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<td>60-64</td>
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<td>10</td>
<td>16</td>
<td>50</td>
<td>57</td>
<td>40</td>
<td>78</td>
<td>175</td>
<td>147</td>
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</tr>
<tr>
<td>Professionals</td>
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<td>9</td>
<td>11</td>
<td>42</td>
<td>23</td>
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<td>41</td>
<td>86</td>
<td>66</td>
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<td>39</td>
<td>75</td>
<td>63</td>
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<td>Blue collar workers and farmers</td>
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<td>374</td>
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<td>5</td>
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<td>26</td>
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<td>9</td>
<td>23</td>
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<td>Housewives</td>
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<td>18</td>
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<td>35</td>
<td>72</td>
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<td>Sickness and disability pensioners</td>
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<td>29</td>
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<td>Physical work load (high)</td>
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<td>Reduced physical ability</td>
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<td>Reduced ADL</td>
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<td>Mental job strain (high)</td>
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<tr>
<td>Social support (poor)</td>
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<td>Health (poor)</td>
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<td>Smoked before</td>
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<tr>
<td>Smoke max.10 cig./14gr.</td>
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<tr>
<td>Smoke min. 11 cig./15 gr.</td>
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<tr>
<td><strong>Total number of individuals</strong></td>
<td>151</td>
<td>54</td>
<td>87</td>
<td>292</td>
<td>156</td>
<td>209</td>
<td>411</td>
<td>776</td>
<td>616</td>
<td>1068</td>
<td>9337</td>
</tr>
</tbody>
</table>
Results

Specific complaints

Blue collar workers and farmers

Non-specific complaints

White collar workers

Professionals

Entrepreneurs

Housewives

Sickness and disability pensioners

1=Slipped disc 2=Sciatica 3=Lumbago 4=Worn out spine 5=Aching hips and legs 6=Lumbalgia

Figure 3. Age standardised prevalence rates of reported low-back complaints by socio-economic classes in the Survey of Living Conditions in Sweden 1980-81 (20-64 year olds) [The numbers in between the bars are explained under the diagram]
Table 3  The odds ratio (95% CI in brackets) of reported low back complaints in relation to sex, age and socio-economic class in the Survey of Living Conditions in Sweden 1980-81 (main effects model)

<table>
<thead>
<tr>
<th>Type of self-reported low-back complaint</th>
<th>Slipped disc</th>
<th>Sciatica</th>
<th>Lumbago</th>
<th>Worn out spine</th>
<th>Aching hips and legs</th>
<th>Lumbalgia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Male</td>
<td>1.19 (0.84-1.68)</td>
<td>1.34 (0.75-2.39)</td>
<td>0.61 (0.39-0.96)</td>
<td>0.97 (0.69-1.37)</td>
<td>0.74 (0.55-0.99)</td>
<td>1.24 (1.00-1.53)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>20-29</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>30-39</td>
<td>1.50 (0.71-3.17)</td>
<td>0.64 (0.22-1.85)</td>
<td>2.08 (0.98-4.41)</td>
<td>0.89 (0.31-2.55)</td>
<td>1.32 (0.80-2.16)</td>
<td>1.35 (0.96-1.89)</td>
</tr>
<tr>
<td>40-49</td>
<td>4.55 (2.33-8.89)</td>
<td>2.32 (0.98-5.47)</td>
<td>1.18 (0.49-2.85)</td>
<td>4.96 (2.16-11.39)</td>
<td>1.57 (0.94-2.61)</td>
<td>1.95 (1.40-2.74)</td>
</tr>
<tr>
<td>50-59</td>
<td>5.63 (2.92-10.68)</td>
<td>2.05 (0.85-4.95)</td>
<td>3.46 (1.67-7.17)</td>
<td>9.21 (4.17-20.35)</td>
<td>2.82 (1.79-4.46)</td>
<td>1.86 (1.33-2.61)</td>
</tr>
<tr>
<td>60-64</td>
<td>4.38 (2.08-9.22)</td>
<td>3.01 (1.14-7.98)</td>
<td>4.71 (2.09-10.61)</td>
<td>17.84 (7.97-39.92)</td>
<td>2.95 (1.75-4.96)</td>
<td>2.62 (1.81-3.79)</td>
</tr>
<tr>
<td>Socio-economic class</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Professionals</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>White collar workers</td>
<td>1.24 (0.76-2.03)</td>
<td>1.13 (0.50-2.55)</td>
<td>0.39 (0.17-0.86)</td>
<td>0.63 (0.35-1.16)</td>
<td>0.68 (0.43-1.08)</td>
<td>0.60 (0.42-0.85)</td>
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<tr>
<td>Blue collar workers/</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>farmers</td>
<td>1.54 (0.94-2.52)</td>
<td>1.41 (0.65-3.07)</td>
<td>2.33 (1.20-4.50)</td>
<td>1.51 (0.93-2.45)</td>
<td>2.30 (1.44-3.67)</td>
<td>2.83 (2.01-3.98)</td>
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<tr>
<td>Entrepreneurs</td>
<td>1.83 (0.88-3.82)</td>
<td>2.05 (0.68-6.15)</td>
<td>3.48 (1.46-8.27)</td>
<td>0.73 (0.28-1.95)</td>
<td>1.55 (0.71-3.40)</td>
<td>2.16 (1.28-3.63)</td>
</tr>
<tr>
<td>Housewives</td>
<td>1.48 (0.68-3.20)</td>
<td>1.01 (0.25-4.03)</td>
<td>0.63 (0.19-2.05)</td>
<td>1.19 (0.58-2.44)</td>
<td>2.20 (1.18-4.09)</td>
<td>2.64 (1.62-4.28)</td>
</tr>
<tr>
<td>Sickness and disability pensioners</td>
<td>3.79 (2.02-7.50)</td>
<td>1.84 (0.58-5.86)</td>
<td>0.94 (0.29-3.07)</td>
<td>2.91 (1.64-5.17)</td>
<td>4.84 (2.71-8.62)</td>
<td>7.08 (4.61-10.86)</td>
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<tr>
<td>Likelihood ratio</td>
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<td>44.32</td>
<td>40.79</td>
<td>44.57</td>
<td>57.34</td>
<td>62.47</td>
</tr>
<tr>
<td>Df</td>
<td>48</td>
<td>48</td>
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</tr>
</tbody>
</table>
Table 4  

