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Katrien Janssen
Scriptie ingediend tot het behalen van de graad van master in de revalidatiewetenschappen en de kinesitherapie,

afstudeerrichting revalidatiewetenschappen en kinesitherapie bij musculoskeletale aandoeningen

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Masterthesis

Depression and self-efficacy are moderators in the relationship between disability and pain in persons with frozen shoulder

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Research context

The following master thesis can provide an addition to the research domain of musculoskeletal rehabilitation, specifically focusing on frozen shoulder (FS) patients. In recent years, research shows the impact of psychological factors on the prognosis of chronic shoulder pain (Bagheri, Ebrahimzadeh, Moradi, & Bidgoli, 2016; Ding et al., 2014; Menendez et al., 2015). Given the long duration of upper extremity disability and pain in persons with FS, factors such as kinesiophobia, self-efficacy, anxiety and depression might be present and can affect the development and recovery as well. A possible explanation for dissatisfying treatment outcomes might be that a person's pain perception and pain-related behavior can be moderated by cognitive and affective processes (Adams & Turk, 2018). Different psychological factors are recognized as moderators in the relationship between disability and pain in chronic musculoskeletal disorders (Baron & Kenny, 1986; Imai, Keele, & Tingley, 2010; MacKinnon, Fairchild, & Fritz, 2007). Little is known about a possible moderating effect in FS. If health care workers are aware of these potential moderating factors, they can be identified. In this manner, high-risk patients, with a potential evolution toward chronicity, can be efficiently treated.

This master thesis is conducted on behalf of the University of Hasselt, as part of the master Rehabilitation Sciences and Physical therapy. It is supervised by supervisor Prof. dr. Annick Timmermans (Prof. dr. A.T.) and co-supervisor dr. Liesbet De Baets (dr. L.D.B.). This master thesis contains a cross-sectional study that explores the possible moderating effect of self-efficacy, kinesiophobia, anxiety and depression on the relationship between upper extremity disability and pain in patients with FS. This study is part of a broader research to investigate which intervention approach is the most effective in patients with FS and if psychological factors can be considered as risk factors.

The cross-sectional study is briefly illustrated in the section below. Patients with FS will be evaluated on self-efficacy, kinesiophobia, anxiety and depression using self-reported questionnaires. Upper extremity disability and shoulder pain will be the examined outcome measures. The purpose of this cross-sectional study is therefore to assess to what extent self-efficacy, kinesiophobia, anxiety and depression are moderating factors in the relationship between upper extremity disability and pain in persons with FS.

Initially, the co-supervisor, dr. L.D.B. introduced the idea of a moderation analysis. Study design, research questions and variables are determined by the two master students (L.G. and K.J.). The master students took part in the recruitment of patients with FS. The Center of Statistics (CenStat) at Hasselt University was consulted for confirmation of statistical analysis. Data processing and writing of this cross-sectional study is implemented by the two master students and with the approval of dr. L.D.B..

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Table of content

1. Abstract

Background: The rehabilitation of patients with frozen shoulder (FS) is often a long and complicated process with dissatisfying treatment outcomes. A person's pain perception and behavior can be moderated by cognitive and affective processes. It is important to understand which specific factors may play a moderating role in terms of disability and pain in FS patients.

Objectives: The purpose of this cross-sectional study is to assess to what extent self-efficacy, kinesiophobia, anxiety and depression are moderating factors in the relationship between disability and pain in patients with FS.

Participants: Persons with the diagnosis of FS, aged 18 years or older with limited range of motion (ROM) in glenohumeral abduction and external rotation and when passive external rotation was less than 50 percent of the ROM of the non-affected side were included. Symptoms were present for at least two months with a progressive increase in pain and/or stiffness.

Measurements: Self-reported questionnaires were used to obtain data on demographic variables, pain intensity, disability, self-efficacy, kinesiophobia, anxiety and depression.

Results: There was a moderate correlation between disability and pain (r=0.62; $p<0.0001$). Both self-efficacy and depression had a significant interaction with disability on pain (p=0.01, p=0.0007, respectively). No significant interaction was found for kinesiophobia and anxiety (p=0.24, p=0.08, respectively).

Conclusion: Self-efficacy and depression are moderators in the relationship between disability and pain in persons with FS. These results highlight that integration of treatment strategies, to improve self-efficacy and depression, can be beneficial in the pain management of FS patients.

