

Attitudes of responsibility for musculoskeletal disorders

Instrument development, distribution and association to background factors in a general population, relationship to outcome of physiotherapy treatment and patients' narrated views.

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2009

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ISBN 978-91-628-7763-7

Printed by Intellecta Infolog AB, Göteborg, Sweden, 2009

It is what we think we already know that prevent us from learning
Claude Bernard

ABSTRACT

Musculoskeletal disorders are common in the population and almost everyone will experience musculoskeletal discomfort at some point in life. Besides causing pain and disability, musculoskeletal disorders also involve economic burdens on individuals, health systems, and social care systems. But what are the attitudes and expectations concerning the management of these disorders? Who do people consider responsible for the prevention, treatment, and management of musculoskeletal disorders?

The aim of this thesis was to explore attitudes of responsibility towards musculoskeletal disorders; to whom or what a general population placed responsibility for the management of musculoskeletal disorders and whether attitudes could be related to background factors or to the outcome of patients' physiotherapy treatment. A further aim was to investigate and describe how patients reasoned about the responsibility for musculoskeletal disorders. The central aim was investigated in four separate studies.

The Attitudes regarding Responsibility for Musculoskeletal disorders instrument (ARM), was developed and psychometric proprieties evaluated to establish validity and reliability of the instrument. The final selection of 15 items suggested acceptable reliability, satisfactory stability and support for face validity, content validity and construct validity. In cross-sectional, postal questionnaire surveys, the ARM instrument was used to investigate general attitudes to responsibility for the management of musculoskeletal disorders (n=1082), associations between attitudes and background variables (n=683-693 out of the 1082) and whether patients' attitudes towards responsibility for musculoskeletal disorders were related to the patients' self-reported outcome of physiotherapy treatment (n=278). Furthermore, 20 interviews with patients regarding their thoughts and reasoning in regard to responsibility for musculoskeletal disorders were analysed using qualitative content analysis.

This thesis shows that a majority of the respondents displayed attitudes of taking personal responsibility for musculoskeletal disorders and sharing responsibility with medical professionals, and did not place responsibility for the management out of their own hands or on employers to any great extent. The main associations found between attitude towards responsibility for musculoskeletal disorders and investigated background variables were that

physical inactivity, musculoskeletal disorder related sick leave, and no education beyond compulsory level, increased attributing responsibility on someone or something else. Patients who attributed personal responsibility were more likely to report a better outcome of physiotherapy treatment. The interviews revealed six interrelated categories: Taking on responsibility, Ambiguity about responsibility, Collaborating responsibility, Complying with recommendations, Disclaiming responsibility and Responsibility irrelevant with the central theme identified as; own responsibility needs to be met.

In conclusion, own responsibility for the management of musculoskeletal disorders should not be underestimated. The responsibility should be shared with the medical professionals but also identified and met by society, employers and family. Background factors can be of importance for accepted attitudes. The common belief is that society having knowledge should take responsibility for prevention and that health care should provide fast accessibility, diagnosis, prognosis, and support for recovery. For long-term management, the individuals questioned felt that they were personally responsible to make the most of their situation despite their disorders. It might be worthwhile deciding whether to match treatment to attitude or attempt to influence a patient's attitude towards personal responsibility, as those who took a more internal attitude appeared to get better results from physiotherapy treatment. Each individual's attitude of responsibility for musculoskeletal disorders should be taken into account when planning prevention, treatment and management of these disorders on an individual and group level.

Key words: responsibility, attitude, musculoskeletal disorders, cross-sectional study, qualitative content analysis, physiotherapy, outcome of treatment, psychometric properties, validity, reliability

LIST OF PAPERS

This thesis is based on the following studies, which will be referred to in the text by their Roman numerals. The papers are reprinted with permission from the publishers.

- I. Larsson Maria EH, Nordholm Lena A. Attitudes regarding responsibility for musculoskeletal disorders - Instrument development. *Physiotherapy Theory and Practice* 2004, 20:187-199.
- II. Larsson Maria EH, Nordholm Lena A. Responsibility for managing musculoskeletal disorders - A cross-sectional postal survey of attitudes. *BMC Musculoskeletal Disorders* 2008, 9:110.
- III. Larsson Maria EH, Kreuter Margareta, Nordholm Lena. Is patient responsibility for managing musculoskeletal disorders related to self-reported better outcome of physiotherapy treatment? Accepted for publication in *Physiotherapy Theory and Practice*.
- IV. Larsson Maria EH, Nordholm Lena, Öhrn Ingbritt. Patients' views on responsibility for the management of musculoskeletal disorders – a qualitative study. Manuscript submitted.

ABBREVIATIONS

ARM	Attitudes regarding Responsibility for Musculoskeletal disorders instrument (1)
CHLC	Chance Health Locus of Control, subscale of the MHLC scale (2)
IHLC	Internal Health Locus of Control, subscale of the MHLC scale(2)
MHLC	Multidimensional Health Locus of Control scale (2)
OR	The Odds Ratio
PHLC	Powerful Others Locus of Control, subscale of the MHLC scale (2)
RE	Responsibility Employer, dimension of the ARM instrument (1)
R(M)P	Responsibility (Medical) Professionals, dimension of the ARM instrument (1)
RO	Responsibility Out of my hands, dimension of the ARM instrument (1)
RSA	Responsibility Self Active, dimension of the ARM instrument (1)

DEFINITIONS

- Cronbach's Alpha Is a reliability index used for estimating internal consistency in instruments composed of several items or questions (3), i.e. assessing the degree to which a set of items correlate with each other.
- Content Validity Indicates that the items and instrument adequately sample the content that defines the variable being measured, and that they are free from irrelevant factors. Utilisation of a panel of experts in the subject to establish whether the draft has content validity (3), is a method quite commonly used (4-8).
- Construct Validity Reflects the ability of an instrument to measure an abstract concept or construct. For construct validity, the Known Groups method can be used. This method provides evidence in support of the construct where the instrument is able to discriminate between individuals having, not having or differing from the construct (3). Construct validity can also be shown through convergence with or discrimination from other scales (3). Convergent validity indicates that two measures believed to reflect the same underlying phenomenon will yield similar results or will correlate highly (9). Discriminant validity indicates that different results, or low correlation, are expected from measures that are believed to assess different characteristics (3).
- Factor Analysis Is the use of a statistical procedure based on correlation and is another common approach to construct validation (3). The concept of factor analysis is based on the idea that a construct contains one or more underlying dimensions, or different theoretical components. A valid instrument should be able to measure and discriminate between these components.

Internal Attitude	Regarding musculoskeletal disorders, this implies that the individual takes an active part in the prevention, treatment or management of such disorders (1).
Item Analysis	Is used to choose the most appropriate items to be included in the instrument. It might be those items which show the most efficiency in predicting an external criterion but it is mainly based on the examination of how each item in the test relates to other items and to the instrument as a whole (3).
External Attitude	Regarding musculoskeletal disorders, this implies that individuals hand over responsibility to someone or something without regarding themselves as being active in the prevention, treatment or management of musculoskeletal disorders (1).
Odds Ratio	The odds ratio can be used when studying how likely an individual is to belong to a certain group or outcome, given the presence of a specific characteristic, when compared with someone in a reference group who does not have the specific characteristic. Odds ratios greater than 1.00 mean that the individual with the presence of the specific characteristic is more likely to belong to the given group. Conversely, odds less than 1.00 mean that individuals in the reference group without the specific characteristic are more likely to belong to the group of interest. An odds ratio of 1.00 means that individuals both with or without the given characteristic are equally likely to belong to the group and should therefore not be in a significant confidence interval for odds ratios (3).
Psychometrics	An umbrella term for studies concerned with the theory and technique of psychological measurement. It is about the procedures used to estimate and evaluate the attributes of measurement instruments such as questionnaires and tests (10).
Reliability	Applies to the extent to which the measurement is consistent and is also free from random or systematic error in repeated measures (3, 9).

Validity	Concerns the extent to which an instrument measures what it is intended to measure. Validity addresses what we are able to do with the test results: usually we want to use the instrument to evaluate, discriminate or predict (3).
Test-retest	This test assesses the degree to which an instrument is stable, based on repeated administrations of the test to the same individuals over a specified time interval. In this way it is possible to evaluate whether or not the instrument is capable of measuring a variable with consistency (3).

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PREFACE

The origin of this thesis lies in my reflections on the many encounters I have had while working most of my professional life as a physiotherapist in primary care, where the vast majority of patients are those with musculoskeletal disorders. To me, musculoskeletal disorders are natural conditions that most people will experience at some point in their life. Although musculoskeletal disorders can lead to severe pain and disability, and they also incur costs both for the individual and for society, they are rarely a symptom of serious or life-threatening disease. In the clinical setting some people with musculoskeletal disorders adopted responsibility for the management of their disorders, whilst others handed over responsibility for managing the disorder and its consequences entirely to others. When I discussed this issue with colleagues, they all acknowledged that there was a "Responsibility" aspect to the management of musculoskeletal disorders. However, when discussing the matter of responsibility outside the clinic it was not so self-evident. I remember in particular one conversation I had with a 22-year-old man, who had been on sick leave for six months, and who had been allocated to a multimodal/professional team for active rehabilitation to enable him to return to work. This conversation triggered the initiation of this thesis. A short extract of the conversation sounded something like this:

Physiotherapist (PT): ...and what are your expectations of the next 12 weeks?

Referred patient (RP): Well...she told me to come here

PT: She, who?

RP: The lady at the Social Insurance Agency

PT: Ok, and what about your back problems?

RP: Well... he'll have to take care of that

PT: He who?

RP: The physician

PT: Ok... and what do you think about the possibility of getting back to work?

RP: Well... they will have to deal with that

PT: They who?

RP: My employer

Afterwards I was a bit concerned as to how the rehabilitation program would go, with this patient's attitude to management of his disorder. Later that night, at home, and admittedly a little frustrated, I discussed attitudes to responsibility for musculoskeletal problems. I was told that I, who had become a physiotherapist, no longer had a normal attitude regarding this matter. "People don't think like you physios do", I was told. But what then are attitudes in the "general" population regarding responsibility for musculoskeletal disorders? Do they differ with sex, age, education? Do they differ according to whether or not you have a musculoskeletal disorder, or if you are on sick leave? Does attitude even matter? Will it have any effect on the results of physiotherapeutic interventions? How do people think and reason in this matter?

Eventually, these questions resulted in this dissertation. This work has taken me to new worlds of instrument development, statistics, psychological theory, qualitative methodology, and many interesting but almost endless discussions which finally gave some answers but which also raised many more questions. There are many different aspects to be considered in the management of musculoskeletal disorders, but hopefully this thesis will give a contribution to the puzzle.

INTRODUCTION

Musculoskeletal disorders are very common, and there has been an increased focus on health and well-being related to musculoskeletal disorders during the last decade, which has brought to attention the problems associated with these disorders. Besides causing pain and decreased functional capacity, musculoskeletal disorders have a substantial influence on quality of life, cause psychological distress and inflict an enormous financial burden on health and social security systems (11). The disorders are most commonly reported in Western societies with population-based incidence and prevalence data on musculoskeletal disorders, such as spinal disorders, primarily collected in North America and Europe (12). Thus, these data may be subject to social, economic, genetic and environmental variables, in addition to issues of methodology and definition of disorders. A smaller amount of information reported from other parts of the world (13), however indicates an increase in musculoskeletal disorders in the developing countries. The reporting of a given episode or condition also seems to depend on the system of social security, national health care and employee compensation in the country concerned (11).

The common incidence, sizeable amount of health care use and high costs of these symptoms imply the necessity to develop new strategies to deal with consequent functional limitations and effects on quality of life, and look at ways of reducing the burden of musculoskeletal diseases (14-16). A meeting, organized by the World Health Organisation (WHO) in Geneva, Switzerland at the start of the new millennium (The WHO Scientific Group on the Burden of Musculoskeletal Conditions in collaboration with the Bone and Joint Decade), marked the launch of the Bone and Joint Decade 2000–2010. In 2008, a task force of the Bone and Joint Decade provided a Standards of Care document for acute and chronic musculoskeletal pain (17). The document is a rigorous review and summary of management of musculoskeletal conditions produced over recent years. Enabling self-management and allowing the individual to take responsibility for care is stated as being desirable in the management of these disorders (17). However, people's attitudes of responsibility for musculoskeletal disorders and its consequences are not well explored. The present thesis will focus on individuals' attitudes towards responsibility for musculoskeletal disorders.

BACKGROUND

The following background section presents concepts of theoretical and methodological viewpoints of relevance to the object of the present thesis. This is followed by a section in which issues on musculoskeletal disorders of relevance to the aim is presented.

Responsibility

In English, the word “responsible” has its origin in Latin: *respondere*, which means “To answer” (Barnhart Dictionary of Etymology). The Swedish word “ansvar” has similar linguistic roots. The word and its use are described in terms of different kinds of “svaromål” (English: “Answer”) in most aspects. However, one aspect also relates to legal sanctions (18). As the original meaning of the word “Responsible” was “To answer”, it can be interpreted as meaning “To answer for your actions” (19). The use of the concept of responsibility in this way implies a view of man as having free will; being accountable or answerable for his own actions.

On the other hand, if the actions of man are seen purely as a response to certain stimuli (as in traditional classical conditioning), the individual’s responses will be more difficult and less interesting to discuss in terms of responsibility. Health would not be discussed in terms of responsibility if it was not seen to be important. In other words, the absence of disorders is highly valued not only by the individual, but also by society, as healthy citizens are productive ones and ill-health generates costs (20). Parsons (20) assumed that ill-health was undesirable and its occurrence was beyond the control of the individual, implying some form of helplessness. However, the individual was seen as being obligated to seek help and to participate in the process of recovery (20). A consequence of this is that health care and society reject patients who do not try to get well. Waddell and co-workers (21) modified Parsons’ model of the sick-role for chronic pain and disability. In their model, one of the obligations is that the individual has to assume part of the responsibility for his/her health and functional capacity. The modified model involves to some extent a shift of responsibility from the care providers to the patient. The modified model questions the rights and obligations associated with the sick-role, as well as society’s duties towards those with chronic illness (21).

A basic assumption in this thesis is that the meaning of “Responsibility” is formed by the situation in which it is used. In a broad sense, responsibility is about self-perceptions; about how the self relates to the world and to other people (22). A person who professes to hold certain values and who answers for his/her actions is *taking* responsibility. There might be situations where a person has a responsibility for something but does not accept it and vice-versa. You can have responsibility and accept it without being fully aware of it, but taking responsibility usually requires some sort of achievement. You can have responsibility as a person or as someone in a certain position. For example, you may have to answer to yourself, to your family, to health care or to God. A given responsibility can be specified and explicit or unspecified and implicit (22). It is usually when you discuss the consequences of insufficiency in fulfilling responsibilities that blame or guilt is connected to responsibility (19). But Shaver and Drown (23) argue that the concepts of causality, responsibility and blame are to be differentiated from each other and should not be taken as measures of the same thing. Blame incorporates a critical element of intentionality to bring about harm (23).

In this thesis, the object of responsibility is in relation to musculoskeletal disorders. Among synonyms for the Swedish verb “ansvara” are words such as “Take care of, see to, provide for” (24), which have a more general meaning of taking care of something. This is the meaning of the word “Responsibility” as used in this thesis.

Responsibility for the management of disorders is also regulated in laws and legislations:

Health care responsibility for disorders

The health care system is responsible for the medical treatment and rehabilitation of patients with musculoskeletal disorders. According to the Swedish Health and Medical Services Act (Hälso- och sjukvårdslagen HSL) (SFS 1982:763) (25), health care should include measures for medical prevention, and examination and treatment of disease and injury. HSL is a basic law - the requirements to be met by health and medical services concern quality of care, accessibility of care, respect for the patient’s right to self-determination and privacy, and promotion of good relationships between patients and health care personnel. Care and treatment shall as far as possible be designed and conducted in consultation with the patient. A prompt medical assessment of the patient’s state of health shall be carried out (chapter 2, section 2 a). The patient shall also be given individualised information concerning his/her state of health and the treatment methods available (chapter 2, section 2b). Health and medical services shall also work for the prevention of ill health (chapter 2, section 2c). County councils are responsible for providing good health and medical services

to persons living within their boundaries, and shall also endeavour to promote the health of all residents (chapter 2, section 3). Where several alternative treatments exist, which concur with science and best practice, the county council shall give the patient the option of choosing his/her preferred treatment, if, with regard to the illness or injury involved and the cost of the treatment, this is seen to be justifiable (chapter 2, section 3a).

Responsibility for the work environment related to disorders

Responsibility for the work environment is regulated in the Swedish Work Environment Act (Arbetsmiljölagen)(1977:1160) (26). The purpose of this Act is to prevent ill-health and accidents at work and generally to achieve a good working environment (chapter 1, section 1). Regulations concerning employer responsibility are quite extensive. For example, in chapter 2 section 1, the Act states that the working environment shall be satisfactory with regard to the nature of the work and social and technical progress in the community. Working conditions shall be adapted to people's differing physical and mental aptitudes. The employee shall also be given the opportunity to participate in the design of his own work environment and in processes of change and development affecting his work. In addition, technology, work organisation and job content shall be designed in such a way that the employee is not subjected to physical or mental strains which might lead to ill-health or accidents.

The employer is obliged (according to chapter 3, section 3) to ensure that the employee acquires a sound knowledge of the conditions in which work is conducted and that he is informed of the hazards which the work may entail, has received the training necessary, and that he knows what measures should be taken for the avoidance of risk in performing the work. The employer shall make allowance for the employee's special aptitudes and regard shall be paid to the fact that individual persons have differing aptitudes for the tasks involved. Furthermore, in chapter 2 section 1 it is stated that efforts shall be made to ensure that work provides opportunities of variety, social contact and co-operation, as well as coherence between different tasks. Efforts shall also be made to ensure that working conditions provide opportunities for personal and vocational development, as well as for self-determination and professional responsibility.

In chapter 3 of the Act, concerning general obligations, it is stated that employer and employee shall co-operate to establish a good working environment. The employer shall take all the precautions necessary to prevent the employee from being exposed to health hazards or accident risks. One basic principle is that everything capable of leading to ill-health or accidents shall be altered or replaced in such a way that the risk of ill-health or accidents is eliminated. The

second section of chapter 3 describes how the employer shall systematically plan, direct and control activities in a manner which ensures that the work place meets the requirements for a good work environment. Beyond investigating work injuries and hazards he shall take the preventative measures required. The employer shall also ensure that there is a suitably organised scheme of job adaptation and rehabilitation. Availability of occupational health services is required (26).

The employee's responsibility is also stated in chapter 3, section 4. The employee is obliged to assist in work relating to the working environment and shall take part in the implementation of the measures required to achieve a good working environment. He shall comply with provisions issued and use the safety devices and exercise such other precautions as are needed for the prevention of ill-health and accidents.

Societal responsibility of management

The social insurance scheme covers the whole population and gives benefits to all. Everyone enjoys a certain minimum of protection and in addition to this, gainfully employed insured persons are guaranteed payments graduated according to the size of their incomes. Adherence to the social insurance system is automatic and in general also compulsory (27).

The Swedish Social Insurance Agency is responsible for a large part of the social security system. Their tasks include investigating, deciding on and paying benefits and allowances in the social insurance scheme. If a person on sick leave needs support in order to begin working again, the Swedish Social Insurance Agency has a further responsibility to coordinate society's various measures for rehabilitation, including rehabilitation. The Swedish Social Insurance Agency should also take the initiative and coordinate the measures needed. If necessary, they can also give support in liaison with authorities and others so that the person receives the required assistance with rehabilitation (28). The person on sick leave is responsible for providing the required information and for participating in the assessment and planning of rehabilitation. They are also required to take an active part in the rehabilitation to the best of their ability (29).