The odds ratio (95% CI in brackets) of reported specific, non-specific and frequent low-back complaints by sex, age, socio-economic class (Model A) and complemented with other variables (Model B) in the Survey of Living Conditions in Sweden 1980-81

<table>
<thead>
<tr>
<th></th>
<th>Specific complaints</th>
<th>Non-specific complaints</th>
<th>Frequent complaints</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Model A</td>
<td>Model B</td>
<td>Model A</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Male</td>
<td>1.00 (0.79-1.30)</td>
<td>0.98 (0.77-1.31)</td>
<td>1.00 (0.85-1.17)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>30-39</td>
<td>1.46 (0.91-2.32)</td>
<td>1.46 (0.91-2.33)</td>
<td>1.34 (1.02-1.76)</td>
</tr>
<tr>
<td>40-49</td>
<td>2.81 (1.81-4.38)</td>
<td>2.78 (1.79-3.34)</td>
<td>2.18 (1.67-2.84)</td>
</tr>
<tr>
<td>50-59</td>
<td>4.02 (2.63-6.14)</td>
<td>3.96 (2.58-6.08)</td>
<td>3.02 (2.34-3.89)</td>
</tr>
<tr>
<td>60-64</td>
<td>4.15 (2.57-6.72)</td>
<td>4.20 (2.58-6.83)</td>
<td>4.76 (3.61-6.28)</td>
</tr>
<tr>
<td><strong>Socio-economic class</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professionals</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>White collar workers</td>
<td>1.53 (0.97-2.41)</td>
<td>1.46 (0.93-2.30)</td>
<td>1.56 (1.14-2.15)</td>
</tr>
<tr>
<td>Blue collar workers and farmers</td>
<td>1.74 (1.22-2.48)</td>
<td>1.41 (0.97-2.06)</td>
<td>2.49 (1.95-3.17)</td>
</tr>
<tr>
<td>Entrepreneurs</td>
<td>2.35 (1.42-3.88)</td>
<td>2.07 (1.24-3.44)</td>
<td>1.75 (1.19-2.59)</td>
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<tr>
<td>Housewives</td>
<td>1.07 (0.59-1.92)</td>
<td>1.02 (0.56-1.84)</td>
<td>2.20 (1.56-3.09)</td>
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<tr>
<td>Sickness and disability pensioners</td>
<td>2.50 (1.52-4.11)</td>
<td>1.50 (0.84-2.66)</td>
<td>6.45 (4.73-8.79)</td>
</tr>
<tr>
<td><strong>Other variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical workload (high)</td>
<td>1.53 (1.13-2.08)</td>
<td>1.25 (0.65-2.40)</td>
<td>2.00 (1.64-2.43)</td>
</tr>
<tr>
<td>Reduced physical ability</td>
<td>1.54 (0.77-3.11)</td>
<td>0.52 (0.32-0.82)</td>
<td>0.63 (0.39-1.00)</td>
</tr>
<tr>
<td>Mental job-strain (high)</td>
<td>1.37 (0.92-2.04)</td>
<td>1.78 (1.39-2.30)</td>
<td>1.05 (0.66-1.68)</td>
</tr>
<tr>
<td>Social support (poor)</td>
<td>0.87 (0.40-1.89)</td>
<td>0.97 (0.50-1.89)</td>
<td>2.63 (2.01-3.44)</td>
</tr>
<tr>
<td>Health (poor)</td>
<td>1.87 (1.23-2.86)</td>
<td>1.20 (0.84-1.70)</td>
<td>0.99 (0.78-1.26)</td>
</tr>
</tbody>
</table>
Results