Keywords: frozen shoulder, moderator, pain intensity, disability

2. Introduction

Adhesive capsulitis, also known as frozen shoulder (FS), is a self-limiting pathology of the glenohumeral joint that mostly affects persons between 40 and 60 years old. The prevalence of FS ranges between two and five percent (Hand, Clipsham, Rees, & Carr, 2008). FS is characterized by limited active and passive glenohumeral movement, which is often painful. This loss of movement is assumed to be due to progressive inflammation and fibrosis of the glenohumeral joint capsule. However, the exact pathogenesis is still unclear (Hsu, Anakwenze, Warrender, & Abboud, 2011). Usually, FS appears at the non-dominant side and is found more often in women (Hand et al., 2008).

Depending on the cause, two forms of FS can be differentiated. Primary FS is idiopathic, while secondary FS occurs due to injury or after surgery (Schultheis, Reichwein, & Nebelung, 2008). It has also been shown that diabetes mellites, cardiac diseases, endocrine diseases and Dupuytren disease are associated with the development of FS (Hsu et al., 2011). In their recovery, FS patients go through three different stages, with each stage lasting four to nine months. A progressive loss of passive range of motion in the glenohumeral joint and high pain intensity can be seen in the first stage, also called the "freezing" stage. In the "frozen" or second stage of FS, patients appear to have persistent range of motion deficits, but report a decrease in pain intensity. The "thawing" or third stage is characterized by an improvement in glenohumeral range of motion (Hannafin & Chiaia, 2000; Kelley et al., 2013).

The fact that FS leads to upper extremity disability that can persist over one to three years, if not permanent, results in a severe impact on daily functioning (Le, Lee, Nazarian, & Rodriguez, 2017). FS furthermore leads to both personal and societal costs due to medical or physical therapy and sick leave (Le et al., 2017). Evidence shows that persons with FS do not always respond well to conservative treatment directed to the shoulder (Struyf & Meeus, 2014). Knowing that a person's pain perception/experience and pain-related behavior can be moderated by cognitive and affective processes (Adams & Turk, 2018), as first introduced by the biopsychosocial model of Engel (Engel, 1977), might explain these dissatisfying treatment outcomes in FS.

A study of Ding et al. (2014) reported that in primary FS, the prevalence of depression and anxiety was 28 and 24 percent respectively. In FS pathology, emotional aspects such as depression and anxiety seem to result in greater self-reported disability and pain intensity,

and in a decreased quality of life (Bagheri et al., 2016). It is important to understand that psychological factors contribute to the development or maintenance of musculoskeletal disorders in terms of disability and pain (Alvarez, Pagani, & Meucci, 2012). They can act as moderating factors to influence and determine the strength of the relationship between a predictive variable and a response variable (Baron & Kenny, 1986), such as disability and pain.

Taking the cognitive aspects of pain into account, self-efficacy and fear avoidance are important factors influencing the behavioral response to pain in central sensitivity syndrome patients (Adams & Turk, 2018). It may be related to their engagement in activities. Self-efficacy, pain beliefs and attitudes were found to influence the association between pain and disability in persons with chronic musculoskeletal pain. (Alcantara et al., 2010; Costa Lda, Maher, McAuley, Hancock, & Smeets, 2011; Martinez-Calderon, Zamora-Campos, Navarro-Ledesma, & Luque-Suarez, 2018). Specific for neck and back pain, fear avoidance beliefs, self-efficacy and psychological distress were found to play a mediating role in the relation between pain and disability (Lee et al., 2015). In shoulder pain patients, Coronado et al. (2017) showed that optimism moderated the influence of pain catastrophizing behavior on disability. To our knowledge, however, it is currently not known which psychological factors play a moderating role in the relation between disability and pain in persons with FS.

Since the rehabilitation of patients with FS is often a long and complicated process, it is important to understand which specific factors may play a role in the prognosis of FS in terms of disability and pain. The purpose of this cross-sectional study is therefore to assess to what extent self-efficacy, kinesiophobia, anxiety and depression are moderating factors in the relationship between disability and pain in patients with frozen shoulder.

There are two hypotheses in the present study. First, there is a relationship between upper extremity disability and pain. Second, as cognitive and emotional aspects of pain, self-efficacy, kinesiophobia, anxiety and/or depression moderate the relationship between upper extremity disability and pain, while there is controlled for relevant demographic covariates.