Attitudes

Attitude can be seen as a mental state of readiness, usually organised through experience. It will influence the individual's response to objects and situations to which the attitude is related (30). Attitudes are thought to be formed through behavioural and/or cognitive processes. The attitude structure is usually said to include the ABC components; affect (feelings), behaviour (responses, conation) and cognition (thoughts) (31).

Behavioural approach to attitudes

Fishbein and Ajzen (32) defined attitude as "a learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object" (p. 6), which could be considered to be a behavioural approach. This view claims that most attitudes are the result of direct experience (positive or negative), related to Fishbein & Ajzen's expectancy value model (33). Within the behavioural approach, attitudes are also thought to be formed by classical conditioning through associations of a stimulus to a positive or negative response, by operant conditioning where attitudes are shaped by a system of reinforcement, or by observational learning where attitudes are the results of modelling actions or emotions simply observed and imitated (34).

Cognitive approach to attitudes

Within the cognitive approach, the cognitive component of attitudes is emphasised as beliefs or schemas are the building blocks of an attitude. According to this approach, attitudes toward a given object are constructed and formed in response to information that is collected, stored and then evaluated. People can form attitudes by analysing their own behaviour or by using their mood to provide information and make evaluations of an object. Attitudes can also be formed in response to persuasion, or with cognitive processes such as using cues available from memory (34). Thus, attitudes can be formed by personal experiences that have been learned, or as a result of information or thought processes. According to Katz (35), attitudes serve as conscious and unconscious motives in relation to events, objects and people. Our self-concept has some value in the expression of attitudes, and attitudes could be part of our individual identity and values (35).

Attitudes, feelings and behaviour

Attitudes are thought to influence feelings and behaviour (32), and according to the theory of planned behaviour (36), attitudes regarding the behaviour is one of the determinations of intention, which in turn can predict a person's behaviour in relation to the object of concern. The positive, negative or mixed reaction to a person, object or idea (37) thus predicts the intention and is a determinant of feeling and of behaviour (38, 39). Strong attitudes are thought to influence behaviour more, as they are processed readily and are more accessible. Attitudes strongly linked to a situation are more automatic (34). Among psychological factors recognized to be of importance for the relationship of attitudes to behaviour is the level of correspondence or similarity between measured attitude and behaviour. The more specific the attitude, question, or statement is, the better it predicts future behaviour (40). Behaviour influenced by predispositions of attitudes by nature, as a result of inborn physical, sensory and cognitive skills, temperament and personality

traits to hold certain strong attitudes, has gained attention through studies in which identical twins even those raised apart, showed more similarities in attitudes than fraternal twins (41, 42).

Attitudes, personality and behaviour

Attitudes and personality have many similarities and both terms relate to latent hypothetical constructs which can be manifested in a wide variety of observable responses. However, in contrast to attitudes, personality is not necessarily evaluative and directed at a given object or target (43). Personality can be viewed as individual and meaningful differences between individuals, and can be defined as the distinctive and characteristic patterns of thought, emotion, and behaviour that make up an individual's personal style of interacting with the physical and social environment (44). This pattern of cognition, affection, relations and impulse control is believed to predict the person's behaviour in given situations (free interpretation from DSM-IV). The view on personality - how it is formed and how it can relate to health differs between perspectives.

Four main perspectives of personality are often described: - psychodynamic; trait; humanistic; and social-cognitive. In brief, in psychodynamic theory, originally based on theories developed by Sigmund Freud (1856 –1939), common assumptions are that a large proportion of our mental life is ruled by unconscious material or unconscious motivation and personality is to a large extent characterised and formed by experiences in childhood. Our mental life is characterised by ambivalence and contradictory motives, thoughts and emotions. The mental picture of self and others is a substantial part of personality, which determines our attitudes. In the personality there are conflicts, which are handled by defence mechanisms. A mature personality is characterized by flexibility and autonomy (44).

In trait theory, every human has given dispositions of traits, which explain behaviour, emotion and cognition. A trait is stable over time and situations and is assumed to be normally distributed in the population. Hans Eysenck (1916-1997) developed a model of personality based on traits which he believed were highly heritable; extraversion-introversion, neuroticism-emotional stability and psychoticism (P). Louis Leon Thurstone (1887-1955) introduced another model in trait theory; the five-factor model, often called the Big Five including five dimensions: - neuroticism; extraversion; openness; agreeableness; and conscientiousness (44).

The humanistic theory was developed as a reaction to the psychodynamic and behaviouristic approach to personality. The humanistic approach emphasises the positive aspects of human beings. It has a non-deterministic view of personality and a belief that we are free to form ourselves and our life. We have

autonomy and a free will. Even so, an inherent potential is also mentioned. The two psychologists Abraham Maslow (1908-1970) and Carl Rogers (1902-1987) considered self-actualisation as a central concept. Self-actualisation, according to Maslow, is "Intrinsic growth of what is already in the organism, or more accurately of what is the organism itself...self-actualisation is growth-motivated rather than deficiency-motivated" (45). This explanation emphasises the fact that self-actualisation cannot normally be reached until other more basic needs of Maslow's hierarchy of needs are satisfied. Rogers on the other hand, pointed out that free choice and responsibility for one's own choices are prerequisites for self-realisation. The "real self" strives for the "ideal self" and when these are in congruence, self-realisation is reached (46). The humanistic approach has a positive view of responsibility. The client in Roger's therapy was to be met by a genuine interest, empathy and acceptance. In his therapy, reflection back is important. When you formulate your thoughts to someone who is listening actively, you can attain insight, or understanding of your feelings (46).

The social cognitive theories are the most relevant personality theories to this thesis. They can be seen as a mixture of the cognitive theories developed by, for example, Aaron Beck (1921-) and George Kelly (1905-1966) and behavioural theories developed by B.F. Skinner (1904-1990) and Ivan Pavlov (1849-1936). In the book "Social foundations of thought and action" from 1986 (47) Bandura describes a social cognitive theory. The social part of the theory derives from the social origin of human thoughts and actions and the cognitive part recognises the contribution of thought processes to human motivation, affect and action (47). The social cognitive theories analyse human motivation, thought and action. They show causation models in which environmental events, personal factors and behaviour operate as interacting determinants of each other. Human thought is believed to be a powerful instrument for action, and human behaviour is goal-directed with outcomes projected into the future (47).

Albert Bandura (1925-), Walter Mishel (1930-) and Julian B. Rotter (1916-) have developed theories within the social cognitive perspective and some of their theories will be addressed here briefly:

Self-efficacy

Perceived self-efficacy refers to beliefs in one's capabilities to organise and execute actions required to attain goals regulating one's own motivation, thoughts, processes, affective states, and actions. It may also involve changing environmental conditions depending on what one seeks to manage (48). Self-efficacy concerns the efficacy belief system not as an omnibus trait, but as a differentiated set of self-beliefs linked to distinct realms of functioning. According to Bandura, efficacy beliefs are concerned not only with the exercise

of control over action but also with the self-regulation of thought processes, motivation and affective and physiological states (49). Bandura describes that self-efficacy is not a fixed ability that a person either does or does not have, but rather it is a generative capability in which cognitive, social, emotional and behaviour sub-skills must be organized and effectively organised to serve innumerable purposes. Regardless of what the underlying skills might be, perceived self-efficacy is an important contributor to accomplishing a performance. Accordingly, it is not a measure of the skills you have, but a belief regarding what you can do under different sets of conditions with whatever skills you possess (49).

Personality's variation over situation

As early as 1968, Walter Mischel challenged the concept of personality as a description of people in terms of broad traits and states, using situation free adjectives (50). In the classic view of personality, the basic qualities of the person are assumed to be independent of and unconnected to situations. Early work by, for example, Newcomb in 1929 (51) showed that the correlation of daily behaviour across separate situations was very low. Mischel explained this by contending that it was incorrect to aggregate across situations. A person can behave differently in different situations but still show overall individual differences: on the whole, some people are more sociable, punctual and so on than others. In time, the need to consider both person and situation has been recognised, and in the study of the personality the focus has shifted away from broad, situation-free adjectival trait descriptors to more situation-qualified characterisations of persons in context. These characterisations are more interactive with the situations in which they were expressed. Finding the invariability in a personality requires taking account of the situation and its meaning for the individual and it may be observed in the stable interactions and interplay between them. Mischel saw the individual as an organized, dynamic, agentic system functioning in the social world (52).

Locus of control

Research into locus of control started in the mid-1950s when psychologist Julian Rotter was developing his social learning theory. In his work on reinforcement he realised that not all people value reinforcements in the same way and will therefore differ in their response to them. People also differed in terms of their expectations for reinforcements (53). Rotter published a questionnaire measuring internal versus external locus of control in 1966 (54). Rotter called it "Generalised expectancies" when a person's expectations of reinforcements were held across a variety of situations (55, 56). Generalised expectancy of events being outwith one's control is called external locus of control. Internal locus of control is the generalised expectancy that reinforcing events are under one's control and that one is responsible for the major outcomes in life.

Some researchers have become more interested in specific areas of life, in which people can be internal in one area of life and external in another. This approach is referred to as specific expectancies (53). One specific area of life concerns locus of control expectations for health and whether people believe that their health is or is not dependent on their own behaviour (57). Wallston, Wallston and DeVillis developed a measurement of health locus of control called the Multidimensional Health Locus of Control scale (MHLC), as they believed it to be a multidimensional construct. The scale consists of three subscales: Internal Health Locus of Control (IHLC) - six items concerning health status as a result of own behaviour; Chance Health Locus of Control (CHLC) and Powerful Others Locus of Control (PHLC) - six items each, concerning health status as due to factors such as fate, luck, chance, or powerful others—factors over which one has little control (2).

In this thesis, internal attitude regarding responsibility for musculoskeletal disorders implies that the individual takes an active part in the prevention or treatment of musculoskeletal disorders. External attitude regarding responsibility for musculoskeletal disorders implies that the individual does not regard her/himself as the active component in the prevention or treatment of musculoskeletal disorders.

Coping

Coping is usually not included as a personality theory, but in the present thesis is seen as being related to the above. Coping behaviour or coping style, defined by Lazarus and his group as "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (58) is seen as a process or a state, as distinguished from coping as a trait. Two major types of coping are proposed; problem-focused coping, which includes efforts that are directed at controlling or changing the sources of the stress; and emotion-focused coping strategies, which are attempts at managing emotional responses to the stressor (e.g. strategies for handling fears due to the disorder). As coping attempts to diminish the physical, emotional, and psychological burden of the disorder, both problem and emotion-focused coping may play a part in the response (58). Brown and Nicassio (59) further conceptualised coping as being active or passive in nature. Active coping was referred to as the use of adaptive strategies by the individual to control a disorder. On the contrary, passive coping entailed the use of strategies that gave control of disorder management to others, or an acceptance of the restrictions in life (59).

Attitudes within the present thesis

Within this thesis, both cognitive and behavioural factors are believed to form attitudes. Situation and personality are both seen as influencing the relationship between attitudes and behaviour.

Musculoskeletal disorders

It is difficult to find generally accepted definitions of musculoskeletal disorders. The basic term "Musculoskeletal" can be defined as: "Related to or involving both muscles and skeleton" (60). The World Health Organisation has provided the "Classification of diseases (ICD)" system, where chapter XIII includes "Diseases of the musculoskeletal system and connective tissue", where, for example, inflammatory polyarthritis, arthrosis and low back pain are included. However, in the database Medline/PubMeds MeSH-terms, musculoskeletal diseases are defined as: "Diseases of the muscles and their associated ligaments and other connective tissue and of the bones and cartilage viewed collectively", but, for example, back pain, neck pain and headache are classified under the term "Pain".

Diseases and disorders included in the above classifications are sometimes excluded in other definitions and studies of musculoskeletal disorders. In a study from the Netherlands, a multidisciplinary consensus on terminology and classification of complaints of the arm, neck and/or shoulder was developed. In this classification, disorders resulting from acute trauma or from systemic disease, e.g. rheumatoid arthritis, were excluded (61). In a study of predictive factors in the rehabilitation of musculoskeletal disorders, the conditions of disc hernia, arthrosis, post-traumatic or orthopaedic injuries and whiplash disorder were included (62). Sometimes, definitions of musculoskeletal disorders reflect a more gradual or chronic development and are not typically the result of any instantaneous or acute event (such as a slip, trip, or fall) (63). Most studies refer to disorders or pain from a specific part of the body, e.g. the back, neck, (12), shoulder (64) or knee (65). Thus, musculoskeletal disorders include a group of conditions that involve the nerves, tendons, muscles, and supporting structures such as intervertebral discs. They represent a wide range of disorders, which can differ in severity from mild periodic symptoms to severe, chronic and debilitating conditions. Taken together there is no consensus of the term "Musculoskeletal disorders".

Throughout this thesis the term "Musculoskeletal disorder(s)" refers to pain or disorder from the musculoskeletal system and is seen as a natural condition that most people will experience at some point in life, although it is rarely a symptom of serious or life-threatening disease (66). It has, however, recently been associated with an unclear increased risk of mortality (67). Thus, in the first two studies of this thesis, musculoskeletal disorders were not explicitly

defined to the participants. The attitude instrument gave examples of musculoskeletal disorders, but the respondent's own experience or interpretation was used regarding definition of what was a musculoskeletal disorder. However, in the third and fourth study (in which only patients participated), musculoskeletal disorders were defined as disorders primarily generated from the musculoskeletal system. For example, cancer-generated pain, pregnancy-related disorders (such as pelvic girdle pain), and neurological (such as stroke or multiple sclerosis) or systemic disease were excluded.

Prevalence and consequences of musculoskeletal disorders

Musculoskeletal conditions are without doubt a major burden on individuals, health systems and social care systems. Of these, low back pain is the most prevalent condition (68). An adequately functioning musculoskeletal system is a key factor for functional capacity and independence. It is also a component of overall health and well-being (69, 70). Impaired functional capacity and degenerative musculoskeletal disorders are prevalent and increasing sources of morbidity and suffering (11). Epidemiological studies in the US (71) as well as in Europe (15, 72) report musculoskeletal disease as common among the population. It is estimated that 15% to 20% of adults have back pain during a single year and 50% to 80% experience at least one episode of back pain during a lifetime (73). The 12-month prevalence of neck pain ranged between 30% and 50% and prevalence of activity-limiting pain was 1.7% to 11.5%. Neck pain is more prevalent among women than men and the prevalence peaks in middle age (74). The common incidence of these symptoms underlines the necessity to develop new strategies to deal with consequent functional limitations and effects on quality of life. It is therefore important to increase the potential for self-care in musculoskeletal disease (15).

Health care use for musculoskeletal disorders

Musculoskeletal conditions affect the physical abilities as well as the psychological status of individuals and are a common reason for self-medication and entry to the health care system (75). They are thus responsible for a sizeable amount of health care use (16). Recurrence of health care use for musculoskeletal symptoms was shown to be more than 40% in a prospective study of industrial workers (76). Results of a questionnaire study concerning knee pain showed that a majority of people with severe pain or disability had not consulted their general practitioner (GP) during the last 12 months (77). Although the results showed a high level of self-management, not seeing a GP or a physiotherapist could mean missed opportunities for effective interventions. A targeted and integrated approach between clinicians and health care planners for primary and secondary prevention is therefore required (77).

Costs for musculoskeletal disorders

Musculoskeletal disorders not only cause pain and decreased function, they also create extensive costs both for the individual and for society (16, 78-83). The high costs imply that governments need to invest in the future and look at ways of reducing the burden of musculoskeletal diseases (14). As early as 1991, Nachemson stated that the epidemic increase of illness due, in particular, to low back pain, was threatening the social welfare system and that back problems are not only a medical, but a political problem. He also stated that he hoped that politicians would understand the importance of their role over the next 10 years (84). During the latter part of the 1990s and early 2000s, the incidence of long term sick-listings in Sweden increased considerably, although it has decreased during recent years (85). About 60 % of the costs for sickness benefits are due to musculoskeletal disorders and psychiatric disorders. The single largest diagnosis, which accounts for 15% of the sickness benefit for men and 12% for the women, is back pain (86). In Sweden, the increasing cost of sickness benefits has definitely become a political issue, vividly debated in recent years. In a national agreement between the government and county councils in Sweden, the government agreed to allocate one billion SEK annually from 2007-2009, to help reduce sick leave (87).

Health care management of musculoskeletal disorders

Different health care specialities are involved in the treatment of musculoskeletal disorders. The rehabilitation needs of patients who do not require advanced medical and technical resources or other special competence should be handled by primary care as a part of outpatient care, with no restriction to illnesses, age or patient category (chapter 2, section 5) (25). According to The Swedish Council on Technology Assessment in Health Care (SBU) (12), primary care is the most appropriate level for most patients with musculoskeletal disorders.

Different physiotherapy treatments such as home-based exercise (88), supervised exercise and advice (89), acupuncture (90), manual therapy (91), aquatic treatment (92) etc. are often used to treat musculoskeletal conditions (93). The treatments evaluated in the literature often refer to specific diseases or sites of the body - e.g. rheumatoid arthritis (94), patients with knee or hip osteoarthritis (95) or low back pain (96, 97). Physiotherapy plays an important role in the management of musculoskeletal disorders (98), but it is well known among clinicians that patients, although they may seek treatment for the same diagnosis, experience different outcomes from the treatment given. Fritz and Brennan (99) have proposed a treatment-based classification system for patients receiving physiotherapy interventions for neck pain. In their study, key examination variables collected at baseline were compared to interventions and classified as matched or non-matched treatment. When evaluating the outcome

of physiotherapy, it was shown that those who were matched to the classification system were associated with better outcomes than those receiving non-matched interventions (99). O'Sullivan and Beales (100) suggested sub-categorising both physical and psycho-social factors, and the need for a classification-based approach which can guide targeted interventions. In their mechanism-based classification system of chronic pelvic girdle pain disorders, physical and psycho-social factors are successively evaluated in a hierarchical structure to determine a preferred intervention (100). Denison and co-workers (101) have shown that patients with musculoskeletal pain in a primary care setting could be sub-grouped based on pain intensity, disability, self-efficacy and fear-avoidance variables. Three sub-groups were generated by a cluster analysis and were defined as having different profiles such as "high self-efficacy – low fear-avoidance", "low self-efficacy – low fear-avoidance" and "low self-efficacy – high fear-avoidance". This sub-grouping revealed among patients with musculoskeletal pain might suggest that different strategies for treatment could be used for these patients (101).

Patients' beliefs of management of musculoskeletal disorders

Patients' beliefs and attitudes towards their disorder have been described in some studies. Klaber Moffett and co-workers (102) investigated public perceptions of back pain and its management and compared it with current clinical guidelines. They concluded that the problem of managing back pain might be reduced by closing the gap between the public's expectations and what is recommended in the guidelines (102). A study by Haugli and co-workers looked at the effects of a group learning program for people with chronic musculoskeletal pain and high absenteeism. The study aimed to investigate what characterised patients who may benefit from such a program. Patients with high agency orientation (i.e., a person who tends to construct himself or herself as an originator of behaviour) seemed to benefit more from the program with regard to pain reduction and improved pain coping than those with low agency orientation (103).

The perspective is generally that of a predominantly medical model in studies of disability due to musculoskeletal disorders. However, environmental factors and personal factors have recently gained increasing attention. In a review by Wiegler and co-workers (104), beliefs and attitudes of patients towards disease and disability were identified as personal factors relevant to disability, although no study confirming the contribution of these personal factors was found. The authors reason that some personal factors may contribute to disability by mediating from pain to disability, e.g. attitudes towards pain and health beliefs (105) and that these mediators may have been missed in their review. Further interpretation of the results of this review suggested that the interaction between environmental factors and personal factors should be considered (104).