The kind of complaint (specific, non-specific or frequent LB complaints) correlated significantly with age and socio-economic class especially those with non-specific and frequent complaints (Model A, Table 4). When the other variables were added the result changed slightly (Model B, Table 4). Specific complaints are now reported more often only by one socio-economic class, the entrepreneurs (OR=2.07). The OR-rates for sickness and disability pensioners with specific, non-specific and frequent LB complaints changed from OR=2.50 to 1.50, from OR=6.45 to 4.07, and from OR=6.88 to 3.45 respectively when the other variables were included (Table 4). In Model B the odds ratio for sickness and disability pensioner among those with specific LB complaints is no longer significant, meaning that the higher odds ratio for this group in Model A could be explained by the variables added to in Model B. The variables that could explain this are high physical workload and poor health (OR=1.53 and 1.87 respectively). For people with non-specific and frequent LB complaints the odds ratio for sickness and disability pensioners is reduced but is still high. To a certain extent this change could be explained by variables such as high physical work load, reduced physical ability, high mental job-strain, poor health and smoking a lot but there still remains a relation between socio-economic class and non-specific and frequent LB complaints.

Results of Paper IV

Non-response analysis

The answering rate was low both for the low-back (LB) group (57%) and for the reference group (61%). A non-response analysis done from the variables obtained from the sickness records showed that the non-respondents differed significantly regarding socio-economic group belonging, number of spells during the year and length of last sick leave. The non-respondents had more spells (p<0.001), belonged to a lower socio-economic group (p=0.001), 62% were blue-collar workers, and had longer periods (p=0.01) of sickness absence. A logistic regression analysis with the LB complaint (yes or no) as the dependent variable and number of spells, length of last sick leave, doctor’s certificate, sex of the individual, socio-economic group, and age as independent variables was also done between the two studied sick leave groups among the non-respondents. A significant difference was found regarding the length last of sick leave and number of spells. Non-respondents with LB complaints had longer sick leave (OR=1.061 95% CI 1.013-1.112) and more spells during the year (OR=1.298 (1.164-1.447)) than those on sick leave for other kinds of complaints.
**Baseline characteristics**

The prevalence rate for sick listing due to LB complaints was in our study estimated to be 8%. There were no differences regarding the sex of the individuals, leisure time activities or social support between the LB group and the referents. The mean age of the individuals did not differ significantly between the groups but when dividing the individuals into age groups, 20-39, 40-59 and 60-, the difference became significant (p=0.005). The LB group was over represented in the oldest age group 60- (11% versus 4%) (Figure 4).

![Figure 4](chart.png)

**Figure 4** The distribution according to age of the two studied groups – low-back complaints and referents.

Education differed significantly between the groups (p=0.006), 54% of the LB group had a lower education compared to 42 % in the reference group. Socio-economic group differed significantly (p<0.001), only 39% of the LB group were professionals compared to 57% of the reference group.

The length of the last sickness absence differed between the groups, mean and median for the LB group was 70 days and 7 days, and for the reference group 7 days and 3 days respectively. In the reference group 82% were sick listed less than 9 days, and 17% 9-89 days. In the LB group the percentages were 60% and 28% respectively. The LB group had a greater number of longstanding sickness absences (>90 days), 12% versus <1% among the referents. The number of spells differed significantly (p=0.002) between the groups, the LB group having more spells during that year. Although the LB group had more spells only 38% of their spells were due to low-back
Results

complaints. Number of sick leaves certified by a doctor and number of persons with early retirement pension was significantly higher in the LB group than in the reference group (p<0.001 and 0.015 respectively).

Perceived health differed significantly (p=0.002) between the groups. Poor health was reported by 14 persons in the LB group and by 3 persons in the reference group. Work conditions that differed significantly were reduced working capacity due to the complaint (p<0.001), the complaint being due to working conditions (p<0.001), worry of being struck by an accident at work (p=0.002), anxiety for illness due to working conditions (p=0.002) and tiredness after work (p=0.003).

The dependent variable in the statistical analysis was low back complaints (yes or no). Statistical significance in the bivariate logistic regression model was found in almost all variables but in the variable sex, age and marital status. Significance in the multivariate logistic regression model was found only in the variables socio-economic group, length of sick leave and number of spells (Table 5). The variables poor health, early retirement pension and reduced capacity for those not working were not included in the logistic regression models due to their skewed distribution in the study sample. A test of multicollinearity showed no significant correlation between the variables in the regression model (VIF<1.2).