3. Methods

3.1. Study design and participants

This is a cross-sectional study that is conducted in 2017-2018. We recruited persons with a diagnosis of FS who consulted an orthopedic shoulder and elbow surgeon in the orthopedic centre 'Associatie Orthopedie Hasselt' in Hasselt. A second way of recruitment was through independent institutions where suitable patients were asked to participate. The recruitment started in August 2017 and ended in April 2018. Preliminary to study participation, all participants provided a written informed consent. In accordance with the Belgian law of seven May 2004, ethical approval was obtained from the Medical Ethics Committee of Hasselt University and the Medical Ethics Committee of Jessa Hospital on the third of October 2016. The code of the research was B243201731206. Persons with the diagnosis of FS were asked to participate if they met the following inclusion criteria: individuals aged 18 years or older, limited range of motion (ROM) in glenohumeral abduction and external rotation and passive external rotation was less than 50 percent of the ROM of the non-affected side, progressive increase in pain and/or stiffness, symptoms were present for at least two months, and ultrasound of the rotator cuff and RX of the shoulder showed normal images. They were excluded if the symptoms were bilateral. Sufficient knowledge of the Dutch language had to be present to complete the questionnaires.

3.2. Clinical assessment and evaluation procedure

After providing written informed consent, participants filled in self-assessment questionnaires, described in the sections below. Those contained demographic, outcome and psychological variables.

3.2.1. Demographic variables

Demographic information was obtained using a standard self-reported form. This included type of FS, age, sex, origin, dominant side and affected side. Time, presented in months, from diagnosis to completing the questionnaires was considered as a minimum duration of symptoms.

3.2.2. Outcome variables

For the assessment of shoulder pain, patients scored the Numeric Pain Rating Scale (NPRS) between zero and ten, according to their pain intensity at rest, during activity and at night.

Zero refers to no pain and ten to the worst pain they could imagine. Bijur, Silver, and Gallagher (2001) detected an interclass correlation coefficient (ICC) of 0.97 for reliability is patients with acute pain. For chronic pain on the other hand, moderate reliability was found. The validity is rather questionable (Carlsson, 1983). Maxwell (1978) showed adequate sensitivity of the NPRS.

The Disabilities of the arm, shoulder and hand questionnaire (DASH) measures the extent to which a patient can perform activities in daily functioning in spite of their disability. The DASH is an ordinal five-point scale in which a higher score indicates more disability. The maximum score amounts 100. For the Dutch version of the DASH, reliability is high. Internal consistency, test-retest reliability and inter-rater- and intra-rater reliability were found to be high. It is shown to be a valid instrument to use in patients with upper limb disorders (Gummesson, Atroshi, & Ekdahl, 2003; Veehof, Sleegers, van Veldhoven, Schuurman, & van Meeteren, 2002).

3.2.3. Psychological variables

The Pain Self Efficacy Questionnaire (PSEQ) was used to measure self-efficacy. PSEQ is a ten-item questionnaire in which patients are asked to assess their confidence in performing activities, despite their pain. It is applicable in all pain patients. The PSEQ is an ordinal seven-point scale ranging from zero ("not at all confident") to six ("completely confident"). The maximum score amounts 60 and higher scores reflect stronger self-efficacy beliefs. A cut-off value greater than 40 reflects high levels of self-efficacy (Nicholas, 2007). Reliability and validity of the PSEQ are high (Asghari & Nicholas, 2001).

For the assessment of kinesiophobia, patients filled in the Tampa Scale for Kinesiophobia (TSK). TSK is a four-point scale between one ("disagree") and four ("agree"). The maximum score is 68 and a score above 37 is associated with higher fear of movement. Both the Dutch and English TSK are reliable measurement instruments with a high intern consistency and test-retest stability (French, France, Vigneau, French, & Evans, 2007; Lame, Peters, Kessels, Van Kleef, & Patijn, 2008; Lundberg, Styf, & Carlsson, 2004; Roelofs et al., 2007). Woby, Roach, Urmston, and Watson (2005) found a good concurrent and predictive validity.

The Hospital Anxiety and Depression Scale (HADS) includes two subscales, each consisting of seven items to assess anxiety (HADS-A) and depression (HADS-D). A four-point scale ranging

from zero to three is used for scoring, with a possible maximum score of 21 per subscale. A score lower than or equal to seven indicates the absence of depression or anxiety, while a score higher than or equal to 11 indicates a presumed presence of depression or anxiety (Zigmond & Snaith, 1983). In patients with a musculoskeletal disorder, the HADS is a widely used screening tool to determine the levels of depression and anxiety as psychological comorbidities (Harter, Reuter, Gross-Hardt, & Bengel, 2001; Pallant & Bailey, 2005).