Musculoskeletal disorders are even more common in older adults, and as they often have co-morbidity and hold a risk for drug-interaction effects (106, 107), self-management programs for pain control hold substantial promise as a means of decreasing pain and improving function. A review of evidence for self-management programs (108) showed that they generally had a positive effect. However, generalisability issues were identified as well as issues concerning psychological mechanisms that might explain underlying disparities. Study designs explicitly targeting these moderating and/or mediating constructs for underlying self-management pain strategies were advocated by the authors (108).

Evidence-based practice

The importance of evidence-based treatment is increasingly gaining ground in health care. Evidence-based practice means using the best available external clinical evidence and research and integrating it with individual clinical expertise. However, for effective and efficient treatment, the patients' preferences should also be used when making clinical care decisions (Figure 1). The guidelines cannot be used as a cookbook, they must be integrated and matched with the patient's clinical state and preferences (109). Integrating patient values into clinical behaviour might lead to better adherence to treatment. This means that there is a need to evaluate patient values, expectations and preferences for who, how and why a disorder should be managed in a specific way

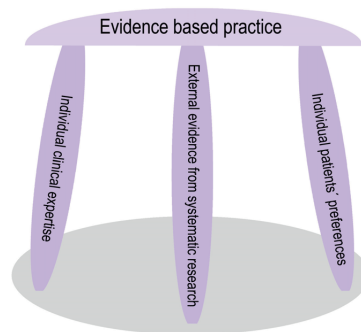


Figure 1. Model of evidence-based practice (adopted from Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence-based medicine: what it is and what it isn't. *Bmj* 1996;312(7023):71-2.)

Summary of the problem area

In conclusion, musculoskeletal disorders have a major impact on the individual and on society. Different perspectives are needed to achieve the most efficient management of the disorders. Attitudes are known to affect people's beliefs, expectations and behaviour. It is not yet known how individuals in the general

population assign responsibility for management of musculoskeletal disorders, or if it differs due to sociodemographic variables or experience of these disorders. Nor has it been shown if placing responsibility for the management of the disorders internally or externally is of any importance for the outcome of physiotherapy or the rationales patients express regarding responsibility for musculoskeletal disorders. Thus, in the management of musculoskeletal disorders, exploring attitudes of responsibility for them could be of help for future strategies in the prevention, treatment and management of these disorders.

AIMS

The aim of this thesis was to develop an attitude instrument and explore attitudes of responsibility for musculoskeletal disorders; on who or what people in a general population placed responsibility for the management of musculoskeletal disorders, and whether attitudes could be related to background factors or to the outcome of a patient's physiotherapy treatment. A further aim was to investigate and describe patients' viewpoints regarding responsibility for musculoskeletal disorders.

The central aims were investigated in four separate studies with the following goals:

- Study I To develop and test an attitude instrument for the measurement of attitudes regarding responsibility for musculoskeletal disorders.
- Study II To describe a general population's attitudes towards responsibility for musculoskeletal disorders. The aim was also to investigate the relationship between attitudes regarding responsibility for musculoskeletal disorders and the background variables: - age, sex, education, physical activity, presence of musculoskeletal disorders, sick leave and visits to care providers.
- Study III In a clinical setting, discover whether patients' attitudes towards responsibility for musculoskeletal disorders were related to the patients' self-reported outcome of physiotherapy treatment. A further aim was to find out whether a patient's attitude was related to the main type of physiotherapy treatment.
- Study IV To describe patients' thoughts and reasoning regarding responsibility for musculoskeletal disorders.

MATERIALS AND METHODS

Design

The research questions and aims of the four studies included in this thesis required multiple methodological approaches. Generally the basis of the chosen methodologies was the question of research for each respective study. Mainly descriptive and associational designs have been used. For the purpose of developing the attitude instrument (Study I), psychometric methods were used; this involves the construction of instruments and procedures for the measurement, development and refinement of theoretical approaches to measurement. Statistics and psychological theories are integrated to result in empirical measurement (10). For the description and relationships of attitudes of responsibility for musculoskeletal disorders towards background factors and the outcome of physiotherapy treatment, a cross-sectional postal survey design was used (Study II, III). Finally, when the purpose was to study thoughts and reasoning, a qualitative methodology which included interviews was chosen (Study IV). Patton (110) states that the combination of quantitative and qualitative methods can be used to elucidate different aspects of interest. Study IV was judged to complement the other three by adding a wider variety of explanations and viewpoints on possible attitudes. An overview of research designs is given in Table 1.

Setting

The setting for this thesis was the Primary Care district of southern Bohuslän with 240.000 inhabitants, in the vicinity of Gothenburg (the second largest city in Sweden). The district consists of eight municipalities and has a mix of rural and urban districts, with some inhabitants commuting to the metropolitan area. To be eligible for the studies, participants had to be aged over 18. The first study included several subsettings within the area such as a larger company, physiotherapy units, department of home care and participants' homes but also included participants from other parts of Sweden for the panel of experts and known-groups comparisons. Study II included patients from the primary care district. To be eligible for Study III and Study IV the potential participants must have visited a physiotherapy unit within the area.

Table 1. Research design overview.

Study	I	II	III	IV
Design	Instrument development using psychometrics	Cross-sectional postal survey	Cross-sectional postal survey, retrospective	Explorative, descriptive
Setting	Participants' homes and physiotherapy units, department of home care, A larger company	General population	One physiotherapy unit	Mainly nearby a physiotherapy unit
Data collection	Interviews Questionnaire	Questionnaire	Questionnaire and medical chart	Semi-structured individual interviews
Participants	Interviews n=10 Panel of experts n=8 Pre-test n=5 Known-groups comparison n=29 Item analyses n=38	Random sample of 1082 (response rate 61%) Included in regression analyses n=683-693	Patients finished physiotherapy treatment within the last 6 months n=279 (response rate 45%)	20 people with musculoskeletal disorders
Analysis	(Content analysis), Spearman's correlation, Cronbach's alpha, Factor analysis, Non-parametric statistics	Descriptive statistics, inferential non-parametric and parametric statistics (binominal logistic regression)	Descriptive statistics, inferential non-parametric and parametric statistics (binominal logistic regression)	Qualitative content analysis

Participants

Study I, the instrument development, included five different samples of participants. 1) Ten people (six women, four men) aged between 18 and 90 were included for item generation interviews. 2) The panel of experts consisted of six physiotherapists (who were studying or had obtained at least a master's degree

in physiotherapy and were familiar with the concept of responsibility for musculoskeletal disorders) and three psychologists (who were experienced in instrument development and had obtained Ph.D. degrees), one epidemiologist and one statistician. 3) For pre-testing of the instrument, two men and three women aged 27 to 56 (mean 44.6) were included. Three people were outpatients at a physiotherapy clinic. Two were recruited from a department of home care. 4) One group of physiotherapists (12 females, 1 male, aged 30 to 56, mean 41.3 years) and one group of soccer players (16 males, aged 18 to 45, mean 24.6 years) were included for the test of construct validity of the instrument. 5) A group of 38 people (32 females, 6 males, aged 23 to 62, mean 42 years) was recruited from a department of a large company to test the extent of reliability, stability, and construct validity of the instrument.

In Study II 1082 participants were included from a random sample of one percent of the population in each of the eight municipalities (1770 people). The sample was extracted from the population registers using the SPSS statistical program (Statistical Package for the Social Sciences, Chicago IL) version 13.0 for Microsoft Windows. The inclusion of 1000 individuals is used as common practice in public opinion polls (111).

In Study III 278 patients were included from 647 eligible. The criteria for inclusion were patients suffering from musculoskeletal disorders primarily generated from the musculoskeletal system who had completed their physiotherapy treatment period within the last six months. A patient could only be included in the study once, thus patients who had restarted a treatment period were excluded. Similarly, patients with disorders not primarily generated in the musculoskeletal system, such as cancer generated pain, a pregnancy related disorder or neuromuscular disease, were also excluded.

For Study IV, to get a variation in age, sex and patients with different musculoskeletal disorders and experiences of treatment (110), a strategic sample of 20 people were recruited via physiotherapy outpatient clinics. Eleven women and nine men participated. Mean age was 52.3 years (range 25-78 years), six had compulsory education, nine high-school and five university education. Eight had been on sick leave at some point for a shorter or longer time during the last three months. The inclusion criteria were Swedish speaking and having or had musculoskeletal disorder primarily generated by the musculoskeletal system. The individuals were generally at the end of, or had finished their physiotherapy treatment period.

Instrument development (Study I)

In order to achieve the research aims it was necessary to develop an instrument for the measurement of attitudes toward responsibility for musculoskeletal

disorders. I have chosen to report the total process of this development, which resulted in a final instrument and evidence of reliability and validity. A figure of this development and testing is shown in Figure 2.

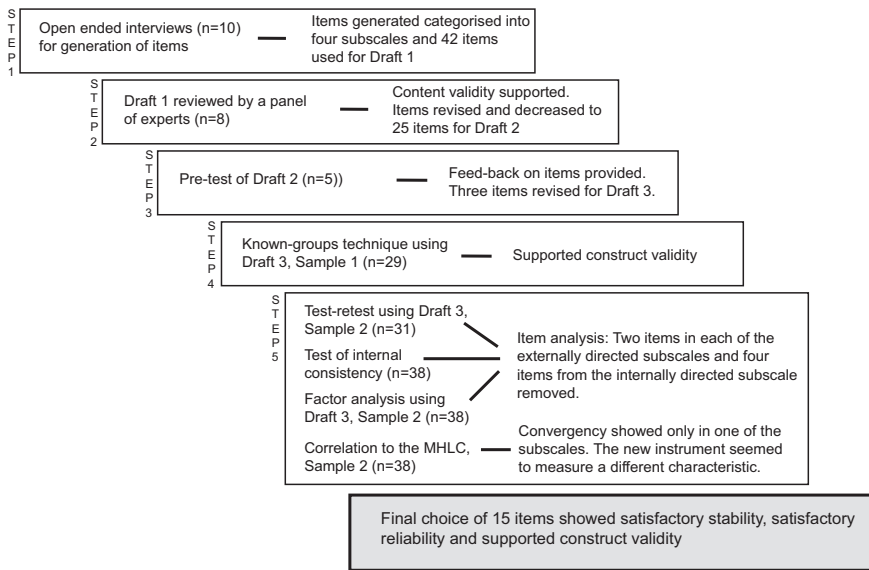


Figure 2. The steps of the instrument development

Step 1. An interview group was strategically selected to get a range in age, sex, and people with and without disorders from the musculoskeletal system. They were recruited through physiotherapy clinics, society connections, school, colleagues, and acquaintances. The interviewees were asked whether they currently or in the past had any musculoskeletal disorders, about their beliefs concerning the cause of the disorders and what they did when they had pain or disorders from the musculoskeletal system. They were asked whether they could do anything about the disorders themselves and if not who could help them, whether they had visited anyone to get help for their disorders during the last 12 months - and if they had, what kind of help they had received, who they believed was responsible for achievements and if anything had changed their view regarding musculoskeletal disorders. They were also asked whether they thought their musculoskeletal disorders were work related, who/what was responsible for preventing musculoskeletal disorders at work, and their reasons if they considered it possible to prevent musculoskeletal disorders. Finally they were asked who had the responsibility for preventing disorders and what taking personal responsibility for something such as lower back pain meant to

them. The interviews were approximately 30 minutes long and were audiotaped. The interviewer listened to the taped interviews and wrote down a total of 141 items generated from statements in the interviews. Items not concerning responsibility and musculoskeletal disorders were excluded, leaving 132 items. The items were categorized by the idea they expressed. Four major categories were revealed:

1. Responsibility Employer (RE), 20 items (e.g., "Only the employer can take the appropriate preventive measures to ensure that muscle and joint problems do not occur in the work place").
2. Responsibility (Medical) Professionals (R(M)P), 21 items (e.g., "If I experience back pain, I seek the advice of a physician or some other person until I find someone who can cure me").
3. Responsibility "out of my hands" (RO), 13 items (e.g., "I don't know any way to prevent discomfort in my muscles and joints").
4. Responsibility Self Active (RSA), 43 items (e.g., "If I experience pain somewhere, it is of course my responsibility to ensure that I get well").

If there were less than 10 items expressing the same or similar idea, it was not regarded as a major category and omitted. In the four major categories ambiguous items were excluded. If there were very similar items, one was chosen. Seven items from categories 1, 2, and 3, revealing external attitude and 21 items from category 4 revealing internal attitude regarding responsibility judged to be representative from each category, were chosen for the first draft of the new instrument; Attitudes regarding Responsibility for Musculoskeletal disorders (ARM), with a potential structure of four dimensions (RE, R(M)P, RO, RSA). The 42 items were put in a bowl and the order of the items in the new instrument was randomly selected. To each item a 6-point Likert-type scale scoring from 1 (strongly disagree) to 6 (strongly agree) was connected, revealing rank from internal to external view.

Step 2. The first draft of the Attitudes regarding Responsibility for Musculoskeletal disorders instrument with 42 items was then sent to a panel of experts for comments. The panel of experts found the items relevant to measure the required characteristic. Content validity was thus supported. The physiotherapy and psychology experts generally commented that there were too many items which were also too similar, an opinion shared by the epidemiologist especially in the dimension "Responsibility Self Active". The statistician found the questionnaire suitable for statistical analysis. Items commented upon were considered for revision; clarification or removal. Thus, Draft 2 of the instrument contained 25 items after revision. A balance of internal and external items was achieved by choosing 10 internally directed items (RSA) and five of each of the externally directed items (RO, R(M)P, RE).

Step 3. The pre-test was carried out to check the time required to answer the instrument, provide feedback, and whether the subjects understood the items or were reluctant to answer any questions and whether the questions yielded the required data. All five people had had some musculoskeletal discomfort during the last three months. The time required to answer the instrument ranged from 5 to 14 minutes (mean 8.8). The subjects all declared that they understood the questions and did not express any reluctance in answering any of them. Even so, for the next draft three items were slightly modified for clarity, Draft 3.

Step 4. Draft 3 was used for the test of construct validity using known-groups comparisons. One participant in each group was given a verbal and written explanation of the study and instructions on how to fill out the forms. They informed the rest of the group and distributed the instrument. The known-groups comparison for construct validity showed statistically significant differences (using Mann-Whitney's U-test), in all four dimensions of ARM between the attitudes of physiotherapists and soccer players, see Table 2. The hypothesis that physiotherapists have a more internal attitude than the group of soccer players was thus supported.

Table 2.
Results of known-groups technique (using Mann-Whitney's U-test) for each subscale of the Attitude instrument regarding Responsibility for Musculoskeletal disorders (ARM)

	Group of physiotherapists (n=13)			Group of soccerplayers (n=16)			Mann-Whitney U	P
	Median	Q ₁	Q ₃	Median	Q ₁	Q ₃		
RO¹	7	6	7	11	8	13	37.5	<.005
R(M)P²	9	5	9.5	16	14	17	11	<.001
RE³	10	8.5	12	14	11	18	45	<.010
RSA⁴	19	15.5	21	24	21	28	40	<.005

¹RO- Responsibility Out of my hands, minimum value 5, maximum value 30

²R(M)P- Responsibility Medical Professionals, minimum value 5, maximum value 30

³RE- Responsibility Employer, minimum value 5, maximum value 30

⁴RSA- Responsibility Self Active, minimum value 10, maximum value 60

Step 5. For the item analysis and establishment of extent of reliability, stability, and construct validity, Draft 3 of the instrument was administrated twice with a time interval of ten weeks. The first administration included Draft 3 of the newly developed instrument and the Multidimensional Health Locus of Control scale (2). When the questionnaire was administrated for the second time, the MHLC scale was omitted. Thirty-one individuals answered the questionnaire the second time and were included in the test-retest correlation. Item analysis of the items used in Draft 3 led to the removal of two items in each of the externally directed dimensions and four of the internally directed

items. The remaining 9 externally directed items, 3 in each of the dimensions “Responsibility Out of my hands”, “Responsibility (Medical) Professionals” and “Responsibility Employer” and the 6 remaining items in the dimension “Responsibility Self Active” constituted the final instrument. The internal consistency was calculated using Cronbach’s alpha, a correlation of .70 is generally accepted for attitudinal measures (112). The test-retest stability of the new instrument over time was calculated by Spearman’s correlation, it is reasonable to demand attitudinal stability greater than .50 (9) (see Table 3).

Table 3.

Reliability analysis of the Attitude regarding Responsibility for Musculoskeletal disorders instrument’s dimensions: internal consistency coefficient assessed with Cronbach’s alpha, test-retest correlation coefficient using Spearman’s correlation

	No. of item	Reliability		Test-retest stability		
		Cronbach's Alpha	n	r _s	N	P
RO ¹	3	.69	37	.742	30	<.001
R(M)P ²	3	.77	37	.795	30	<.001
RE ³	3	.85	38	.669	31	<.001
RSA ⁴	6	.70	36	.568	29	.001

¹RO- Responsibility Out of my hands

²R(M)P- Responsibility Medical Professionals

³RE- Responsibility Employer

⁴RSA- Responsibility Self Active

In order to explore the construct validity of the instrument factor analysis, principal component analysis with varimax rotation, eigenvalue at least 1 was used. The cut off point for item factor loading factor was .40. The 15-item instrument produced a factor analysis with five factors that explained over 76% of the total variance. The names of factors and items with factor loadings and the percentage of explained variance contributed by each factor are shown in Table 4. Factor 1 was explained by four items, dominated by all the three items from the “Responsibility Employer” dimension concerning employers’ responsibility but also included one from the “Responsibility Out of my hands” dimension. As a result, it was called “Employer dominated”. Factor 2 was explained by three items. They all originated from the “Responsibility (Medical) Professional dimension”. The content of these items reflects behaviours related to turning to somebody (a professional) in case of musculoskeletal disorders and Factor 2 was called “professional help dominated”. Factor 3 was identified with four items and consisted of all the three items from the “Responsibility Out of my hands” dimension. The “Responsibility Out of my hands” items deal with the conception that you can not affect disorders of the musculoskeletal system. It was entitled “out of my hands dominated”. Factor 4 included three items, all from the “Responsibility Self Active” dimension, which deal with the

conception of self active responsibility regarding musculoskeletal disorders. As a result, it was entitled “self active responsible dominated”. The fifth factor concerned future responsibility for the body and was called “future self-care dominated”. The hypothesis that the factor analysis would confirm the ARM’s dimensions and thereby confirm construct validity was essentially supported.

Table 4.

The result of the second factor analysis of the 15 items of ARM: Principal Component Analysis with Varimax rotation (n=38). Name of factors and items with factor loadings, percentage of explained variance contributed by each factor

Item dimension and number	Factor 1 Employer dominated	Factor 2 Professional help dominated	Factor 3 Nothing to do dominated	Factor 4 Self active responsible dominated	Factor 5 Future self care dominated
RE6 (later nr 2)	.777				
RE21 (later nr 11)	.911				
RE25 (later nr 15)	.836				
R(M)P15 (later nr 9)		.882			
R(M)P16 (later nr 10)		.923			
R(M)P24 (later nr 14)		.589			
RO3 (later nr 1)			.532		
RO9 (later nr 4)			.869		
RO23 (later nr 13)	.667		.458		
RSA8 (later nr 3)				.614	
RSA10 (later nr 5)				.642	
RSA13 (later nr 7)				.803	
RSA14 (later nr 8)					.903
RSA22 (later nr 12)					.892
RSA11 (later nr 6)			-.706		
% of total variance	29.438	17.730	13.288	8.616	6.749

RE- Responsibility Employer

R(M)P- Responsibility Medical Professionals

RO- Responsibility Out of my hands

RSA- Responsibility Self Active

For divergent (discriminant) validity, the ARM’s dimensions (RE, R(M)P, RO, RSA) were tested for correlation to the MHLC’s subscales (CHLC, PHLC, IHLC), Spearman’s correlation was used. The hypothesis was that there would be an association between the ARM’s dimension “Responsibility Out of my hands” and MHLC’s subscale Chance Health Locus of Control; the ARM’s dimensions “Responsibility (Medical) Professionals” as well as “Responsibility Employer” and MHLC’s Powerful others Health Locus of Control; and finally between the ARM’s dimension “Responsibility Self Active and MHLC’s subscale Internal Health Locus of Control. Spearman’s correlation of hypothesized ARM’s dimensions and MHLC’s subscales (n=38) did not show convergency except for the ARM dimension “Responsibility Employer” and the MHLC subscale “Powerful others Health Locus of Control” ($r_s=.495$, $p=.002$),

which might reflect that in these subscales there was a similar underlying phenomenon. However, the new instrument seemed to measure a different characteristic.