A multivariate logistic regression analysis, with the socio-economic group (professionals versus blue-collar workers) as the dependent variable and sex, age, sick leave pattern, and some work-related variables as independent variables, was executed to explore this relationship. The variable age (OR=0.96 95% CI 0.9-1.0), reduced working capacity (OR=0.5 (0.3-0.8)) and worried to be stricken by an accident at work (OR=3.6 (1.7-7.5)) were the only variables that significantly were associated with blue-collar workers.
Table 5  Odds ratio (OR) for having LB complaints when adjusting for socio-demographic factors, sick leave pattern, work-related factors and smoking

<table>
<thead>
<tr>
<th>Variable</th>
<th>Bivariate</th>
<th></th>
<th></th>
<th>Multivariate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>CI (95%)</td>
<td>OR</td>
<td>CI (95%)</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>1.134</td>
<td>0.802-1.604</td>
<td>1.127</td>
<td>0.689-1.843</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.995</td>
<td>0.980-1.009</td>
<td>1.010</td>
<td>0.986-1.043</td>
<td></td>
</tr>
<tr>
<td>Socio-economic group</td>
<td>2.146</td>
<td>1.475-3.121</td>
<td>1.992</td>
<td>1.165-3.406</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>1.631</td>
<td>1.148-2.318</td>
<td>1.021</td>
<td>0.612-1.704</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td>0.922</td>
<td>0.616-1.381</td>
<td>1.122</td>
<td>0.645-1.951</td>
<td></td>
</tr>
<tr>
<td>Length of sick leave</td>
<td>1.026</td>
<td>1.010-1.043</td>
<td>1.049</td>
<td>1.013-1.087</td>
<td></td>
</tr>
<tr>
<td>Number of spells</td>
<td>1.221</td>
<td>1.110-1.343</td>
<td>1.425</td>
<td>1.241-1.636</td>
<td></td>
</tr>
<tr>
<td>Doctor's certificate</td>
<td>0.342</td>
<td>0.228-0.512</td>
<td>1.075</td>
<td>0.496-2.331</td>
<td></td>
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<tr>
<td>Illness due to working conditions</td>
<td>0.617</td>
<td>0.429-0.888</td>
<td>0.897</td>
<td>0.657-1.226</td>
<td></td>
</tr>
<tr>
<td>Reduced working capacity</td>
<td>0.456</td>
<td>0.321-0.647</td>
<td>1.049</td>
<td>0.843-1.305</td>
<td></td>
</tr>
<tr>
<td>Worried to be stroked by an accident at work</td>
<td>1.852</td>
<td>1.308-2.622</td>
<td>1.065</td>
<td>0.621-1.825</td>
<td></td>
</tr>
<tr>
<td>Anxiety for illness due to working conditions</td>
<td>1.602</td>
<td>1.179-2.178</td>
<td>1.146</td>
<td>0.715-1.837</td>
<td></td>
</tr>
<tr>
<td>Anxiety to cause an accident</td>
<td>1.358</td>
<td>1.010-1.827</td>
<td>0.849</td>
<td>0.546-1.320</td>
<td></td>
</tr>
<tr>
<td>Tiredness after work</td>
<td>1.393</td>
<td>1.136-1.707</td>
<td>1.162</td>
<td>0.863-1.565</td>
<td></td>
</tr>
<tr>
<td>Daily smoking</td>
<td>1.080</td>
<td>1.058-1.102</td>
<td>1.208</td>
<td>0.687-2.123</td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION

Are outcomes in health care, here identified as length of sick leave, number of spells and granted disability pensions influenced by how the notions of health, disease and illness has been defined? In this thesis patients with low-back complaints are used as the example in this discussion. As earlier stated most of the patients with low-back complaints cannot be causally identified. Approaches to unidentified complaints are difficult to develop from a biomedical point of view, as the persons suffering from them are not theoretically assessed as diseased within this perspective. What are these people then suffering from and what would be the best approaches if they were to be treated within the health care system? Already at this point two things are to be defined; assumed causes of the suffering if no objective findings are detected and whether or not they are to be treated within the health care system. These matters can be defined differently depending on what perspective is in use, the biomedical or the humanistic social perspective. Viewed from the biomedical perspective these patients are in health per definition when no abnormal findings have been identified and the cause must therefore be looked for outside biomedicine. They are so to say not entitled to treatment within this perspective theoretically.