3.3. Statistical analysis

Data were analyzed with SAS JMP (John's Macintosh Project) pro version 13.2.0 as the statistical software. A significance level of $\alpha = 0.05$ was considered in all statistical analyzes. To determine the strength of the relationship among the self-reported variables, Pearson's correlation was used. A correlation coefficient greater than 0.7 was interpret as strong, between 0.4 and 0.7 was seen as moderate and less than 0.4 was interpret as weak (Schober, Boer, & Schwarte, 2018). Normality was checked using the Shapiro-Wilk test. An equal variance and horizontal course of residuals indicated that homoscedasticity and linearity were met. Multiple linear models were developed with pain as the dependent variable and disability as the independent variable or predictor. Since the aim of the study was to determine psychological factors as possible moderators in the relationship between disability and pain, interaction effects between self-efficacy, kinesiophobia, anxiety, depression and disability were analyzed. Due to the hypothesis that the affected side can be seen as a confounder variable in the relationship between disability and pain, it was implemented as a covariate in all linear models.

4. Results

4.1. Analysis of participants

A total of 57 persons, of whom 76 percent were diagnosed with idiopathic FS, participated in the cross-sectional study. Secondary FS (10%), Dupuytren Disease (6%), Diabetes Mellitus (4%) and Thyroid Disease (4%) were seen in a smaller group of the studied population. Participants' mean age was 56 ± 7.19 years, and all participants were from Caucasian origin. Thirty-seven participants (64.9%) were female and 20 participants (35.1%) were male. In 53.8 percent of the persons with FS, the affected side was the non-dominant side. The mean duration of symptoms was 3.5 ± 6.83 months. Demographic characteristics are presented in Table 1. For some of the demographic data, there were missing values. One person did not fill in her age, while seven persons did not report type of FS. Data related to dominant side and minimum duration of symptoms were missing for five and eight persons, respectively. Percentages were calculated according to the available information.

4.2. Analysis of self-reported questionnaire scores

An overall sample of 57 participants filled in the questionnaires on self-efficacy and kinesiophobia, while 47 participants provided data on anxiety and depression. This was considered in the statistical analyzes. The self-reported questionnaire scores are listed in Table 2.

4.3. Correlation between disability and pain

To test our first hypothesis, Pearson's correlation was used. It was observed that disability significantly correlated (r=0.62; *p*<0.0001) with pain as presented in Table 3. The correlation was considered as moderate and indicates that higher levels of disability are associated with higher pain intensity (Figure 1). This confirmed our first hypothesis that there is a relationship between upper extremity disability and pain.

4.4. Effect of psychological variables on the relationship between disability and pain

All conditions to perform the linear models were met. Results are presented in Table 4. When controlling for self-efficacy as a moderator in the relationship between disability and pain, a significant interaction between self-efficacy and disability (*p*=0.01) on pain was observed. In the second analysis with kinesiophobia as a possible moderator in the relationship between disability and pain, no significant interaction between kinesiophobia and

disability (p=0.24) was observed. In the linear model with anxiety as a possible moderator, no significant interaction between the two variables was obtained (p=0.08). In the last analysis, a significant interaction between disability and depression (p=0.0007) was observed. The results supported the hypothesis that self-efficacy and depression moderate the relationship between disability and pain. Anxiety and kinesiophobia on the other hand cannot be considered as moderators in this relationship. In all linear models, the affected side turned out not to be a significant confounder (p=0.35, p=0.20, p=0.26, p=0.24, respectively). According to Shapiro-Wilk test, all residuals were from a normal distribution. Homoscedasticity and linearity were met due to an equal variance and horizontal course of the residuals.

5. Discussion

This cross-sectional study investigated the extent to which self-efficacy, kinesiophobia, anxiety or depression had a moderating effect on the relationship between disability and pain in patients with FS. Our hypotheses were partly confirmed. A moderate correlation was found between disability and pain and a significant moderating effect was found for self-efficacy and depression. In contrast to our second hypothesis, this moderating effect was not found for kinesiophobia and anxiety.

