Chapter 1

General Introduction
In the Netherlands, psychomotor therapy (PMT) is widely integrated in psychiatric care [1] and in the care for persons with a mental retardation. Integration of thoughts, feelings (emotions and physical sensations) and behavior is an important general aim of PMT. Furthermore, PMT works through body experience and therefore it seems to be a logical intervention for patients treated in a rehabilitation center, who have to cope with a changed body, which most of the time also affects their psychological and social functioning [2, 3]. However, in rehabilitation centers in the Netherlands, PMT is only marginally present. The most obvious patient group in the rehabilitation where psychosocial factors play an important role in maintaining the physical complaints is probably chronic pain. Therefore this patient group became the focus of this research project. The major aim of this research was to evaluate the possible contribution of PMT in rehabilitation treatment of chronic pain.

**Chronic pain**

Pain is defined as an unpleasant sensory and emotional, subjective and private experience associated with actual or potential tissue damage, or described in terms of such damage [4]. Pain is chronic when pain has persisted beyond the normal tissue healing time (usually taken to be 3 months) and it is non-specific when pain is without apparent biological value. Several non-specific musculoskeletal chronic pain syndromes have been specified, generalized pain syndromes, such as fibromyalgia and localized pain syndromes e.g. pain in the neck (whiplash), head, upper and lower limbs, and (lower) back.

Chronic pain is a very common disorder in western society. The prevalence of chronic pain ranges from 10-55% [5]. In the Netherlands, 44.4% of the population 25 years of age or older have chronic musculoskeletal pain complaints [6]. The most prevalent body locations of chronic pain are lower back (21.2%), shoulder (15.1%) and neck (14.3%). The most frequently mentioned causes of the pain are (osteo)arthritis, herniated or deteriorating discs and traumatic injuries [7].

The economic burden of chronic pain is mainly based on research in populations with chronic (low) back pain. Lost productivity due to prolonged sick leave and early retirement and disability compensation are the main reasons for high indirect costs, $150 billion per year in the USA alone [8-10]. The total estimated direct healthcare costs in the USA are more than $70 billion per year [10]. Direct healthcare costs contain costs due to visits to the general practitioner and (pain) specialist, medication, surgery and non-drug treatment. Moreover, it seems hard to find the right treatment because 54% of the pain patients had consulted two to six different physicians and had tried different treatments, and 40% reported inadequate pain control [7]. The high costs and the high use of different medical services reflect the complexity of the disorder.
Multidisciplinary treatment

The biopsychosocial model [11] is the most commonly accepted model in rehabilitation medicine for the explanation of chronic pain. According to this model, chronic pain is a condition, in which physical, social, and behavioral factors influence the patient’s well-being and prognosis. Consequently, patients should gain most from a treatment approach that addresses all of these factors, i.e. multidisciplinary pain treatment. As a result the number of multidisciplinary treatment programs have rapidly increased over the last decades. The content and characteristics of multidisciplinary treatment for chronic pain vary considerably. The components most mentioned are psychological approaches (such as cognitive-behavioral therapy), some form of physical activity, pain education, lifestyle training and relaxation [12]. The effectiveness of a multidisciplinary approach compared to a monodisciplinary approach has been confirmed in systematic reviews [13, 14]. However, there is still discussion about the (cost-)effectiveness of multidisciplinary pain treatment programs, because of a lack of high quality randomized clinical trials [15-17] and a limited effectiveness in the long run [18]. Furthermore, it is not clear which components or combination of components are most beneficial [12].

Body awareness

Alterations in the perception of physical signals are considered crucial for the development and maintenance of medically unexplained symptoms like chronic pain [19]. Bischoff proposed in 1989 that a failure to become aware of changes in physical signals would result in a failure to initiate adequate coping behavior, which in turn would increase the probability of symptom occurrence [19]. Brown [20] suggested that previously formed symptom-related memory structures (“schemata”) activate automatic processing. Thus, the perception of physical sensations is based on subjective constructions rather than on objective representations of sensory signals [20]. There may be a heightened self-report of pain combined with a heightened but selective attentional focus on pain (hypervigilance to pain), which in turn reduces the capacity for an attentional shift to a “normal” internal signal [19]. Several studies confirm the relatively extreme attention to pain in chronic pain patients and state that this attention emerges when patients have a high intensity of pain, have catastrophic thoughts about pain, and become fearful of pain [21-24]. A person who is hypervigilant to pain will constantly scan his or her body for threatening pain related sensations. Based on this biased attention, perceptions of common physical signals are disturbed and/or deficient [19]. Patients with chronic pain may describe the location and nature of a bodily pain in great detail and precision, but are unaware of the thoughts, feelings, and bodily sensations that contributed to pain onset [25]. Increasing awareness of the body may help to understand the relationship between physical pain, physical sensations and mental state for patients with
several disorders, such as musculoskeletal disorders and chronic pain [26]. The mental state is often influenced by cognitions and feelings formed during earlier life experiences. Therefore the patient could learn to differentiate between feelings in the present and feelings from earlier experiences.