The lack of findings may also be due to the accuracy of the measuring instruments or to the competence of what to measure and how. There are very few measuring instruments that without the patient’s participation reveals any findings regarding LB troubles. Usually the patient is asked if it hurts when different tests are conducted. The best instrument is the patient’s subjective pain description in relation to her/his functional capability at the moment. It is the subjectivity that is difficult to measure. Subjective pain cannot be simultaneously shared and reported by anyone other than the person experiencing it says France & Houpt. Linton states that low-back pain not only influences the functional ability but also gives rise to anxiety and depression which in turn fortifies the experience of pain. This is probably true for all kinds of pain experience not only for those with low-back pain. Linton continues that behaviours that succeed to diminish or remove pain have a tendency to increase in coming, similar situations. Behaviours that do not mitigate pain or that aggravate it diminish logically in frequency. Therefore it is of importance to assess and to make up strategies to cope with the pain behaviour already in the beginning of a rehabilitation.
Tyreman brings up another issue about a conflict that practitioners face between emphases in biomedical knowledge on objectivity and in practice on professional values. This conflict he argues arises from medicine's uncritical acceptance of a scientific concept of objectivity that is inappropriate for health care practice where both object and subject are persons with interests and expectations. Tyreman discusses objectivity by referring to Alison Loughlin, who claims that the concept of objectivity conflates two ideas; one is the ability to make a rational judgement — to distinguish true from false. A professional is being objective, in this sense, when he/she judge that a patient is ill or not, does or does not have a particular disease, demonstrates particular signs and so on. The second is the ability to distance or remove the enquirer as subject from the enquired object in order to eliminate personal bias, prejudice and values from the result of the inquiry. For example, when a person justifies a statement by saying, “It will be evaluated externally to ensure objectivity”. Tyreman claims that it is this second idea of objectivity identified by Loughlin that is unhelpful in health care. By declaring items like diseases and functions as real, objectivity also appears to provide certainty in the way we then deal with them, and if we can be certain we can be more reliable and thereby produce more effective outcomes says Tyreman. He concludes that health care practitioners claim objectivity in an epistemological sense when making rational informed judgements of true or false in respect of whether someone has a disease or is exhibiting a particular sign of dysfunction. But knowledge of human function and dysfunction that fails to take account of values, he says fails also to provide a full account of patients' experiences and of the role of the practitioner in providing care.

According to humanistic social perspective low-back complaints is seen as individual matters causally identified or not. The person in question is viewed through her/his ability to fulfil wanted actions. For instance the action repertoire may not be adequate due to the low-back complaint. The goals for the health care system would then according to this perspective be to guide the patient to achieve goals set by the patient in concordance with her/his resources and social context within which that person acts. The rehabilitation approach would be to achieve this by both technical treatment methods and by assessing in what way this individual is affected by her/his complaints in the daily life.
Outcome measures in light of the two perspectives of health

Longstanding sick leaves, number of spells and granted disability pensions indicate contacts with the health care system, as people need a doctor’s certificate after seven days of sick leave and for the conduct of a disability pension. I have presupposed that all granted disability pensions are foregone by intense rehabilitation actions, which aim at regaining the functional ability of the individual in question and that the goal of long sick leave periods indicate therapy of some kind to shorten these periods. The measured outcomes, length of sick leave, number of spells and granted disability pensions are here seen as a result of a communication between patients with low-back complaints and the health care system. This is the basis of the discussion.

I will start this discussion with an example of how things can be understood in one way or the other. The example; “How are people with longstanding problems on sick leave viewed”? Are they looked upon as longstanding pain patients or as patients with pain that lasted a long time? These two views may indicate different ways of interpreting these matters. I would say that the first expression indicates that longstanding pain patients are seen as a homogenous group. They are assessed as a group rather than as individuals. Most studies are directed towards groups of people with longstanding low-back problems and are directed towards groups of patient with either specific or non-specific complaints.\(^{43}\) To divide disorders in so called specific (measurable findings) and non-specific (no or few measurable findings) disorders indicate that there is a belief concerning a difference between these two groups. This belief as I see it derives from a biomedical approach.

If these patients were assessed simply as individuals with pain that lasted a long time their problems would be assessed at an individual level taking their goals, resources and social surroundings into consideration. Every individual differs in their experienced discomfort and this is relative to their hopes and desires what to be able to accomplish within their social context. This view suggests an approach derived from the humanistic social perspective.
Outcome of Paper III and IV in light of the two perspectives of health

Differences in physical morbidity between social classes are large. Out of different causal factors the physical-work environment seems to be the most important one for class differences in physical morbidity. If the work environment would be the same for the different classes then morbidity also would be the same.59

In Paper III the results revealed a social gradient. Social class seems thereby to have an impact on low-back complaints. This class specific association appeared only for those with non-specific and frequent complaints and not for those with specific complaints and the odds to become a disability pensioner was higher for those with non-specific and frequent complaints (Table 4). Can this outcome be interpreted as an outcome due to health care strategies derived from a biomedical perspective? This cannot definitely be answered using these data but I would like to discuss the question if it is possible to assume this or not. How does the health care system assess low-back complaints that cannot be measured? If a cause cannot be assessed these complaints are not seen as medical problems within the biomedical perspective. But these people still experience a need of care. They do not qualify as being diseased but they are to a great extent granted a disability pension. On what grounds one may ask. This I see is a paradox. Society has an obligation and needs a legitimate solution for those individuals that cannot support themselves due to ill health, in the sense of not being able to earn their living. This obligation makes a demand on the health care system.