Previous studies have shown that pain beliefs such as solicitude mediate the relationship between pain and disability in patients with chronic musculoskeletal disorders (Alcantara et al., 2010). This mediating effect was also found for self-efficacy, kinesiophobia and psychological distress, which included anxiety and depression, in patients with chronic low back and neck pain (Costa Lda et al., 2011; Lee et al., 2015). The current findings are partly consistent with the results of previous studies on this topic, investigated in different populations. However, in contrast to our research design, previous studies used pain as the predictor and disability as the response variable. In chronic pain patients, two studies reported a correlation between depression, pain-related fear and disability (Alcantara et al., 2010; Zale, Lange, Fields, & Ditre, 2013). Specifically in shoulder pain patients, Menendez et al. (2015) found that psychological distress, including anxiety and depression was associated with greater perceived disability. Kromer, Sieben, de Bie, and Bastiaenen (2014) reported a significant influence of fear-avoidance beliefs on disability. Given the fact that several studies found a significant correlation between psychological variables and disability, we decided to investigate the interaction effect between these variables as possible moderators and disability as the predictor. Further, Coronado et al. (2017) found that optimism is a moderator in the relationship between pain catastrophizing and disability. In the assumption that the moderators can be influenced by other cognitive and affective components, the results need to be interpreted carefully.

A positive aspect of the study is the consideration of confounders. The affected side was seen as a confounding variable because when the affected side is dominant, one would expect to report more disability. The current results didn't confirm this assumption regarding the total score on DASH. These findings were consistent with a recent study of Christiansen, Michener, and Roy (2018). However, they found a significant lower score on DASH subitems writing,

using a knife to cut food and recreational activities where you move the arm freely when the non-dominant side was affected. This indicates that the affected side should be considered as a confounder. Other confounding variables we didn't include were type of treatment previous to recruitment (e.g. use of analgesics, corticosteroid injection, physical therapy…) and work/leisure characteristics (Ahn et al., 2018; Georgiannos, Markopoulos, Devetzi, & Bisbinas, 2017; Page et al., 2014; Wang et al., 2017; Yoon, Lee, Lee, & Kwack, 2013). Although this assumption could be of interest as the scores of the self-reported questionnaires may be influenced by the possible confounders mentioned above. To our knowledge, the current investigation provides the first data about this topic in a population of FS patients. This can be considered as a strength.

In the analysis of the demographic variables, it turned out that some participants did not fill in all items of the self-reported form. This can lead to an inaccurate representation of the heterogeneity of the population. Another limitation of a study that uses self-reported questionnaires is that the sincerity by which the participants fill in the self-reported questionnaires cannot be verified. The NPRS, used to register pain intensity, showed a low validity in chronic pain patients. Psychological factors may contribute to the chronicity of symptoms and their interpretation of pain. This may declare why a low validity is found in this population. An explanation for the heterogeneity of the FS population can be due to the individual difference in symptom progression. A predominance of women cannot be interpreted as a selection bias, given the fact that FS has a greater appearance in women (Hand et al., 2008). Due to the cross-sectional study design, we cannot make a statement regarding the contribution of the moderators on the prognosis of the symptoms.

The results of this cross-sectional study provide information regarding the moderating effect of psychological factors in the relationship between disability and pain in patients with FS. Particular cognitive and affective processes influence the extent to which a person experience pain that is related to their disability. This is of great importance knowing that patients with FS have to deal with disability over a long time. Persons with more depressive symptoms and low self-efficacy are going to report worse outcome in terms of pain. It is also demonstrated that depression and lower self-efficacy are barriers for treatment adherence, which leads to dissatisfying treatment outcomes (Jack, McLean, Moffett, & Gardiner, 2010). Therefore, health care workers need to recognize and address the possible barriers. Strategies that lie

within the physical therapist's ability to improve self-efficacy are coping planning, action planning and setting realistic goals and expectations. The patient will experience more success in their rehabilitation, which leads to increased motivation (Palazzo et al., 2016). In case of depressive symptoms, a multidisciplinary approach can be beneficial. Patients need to be informed about the advantages of exercise therapy on depressive symptoms. A good therapeutic alliance, supervision and positive feedback during exercises are key strategies for the physical therapist (Jack et al., 2010; Palazzo et al., 2016). In clinical practice, these elements need to be taken into account during treatment, rather than only focusing on the physical symptoms of the patient.