The final version of the ARM instrument now consisted of 15 items on four dimensions: - six items attribute responsibility to self; the dimension entitled "Responsibility Self Active", three items attribute "responsibility to be out of my hands", three items attribute "responsibility to employers" and three items attribute "responsibility to (medical) professionals". Each item is rated on a six-point Likert-type scale from 1 (strongly disagree) to 6 (strongly agree). In calculating the scores, internal items (the items of the "Responsibility Self Active dimension) were reversed, thus expressing degrees of externality by increasing scores (possible range of "Responsibility Self Active" 6-36, of "Responsibility Out of my hands", "Responsibility Employer" and "Responsibility (Medical) Professionals" 3-18) (1).

Data collection (Studies II-IV)

A flow-chart of the data collection for Studies II-IV is presented in Figure 3.

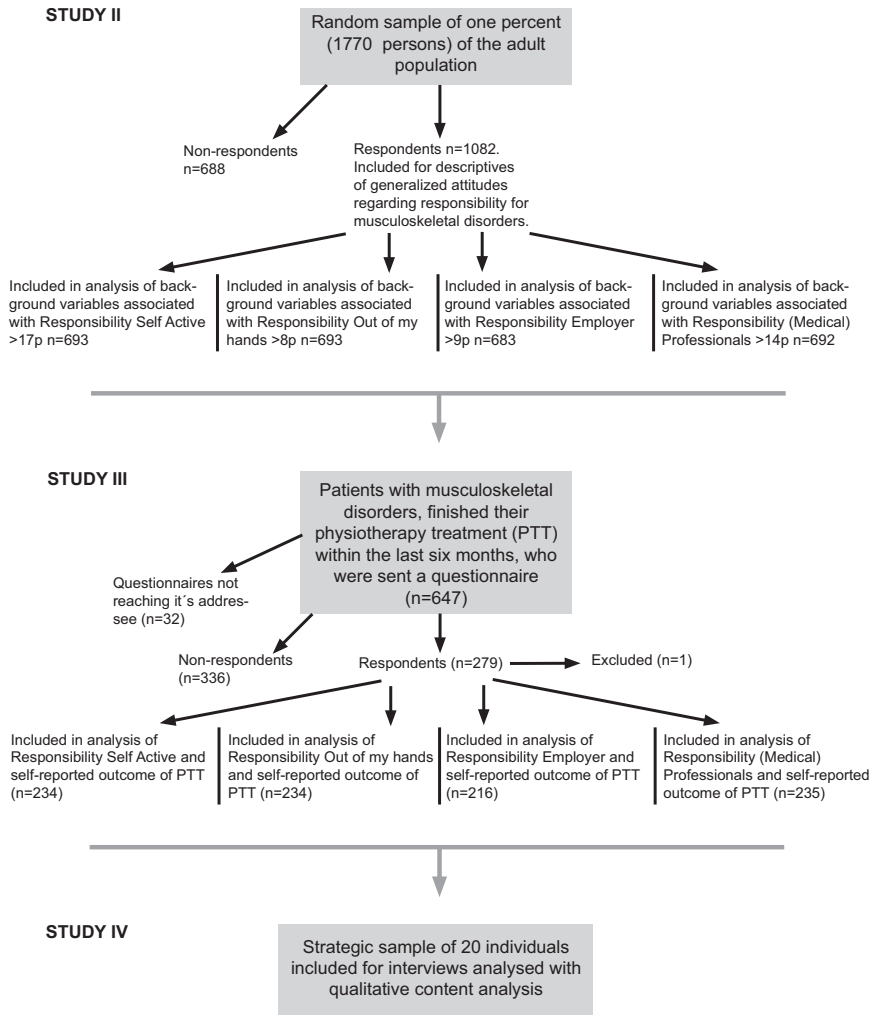


Figure 3. Flowchart of the data collection for Studies II-IV.

For investigating attitudes of responsibility for musculoskeletal disorders and associations to background variables (Study II)

The participants were mailed written information, a questionnaire and a stamped self-addressed envelope. Part one of the questionnaire contained the new attitude instrument regarding responsibility for musculoskeletal disorders (ARM) (1). Part two included questions on background variables; age, sex, education, physical activity musculoskeletal disorders, sick leave and visits to care providers. The questionnaires were uncoded and thus answered anonymously, and one reminder including the full questionnaire was sent to all the participants after seven weeks. Respondents consented to participate by returning the completed questionnaire. Questionnaires were received from 1082 persons (61%) of the sample. Approximately 690 individuals could be included for analyses to background variables (see Figure 3). Age ranged from 18 to 99 years old, with a mean of 50 years (sd 16).

For investigating patient responsibility for managing musculoskeletal disorders and the relationship to self-reported better outcome of physiotherapy treatment (Study III)

On three occasions during a two-year period (2005-2007), patients from an outpatient physiotherapy clinic in primary care were sent a questionnaire. Participants were mailed written information about the study, the questionnaire and a stamped self-addressed envelope. The questionnaire included the ARM instrument (1) and self-assessment on the outcome of physiotherapy treatment stated on the global outcome scale. Data collection also included social-demographic variables; age, sex, education and physical activity. One reminder was sent out after approximately four weeks to those who had not yet answered the questionnaire. Thirty-two questionnaires were returned without reaching the correct addressees, giving a total of 615 possible respondents. A total of 279 (45%) completed forms were returned, and one was excluded on the grounds of the exclusion criteria. Treatment related variables such as the number of treatments, main treatment categorized as active (home-based programs, ergonomic advise etc.), active-led (supervised rehabilitation programs) and passive (acupuncture, massage, hot-pack etc), and the consulting physiotherapists were excerpted from the respondents' medical chart.

For the exploration of viewpoints regarding responsibility for musculoskeletal disorders (Study IV)

For collection of data for the qualitative study, the patients - after a verbal request to participate from their physiotherapist - were given a letter with information on the study. If they were interested in participating in an interview, their physiotherapist provided the researcher with their name and phone number. The researcher then contacted the patient by phone with a

request to participate in the study. Before the interview started, the participants were again informed about the study and told they could withdraw at any time. They were also given the opportunity to pose questions. They then gave their informed consent and were assured confidentiality. The note with name and phone number was destroyed after the interview meaning they could not be connected to the informant's identity. None of the informants declined and all participated in the study.

Three pilot interviews were conducted in October 2007, the rest of the interviews were conducted in April to July 2008. As the pilot interviews did not differ significantly, they were included in the study. The last six interviews did not appear to provide much new information and the data collection was therefore ended. As requested by the interviewees, 17 interviews took place at a location near the physiotherapy department where they had been patients; one interview was performed at the university where the interviewer worked, one at the interviewee's workplace and one by telephone interview. Three were immigrants, one from another Nordic country, one from the Baltic States and one from the Middle East. Semi structured interviews were performed with each of the informants individually. An interview guide was used.

To gain information about their thoughts and reasoning regarding responsibility for the musculoskeletal disorder, they were asked to discuss their recent experience of musculoskeletal disorders. The first question was followed by open questions on how they thought the disorder started, their beliefs on the cause of the disorder, their treatment, to whom they turned for help and why, and finally their management and prevention of the disorders. In the latter part of the interview, the informants were also asked explicitly about their thoughts and reasoning on responsibility for prevention, treatment and management of the disorder. The interviews were tape-recorded and transcribed verbatim by the first author and had an mean interview time of 42 minutes (19 min - 1 h 18 min).

Measured variables (Studies II-IV)

The Attitude instrument regarding Responsibility for Musculoskeletal disorders (ARM)

The final 15-item version as described on page 41 was used (1).

Background variables

Education was categorised as university, high school, compulsory school or "other" level which included adult education programs and vocational training.

Regarding physical activity/exercise (walking, swimming, sports) the participants were asked to describe their activity on a four-graded scale;

Perform at least 3 times/week, Perform 1-2 times/week, Perform now and then and Perform none or very little.

Musculoskeletal disorders during the last three months were stated using a yes/no format of check boxes for nine locations of the body.

Sick leave implied more than seven days during the previous 12 months that required a doctor's certificate (yes/no format) with additional check boxes for the reason of sick leave; infection (flu, virus and similar), musculoskeletal disorder, mental related disorder (depression, mentally illness or similar) and internal medicine related (gastric ulcer, myocardial infarct or similar).

Visits to care providers were reported for the last three months also using check boxes providing six different care providers; physician, chiropractor, physiotherapist, naprapath, homeopath, zone therapist.

Treatment related variables

Main treatment was categorized as active (home-based programs, ergonomic advise etc.), active-led (supervised rehabilitation programs) and passive (acupuncture, massage, hot-pack, manipulation etc).

Physiotherapists were coded individually. Those physiotherapist treating less than 10 patients each during the period were joined to one parameter.

Number of physiotherapy treatments.

Global outcome scale

The global outcome scale is operationalized into five levels: 1= delayed deterioration, 2= retained functional ability, 3= to some extent increased functional ability, 4= considerably increased functional ability and 5= adequate functional ability/no discomfort. This global scale has the same wording on the five levels as the Swedish goal attainment scale developed in Swedish by the JAAMIS group in Stockholm (113).

Data analyses (Studies II-IV)

Statistical methods

Data were analysed using the SPSS (Statistical Package for the Social Sciences, Chicago IL) version 13.0-16.0 for Microsoft Windows.

Study II

Descriptive statistics were used to describe participants' general attitudes towards responsibility for musculoskeletal disorders in the four dimensions of,

“Responsibility Self Active”, “Responsibility Out of my hands”, “Responsibility Employer” and “Responsibility (Medical) Professionals”.

Binary multiple logistic regression analyses were used to test for associations. Associations were expressed as odds ratios (OR) with 95% confidence intervals (95% CI). For the analyses of association between attitudes towards musculoskeletal disorders and background variables; age, sex, education, physical activity, musculoskeletal disorders, sick leave and visits to care providers, multiple logistic regression analyses with stepwise, backward removal of covariates (Wald) on the .10 level were used. Separate analyses were made for each of the four dimensions of ARM as the dependent variable. The sample’s upper quartile for the dimension was chosen as the cut-off score: “Responsibility Self Active” ≥ 17 p, “Responsibility Out of my hands” ≥ 8 p, “Responsibility Employer” ≥ 9 p and “Responsibility (Medical) Professionals” ≥ 14 p. Thus the outcome was determined by the 25% with the most external attitude. We assumed that 1000 participants would answer the questionnaire and $\geq 10\%$ difference in proportion in the nominal outcome variable was judged clinically relevant. The table below (Table 5) shows the power for different scenarios:

Table 5. Power for different scenarios of proportions of the independent variable (i.e. presence of musculoskeletal disorders) in the dependent variable (most external attitude)

n	p1	p2	p2-p1	zb	power
1000	0.45	0.2000	-0.2500	4.82413	1.00000
1000	0.40	0.2125	-0.1875	3.20743	0.99933
1000	0.35	0.2250	-0.1250	1.57276	0.94211
1000	0.33	0.2300	-0.1000	0.90330	0.81682
1000	0.32	0.2325	-0.0875	0.56351	0.71346
1000	0.30	0.2375	-0.0625	-0.12865	0.44882
1000	0.25	0.2500	0.0000	-1.96000	0.02500
1000	0.20	0.2625	0.0625	-0.14238	0.44339
1000	0.18	0.2675	0.0875	0.65081	0.74242
1000	0.17	0.2700	0.1000	1.06649	0.85690
1000	0.15	0.2750	0.1250	1.94453	0.97408
1000	0.10	0.2875	0.1875	4.53129	1.00000
1000	0.05	0.3000	0.2500	8.17971	1.00000

We see that the assumed difference of 10% between P₁ and P₂ yields a power larger than 0.8 for 1000 participants, and it could be proven to be significant with less participants.

The models were also controlled for interactional effects between the musculoskeletal disorders variable and each of the other background variables in all four dimensions.

Study III

For the analyses of relationship of attitudes regarding responsibility for musculoskeletal disorders and self-reported outcome of physiotherapy

treatment, binary multiple logistic regression analyses were used to test for associations. Associations were expressed as odds ratios (OR) with 95% confidence intervals (95% CI). Each dimension of ARM divided by quartiles was entered separately into the logistic regression as the first independent variable in the first block (Enter method). To control for age, sex, education and physical activity, these independent variables were entered stepwise forward (Wald) in block two. To control for treatment related variables, numbers of treatments, main treatment and treating physiotherapist these were entered as independent variables stepwise forward (Wald) in block three. The patient's self-reported outcome assessed as 4 (considerably increased functional ability) on the global outcome scale was used as the cut-off for "better outcome" of physiotherapy treatment.

Comparing the proportions of "better outcome" among those in the 1st, 2nd and 3rd quartile (p2) of the dimension Self Active Responsibility with those in the 4th quartile (p1) showed that there was enough power to show a difference of 30% and more but not enough for a difference of 13% (see Table 6). However, combining internal attitude (quartile 1-3) and comparing with the least internal attitude (quartile 4) a difference of 29% can easily be shown (Table 6).

Table 6. Comparison of the proportions of "better outcome" among those in the 1st, 2nd and 3rd quartile (p2) of Self Active Responsibility with those in the 4th quartile (p1)

quartiles	p2	p1	n	p2-p1	zb	power
1 vs. 4	0.716	0.385	126	0.331	1.82469	0.96598
2 vs. 4	0.813	0.385	116	0.428	3.00924	0.99869
3 vs. 4	0.515	0.385	120	0.130	-0.55035	0.29104
1-3 vs.4	0.680	0.385	258	0.295	1.96796	0.97546

To test whether attitudes towards responsibility for musculoskeletal disorders, the dimensions of ARM (Study III), divided by quartiles were associated with the main physiotherapy treatment which was, categorized as active, active-led and passive using chi-square test.

To test for statistical significant differences between two groups (i.e. internal missing, Study II or between respondents and non-respondents, Study III) the t-test was used for data on ratio or interval level data, Mann-Whitney U-test for data on ordinal level and chi-square where the data was included on the nominal level. The significance level was set at $p < 0.05$.

Qualitative analysis

A qualitative content analysis (114) was used for Study IV. Content analysis is described as an empirically grounded method, exploratory in process and predictive or inferential in intent (115). Content analysis entails a systematic

reading and is a research technique for making replicable and valid inferences from texts to the contexts of their use. Content analysis is a scientific tool that can provide new insights, increase a researcher's understanding of phenomena or informs of practical actions (115).

The unit of analysis in this thesis (Study IV) was a transcribed interview. Each interview was read through several times bearing in mind the aim of the study, in order to get a sense of the content. An inductive approach was taken in the analysis. The data were systematically analysed for meaning units which were condensed and then coded (114). In these stages the analysis stayed close to the data. When the whole unit of analysis was coded a categorisation procedure started. Sub-categories were formed through a group of codes with similar content and identified by the thread throughout the codes. The sub-categories were then sorted and separated into categories (114). Finally a theme is presented linking the underlying meanings of the categories. A computer program, Nvivo 8 (QSR International Pty Ltd), was used to sort the interviews and quotations. A co-author, with a different occupation (nurse) who had more experience in the method but less in the field, read the transcripts of interviews checking the codes and categories noted by the first author which were then discussed until a consensus was reached. A third co-author who also had a different background (psychologist), checked the content conformity of the categories.

Ethical considerations

Ethical considerations followed the ethical principles for medical research involving human subjects of the World Medical Association's Declaration of Helsinki, originally from 1964 and last updated in Seoul in October 2008.

The research was conducted to understand more about musculoskeletal disorders and to gain knowledge for improvement of preventive and therapeutic interventions as described in the declarations' 7§. This thesis mainly had a descriptive design and the research included no physical procedures or interventions, nor any attempts to influence the participants' attitudes. However, one can not be certain that the research will leave the participants unaffected. Considerations were taken if anything in the studies might threaten the participants' health or well-being and if the research was in the best interest of the participants. We concluded that the research was not likely to cause any harm to the participants. The time and effort it took the participants to fill out questionnaires and participate in interviews was regarded to be outweighed by the possible benefits to other individuals with similar conditions and also to the participants in the event of a disorder re-occurring.

To protect the privacy of the participants, for confidentiality of personal information and in respect to personal integrity we endeavoured to keep the participants identity hidden. This was the reason for not coding the participants in Study II, so that answers could not be traced to the informant. The disadvantage of this was not knowing who had answered the questionnaire and who had not. This led to reminders being sent out to everyone which could be an annoyance to those who had already answered the questionnaire. Another concern was questions being perceived as normative. Instructions explicitly stated that there was no “right” or “wrong” answer to the questions but that the individual’s opinion was valued. In Study III anonymity was not possible as treatment related variables from the medical chart were included. All data was coded and the code list and all data material were kept locked separately. The participants were also assured that only those authorised would have access to the data. However, as the researcher was not involved in the treatment of the patients and patients were assured that the treating physiotherapist had no access to their responses or whether they had responded at all, it would have no effect on future contacts with the clinic. This was also the case for the interview study.

All participants in this thesis were informed of the studies’ aims, methods, anticipated benefits and that it posed no potential risks. The individuals participated voluntary and were informed that they could withdraw at any time without any consequences. They have all given their informed consent.

Studies I-III were approved by the Ethics Committee of University of Gothenburg. Study I, Dnr L 265-99, approved 1999-10-06. Study II: Dnr Ö 592-99, approved 2000-02-17, amendment T 239-03, approved 2003-05-21. Study III: Dnr Ö 264-03, approved 2003-08-26, amendment T 616-07, approved 2007-10-15. For Study IV, Dnr 289-08, the local Research Ethical Board was consulted prior to the study. They had no objections to the study and performed a counselling statement as formal ethical approval was deemed unnecessary according to Swedish law.

RESULTS

The results summarized include the results from Studies II-IV. In a sample of a general population, most people express an attitude of adopting personal responsibility in the management of musculoskeletal disorders. This result is refined by knowledge of background variables. There is a possible relationship between attitude towards self-responsibility and a self-reported considerable improvement as the outcome of physiotherapy. The needs of individuals have to be met by society, health care and employer for a more effective prevention, treatment and management of musculoskeletal disorder.

Attitudes of responsibility for managing musculoskeletal disorders (Study II)

Generalized attitudes regarding responsibility for musculoskeletal disorders

A majority of the respondents showed internal views of responsibility for musculoskeletal disorders and did not consider responsibility to be out of their hands or on employers to any great extent (Figure 4-6). There was no statistical significant difference between the eight included municipalities.