One explanation to this paradox is how these matters are defined within the health care system. If non-specific complaints are assessed as non-medical problems, from a biomedical point of view, health care lacks measures to take care of these people if they ought to be taken care of within the health care system at all. But this outcome (a disability pension) may also indicate that people suffer from a “true” illness although not defined by objective findings. If that is the state one may ask if there is a lack of sufficient diagnostic procedures and measures as well.

Reigo found in his studies that age over 40, low professional status, sick leave at a primary survey and unsatisfactory work tasks were predictive factors for disability pension.60 This was true for those with non-specific and frequent complaints but not for those with
Discussion

specific complaints in my study (Paper III). This may also indicate that people with specific low-back complaints are more suitable for the system as their findings are detectable and thereby treatable (to eliminate or reduce the physiological changes) but not all findings are successfully treatable.

According to Karisto\textsuperscript{61} some people left the labour market due to bad health, and this movement was socially determined. To be granted an early retirement pension was more common among the blue-collar workers. His findings support the results of Paper III, that blue-collar workers and farmers, and housewives more frequently reported a non-specific complaint or a frequent complaint, and became sickness and disability pensioners. But this was not true for blue-collar workers reporting a specific complaint in Paper III.\textsuperscript{61}

Other factors that differed between the studied groups in Paper III were reported reduced physical ability, mental job strain and smoking a lot (Table 4). The physical workload was high for all the studied groups. The high physical workload was as I see not associated with reduced physical ability for those with specific complaints as it was for those with non-specific and frequent complaints. Perhaps a patient with specific low-back complaints do not have to justify her/himself when it comes to a reduced physical ability but those with unidentified complaints have to. In order to be confirmed in having back troubles one ma have to exhibit a discomfort by not being physically able.

**Perceived health**

Åstrand and Isacsson found in their study that if general health was judged as bad, the person was less likely to recover from LB complaints.\textsuperscript{62} This was true for people with a non-specific or frequent LB complaint in Paper III as they besides a poor health to a higher extent were sickness and disability pensioners than people with specific complaints.

Both those reporting specific, non-specific and frequent complaints reported health as poor (Table 4). Although those with non-specific and the frequent complaints to a higher grade were disability pensioners. Perceived poor health in addition to a non-specific or frequent complaint may have an impact on the motivation to regain health, meaning that it is difficult to recover from something that has not even been confirmed by the health care system. Or these individuals are experiencing both ill health and a disability not
compatible with their working conditions. It may also be the reported poor health in addition with other variables such as reduced physical ability and mental job strain that force people to become sickness and disability pensioners.

**Specificity of the complaint**

Within a biomedical perspective specific complaints like a slipped disc are seen as more reliable complaints than for instance lumbalgia is. This reliability is due to the measurability (positive x-ray findings) relative to a slipped disc. Patients with specific complaints are confirmed. Their pain experience is considered as “real” within this perspective when it can be assessed. This confirmation by the health care system influences both the individual’s experience of the complaint and how people in that individual’s social context will relate to her or his low-back complaints.

Non-specific low-back complaints are not confirmed in the same sense as the specific ones within this perspective. How does that influence the patients with these kinds of complaints and how does it influence the providers of the health care system? These individuals may assess it as an unidentified danger that threatens their body and the providers as something that ought not to be solved within the health care system at all.

A disagreement arises thereby in the confrontation between the care seeking individual and the health care system. This position, between the individual and the health care system, are also connected with different grades of power and may lead to a struggle between a weak and a strong part. Therefore it becomes important what perspective that dominates. Kihlström talks about the ambition of understanding, which suggests the human being, be put in the centre like the humanistic social perspective advocates. The ambition of function which is connected with a more technocratic view is in accordance with the biomedical perspective.