To support our findings, broader research in a similar setting and studies that include other confounding factors (e.g. type of treatment, work and leisure) are necessary. At last we would encourage research that evaluates specific psychological interventions designed to increase self-efficacy and depression in a population of FS patients. To our conclusion this might lead to better outcomes in terms of pain.

6. Conclusion

In summary, this cross-sectional study strengthens the assumption that psychological factors need to be considered. Our results show that self-efficacy and depression are moderators in the relationship between disability and pain in persons with FS. These results highlight that integration of treatment strategies, to improve self-efficacy and depression, can be beneficial in the management of pain in FS patients.

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8. Attachments of the cross-sectional study

Table 1. Demographic characteristics (N=57)

Table 2. Self-reported questionnaire scores (N=57)

Figure 1. Scatterplot of the relationship between disability and pain

Table 3. Pearson's correlation (r) among continuous self-reported variables

Table 4. Multiple linear models for moderating effect between disability and pain

Table 1
Demographic characteristics (N=57)

	Mean (±SD)	N (%)
Age, years*	56 (7.19)	
Gender		
Male		20 (35.1)
Female		37 (64.9)
Origin		
Caucasian		57 (100)
North African		0 (0)
African		0 (0)
Asian		0 (0)
Type of FS°		
Idiopathic		38 (76)
Secondary		5 (10)
Diabetes Mellitus		2 (4)
Dupuytren Disease		3 (6)
Thyroid Disease		2 (4)
Minimum duration of symptoms, months[†]	3.5 (6.83)	
Dominant side[Δ]		
Right		46 (88.5)
Left		6 (11.5)
Affected side[Δ]		
Right		22 (42.3)
Left		30 (57.7)
Dominant side		24 (46.2)
Non-dominant side		28 (53.8)

*N=56, °N=50, [†]N=49, [Δ]N=52

Table 2
Self-reported questionnaire scores (N=57)

	Mean (±SD)	N (%) >cut-off
NPRS[a]	4 (2.16)	
DASH[b]	41.3 (18.43)	28 (49.1)
PSEQ[c]	46.3 (12.21)	14 (24.6)
TSK[d]	38.4 (8.89)	34 (59.6)
HADS-A[e†]	6.2 (4.42)	9 (19.1)
HADS-D[e†]	4 (3.61)	3 (6.4)

Abbreviations: DASH = Disabilities of the Arm, Shoulder and hand questionnaire; NPRS = Numeric Pain Rating Scale; PSEQ = Pain Self Efficacy Questionnaire; TSK = Tampa Scale of Kinesiophobia; HADS-A = Hospital Anxiety and Depression Scale for Anxiety; HADS-D = Hospital Anxiety and Depression Scale for Depression
[a]a score 0 = "no pain"; 5 = "moderate pain"; 10 = "worst pain imaginable"
[b]a score <15 = "no problem"; 16–40 = "problem, but working"; >40 = "unable to work"
[c]a score <40 = lower self-efficacy
[d]a score ≥37 is considered as higher levels of kinesiophobia
[e]a score >7 = possible anxiety/depression; ≥11 = assumed anxiety/depression
[†]N=47