Mehling et al. [27, p.1] defined body awareness as followed: “Body awareness involves an attentional focus on and awareness of internal body sensations. Body awareness is the subjective, phenomenological aspect of proprioception and interoception that enters conscious awareness, and is modifiable by mental processes including attention, interpretation, appraisal, beliefs, memories, conditioning, attitudes and affect”.

Schaefer et al. [19] found that interoceptive awareness of patients with somatoform disorders was lower with increasing levels of symptom severity. They suggested that an improvement in the perception of physical sensations might also decrease symptom distress in patients with somatoform disorders. As a consequence of increasing the perception of normal physical sensations, the memory-based schemata [20] might be suppressed, and the objective perception of the sensory input could be improved. This may help patients suffering from somatoform disorders to discriminate between different physical states and to cope with and adapt to different situations more adequately. Thus, a treatment with the aim of improving body awareness might be useful and helpful also for chronic pain patients.

**Psychomotor Therapy**

Body awareness as defined above is a multifaceted concept with physical and mental aspects. Therefore, treatment that aims to improve body awareness must incorporate both aspects. Integration of thoughts, feelings (emotions and physical sensations) and behavior is an important general aim of psychomotor therapy (PMT) [2, 3]. PMT is an experience-based treatment for persons with psychosocial and/or psychiatric problems incorporating movement-oriented and body-oriented methods. Movement-oriented methods are derived from physical activity, sports and physical education whereas body-oriented methods originate for example from relaxation techniques, breathing, sensory-awareness, or mindfulness. PMT may be compared to dance movement therapy [28] and body-psychotherapy [29] practised in other countries. Van der Meijden-van der Kolk and Bosscher [30] indicated four treatment areas for PMT in the treatment of chronic pain derived from the International Classification of Functioning, i.e. physical activity, stress, body experience, and interaction and communication. These treatment areas were important areas to focus on from the different problems the patients experienced and at the same time areas were PMT can act upon. The first three areas have an obvious relation with the body. In the problem area of interaction and communication it is about body
language but also about what physical sensations the body gives in interaction and communication with other people. Which of these areas psychomotor therapists will emphasize depends on the patient and treatment setting. The psychomotor therapist arranges different movement-oriented and body-oriented activities in different contexts (physical, emotional and social) in which the patient first learns to be aware of different physical sensations (increasing body awareness), secondly to interpret these signals without negative thoughts and concomitant feelings (decreasing catastrophizing), and thirdly to use this information from the body to act accordingly, thereby fostering beliefs of self-efficacy. By participating actively patients experience many physical sensations, emotions, (negative) cognitions and are confronted with their (automatic) behavior [1]. During the PMT sessions alternative experiences can be made available through different activities, which will trigger new physical sensations, emotions, cognitions and behavior.

Despite the fact that PMT is a regular type of treatment in mental health in the Netherlands, it is only marginally present in multidisciplinary pain rehabilitation programs and its effect in this context has not been investigated.

**Outline of this thesis**

The main aim of this thesis was to evaluate the possible contribution of PMT in a multidisciplinary treatment of chronic pain. First the most important treatment factor of the PMT module under study in this thesis was defined, i.e. body awareness. Furthermore, self-efficacy and catastrophizing were also incorporated in the study because of research that proved these factors are very important in realizing a positive outcome in chronic pain treatment [31, 32]. In search of adequate instruments to measure these constructs it was noted that appropriate Dutch questionnaires for body awareness and pain self-efficacy were absent. Therefore, it was necessary to translate two questionnaires and study their psychometric quality.

In chapter 2, the factor structure and reliability of the Dutch version of the subscale Body Awareness of the Scale of Body Connection [33] are investigated. Based on the results of the exploratory factor analysis in an undergraduate student sample confirmatory factor analyses were performed in another undergraduate student sample and in two clinical samples. Test-retest reliability was examined in a chronic pain sample.

Chapter 3 provides the reliability and validity of the Dutch version of the worldwide used Pain Self-Efficacy Questionnaire [34]. The structure, internal consistency and test-retest reliability are given and predictive and discriminant validity are reported.
Chapter 4 presents the overall, short- and long-term effects of adding a PMT component to an outpatient multidisciplinary chronic pain treatment in terms of health-related quality of life, pain-related disability, depression, body awareness, pain catastrophizing and pain self-efficacy. In chapter 5 the first aim was to find out whether body awareness is an important factor in improving health-related quality of life, pain-related disability and depression. This aspect is discussed by investigating the mediating role of body awareness in treating patients in a multidisciplinary treatment with and without PMT. Furthermore, a subgroup analysis is performed to answer the question if patients with low body awareness will benefit more from PMT than patients with high body awareness. This information will help to match patients with an appropriate treatment.

Chapter 6 describes the cost-effectiveness of adding a PMT component to an outpatient multidisciplinary chronic pain treatment. Health-related quality of life, pain-related disability and quality adjusted life years were the clinical outcomes and costs were measured from a societal perspective. Cost-effectiveness planes and acceptability curves are presented. Finally, chapter 7 provides a general discussion evaluating the methods, findings and conclusions of all the studies. Implications for daily, clinical practice and recommendations for future research are addressed.
References