People expect their problems to be understood. This understanding is based on beliefs of what is to be assessed as illness or not and these beliefs derive from different theories of health. In a newly published thesis the relationship between the long-term sick listed individuals and their co-actors is investigated. The results revealed a difference in the understanding of ill health between the studied groups.
The results of Paper IV showed that people with low-back complaints were manual workers and had both longer sick leave and more spells than people with other kinds of complaints had (Table 5). The work environment seems to be the determining factor between the two studied groups. Riihimäki\(^64\) has studied the origin of and risk indicators in relationship to low-back complaints. As a consequence of the problems in diagnosing back diseases, the most common measure of low-back morbidity in epidemiological studies has been the occurrence of symptoms. A wide spectrum of work- and individual-related factors have been found to be associated with low-back complaints but little is known about the extent to which these factors are etiologic and the extent to which they are symptom-precipitating or symptom-aggravating. Burdorf et al\(^65\) states, considering muskulo-skeletal disorders at work, that it is important to differentiate between etiological and prognostic factors and to identify which factors affect the workers’ ability to cope with his muskulo-skeletal problem at work.

The work environment is one of the most important parts of the social context within which people act. Reigo’s study bring further evidence to the approach that individuals with a history of back pain and/or ongoing back pain should be given the opportunity to continue participating in work tasks, perhaps in a modified way, he says, to be able to avoid becoming unable to work.\(^60\) The complexity of back pain and the interactivity between socio-demographic and work related factors make the study of risk factors for chronicity and recovery dependent on which factors are studied and can therefore never give the full answer states Reigo. This complexity emphasises an individualisation of rehabilitation. Rehabilitation measures at a community level, he says, should therefore be planned so that those that are “silent” but in need receive the required attention, e.g. women with low education and repeated episodes of back pain.\(^60\) Reigo’s results advocate a rehabilitation approach stemming from a humanistic social perspective.

The biomedical perspective is the most commonly used definition in practice and the results of Paper III and of Paper IV indicate an outcome of health care strategies stemming from that perspective.

The biomedical perspective proceeds from a definition of disease and claims that health is the state if no disease has been detected. The notion of disease claimed by the biomedical perspective is useful for that purpose only, namely in defining a disease but I think this perspective fails in its definition of health as it sees health
as a contradictory notion to disease. To understand health in the clinical practice there is a need of a concept of health independent to a concept of disease. Why is this notion of health needed in the clinical practice? The answer is; a) that health should not be defined as the absence of disease, and b) that to be successful in rehabilitation not only a definition of disease is needed but also a definition of health. As said earlier people seek medical care when they experience ill health. Within a health care system stemming from a biomedical perspective, their ill health will be defined according to the measurability of the experienced ill health. The dimensions health/ill health and health/disease differ according to who defines the ill health, the individual or the health care (Figure 5). People assess health as good or bad or as the ability to act. The health care system assesses ill health as diseased or not. If not diseased the person is defined as being healthy.

Patient perspective

![Diagram](image)

**Figure 5. Different disorders viewed from a patient and a health care perspective**

If the main goal of health care is to restore the patient to good health then the notion of health defined according to the humanistic social perspective is to be preferred as it identifies ill health in the same way as people do. Disease defined according to the biomedical perspective, have only a tendency to cause ill health within this humanistic social perspective if it is of that kind that it
Discussion

affects the individual’s capability to act and thereby her/his fulfilment of wanted actions.

Altered rehabilitation efforts

I believe that the result of rehabilitation efforts could be altered if another perspective than the biomedical one was used. This can only be speculation, as it is not empirically studied. Low-back complaints viewed from this perspective would not be assessed as specific or non-specific complaints but as to how much these complaints influence the daily life of that individual. People have beliefs of what they can do and not, about the cause of the complaints and so on. This makes Pörn’s definition of health as ability useful for the understanding. Pörn states that the perception of the agent is the foundation of the agent’s system of beliefs (cognition). In every phase of the complex action dynamics the agent acts on the basis of the resources he/she believes he/she has and within the limits of the resources he/she actually has (Pörn, ).

Health care measures stemming from this perspective would proceed from the patients’ beliefs guided or assisted by health care providers. If there is a discrepancy, e.g. the patient believes he/she has more resources than he/she actually has regarding a goal, then the goal must be altered if the resources cannot be restored with respect to that particular goal.

To improve overall rehabilitation outcomes, theoretical knowledge about humans in a goal directed action process within a social context is needed. People’s actions have to be understood in relation to their social context, and their illness have to be understood both as a suffering but also within what context it has developed. Not all people with illness seek help from the health care. Not all-measurable findings indicate a suffering. The emphasis on measurable findings and their status in the identification of a disease is not enough. Therefore the focus on disease only, instead of on the dimension health/ill health as well, is questionable.
Discussion

Physical therapy in light of Pörn’s Theory of Health

Pörn’s Theory of health is fruitful for physical therapy in the understanding of the individual as it sees human beings in a goal directed action in a social context. Physical therapy is goal directed action therapy that incorporates both the resources (physical and mental) and the social surroundings in which these actions are to be taken part. The patients’ goals in life and at that moment (preferred capability) are the goals of the physiotherapeutic action. But to be able to interview patients about their goals in life physiotherapists need knowledge from other disciplines than medicine. In this case theories of what makes a person act in a desired way would be needed. The goal of physical therapy should be to act upon the aims of the patients and guide them towards their specific goals. This would be the core of physical therapy. If the goals in physical therapy are to help people regain their ability the first step should be to chart the patient’s actual resources by performing a physical examination, interview them about their goals and social surroundings at the moment. The second step should be to guide the patient to choose one goal at the time if there is more than one and the third step would be to guide the patient using different techniques so that her or his goals can be achieved.