Table 3

Pearson's correlation (r) between disability and pain

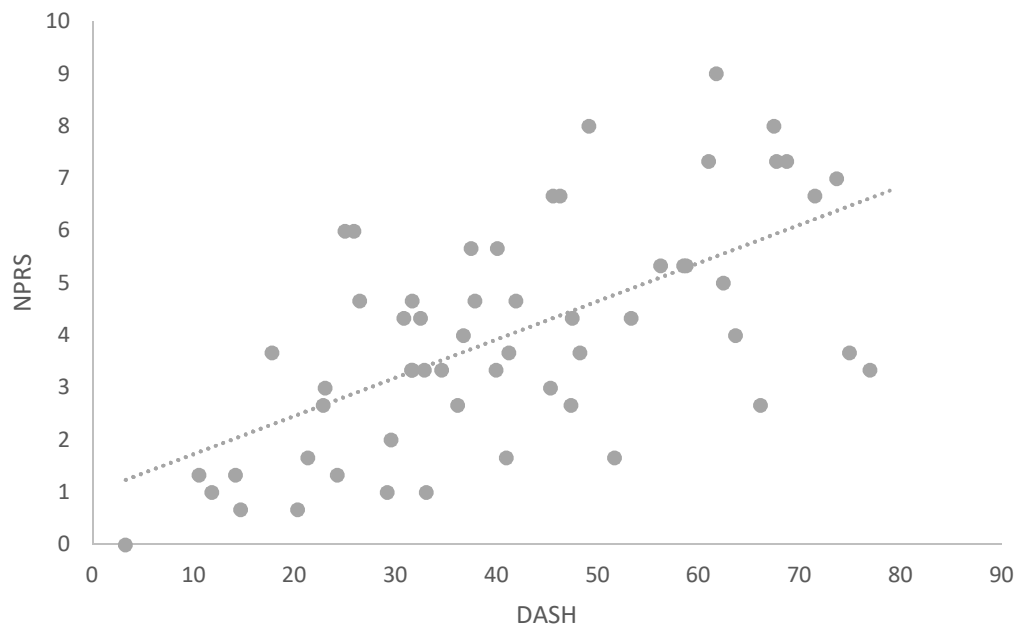|	1.	2.
1. NPRS		0.62**
2. DASH	0.62**	

**p*<0.01

Figure 1. Scatterplot of the relationship between disability and pain

Table 4

Multiple linear models for moderating effect between disability and pain

Independent variable	Dependent variable	Standardized coefficient, β (CI)	Standard Error, SE	Adjusted Determination coefficient, Adj R^2	*P* value F-test	*P* value t-test
1. Self-efficacy as a moderator						
Disability	Pain	0.05 (0.01; 0.08)	0.02	0.44	<0.0001**	0.01*
Self-efficacy		-0.07 (-0.13; -0.006)	0.03			0.03*
Affected side°		0.30 (-0.17; 0.77)	0.23			0.20
Disability+self-efficacy			0.001			**0.01***
Disability+affected side			0.01			0.35
2. Kinesiophobia as a moderator						
Disability	Pain	0.06 (0.02; 0.09)	0.02	0.39	<0.0001**	0.001**
Kinesiophobia		0.04 (-0.03; 0.11)	0.03			0.26
Affected side°		0.30 (-0.19; 0.79)	0.24			0.23
Disability+kinesiophobia			0.002			**0.24**
Disability+affected side			0.01			0.20
3. Anxiety as a moderator[†]						
Disability	Pain	0.05 (0.01; 0.08)	0.02	0.37	0.0005**	0.007**
Anxiety		0.15 (0.01; 0.29)	0.07			0.04*
Affected side°		0.29 (-0.27; 0.84)	0.27			0.30
Disability+anxiety			0.003			**0.08**
Disability+affected side			0.015			0.26
4. Depression as a moderator[†]						
Disability	Pain	0.06 (0.03; 0.09)	0.02	0.46	<0.0001**	0.0005**
Depression		0.18 (0.004; 0.35)	0.09			0.04*
Affected side°		0.21 (-0.30; 0.71)	0.25			0.41
Disability+depression			0.004			**0.0007****
Disability+affected side			0.01			0.24

[†]N=47
°Five missing values
*$p<0.05$
**$p<0.01$

►►
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KNOWLEDGE IN ACTION

VOORTGANGSFORMULIER WETENSCHAPPELIJKE STAGE DEEL 2

DATUM	INHOUD OVERLEG	HANDTEKENINGEN
14/09/2017	Toelichting van de onderzoeksopties en verloop van de metingen	Promotor: Liesbet De Baets Copromotor: Student(e): Student(e):
24/11/2017	Bespreking van de opgestelde onderzoeksvragen	Promotor: Liesbet De Baets Copromotor: Student(e): Student(e):
17/01/2018	Bespreking van het studieverloop	Promotor: Liesbet De Baets Copromotor: Student(e): Student(e):
17/04/2018	Feedback met betrekking tot de inleiding en methodesectie van MP2	Promotor: Liesbet De Baets Copromotor: Student(e): Student(e):
08/05/2018	Feedback met betrekking tot het schrijven van de resultaten	Promotor: Liesbet De Baets Copromotor: Student(e): Student(e):
16/05/2018	Feedback met betrekking tot de discussie van MP2	Promotor: Liesbet De Baets Copromotor: Student(e): Student(e):
22/05/2018	Finale versie van de cross-sectionele studie	Promotor: Liesbet De Baets Copromotor: Student(e): Student(e):

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Richting: **master in de revalidatiewetenschappen en de kinesitherapie-revalidatiewetenschappen en kinesitherapie bij musculoskeletale aandoeningen**
Jaar: **2018**

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