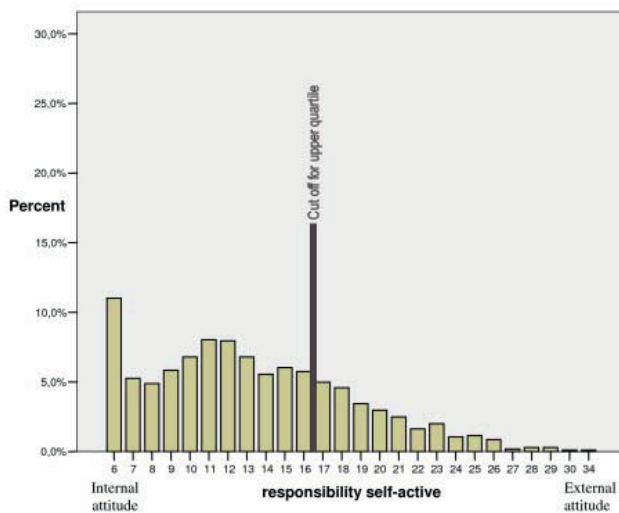


Figure 4. Distribution of participants' scores in the "Responsibility Self Active" (n=1045) dimension given in percent.

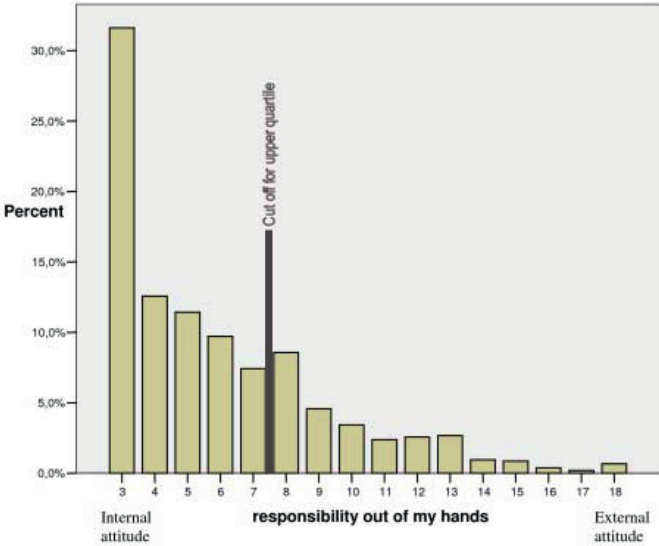


Figure 5 Distribution of participants' scores in the "Responsibility Out of my hands" (n=1050) dimension given in percent.

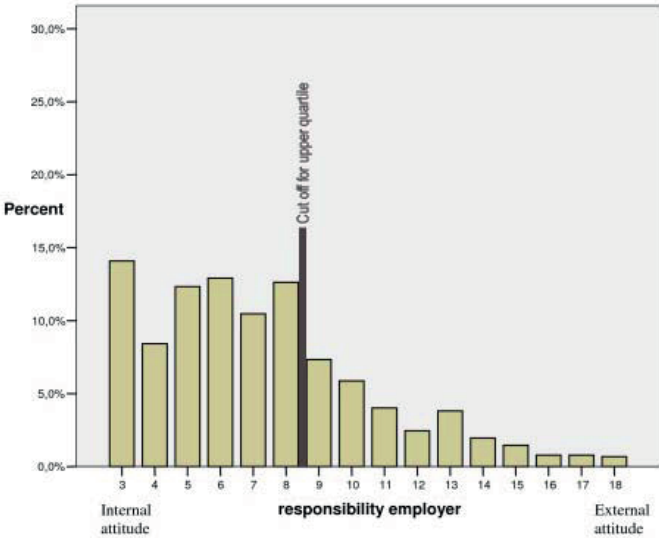


Figure 6. Distribution of participants' scores in the Responsibility Employer (n=1022) dimension given in percent.

On the “Responsibility Medical Professionals” dimension, a more equal distribution was seen, which implied shared responsibility between the individual and medical professionals (Figure 7).

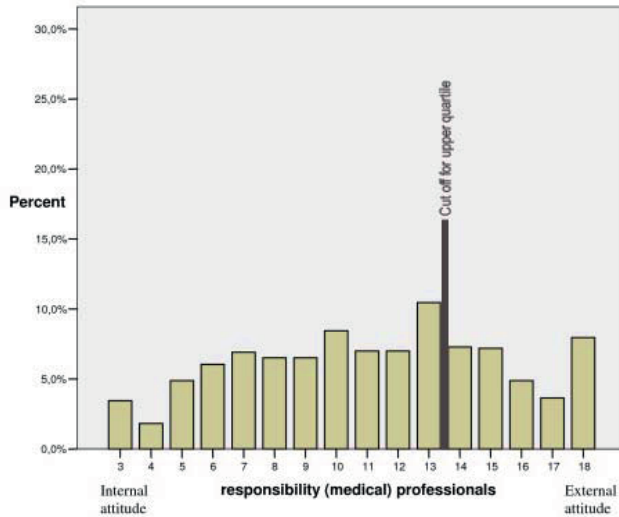


Figure 7. Distribution of participants' scores in the "Responsibility (Medical) Professionals" dimension given in percent (n=1043).

Associations between attitudes towards responsibility for musculoskeletal disorders and background variables

Being physically inactive, the presence of musculoskeletal disorders and related sick leave were strongly associated with the most external attitude in the “Responsibility Self Active” dimension (Table 7, 1st column), implying attitudes not considering oneself to have an active role in the management of musculoskeletal disorders. The external attitude associated with being physically inactive and musculoskeletal disorder related sick leave was also reflected by the “Responsibility to be Out of my hands” dimension (Table 7, 2nd column).

Table 7. Multiple logistic regression of association of background variables with the four dimensions of Attitudes regarding Responsibility for Musculoskeletal disorders (ARM).

The dependant value was scoring in the upper quartile of the population, thus belonging to the group of people (25%) with the **most external attitude**. Significant associations are in bold type.

Variable	Dimension							
	“Responsibility Self Active” (RSA) ≥ 17 p Included in analysis n=693		“Responsibility Out of my hands” (RO) ≥ 8 p Included in analysis n=693		“Responsibility Employer” (RE) ≥ 9 p Included in analysis n=683		“Responsibility Medical Professionals” (R(M)P) ≥ 14 p Included in analysis n=692	
	OR	CI (95%)	OR	CI (95%)	OR	CI (95%)	OR	CI (95%)
Age (years old)								
18-40 (ref)	1.00		1.00		1.00		1.00	
41-64	.73	.49; 1.08	.73	.47; 1.14	.49	.32; .74	1.09	.71; 1.69
≥65	.43	.22; .83	1.26	.69; 2.28	.80	.44; 1.44	2.49	1.41; 4.40
Gender	ns		ns				ns	
Male (ref)					1.00			
Female					1.49	1.03; 2.16		
Education	ns							
University (ref)			1.00		1.00		1.00	
Compulsory school			4.10	2.35; 7.15	3.12	1.81; 5.40	4.76	2.73; 8.29
High school			1.30	.81; 2.11	1.25	.81; 1.95	2.15	1.34; 3.47
Other			1.93	.93; 3.98	1.94	.98; 3.88	3.30	1.67; 6.55
Physical activity					ns		ns	
Perform at least 3 times/week (ref)	1.00		1.00					
Perform 1-2 times/week	2.66	1.58; 4.49	1.13	.70; 1.82				
Perform now and then	6.44	3.81; 10.89	1.57	.96; 2.57				
Perform none or very little	9.20	4.58; 18.50	2.92	1.50; 5.69				
Presence of musculoskeletal disorders (MSD)			ns					
No musculoskeletal disorders (ref)	1.00				1.00		1.00	
Suffered from musculoskeletal disorders	2.78	1.58; 4.89			.66	.43; 1.01	.42	.27; .65
Sick leave							ns	
No sick leave (ref)	1.00		1.00		1.00			
Sick leave but not for MSD	1.44	.78; 2.65	1.27	.66; 2.43	1.78	.99; 3.22		
MSD related sick leave	2.55	1.18; 5.48	2.31	1.08; 4.91	3.07	1.48; 6.39		
Visits to care provider	ns		ns		ns			
No visits (ref)							1.00	
Visited							2.07	1.40; 3.05

Female sex, having compulsory school education and musculoskeletal disorder related sick leave were associated with placing responsibility on the employer. Being middle-aged, on the other hand, had a negative association with placing responsibility on the employer (Table 7, 3rd column).

Have reached retirement age, visited a care provider and having less than university education, at least doubled the odds of placing responsibility externally on medical professionals. The presence of musculoskeletal disorders, on the other hand, decreased the odds of being amongst those with the most external attitudes (Table 7, 4th column).

One significant interactional effect with musculoskeletal disorder was found (marked with italics); In the "Responsibility Out of my hands" dimension we found that a lower level of education showed a strong positive association with externality among those with musculoskeletal disorders, in contrast to those without musculoskeletal disorders. A stratified analysis showed that in the group with musculoskeletal disorders (n=552) OR's amongst those with the most external attitude equalled 5.57, 1.38 and 2.46 for compulsory, high school and other education compared to university education ($p < .001$, .27, .03). The corresponding OR's for those without musculoskeletal disorders (n=141) are given as .76, .84, .55 ($p > 0.5$).

Internal missing data

Multiple logistic regression deals only with completed forms. If data were missing in any variable, the individual was excluded. The two background factors - musculoskeletal disorders and visited care provider - were responsible for 28% out of the 36% respondents missing and thereby dramatically reduced the number of individuals, leaving approximately 690 cases for the analyses of associations. If these two variables were excluded from the multiple logistic regressions, which gave rise to a larger sample (n=994), the remaining variables still showed similar associations with the outcome. There were no statistically significant differences in the overall presence of musculoskeletal disorders and visited care provider between those included in the regression analyses, complete respondents, n=693, and those not included in the analyses, partial respondents, (presence of musculoskeletal disorders, n=96, p=.37; visited care provider n=173, p=.72). More women than men were among the partial (missing) respondents (p=.003). The partial respondents were somewhat older (p<.001), less educated (p<.001), less physically active (p<.01) and more likely to be on sick leave (p<.001). They also had more external attitudes in the dimensions "Responsibility Out of my hands", "Responsibility Employer" and "Responsibility Medical Professionals" (p<.001).

External missing data

As the respondents were anonymous, no description and comparison of non-respondents (external missing analysis) could be made, although the collected sample was compared to municipal and national data for sex, age and education [Statistics Sweden], sick leave [Swedish social insurance agency], presence of musculoskeletal disorders and physical activity [Life and Health 2003, Region Västra Götaland] (Table 8). The collected sample was somewhat over-represented in the "middle-aged" group.

Table 8.

Descriptions of the present sample's background variables and comparative statistics of South Bohuslän and Swedish national data (n = 1082).

	Present sample	South Bohuslän	National
Sex			
• Women	51%	50% ¹	50.5% ¹
• Men	49%	50% ¹	49.5% ¹
Age (year)			
• 18-44	38%	46% ¹	45% ¹
• 45-64	43%	35% ¹	33% ¹
• 65+	19%	19% ¹	22% ¹
Education			
• Compulsory	20%	18% ¹	19% ¹
• High school + other	47%	49% ¹	48% ¹
• University	32%	32% ¹	31% ¹
• Missing	1%		
Physical activity			
• Perform at least 3 times/week	33%		*
• Perform 1-2 times/week	31%		
• Perform now and then	24%	30% ^a	
• Perform none or very little	10%	30% ^a	
• Missing	2%		
Sick leave			
• Sick leave total	17%	13-17%, mean 15% ²	15% ²
• MSD related sick leave	7%	* ³	* ³
• Missing	4%		
Presence of musculoskeletal disorders (MSD)			
• No musculoskeletal disorders	15%		*
• Suffered from musculoskeletal disorders	59%	47-56% (7 out of 8 municipalities) ³	
• Missing	26%		
Visits to care provider			
• No visits	53%		*
• Visited	28%	39-46% (7 out of 8 municipalities) ³	
• Missing	19%		

¹[Statistics Sweden] ²[Swedish social insurance agency] ³[Swedish social insurance agency] Diagnosis was not registered the investigated period. ^a[Life and Health 2003, Region Västra Götaland] *Regional survey report, not statistics* *no comparative data available

Relationship of patient responsibility and self reported outcome of physiotherapy treatment (Study III)

A relationship was found between the attitude of placing responsibility on oneself for managing musculoskeletal disorders and a self-reported considerable improvement as the outcome of physiotherapy in three out of the four dimensions of the ARM.

Patients who belonged to the first two quartiles, expressing a more internal attitude in the dimensions "Responsibility Self Active" (Table 9a) and "Responsibility Out of my hands" (Table 9b) had a higher probability of reporting a considerable improvement from physiotherapy treatment.

Table 9a. Binary multiple logistic regression of associations of the dimension "Responsibility Self Active" to self-reported outcome of physiotherapy treatment. The cut-off for the dependent variable of self-reported outcome was defined as considerable improvement on the global outcome scale. Significant associations are in bold type.

	Considerable improvement according to self-assessment in the questionnaire		
	OR	95% CI	
		Lower	Upper
Responsibility Self Active n=234			
First quartile	4.96	2.13	11.54
Second quartile	7.69	3.00	19.68
Third quartile	1.76	.78	3.96
Fourth quartile (most external attitude) ref	1.00		
<i>Step 1 Age</i>	.96	.94	.98

Table 9b. Binary multiple logistic regression of associations between the dimension "Responsibility Out of my hands" and self-reported outcome of physiotherapy treatment. The cut-off for the dependent variable of self-reported outcome was defined as considerable improvement on the global outcome scale. Significant associations are in bold type.

	Considerable improvement according to self-assessment in the questionnaire		
	OR	95% CI	
		Lower	Upper
Responsibility Out of my hands (RO) n=234			
First quartile	4.44	1.92	10.24
Second quartile	2.76	1.14	6.69
Third quartile	1.63	.70	3.78
Fourth quartile (most external attitude) ref	1.00		
<i>Step 1 Age</i>	.96	.94	.98

There was two to three times increased probability of reporting considerable improvement as outcome of physiotherapy among those who did not belong to the group with the most external attitude in the “Responsibility Employer” dimension, Table 9c.

Table 9c. Binary multiple logistic regression of associations between the dimension “Responsibility Employer” and self-reported outcome of physiotherapy treatment. The cut-off for the dependent variable of self-reported outcome was defined as considerable improvement on the global outcome scale. Significant associations are in bold type.

	Considerable improvement according to self-assessment in the questionnaire		
	OR	95% CI	
		Lower	Upper
Responsibility Employer n=216			
First quartile	2.81	1.17	6.71
Second quartile	2.95	1.22	7.11
Third quartile	2.37	1.02	5.51
Fourth quartile (most external attitude) ref	1.00		
<i>Step 1 Age</i>	.96	.94	.98

Lower age was also associated with considerable improvement (Table 9a-c).

No statistically significant association was found (using the chi square test n=232-255, df=6 $\chi^2=3.60-9.82$ p=0.13-0.73) between the four dimensions of attitudes towards responsibility for musculoskeletal disorders divided by quartiles and type of main physiotherapy treatment defined as active, active-led and passive.

Viewpoints of responsibility for management of musculoskeletal disorders (Study IV)

From the interviews, an overarching theme was identified: OWN RESPONSIBILITY NEEDS TO BE MET; No matter how the responsibilities are expressed, own responsibility needs to be met by society, health care, employers and family, and met in a proper way, with as much or as little of the “correct type” of support needed, and based on the individuals’ expectations.

The analysis revealed six interrelated categories about responsibility for managing musculoskeletal disorders: *Taking on responsibility, Ambiguity about responsibility, Collaborating responsibility, Complying with recommendations, Disclaiming responsibility, Responsibility irrelevant.*

- Taking on responsibility

Taking on responsibility means that no matter what disorders you might have, they are your responsibility. Only you can take on responsibility for the disorders. It is your own responsibility to seek help from health care and be persistent in getting the help you think you might need. You also have to be persistent in attaining treatment be responsible for the result. Self-treatment is also used. Physical activity is seen as beneficial for mental well-being and there is a belief that disorders are managed more effectively if you are physically fit. Good self-knowledge is stressed as important to manage the disorders and different strategies can be used to balance them and your life. The prevention of recurrences is your personal responsibility.

- Ambiguity about responsibility

Ambiguity in the reasoning about responsibility for musculoskeletal disorders means that you think that it is your own responsibility to manage musculoskeletal disorders however at the same time you also feel that work demands precede the management. Ambiguity can also mean failing to take measures which you know are necessary.

- Collaborating responsibility

Collaborating responsibility means that the responsibility for managing musculoskeletal disorders is a collaborative process with others. There is a societal responsibility to keep people active and working but also a responsibility for the individual as a member of society to look after oneself. Society should also provide accessibility for better self-care. Health care must provide necessary prerequisites, correct referral processes and availability, as it is essential for the management of disorders. Involvement from the workplace is stressed as important for prevention of musculoskeletal disorders as well as their management when disorders have occurred. Family support is also important.

- Complying with recommendations

Complying with recommendations means adopting responsibility by actively following advice and recommendations. Society should give information, teach ergonomics and provide information about, as well as give opportunities for physical activity. Health care should provide guidance to politicians as well as to the general public on how to best manage musculoskeletal disorders. Once you have a disorder, recommendations have to be followed. You must then persist in getting relief from the disorder until relief is achieved. There is also a parental responsibility to ensure that children follow advice for a healthy lifestyle.

- Disclaiming responsibility

This category expresses the idea that management of musculoskeletal disorders consists of receiving treatment. You expect to be given help and treatment to remedy the disorder and disclaim personal responsibility. Medical professionals have responsibility in managing the disorders as they have knowledge and expertise, which instills confidence. The medical professionals are thereby also responsible for the result of treatment and if recovery fails, dissatisfaction with them may occur.

- Responsibility irrelevant

When responsibility is seen as irrelevant it relates to the belief that musculoskeletal disorders are due to biological processes such as hereditary and wear and tear of the body. Only some people have a predisposition for musculoskeletal disorder. It is not possible to prevent disorders as it is not known what type of disorders may be sustained.

Core story

The responsibility for prevention of musculoskeletal disorders lies primarily on society/authorities as they have knowledge of what to prevent and how it may be prevented. When musculoskeletal disorders have occurred, health care should provide fast accessibility, diagnosis, prognosis and support for recovery. For long-term management, the individuals thought that they themselves were responsible to make the best out of life despite disorders.

In Table 10 are the subcategories of the categories presented. The subcategories and categories could be structured on a scaling from active (at the left end) to passive (at the right end) style in thoughts and reasoning of responsibility for musculoskeletal disorders as well as on a structural level (Society, Health Care, Family, Employer/Work, Individual). Sub-categories defining responsibility in regard to prevention, treatment or maintaining are colour marked: green for prevention, yellow for treatment and red for maintaining/managing of musculoskeletal disorders.

Table 10. Description of categories, subcategories and core story in relation to structural level.

OWN RESPONSIBILITY NEEDS TO BE MET						Structural level
Taking on	Ambiguous	Collaborating	Complying	Disclaiming	Irrelevant	
		- Need for keeping people active and in work - Accessibility needed	- Provision of exercise, ergonomics, information needed			Society
- Seeking expertise - Persistency		- Provision of prerequisites to manage needed -Referral processes needed - Availability needed	- Provision of guidance needed - Carrying out recommended advice or treatment	- Be given help/ treatment - Relying on professionals with knowledge to act		Health Care
	- Work demands precedes management	- Workplace involve-ment needed - Emotional support needed				Employer/ Work
			- Parental need of support for healthy life-style			Family
- Ending up with me - Self-knowledge for the use of managing strategies - Self-treatment - Perform physical activity to enhance well-being	- Knowing but not doing		- Keep trying to get relieve of disorder		-Biological processes - Unpredictable	Individual

Prevention

Treatment

Management

DISCUSSION

General discussion of the results

The intention of this thesis was to look at the core beliefs about responsibility for musculoskeletal disorders and investigate how these beliefs were distributed in a general population, if beliefs about responsibility mattered regarding outcome of treatment and how people reasoned around the allocation of responsibility. The information gained about the attitudes towards responsibility for musculoskeletal disorders among the general population shows us, being health providers as well as providers of preventive care or promotion, that self-responsibility should not be underestimated, which has also been reported before in regard to patients (116). The results in the general sample were refined by background variables and put together with the information of a possible relationship of attitude and outcome of physiotherapy treatment, we can conclude that there may be implications for a more targeted and tailored approach in regard to attitude. The fourth study with a qualitative approach gave some extended explanations of how people viewed the concept of responsibility in relation to musculoskeletal disorders. In conclusion, the studies included in this thesis give implications that people's attitudes regarding responsibility for the management of musculoskeletal disorders are important and that an attitude more directed to management may be of value.