In Paper II the conditions for acting are discussed theoretically. Conditions for acting and space of acting comprise both internal and external conditions both for the physiotherapist and the patient in interaction. A physical aspect considers the physiological possibilities to accomplish a movement, like "does the patient have enough muscle strength and/or mobility to fulfil the movement task?" and the mental aspect considers the patient’s ability to decide whether or not the actual task is necessary for her/him to achieve desired goals. Measured actual physical resources only explain what the ability is to perform a task but not what the desire to perform it is. Learning is goal-oriented and the ability to accomplish a goal or to achieve a desired outcome is to have a skill. To e.g. instruct (physiotherapist) a movement demands a skill and to teach (patient) a movement if that is a desired outcome is to achieve a skill.

If a patient both wants and is able to perform a task he/she has the capability to perform it (A) (Figure 6). If a patient wants but is not able to perform a task he/she can be trained as far as her/his physical resources permit (B). But if the wish to perform a task is far beyond the patient’s physical abilities a frustration or desperation can arise. The wish to perform a task must be adjusted to the actual abilities if
the patient wishes to be able to accomplish it. If a patient is able but do not want to perform a task it will not be done (C). And if a patient neither can nor wants to perform a task it will not be done (D).

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Figure 6. A crosstable of the entities to want and to be able to\textsuperscript{66}

Most of the technical treatments within physical therapy have a biomedical origin. These treatments are developed in order to minimise the differential between a preferred and current movement capability as Gordon and Cott et al discusses.\textsuperscript{35,39} But the biomedical perspective comes to shortness when conditions that are seen as non-specific (no or few measurable finding) are the target like most low-back complaints are. The treatment approach in physical therapy should therefore proceed from a humanistic social perspective\textsuperscript{67} as Pörn’s theory of health suggests and considering the conditions for acting as discussed in Paper II.\textsuperscript{36}

Studies on the outcome of rehabilitation have been conducted. Grahn states in her thesis that the goal of multidisciplinary rehabilitation is to restore the patient to an active independent life for a longer period of time. This includes comprehensive behavioural outcomes such as a return to work and reduced consumption of health care, and that these attempts require a comprehensive course of action from all the involved personnel.\textsuperscript{68} Johansson found that the patient perspective, e.g. helping patients improve skills to assess and handle possible tissue-threatening situations, or improve confidence in their capacity to perform daily activities, or preparing patients to deal with recurrences and
setbacks, is barely discernible in some randomised clinical trials.\textsuperscript{69} She has studied the outcome of different approaches and found that a multidisciplinary approach rented best results.

Both Johansson and Grahn advocate a rehabilitation approach relative to the humanistic social perspective when they talk about helping patients improve skills and improve confidence in their capacity to perform daily activities and in restoring people to an independent life.

There is an urgent need of studies of the effectiveness of given measures. Buchbinder et al have evaluated the effectiveness of a population based public health campaign intervention designed to alter beliefs about back pain, influence medical management, reduce disability and costs for compensation. They compared two states in Australia, one where the campaign was conducted (Victoria) and one as a referent (New South Wales). Their results show that there was a clear decline in number of claims for back problems in contrast with other claims in the intervention area, and that the decline in the rate of days compensated for back claims was considerably steeper than for other claims. Over the duration of the campaign this represented an absolute reduction in medical costs of twenty percent per claim.\textsuperscript{46} Buchbinder et al claim that, interventions like this one may be an effective strategy for reducing disability and costs related to back pain.

They also discuss how patients' attitudes and beliefs are increasingly accepted as having an important role in disability related to back problems. Despite an increase in evidence that staying active and continuing or resuming ordinary activities is more effective than bed rest, only few physicians give this advice of management. Their results show that the beliefs about back pain improved among the doctors during the campaign.\textsuperscript{46}
CONCLUSION

This thesis has paid attention to that conceptual notions, which seldom are considered within clinical praxis, are of vital importance for the outcome of rehabilitation. Health care falls short especially when it comes to non-specific and frequent low-back complaints and this may be due to the biomedical model being used too strictly within a domain where other models, here exemplified as Pörn's Theory of Health, might result in a more favourable rehabilitation outcome for the individual.
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