Actual behaviour in the management of musculoskeletal disorders has not been evaluated in this thesis, but some conclusions regarding supposed future behaviour will nevertheless be discussed. It is clear that people do not always do what they say they should do and sometimes answers to attitudinal questions are more likely to reflect attitudes of what they believe they should do. Although the link between attitudes and behaviour has been vividly discussed, analyses of research in a review by Kraus (117) concluded that attitudes significantly and substantially predict future behaviour. Strictly speaking, behavioural intentions are best interpreted as intentions to try to perform certain behaviours. If the chosen measure of intention fails to predict a person's attempted behaviour, it is possible that the intention has changed or that factors beyond the person's control prevented him/her from carrying out his intentions (36).

Different approaches can be taken for the management of musculoskeletal disorders based on the findings in this thesis. One is to adjust the management more towards the attitude of the individual or group. Another may be to influence attitudes towards the management:

Adjusting management of musculoskeletal disorders towards individuals' attitudes of responsibility

As can be seen in Study II of this thesis, a majority of the general sample had an internal attitude towards responsibility for the management of musculoskeletal disorders. Thus, promotion of, for example, general exercise and ergonomic advice would probably work quite well as the individuals probably believe that the disorders are theirs to handle. Having an internal attitude probably includes a belief in physical activity, following advice and recommendations and awareness that persistency is needed in the management, as described in the categories; *Taking on* and *Complying with recommendations* in Study IV. On the other hand, Study II also showed that there were some background factors which increased the odds of belonging to those included in the group with a more externally directed attitude.

The main associations found were with physical inactivity, educational level and musculoskeletal disorder related sick leave. This refinement of the results could suggest that those included in the group who had more external attitudes might benefit from more targeted and tailored interventions. Patients with musculoskeletal disorders tend to wait for others to take the lead in getting things done (118), as described in the category *Disclaiming responsibility*, Study IV. Furthermore, if you do not believe that your behaviour can have any impact on musculoskeletal disorders, as described in the category *Responsibility irrelevant* in Study IV, why bother to exercise? General information on the beneficial effects of physical activity probably would not be enough in this case. Promotion and preventive care for those with a more externally directed attitude might need to be more locally based and adjusted to the population to obtain compliance, as described in the categories *Complying with recommendations* and *Disclaiming responsibility*, Study IV, where the responsibilities of society and health care are stressed.

Also on an individual level, those with a more external attitude might benefit more from structured and regular follow-ups by health care, as health care is believed to have knowledge and capability and thereby also responsibility, as described in the *Disclaiming responsibility* category, Study IV. People with musculoskeletal disorder related sick leave had two to three times more likelihood of belonging to the group with the most external attitude. We do not know whether sick leave leads to a more external approach to musculoskeletal disorders, or if there is a higher probability of being on sick leave as a result of

having an external attitude. Possibly the disorder and its consequences force the individual towards externality, as other studies have found links between chronic pain, learned helplessness and low self-directness (118, 119). Even if we are not certain of the direction or cause of this relationship, one might speculate on how management could meet attitudes within this approach. Perhaps a higher degree of workplace involvement is needed as described in the category *Collaborating responsibility* in Study IV. Employers' responsibility is regulated by law (26), but the informants express that they lack company health policies, with investments in personnel and ergonomics, for the management of musculoskeletal disorders.

That work demands precede management of disorders, as described in the category *Ambiguity about responsibility* in Study IV, might also need to be more openly discussed within companies and society. That health care should provide faster accessibility, quicker referral processes and more patient-oriented care are suggested as adjustments to management in the *Collaborating responsibility* category in Study IV. The importance of getting the right medication, aids, X-rays and the availability of the preferred treatment were expressed in the *Disclaiming responsibility* category, Study IV. There is a risk that passive patients may be less likely to follow treatment regimes and less likely to have help from others. They may also be predisposed to sickness to start with. Ironically, patients who, on the surface seem to be adjusted or compliant, but in a passive way, are more likely to be ill at follow-up (120).

A study in a primary care setting in the UK showed that beliefs were among the variables shown to predict overall outcome of low back pain, but they did not predict response to different treatment packages (121). The authors concluded that without demonstrating which factors affect response to treatment, it may be inappropriate to select different treatments for people according to baseline characteristics (121). Study III provided information about relationships between internal responsibility and better outcome despite the heterogeneous sample. Patients in a large range of ages (from students to retirees), with different levels of education, employed and unemployed, with musculoskeletal disorders that could be acute as well as long-standing were included. Within this range of characteristics, placing responsibility to the self was the variable most strongly associated with self-reported better outcome. However, no relationship between attitude and type of treatment used was found. It is possible that a better matching of treatment choices to external attitude could have improved the outcome of physiotherapy.

It has been suggested in other studies that personality traits related to chronic pain may make these patients more easily dependent on passive physical treatment modalities and they may withdraw if that treatment is discontinued

(118, 122). Therefore, these patients' clinicians need to provide a great deal of support and patience. Today's recommendations for management of musculoskeletal disorders (12, 123, 124) probably benefit those with a more internal and self-active approach. Although treatment according to recommended guidelines is often emphasised, evidence-based practice also includes the integration of clinical expertise and patient preferences (109). A balanced judgment must be made where the practitioner should weigh the research evidence, mainly proposing treatments with high involvement of patient activity, against patient preferences and use his/her clinical expertise to estimate compliance and outcome of the chosen treatment. The significance of individuals' beliefs in treatment effectiveness on adherence has been reported in a study which described patients with longstanding pain who did or did not complete a physiotherapy-based program based on their own activity and responsibility (125). Furthermore, in a study by Barlow and co-workers about treatment adherence in relation to ankylosing spondylitis, differences in health beliefs and health behaviour were found between self-help group members and non-members (126). In realigning the management of musculoskeletal disorders more towards the individual's or group's attitude, one must therefore pay more attention to patient beliefs and expectations.

A more person-centred approach has been described as patient-centred medicine, with the patient's view on need, resources and preferences for treatment being emphasised. In a review by Mead and Bower (127) on the conceptual framework of patient-centeredness, five conceptual dimensions were identified: biopsychosocial perspective, patient-as-person, sharing power and responsibility, therapeutic alliance, and doctor-as-person. From an observational study of preferences for a patient-centred approach to consultation in primary care, Little and co-workers (128) concluded that patients in primary care emphatically wanted a patient-centred approach with communication, partnership and health promotion. A patient-centred communication was associated with better recovery from discomfort and concern in another observational cohort study (129). However, not everyone wants to participate in care decisions.

In another study, exploring experiences of patient-centred treatment in older adults with chronic pain, the results showed that some preferred to let care providers make the decisions (130). This was also seen in the *Disclaiming responsibility* category in Study IV of this thesis. Central to the patient-centred care is the collaboration between patients and health care providers. A person-centred approach in the management of musculoskeletal disorders would probably be possible, as a shared responsibility with medical professionals was shown in Study II, and especially for those expressing views on responsibility described in the *Collaborating responsibility* category in Study IV. A person-

centred approach is also described as encouraging individuals to take responsibility for their own health, which leads us to the other approach of management of musculoskeletal disorders:

Influencing attitudes towards internal responsibility in the management of musculoskeletal disorders

A high proportion of the respondents in Study II showed internal attitudes towards responsibility. An internal attitude towards responsibility was also related to better outcome of physiotherapy (Study III). When Carl Rogers describes the processes of therapy, one point he makes is the “making of responsible choices” (46). Rogers emphasises that the responsibility for one’s life is in one’s own hands. The therapist does not assume responsibility for the client’s decisions; instead he/she encourages the individual to take responsibility for making new choices. By doing so, the individual, even if fearful and hesitant, will be cheered and encouraged by the fact that he can successfully take responsibility and gain independence. From a psychological point of view, Rogers claims, there is nothing remarkable about this; it is just a “learning by doing” process (46). In the thesis by Kjellström (22), called *Responsibility, Health and the Individual*, concepts of individual responsibility for health were studied. The study showed that the prerequisites for taking responsibility were self-reflection, critical examination and conscious choices.

These results are in concordance with results of Study IV, where self-reflection, critical examination and conscious choices can be found in the *Taking on responsibility* category. Lack of conscious choices and self-reflection can be found in the *Disclaiming responsibility* and *Responsibility irrelevant* categories, where passive approaches towards responsibility are described. Self-interest and a person’s own experience of outcomes are believed to increase attitudinal strength (37). Thus, by providing support and encouragement when using self-active and self-responsible strategies, as described in the category *Collaborating responsibility* in Study IV, so that successful management is achieved, attitudes can be influenced and a new attitude and behaviour formed for the next episode of musculoskeletal disorders. In turn, this could lead to more self-responsible behaviour as described in the categories *Taking on responsibility* and *Collaborating responsibility* in Study IV. Greater self-responsible behaviour could be more beneficial for patients attending, for example, programs for chronic musculoskeletal pain (103).

People’s attitudes are dependent both on the amount of information they have and on the way in which that information was acquired. Personal experience makes attitudes more stable and more predictive of behaviour (37). With a new experience, attitudinal changes can take place. Some patients in Study IV, describe how they have changed their attitude towards responsibility after an

episode of, for example, back pain. Before the disorder they had not thought much about having a personal responsibility to prevent or manage musculoskeletal disorders and had therefore taken no specific measures. Afterwards, however, they had realised that their own behaviour mattered and they had taken on more responsibility. This can also be seen in the expressions of responsibility regarding primary versus secondary prevention. Attitudes of responsibility placed on society and health care involve primary prevention, as it is believed that health care personnel have knowledge of how to prevent these disorders, as described in the category *Complying with recommendations*, Study IV. However, for secondary prevention there is a shift towards personal responsibility, as you should now have experience and knowledge yourself, as described in the category *Taking on responsibility*, Study IV. This might also partly explain the lower likelihood of placing responsibility on medical professionals when suffering from musculoskeletal disorders as shown in Study II.

Changes in attitude are thought to be based on persuasion (37). To abandon a habitual attitude and adopt a new one, the individual must anticipate some sort of positive outcome for doing so. The incentive for attitude change could be a positive reinforcement, some form of reward, or a negative reinforcement, such as the removal of something unpleasant (131). In this context, the relief or reduction of symptoms from the musculoskeletal disorder would probably be the best incentive for a change in attitude. There are a number of models which attempt to understand and describe attitudinal change (131) and they share some principles. In conclusion, attitude change can sometimes be elicited by extraneous factors, such as in a message. However the impact of this is decreased and persuasion enabled by congruence between the message and accessible knowledge and goals (131). Possible suggestions of this can be found in the category *Complying with recommendations* in Study IV, where the medical professionals' responsibility for providing knowledge and information is emphasised. To lay the foundation for change, or to change attitudes towards a more internal one regarding responsibility for musculoskeletal disorders, the message from authorities such as schools, the health care system and even parents should be consistent and well disseminated in the community. For example, physical activity should be advertised as a promoter of musculoskeletal health. Prerequisites consistent with the message from authorities should be provided; for example regular physical activity in school, safe cycle paths and so forth.

Trying to change a patient's attitude and thus behaviour towards being more active in the management of their musculoskeletal disorders is in line with the cognitive-behavioural perspective (132). This perspective includes assumptions that the individual processes information actively, that thoughts can elicit and

influence behaviour and vice versa, and that individuals can learn more adaptive ways of thinking, feeling and acting. Furthermore, individuals should be active, collaborative agents in their changing of maladaptive thoughts and behaviours (133). This perspective has recently been used for patients with musculoskeletal disorders in a primary care setting (134) and favoured those treated with a tailored behavioural medicine intervention over those treated with physical exercise intervention for pain-related disability. However, a review of behavioural treatment programs for chronic low back pain could not recommend this approach over active conservative treatment (135). Nor could a study comparing cognitive-behavioural, physical exercise or both, for the treatment of low back pain (136). However, expectancy and credibility of treatments were associated with the outcome of both therapies, therefore the results underscore the importance of the possibility that these factors could contribute to the development of more effective treatment (137).

Using the results of this thesis, it would be possible to discuss whether or not the cognitive-behavioural perspective in the management of musculoskeletal disorders might be more efficient. It might also be possible to assess whether or not it benefits those individuals already expressing attitudes such as those discussed in the *Taking on responsibility* category in Study IV. In this category, the respondents had already expressed the use of cognitive strategies and may therefore be more willing to adopt the treatment principles. On the other hand, it may perhaps be possible to use the cognitive-behavioural perspective in the persuasion of guiding individuals towards a more internal attitude and taking on more responsibility. By identifying attitudes such as those expressed in, for example the *Ambiguity about responsibility* category, or the *Disclaiming responsibility* category, Study IV, they can be illuminated and the associated beliefs challenged with cognitive-behavioural perspectives.

It is my belief that many physiotherapists in their daily professional work use strategies of adapting treatment to attitudes as well as influencing patient attitudes to treatment. However, they may not use an explicit theoretical base for what they do, or why they take a specific approach when meeting a specific patient and why they choose a specific treatment. Physiotherapy is concerned with maximising quality of life and movement potential, which involves interaction with the patient, other health professionals, the family, and communities using the knowledge and skills unique to physiotherapists (138). After assessment, the physiotherapist assists the individual in acquiring the knowledge, skills and attitudes necessary to achieve agreed goals. It is my clinical experience that physiotherapists often know that they have to meet expectations of, for example, pain relief with a more passive treatment modality in which the patient is a receiver of therapy. They then guide the patient towards a more active approach towards the agreed goals, using for example a

more exercised-based therapy. They then move further towards self-management of treatment. Self-management implies a shift of responsibility for keeping the condition under control, from the medical professional to the individual (139).

Attitudes of responsibility and society

One might say that it is in the interest of society to make people accept responsibility for the management of musculoskeletal disorders, as this could reduce societal costs. In general, the concept of taking individual responsibility for your own health is quite widespread, but the possibility of actually taking responsibility is not only influenced by individual factors but by social structures and cultural beliefs about health and disease (22). It seems that taking responsibility for your own health requires certain actions, but when one takes a closer look, responsibility demands that people mentally organise their experiences in a specific way. Examining the concept of individual responsibility for health from the perspective of development theory, Kjellström (22) concluded that some demands are beyond what people can generally manage. This means that there may be a discrepancy between the societal demands on the individual and his or her capabilities. Excessive demands on the individual to take personal responsibility as a means of promoting good health might then instead lead to poorer health due to stress resulting from inability to cope with all of life's demands (22).

Society, in the form of health care and the Social Insurance Agency, has a formal responsibility in the prevention and management of musculoskeletal disorders. However, informants in the category *Collaborating responsibility* in Study IV stated that they sometimes think these authorities are neglectful of taking responsibility. This might take the form of not providing the care or treatment that the individual finds necessary; or the physician being seen as a gate-keeper to further referral for treatment or investigation. Some informants also express that the Social Insurance Agency's system should be more flexible, setting requirements but also investing more in the individual. The employer's responsibility is quite extensive, regulated by the Swedish Work Environment Act (1977:1160) (26). However, informants expressed in the *Ambiguity about responsibility* category in Study IV that they are unaware of exactly what the responsibilities of the employer are. Even when they are aware of the employer's responsibility and the employee's rights, the informants state that they hesitate to inform the employer about perceived disorders as this can be seen as a complaint and they are afraid that this might prove disadvantageous to them in the future.

With the extensive responsibilities of health care, employers and the social insurance agency in combination with a population willing to take on

responsibility to a great extent, it is something of a mystery as to why these disorders are still prevalent among those most susceptible to sick leave. Could one explanation be related to the theme of Study IV, that personal responsibility is not properly met? Is there a need for more individualised plans in rehabilitation, where patient preferences should have a larger impact? Or should the cognitive-behavioural approach, recommended as treatment for those with mild or moderate anxiety, depression or stress-related disorders (140), also be used for musculoskeletal disorders? Further research is needed on the inter-relationships of responsibility, musculoskeletal disorders and sick leave. Hopefully, research within the "Guaranteed rehabilitation" provision (140) will address this in the near future.

In conclusion, attitudes to responsibility can be seen as being the core of beliefs and intentions, thus forming the foundation of behaviour in the management of musculoskeletal disorders. The next step or level could be locus of control: where does the individual attribute control over the specific issue, which in turn encourages attempts at certain behaviours. Attitudes give rise to behaviour only when we perceive the behaviour to be within our control (36). Thus, a person can have attitudes of self-active responsibility but needs to feel that he or she also has control over the issue in order to adopt certain behaviour. After this evaluation, a person who intends to adopt this behaviour considers his or her ability to follow through on their intention: self-efficacy in relation to the given object. In the category *Taking on responsibility* (Study IV), a high level of self-efficacy could be seen, whereas in *Disclaiming responsibility*, a low level of self-efficacy was shown, as the patients wanted others to manage the disorder. Finally he or she uses strategies for adopting behaviour in regard to the object, i.e. adopting different coping strategies. The expressions in Study IV's categories *Taking on responsibility*, *Ambiguity about responsibility* and *Collaborating responsibility* could conform with the description of active coping. The category *Complying with Recommendations* could be seen as still taking responsibility, but perhaps in a more passive coping way. *Disclaiming responsibility* and *Responsibility irrelevant* might be seen as being related to the possible adoption of passive coping styles.

It is possible to identify patients' assignment of responsibility for musculoskeletal disorders and, at core this assignment is probably subject to influence. However, for each step closer to the level of behaviour one can decide whether to accept individuals' chosen strategy and provide them with prerequisites for enhancing outcomes; or one can try to give them prerequisites and influence them to choose another strategy in order to affect outcomes, as illustrated in Figure 8.

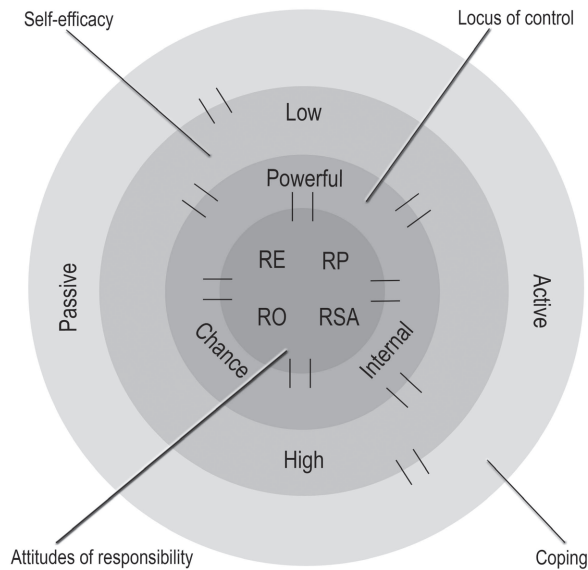


Figure 8. The inverse maze, from attitudes to behaviour.

Methodological considerations

There is an underlying assumption that attitudes are predictors of behaviour, but this has been challenged both theoretically and experimentally, mainly by situational determinations of behaviour. In general, attitudes have been found to predict behaviour best when they are (a) strong and consistent, (b) specifically related to the behaviour being predicted, (c) based on the person's direct experience and (d) the individual is aware of his or her attitudes (44). In the work of this thesis, consistency of attitudes was shown in the first study of instrument development (Study I). The following two studies (Study II, III) investigated the strength of attitudes and found fairly strong beliefs of internal attitudes regarding the management of musculoskeletal disorders. These two studies also found that either internal attitude had a beneficial effect on the outcome of treatment, or that the treatments used benefited those with internal attitudes. The measurement instrument (ARM) was designed to be specifically related to musculoskeletal disorders in order to meet the criteria of a closer relationship between attitude and behaviour. Most of the participants in this thesis had personal experience of the areas which were covered in the ARM. Many of the participants in this thesis were aware of their own attitudes but the interviews (Study IV) showed that not everyone was aware that they had a specific attitude towards their own disorder. For some interviewees, the interview made them aware of their own attitudes, making them explicit

instead of implicit. All in all, these factors support the concept of using patients' attitudes (instrument) towards responsibility for management of musculoskeletal disorders as a predictor of possible behaviour. The fourth study, with a qualitative approach, carried out to give a better understanding of underlying thoughts and reasoning for the attitude taken, could be seen as validation that attitudes are dimensional. Furthermore, Study IV gave explanations for the attitude taken, which might be of help either in understanding how to adjust to attitudes, or when trying to influence attitudes.

There were several rationales for development of a new attitude instrument regarding responsibility for musculoskeletal disorders. One was that attitudes or perceptions of responsibility are used in common language when discussing patient behaviour and treatment, while concepts such as locus of control, self-efficacy and coping are theory generated and not so often used in day-to-day conversations about clinical practice. Another reason was that more specific attitude statements are better at predicting future behaviour in relation to the given object (40), and no instruments explicitly assessing responsibility for management of musculoskeletal disorders were found. Based on the above, it was decided to develop a new instrument inspired by work from other attitude instruments; mainly the locus of control scales.

Development of an instrument is a never-ending issue: the validity and reliability processes are ongoing for use in different settings, and further studies will include these processes. Further studies could for example include a larger sample for a renewed factor analysis, as the one performed in this thesis had a relatively small number of subjects. Kline (141) suggests that approximately $n=100$ would be sufficient if the structure is clear. As an alternative, a confirmatory factor analysis could be conducted. In further studies of reliability, intra-class correlation (ICC) could be used as it better reflects both correlation and agreement (3, 142) or use limits of agreement to assess how much one assessment will differ from the next (142). In a strictly statistical sense, the data generated by the ARM instrument are at an ordinal level which is rank invariant. To test reliability as being an agreement of repeated measures it might be more correct to use a rank-invariant method (143). The ARM instrument is developed for screening and assessment of attitudes, but in order to use it for evaluation it should be tested for responsiveness, minimal important difference and for ceiling and floor effects (9, 143, 144). The ARM involves four subdimensions which are intended to give information on attitudes related to self, employers and medical professionals. Even where it was possible to assume a correspondence between subscores, they were not shown to correlate to a great extent, and therefore it is not recommended to sum scores across the subdimensions.

A major methodological concern of Study II was the issue of missing data. The problem involved both external and internal missing data. As the questionnaires were anonymised in an attempt to attain a higher response rate, we could not compare those who answered the questionnaire with those who did not. In order to give the reader an opportunity to evaluate generalisability, we tried to compensate for the external missing data by providing municipal and national data for the available parameters. In the collected sample, the “middle-aged” group was somewhat over-represented. The regression analysis only includes completed forms. It was recognised that two questions: - visited care provider and presence of musculoskeletal disorders -, were implicated in a majority of the internal missing cases, even though a yes/no format had been employed for these. To explore the impact of the missing data, several statistical comparisons were conducted between those with and without missing data. In conclusion we determined that those with missing data for these two questions showed similar associations and would not therefore have altered the results to any great extent (even though this can be shown on group level only).

Another issue in Study II was that of interaction effects on attitudes towards responsibility for musculoskeletal disorders whilst concomitantly suffering from a musculoskeletal disorder. As the questionnaire was sent to a general sample of adults, in which both those with and without musculoskeletal disorders were included, one might anticipate that there would have been a risk of interaction effects. The study therefore controlled for this, and an interaction effect was found only with “Education” in the “Responsibility Out of my hands” dimension. This means that education was only associated with attitude in the “Responsibility Out of my hands” dimension in combination with having a musculoskeletal disorder. This is, of course, of interest since musculoskeletal disorders are more present in the blue collar population, and earlier episodes of neck and back pain are risk factors for sick leave (145).

In Study III, relationships between attitudes and the outcome of physiotherapy were investigated. This was the first study in the thesis to include only patients and exclusion criteria were used regarding what was considered not to be a musculoskeletal disorder. This might have narrowed the musculoskeletal disorder population somewhat from the first two studies. Study III had a retrospective design. The reason for not filling out the ARM instrument before treatment began was that we did not want to draw attention to and perhaps influence attitudes about responsibility during the physiotherapy treatment period. Rather, we wanted simply to investigate whether or not there might be a relationship between patient attitudes and the outcome of physiotherapy. A future prospective cohort study could of course better provide predictive value and exclude the possibility of the ARM findings being a result of either the physiotherapy care, or of the outcome the patients actually experienced in the

course of their musculoskeletal disorder. It could also exclude the risk of recall bias, or the risk of an attribution error of attributing good outcomes to personal factors, but poorer outcomes to external factors (37).

To evaluate outcome of physiotherapy treatment is not an easy task. On what criteria should evaluation be assessed: body function, activity, or participation (146)? How specific (Versus global) should it be? Should evaluation focus on functional ability or should it be patient goal-oriented? This thesis used a self-reported global assessment of treatment outcome. As the study was performed in a clinical outpatient setting, it would have been very difficult to assess clinically relevant treatment outcomes for all possible measurements used for the wide variety of musculoskeletal disorders and on a variety of levels (146). It could also be argued that the patients' overall impression of outcome is the most important one. Self-reported global outcome of treatment requires the patient to make an overall evaluation of the different aspects of their response to treatment. This evaluation is obviously of significant clinical importance (147). Even so, there is a need for continued discussion about feasible, clinically important outcomes, and to test specified and global outcome scores for validity and reliability.

In Study IV, qualitative content analysis was used to gain a better understanding of how patients reasoned, and how they might have formed attitudes towards responsibility for musculoskeletal disorders. It is difficult to capture "meaning", and content analysis as a method has been criticised for trivialising the complex interaction process by which meaning is constructed; for making the assumption that meaning can be categorised. Another criticism is that content analysis ignores the emergence of unique meanings in the immediacy of local context and interaction movement (148). Typical content analysis also considers isolated meanings and could be seen as being reductionist and lacking understanding in a broader cultural perspective, which could give a more meaningful understanding. This criticism should be given consideration: sometimes content analysis of interviews can be seen as shallow, but one must always ask oneself about the purpose of the study. This thesis has intentionally restricted its questions and considerations to the assignment of responsibility for musculoskeletal disorders. That does not imply, however, that it has overlooked the fact that interpersonal processes can take place in the interview situation that might have influenced attitudes. Local and cultural context is also of importance in forming and developing attitudes.

To gain a broader perspective, and perhaps a deeper understanding, complementary studies such as participation observations or conversation analysis could have been made. However this was beyond the scope of this thesis. Every study must be evaluated according to the implementation of

methods and procedures that generated the findings. Traditionally in qualitative research the concepts of credibility, dependability, transferability and confirmability have been used to assess whether or not the research findings are trustworthy (149).

The qualitative study in this thesis has tried to meet the credibility (150) criterion by describing a transparent process in selection of context, participants and the gathering of data. Additionally, in the Appendix of Paper IV, examples of meaning units, condensed meaning units, codes, categories and theme are shown. However, one can speculate as to whether or not recruitment of informants by their clinicians might have led to selection bias of their most satisfied patients. This problem was addressed by explicitly explaining to the clinicians that it was not the treatment that was to be evaluated, but patient experiences, with no regard to treatment outcome. Gathering of data can be affected both by the patients' social desirability or the interviewer's foreknowledge of the phenomenon. To address these issues, the interviewer's role as a physiotherapist was not explicitly stated unless the informant explicitly asked about it. It was seen as both a strength and an advantage for the qualitative study to have two co-researchers from different occupations (Nurse; psychologist) and research areas (Diabetes; social psychology) when interpreting the results.

Dependability deals with the extent to which the same findings will appear under similar circumstances (149). Similar conditions were achieved for the interviews, with the possibility of one exception, which was a telephone interview. Questions were posed in the same setting for all informants or there might have been a risk of inconsistency in data collection (114). Nevertheless, collecting data in an interview is an emerging process and follow-up questions can affect focus (114). Transferability represents the possibility of transferring the results in a study to other settings or groups (150). It is an empirical matter depending on the similarity between the sending and receiving context. To provide empirical evidence of contextual similarity, sufficient descriptions both of the clinical setting and the chosen geographical area were given (114, 149). Confirmability i.e. the degree to which results can be confirmed by others, has been verified somewhat in the second study of the thesis, where results show similarity to each other in the way responsibility is assigned and in its dimensional structure. Whether the results can be confirmed and have direct usefulness for the clinic still needs to be explored.

Statistical considerations

Using psychometrics in instrument development has a long tradition in psychological research for the measurement of abstract concepts. It has also been used widely in other research areas. Generally when using psychometrics, the underlying abstract concept operationalised as data on rating scales are considered to be on the interval level and thereby analysed with parametric statistics (151, 152). However, there are different approaches and views on how to treat data derived from rating scales. Svensson (153) has suggested that data on rating scales should be evaluated using the ordered structure only, thus using rank-invariant methods and non-parametric statistics. In this thesis parametrics were used for the development of the instrument. However, the choice of using non-parametric methods, such as logistic regressions in the analyses of relationships of attitudes of responsibility for musculoskeletal disorders, was based on the fact that data were mainly on the categorical level and were not normally distributed. The rationale for using quartiles was based on a clinical interest in seeing how groups of people with different attitudes would differ from each other with regard to background factors and outcome, and not on the importance of scoring points.

General considerations

For the objective of this thesis I am well aware that many other perspectives and objects of concern may be of interest in the management of musculoskeletal disorders. However, I have chosen to focus on attitudes towards responsibility for management of musculoskeletal disorders and I have tried to extract one part or a piece of the whole that together with others can make a difference and have further implications for the treatment of these disorders.

CONCLUSIONS AND CLINICAL IMPLICATIONS

In this thesis the Attitude instrument regarding Responsibility for Musculoskeletal disorders (ARM) was developed and used in exploration of attitudes and in evaluation of relationships to background factors and outcome of physiotherapy treatment. Furthermore, patients narrated their views about responsibility for musculoskeletal disorders.

- The Attitude instrument regarding Responsibility for Musculoskeletal disorders developed in this thesis have acceptable validity and reliability and can be used to assess where individuals place responsibility for musculoskeletal disorders. The instrument (ARM) can thereby be used as a screening instrument in a variety of settings; such as in preventive care, in primary health care, in return to work programmes, in occupational health care and in pre-operation assessments, in for example, the orthopaedic area.
- People are generally prepared to take an active part in the management of musculoskeletal disorders which gives implications not to underestimate individuals' willingness to adopt own responsibility.
- However, physical inactivity, musculoskeletal disorder and related sick leave as well as educational level were associated with a more external view, i.e. placing responsibility on someone or something else to a greater extent. Therefore, considerations should be given to related factors regarding setting as well as factors within the individual.
- The respondents in this thesis found responsibility for musculoskeletal disorders a matter to be shared, foremost with the medical professionals. Thus, health care should provide fast accessibility, diagnosis, prognosis and support for recovery.
- A more internal view, i.e. placing responsibility mainly on oneself, showed association to a self-reported better outcome of physiotherapy treatment. It is therefore important to illuminate attitudes of responsibility for musculoskeletal disorders and decide whether to challenge the attitudes and beliefs and work with strategies to increase internal attitude or to conform treatment towards patient preferences and beliefs which

might result in better adherence and thereby also improved outcome of treatment.

- Regardless of view on responsibility for musculoskeletal disorders, individual responsibility needs to be met by society, health care, employers and family, and met in a proper way, with as much or as little of the “correct type” of support needed, and based on the expectations of the individuals. Different viewpoints towards responsibility were expressed in the subcategories of Study IV and can serve as examples of different support in regard to taken viewpoint.
- In addition to considering the individual’s attitude in regard to treatment, for the promotion of good musculoskeletal health or prevention of musculoskeletal disorders on group level, adjustments may need to be made in regard to setting. Different strategies may need to be used in different socio-economic areas. Information campaigns to increase physical activity might work well in one area but in other areas there may be a need for a more targeted intervention with provision of activities or locality as well as the presence of medical professionals for advice to enhance physical activity.

Future research including attitudes of responsibility for musculoskeletal disorders

- For use of the ARM instrument in evaluation of interventions, the instrument should be tested for responsiveness, minimal important difference and for ceiling and floor effects.
- Future studies could address seeking evidence of what the most effective strategy would be in the prevention and rehabilitation of musculoskeletal disorders; increase internal attitude towards responsibility for musculoskeletal disorders or conform to attitude in regard to short-term outcome, long-term outcome and cost-effectiveness.
- Future studies would be needed to investigate cause and effect of the relationship of external attitude towards responsibility for musculoskeletal disorders and sick leave. Does sick leave forego external attitude or vice versa? Prospective studies as well as interview studies with people on sick leave could address this.

- Future studies with targeted prevention at group level in regard to socio-economic factors could evaluate if this could be more effective than general prevention used for musculoskeletal disorders.

SVENSK SAMMANFATTNING

Uppfattning om ansvar vid besvär från rörelseorganen

De flesta människor drabbas någon gång i livet av besvär från rörelseorganen. Besvären är sällan tecken på någon allvarlig sjukdom, men kan i vissa fall bli långdragna eller återkommande. Förutom att besvären är vanligt förekommande, kan de orsaka nedsatt funktion och livskvalitet och kan på så sätt bli kostsamma för såväl individen själv som för samhället. Besvär från muskler och leder är en av de vanligaste orsakerna till långvarig sjukskrivning.

Inom sjukvården håller nya arbetssätt på att växa fram, som innebär att man ser mer till helheten på både individnivå och i samhället. Målet är att få patienten mer delaktig i både behandling och förebyggande åtgärder. Patienten ses som en expert och får en mer ansvarsfull roll än tidigare, medan behandlaren fungerar mer som en medarbetare. Frågan är dock vilken uppfattning samhällsmedborgarna själva har om vem som bär ansvaret för att hantera besvär från muskler och leder samt om det skiljer sig beroende på bakgrundsfaktorer eller om man har erfarenhet av eller varit sjukskriven på grund av besvären. Utifrån sjukgymnastisk synpunkt är det också intressant att veta om patientens uppfattning om ansvar för sina besvär har något samband med resultatet av behandlingen och vilka synsätt patienter kan ha angående ansvaret för att hantera dessa besvär. För att besvara dessa frågor genomfördes fyra delstudier med specifika syften inom ramen för avhandlingen.

Avhandlingens första studie (Studie I) syftade till att utveckla ett psykometriskt instrument (en enkät) för att mäta individers uppfattning om ansvar till besvär från rörelseorganen. Först genomfördes öppna intervjuer med tio personer inom berörd grupp för att skapa lämpliga påståenden. Intervjupersonerna var strategiskt utvalda för att få en spridning i ålder, kön och för att få med personer med eller utan besvär från rörelseorganen. Ett mätinstrument bestående av fyra olika delskalor utformades. Dessa visade att ansvaret för att förebygga, behandla eller hantera besvär ifrån rörelseorganen kan:

- förläggas till de (medicinskt) professionella – Responsibility (Medical) Professionals (R(M)P),
- förläggas till arbetsgivaren – Responsibility Employer (RE)
- förläggas till faktorer som jag inte kan påverka – Responsibility Out of my hands (RO)
- förläggas till mig själv, d.v.s. är något jag aktivt tar del i – Responsibility Self Active (RSA)

Påståendena är antingen riktade mot intern eller extern uppfattning. Med intern uppfattning menas att individen betraktar sig själv som den aktiva parten vid förebyggande, behandling eller hanterande av besvär från rörelseorganen. Med extern uppfattning menas att individen **inte** betraktar sig själv som den aktiva parten vid förebyggande, behandling eller hanterande av besvärerna från rörelseorganen, utan förlägger ansvaret hos någon annan eller till något annat. Innehållsvaliditet, d.v.s. hur väl instrumentet täcker av sitt tänkta område, prövades genom att instrumentet sändes ut till en expertgrupp bestående av sjukgymnaster och psykologer för att få deras bedömning av om frågorna i instrumentet var relevanta för att mäta det som eftersträvades. Instrumentet förtestades (face validity) också av fem personer som alla hade haft besvär ifrån rörelseorganen de tre senaste månaderna.

För att testa begreppsvaliditet, d.v.s. att instrumentet mäter det abstrakta begrepp som det avser att mäta och att uppbyggnaden av instrumentet är pålitligt användes först förväntad gruppvis jämförelse, där en förmodad skillnad i uppfattning om ansvar för besvär från rörelseorganen mellan en grupp sjukgymnaster och en grupp fotbollsspelare visade sig vara statistiskt säkerställd. Vidare gjordes en faktoranalys som i huvudsak överrensstämde med de antagna delskalorna på instrumentet och gav på så sätt stöd till begreppsvaliditeten. Korrelationsberäkningar mellan delskalorna på det nya instrumentet och delskalorna på det sedan tidigare kända instrumentet Multidimensional Health Locus of control scale (MHLC) visade att det nya instrumentet verkade mäta ett annat begrepp än MHLC.

Reliabiliteten prövades med Cronbach's alpha-test för att se på inbördes överensstämmelse vilken bedömdes som tillfredsställande. Stabiliteten i det nya instrumentet prövades med Test-retest där Spearmans rangkorrelation användes och visade acceptabla värden. Det nya attitydinstrumentet "Attitudes regarding Responsibility for Musculoskeletal disorders" (ARM) kom slutligen att innehålla 15 påståenden fördelade över fyra dimensioner för att mäta i vilken grad ansvaret förläggs internt eller externt, d.v.s. att ansvaret förläggs till individen själv, arbetsgivaren, de medicinskt professionella eller till faktorer som man inte kan påverka.

I avhandlingens andra studie (Studie II) gjordes en enkätundersökning bland ett slumpmässigt urval på 1% (1770 personer) av den vuxna befolkningen i åtta kommuner i Västra Götaland. Syftet var att kartlägga människors attityder kring ansvar och att utforska sambanden mellan attityder och bakgrundsvariabler såsom ålder, kön, utbildning, förekomst av muskuloskeletal besvär, sjukskrivningar, fysisk aktivitet och läkarbesök. Enkäten besvarades av 1082 personer och sambandsanalyser genomfördes. Resultatet visade att en majoritet av individerna förlade ansvaret internt, det

vill säga de var beredda att ta en aktiv roll i förebyggandet eller behandlingen av sina besvär och förlade inte ansvaret till arbetsgivaren eller till faktorer man inte kan påverka. I förhållande till den medicinska professionen var ansvarsfördelningen jämnare, det vill säga deltagarna lutade åt ett delat ansvar mellan sig själva och de medicinskt professionella. Fysisk inaktivitet, besvär från rörelseorganen och sjukskrivning för dessa, ökade sannolikheten för att ansvaret skulle förläggas utanför sig själv. Att vara kvinna, sjukskrivning för besvär från rörelseorganen eller att inte ha utbildning utöver grundskola ökade sannolikheten för att förlägga ansvar för besvär från rörelseorganen i högre utsträckning till arbetsgivaren. Äldre personer, de som besökt en vårdgivare och de som ej hade högskole- eller universitetsutbildning förlade ansvaret till de medicinskt professionella i högre utsträckning.

Ytterligare en enkätundersökning (Studie III) gjordes med syftet att undersöka om uppfattning om ansvar för upplevda besvär från rörelseorganen hade någon relation till självrapporterad effekt av sjukgymnastisk behandling, samt om uppfattningen om ansvar hade något samband med vilken sjukgymnastisk behandlingsmetod som valdes. Patienter (n=647) som avslutat sin behandling vid en sjukgymnastisk primärvårdsenhet fick en ARM-enkät per post. Patienterna ombads fylla i enkäten och skatta resultatet av den sjukgymnastiska behandlingen (=upplevt mål med behandlingen). Beräkning av sambandet mellan attityd och behandlingsutfall gjordes (n=278). I denna beräkning kontrollerades för sociodemografiska variabler samt för behandlingsrelaterade variabler såsom antal behandlingar, sjukgymnast och huvudsaklig behandling. Test för att undersöka relationen mellan attityd och vald behandlingsmetod gjordes också. Resultaten visade att det fanns en relation mellan att förlägga ansvaret huvudsakligen internt/till sig själv och att rapportera väsentligen ökad funktionsförmåga eller minskade besvär som resultat av sjukgymnastisk behandling. Inget samband kunde påvisas mellan uppfattning om ansvar och vald sjukgymnastisk behandlingsmetod.

Avhandlingens sista delstudie (Studie IV) syftade till att beskriva hur patienter såg på ansvar för sina besvär från rörelseorganen. Intervjuer genomfördes med 20 strategiskt utvalda patienter. Intervjuerna analyserades med kvalitativ innehållsanalys, med vars hjälp man i olika analyssteg får fram svars-kategorier som beskriver hur intervjupersonerna resonerade kring ansvar. Resultatet från intervjuerna redovisades i sex svars-kategorier och ett övergripande tema, som beskrev intervjupersonernas synsätt på ansvar för besvär från rörelseorganen. Dessa sex kategorier var: (1) besvär är något man själv måste ta ansvar för, (2) tvetydighet om ansvar, (3) samarbete om ansvaret, (4) ta ansvar genom att följa rekommendationer, (5) avsäga sig ansvar och (6) ansvar är irrelevant.

Generellt ansåg intervjupersonerna att ansvaret för att förebygga besvär främst vilade på samhället eftersom det var där kunskap om hur man kan förebygga besvär finns. Däremot framkom att ansvaret för sekundärprevention, d.v.s. att undvika att få tillbaka besvär efter behandling och information, framför allt vilade på individen själv. Intervjuerna visade också att när besvären uppstått ansåg man att sjukvården var ansvarig för att snabbt ställa diagnos, prognos och stödja rehabiliteringen. För att hantera besvären på lång sikt sågs individen själv som ansvarig för att leva ett så gott liv som möjligt trots besvären. Det övergripande temat från intervjustudien kan beskrivas som att oavsett vilket synsätt man har på ansvar för besvär från rörelseorganen så behöver ansvaret för att hantera besvären mötas upp, dels av samhället, av sjukvården, av arbetsgivare och av familjen. Ansvaret behöver mötas upp med så mycket eller lite stöd den drabbade behöver och med stöd grundat på individens förväntningar.

Slutsatserna av avhandlingen är att man inte skall underskatta individers uppfattning att man ska ta eget ansvar för att hantera besvär från rörelseorganen. Däremot behöver det egna ansvaret mötas upp framför allt av sjukvården men också genom att försäkringskassan, arbetsgivaren och familjen möter upp med det stöd som kan behövas för att hantera besvären. Bakgrundsfaktorer, som till exempel individens kön, ålder och utbildning, kan ha betydelse och bör beaktas både när det gäller prevention och vid behandling av besvären. Att ta eget ansvar för att hantera besvären från rörelseorganen kan vara gynnsamt för utfallet av sjukgymnastik behandling. Som vårdgivare bör man därför bättre uppmärksamma individernas uppfattningar och förväntningar genom att tillsammans med patienten diskutera och komma fram till hållbara strategier för förebyggande och behandling av besvär från rörelseorganen.

AVHANDLINGENS RESULTAT I KORTHET

Alla behöver ta del i ansvaret och samarbeta för att bäst hantera besvär från rörelseorganen

Att ha besvär från muskler och leder såsom att ha ont i ryggen, nacken eller axlarna är mycket vanligt. Förutom att det orsakar lidande för individen kan det också innebära stora kostnader för individen själv såväl som för samhället. Avhandlingen visar att det egna ansvaret anses vara stort men behöver mötas upp med hjälp och samarbete med sjukvården, arbetsgivare och samhället i övrigt för att bäst förhindra och behandla besvär som uppstår från muskler och leder.

Med hjälp av ett attitydinstrument utvecklat i avhandlingens första studie kunde man i en enkätstudie visa att de allra flesta individer var beredda att ta eget ansvar för besvär från muskler och leder och förlade inte ansvaret i någon större utsträckning till arbetsgivaren eller till att ligga utanför sin egen kontroll. Däremot ansåg man att det är ett ansvar som måste delas med medicinskt kunnig personal. Att veta till vem individen främst förlägger ansvaret är värdefull kunskap när vi som vårdgivare lägger upp behandlingsstrategier. Med bättre kunskap om hur villiga människor är att ta ansvar för sina besvär kan vi förbättra möjligheterna att lyckas med både förebyggande insatser och behandling. Fysisk inaktivitet, sjukskrivning för besvär från rörelseorganen och att inte ha någon vidareutbildning utöver grundskola, ökade sannolikheten för att ansvaret för besvären skulle förläggas utanför sig själv till någon eller något annat.

I avhandlingens tredje studie kunde man visa på ett samband mellan att personer som tog mycket eget ansvar lyckades bättre med sin sjukgymnastiska behandling. Om det berodde enbart på just det egna ansvaret eller på andra faktorer behövs det dock mer forskning om. Man kan dock fundera på om man skall man möta patientens förväntningar och attityder eller om man skall försöka påverka attityden för att nå bästa möjliga resultat. I en påföljande studie intervjuades patienter om hur de tänkte och resonerade när det gällde ansvaret för att förebygga, behandla och hantera besvär från rörelseorganen. Många uppgav att de aldrig hade funderat över att man kunde förebygga besvären och undrade t.ex. hur man ska kunna förebygga något man inte vet skall komma? Många uppgav att sjukvården och samhället som kan ha kunskap om vilka besvär som kan uppstå också borde ha ansvaret för att förebygga besvären. Man ansåg vidare att arbetsgivaren hade ansvar för att förhindra att besvär uppstod i samband med arbetet, men också att man hade en egen skyldighet att

säga ifrån om man upplevde besvär på arbetet. Både skolan och föräldrar uppgavs ha ett ansvar för att barn tidigt skall lära sig att använda sin kropp på rätt sätt och vara fysiskt aktiva för att undvika framtida besvär. Om man fick besvär försökte man ofta klara av det ändå tills man nådde en punkt där man insåg att hjälp behövdes. Man förväntade sig då att sjukvården snabbt skulle ställa diagnos och ge en prognos angående besvären samt ge råd och information om behandling samt att remittera vidare om det behövdes. Därefter ansåg de flesta att det var upp till individen själv att följa de råd och den behandling man fått. Många önskade sig en snabb och enkel lösning men angav att man ofta behövde vara uthållig både för att få hjälp och för att få bukt med besvären.

Slutsatsen av avhandlingen är att man bör bättre uppmärksamma individers uppfattningar och förväntningar på ansvaret att hantera besvär från rörelseorganen, då det kan vara av vikt för att utveckla hållbara strategier för förebyggande och behandling av besvären.

ACKNOWLEDGEMENTS

These years as a doctoral student have enriched my life with so much knowledge and joy, even if it has also included hard work and long hours. It has also been a privilege to carry out PhD studies within two academic milieus, The Institution of Occupational Therapy and Physiotherapy (now part of The Institution of Neuroscience and Physiology), The Sahlgrenska Academy at the University of Gothenburg and the Vårdalinstitutet – The Swedish Institute for Health Science, which with its' multidisciplinary focus has given me the opportunity to be a part of the research from a wide variety of subjects and research areas. I would like to express my sincere gratitude to all those who have contributed with their time and experience; especially the participants of the studies but also supervisors, colleagues, fellow doctoral students and others who showed interest in my work. I particularly would like to thank:

My main supervisor, Professor **Lena Nordholm**, for your beliefs in my ideas and my capacity of realising them, for sharing your great knowledge in research and in the academic world, for inspiring guidance and, for providing support whenever I needed it the most. You are fantastic and a true role model, not only as a researcher but as a human being!

My assistant supervisor, Associate professor **Margareta Kreuter**, for your support and encouragement and always being so quick in responses to any question asked, whenever, and wherever in the world you are!

My co-author and methodological supervisor PhD **Ingbritt Öhrn** for your skilful guidance in the qualitative world which has again reminded me of how much we can learn from listening! It has been a pleasure to collaborate with you.

Professor **Björn Lindgren**, former platform leader of the research platform “Persons with long-term illness and functional disabilities”, for believing in my ideas and in me. Thank you for always showing a sincere interest in my work and sharing your great knowledge so useful in the multidisciplinary setting. You have truly not been “economical” with your knowledge.

Professor **Ingalill Rahm Hallberg**, for your engagement and interest in every one of us, the doctoral students at Vårdalinstitutet. You have generously shared your great knowledge and experience with us.

Professor **Sten Landahl**, for taking interest in my work, and without whose guidance through the university bureaucracy I wouldn't have become a doctoral student at all.

Jane Carlsson, Professor in physiotherapy at the University of Gothenburg for support and for cherishing us, the doctoral students and showing engagement and interest in every paper presented at the doctoral students seminars and for sharing your great knowledge.

Associate Professor, **Mari-Ann Wallander**, for once upon a time introducing me to research and emphasising the joy of it. You have probably meant more to me than you yourself can imagine.

My fellow doctoral students at the Vårdalinstitutet. Thank you so much for your honest interest and comments throughout the seminars. To get to know you and follow your work has been such a privilege, included joy and been a great experience.

Especially I want to thank:

Lena Zidén, PT, PhD, my "room mate" and fellow doctoral student at the Vårdalinstitutet and at The Department of Occupational Therapy and Physiotherapy. Well, we have shared "everything" over these years. It would not have been the same without you!

Carina Sparud Lundin, RN, PhD for your energy and support, I told you there would be a pay back time for SPSS advice, it was called NVivo! You are one of the most generous people I have ever known. I am so glad to have got to know you and have you as my friend.

I would also like to thank **Anna Enblom, Marlene Sandlund, Anne Wennick, Mathilda Björk, Hanna Egard, Kristofer Hansson, Elisabet Mattson, Elin Olander, Oskar Krantz, Lena Gripeteg, Therese Hanson, Katja Laakso, Magnus Roos, Pia Nylinder**, for a good working climate and constructive criticism over the years as doctoral students in the platform "Persons with long-term illness and functional disabilities" and the "post-docs" with a special thanks to **Anna Lindgren, Katarina Steen-Carlsson, Markus Idvall**, who been there all the way with good advice.

My colleagues at The Department of Occupational Therapy and Physiotherapy at The University of Gothenburg for welcoming me into your "world" and to the doctoral students at the institution for interest and constructive criticism at our seminars.

All my **physiotherapy colleagues and friends** in Primary Care Southern Bohuslän! Thanks for assistance with my research whether it as been to be “study objects”, good medical chart writers or assisting in recruiting patients to the interview study. Thanks to you I have also been able to keep my clinical knowledge up to date, especially through tutoring your candidate works/papers. A special thanks to my boss at Hönö physiotherapy out-patient clinic, **Helene Möller**, for quick and easy answers to all sorts of requests and administration.

My physiotherapy colleagues at the Advanced Course in Physiotherapy **FDJ 14B**, Karolinska Institutet for assistance in the instrument development.

My experienced former and present colleagues at the Research and Development unit in southern Bohuslän; **Aina Granath, Birgitta Wickberg, Anita Elfström, Lennart Nord, Robert Eggertssen, Margareta Hellgren**, it has been an honour to be among you. Thank you also **Annika Tågerstedt** and **Carin Sjöström-Greenwood** for being great assistants and, a special thanks to Carin for assistance with the figures!

Anna Lindgren, Magnus Pettersson and **Kirsten Mehlig** for statistical advice.

The librarians at the biomedical library, University of Gothenburg for being so service-minded in all aspects from retrieving literature from far and near and helping out with EndNote difficulties.

Fiona Lovén, for valuable help with language review of the thesis.

Mari Lundberg, PT, PhD, who’s “been there, done that” but without saying so. Thanks for all the fruitful discussions whether they have been scientific or how to support the children. Thanks for your interest, support and encouragement, for “debriefing moments” and, most of all for being a good friend!

Annelie Gutke, PT, PhD for many inspiring lunches containing so much more than food, everything from complicated statistical issues to how to clear out if it really could be chickenpox.

Katarina Nilsson Helander, MD, PhD, “I’m hot on your heels”. Thank you especially for moral support at the late phase of writing this thesis. **Ingrid Hultenheim Klintberg** PT, MSc, it was worth commuting to Trollhättan just to get to know you, you’re next!

The **Jernström-Dryver** family for your generous hospitality during my endless visits to Lund. Staying with you has made my trips so much more worth the effort. Thank you for scientific discussions as well as talks about work and life and for great stories with much laughter late evenings.

The **Wells** family for the spontaneous, unconstrained social contact that has enriched many, many weekends. I will so miss our “blob” nights.

Our friends and relatives for help in the parallel “House project”. A special thanks to **Lars** and **Eva**, **Marie** and **Lennart**, **Peter**, **Camilla**, **Mikael**.

My **wonderful friends** for still being my friends although I have been conspicuous by my absence lately.

Tack älskade **mamma** för den styrka och trygghet du alltid gett mig. Du har visat vad ett föräldraskap med villkorlös kärlek genom hela livet innebär. Du har kanske inte samtyckt till alla beslut och till allt jag tar mig för, men stöttar alltid till 100%!

Tack käre **pappa** för att du ställer upp för vår familj, passar barnbarnen när det kniper, fixar i vår trädgård, skottar snö och hjälper till så mycket du kan.

A very special thanks to my beloved family;

To **Kjell** for being my partner in the most important project of all, called life!

To my oldest son **Felix**, so wise I sometimes think maybe you ought to be the head of this family, even 7 years old!

To my daughter **Olivia**, truly a mini-me in many ways but with a creative mind I envy.

To my youngest son **Gabriel**, literally arriving in the middle of this work. When I didn't think life could be better you enriched it even more.

You all remind me that life is here and now and of what is of major importance. Love you infinitely.

Financial support was obtained from The Sahlgrenska Academy at The University of Gothenburg, Vårdalinstitutet and from the Local Research and Development Council of Gothenburg and Southern Bohuslän.

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APPENDIX

APPENDIX 1 – Uppfattning om ansvar vid besvär från rörelseorganen
Attitudes regarding Responsibility for Musculoskeletal disorders instrument (ARM).

I detta häfte finner du ett antal påståenden. Dessa påståenden handlar om besvär från muskler och leder, till exempel ont i rygg, nacke, axlar, knä och liknande. Oavsett om du har besvär eller ej, vill vi att du tar ställning till dessa påståenden: håller du med om dem eller har du en avvikande uppfattning?

Markera vad du tycker genom att ringa in en siffra. Har du en kraftigt avvikande uppfattning ringar du in siffran 1. Håller du med helt och hållet ringar du in siffran 6. Ligger din uppfattning någonstans däremellan har du siffrorna 2 till 5 att välja bland. Det här är ett mått på dina personliga uppfattningar och det finns inga "rätta" eller "felaktiga" svar I detta formulär.

	Det håller jag inte alls med om.					Det håller jag helt med om.
	1	2	3	4	5	6
1. Det finns inget jag kan göra för att lindra mina besvär från muskler eller leder.	1	2	3	4	5	6
2. Om jag får ont i t.ex. axlarna beror det på att arbetsgivaren inte vidtagit nog med åtgärder för att underlätta mitt arbete.	1	2	3	4	5	6
3. Genom att träna upp muskler och lära mig att använda kroppen på rätt sätt skulle jag kunna minska besvär från muskler och leder.	1	2	3	4	5	6
4. Jag känner inte till något sätt att förebygga besvär från leder och muskler.	1	2	3	4	5	6
5. Genom att jag lär mig en viss teknik kan jag själv minska mina t.ex. ryggbesvär.	1	2	3	4	5	6
6. Har jag haft ont t.ex. i knät så förebygger jag för att inte få ont igen.	1	2	3	4	5	6
7. Om jag har ont någonstans så är det klart att det är jag som har ansvaret för att bli bra.	1	2	3	4	5	6
8. Jag skaffar mig tid för att röra på mig för att minska risk för besvär från muskler och leder.	1	2	3	4	5	6
9. Om jag får ont i ryggen söker jag hos läkare eller hos någon annan person tills jag hittar någon som kan bota det.	1	2	3	4	5	6
10. Får jag ont i t.ex. knät, vänder jag mig till någon för att få det åtgärdat.	1	2	3	4	5	6
11. Det är bara arbetsgivaren som har möjlighet att förebygga så att besvär från muskler och leder inte uppkommer på arbetsplatsen.	1	2	3	4	5	6

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12. Jag tänker på att min kropp skall hålla många år till och sköter den på bästa sätt.	1	2	3	4	5	6
13. Jag tror inte att man överhuvudtaget kan påverka att man får ont t.ex. i axlarna.	1	2	3	4	5	6
14. Om jag har ont t.ex i ryggen måste någon utifrån hjälpa mig med medicin eller annan hjälp.	1	2	3	4	5	6
15. Det är bara genom att ha mer personal på tunga arbeten som man kan undvika besvär från muskler och leder	1	2	3	4	5	6

APPENDIX 2 - Attitudes regarding Responsibility for Musculoskeletal disorders instrument (ARM).

	I don't agree at all			I totally agree		
	1	2	3	4	5	6
1. There is nothing I can do to relieve the pain/discomfort in my muscles and joints.	1	2	3	4	5	6
2. If, for example, I experience pain from my shoulders, it is because my employer has not taken the necessary measures to make my work easier.	1	2	3	4	5	6
3. By training my muscles and learning to use my body correctly, I could alleviate discomfort in my muscles and joints.	1	2	3	4	5	6
4. I don't know any way to prevent discomfort from the musculoskeletal system.	1	2	3	4	5	6
5. By learning a certain technique, I could, for example, reduce my back discomfort myself.	1	2	3	4	5	6
6. If, for example, I have experienced pain in my knee, I take prevent action to avoid getting this pain again.	1	2	3	4	5	6
7. If I experience pain somewhere, it is of course my responsible to ensure that I get well.	1	2	3	4	5	6
8. I make time for exercise to reduce the risk of muscle and joint problems.	1	2	3	4	5	6
9. If I experience back pain, I seek the advice of a physician or some other person until I find someone who can cure me.	1	2	3	4	5	6
10. If, for example, I have knee problems, I turn to someone who can take corrective measures.	1	2	3	4	5	6
11. Only the employer can take the appropriate preventive measures to ensure that muscle and joint problems do not occur in the work place.	1	2	3	4	5	6
12. I am aware of the fact that my body has to hold up for many more years, and I do my best to take care of it.	1	2	3	4	5	6
13. I don't think that whatever I do has any effect on, for example shoulder pain.	1	2	3	4	5	6
14. If, for example, I experience back pain, I need professional help to get medication or some other form of treatment.	1	2	3	4	5	6
15. The only way to avoid disorders of the muscles and joints is to have more people/staff sharing physically heavy work.	1	2	3	4	5	6

