Preface

We, Bert Cuyvers and Jonas Verbrugghe, would like to express special appreciation and thanks to our promotor Prof. Dr. Annick Timmermans. She helped us from the startup of the literature search (master thesis part one) untill ending this two year during project with the results of our experimental study (master thesis part two). She gave advice and remarks when needed and never doubted our abilities as beginning researchers. She consistently helped us by maintaining a follow up of our progress and leading us to further developments. This way we feel like we succeeded in achieving our goal, which was setting up a qualitative masterthesis.

We also want to thank the Department of Physical Medecine and Rehabilitation at Jessa hospital, Hasselt. The Head of the department, Dr. G. Claes and the head of the paramedical team mr. E. Olivieri were very enthusiastic from the beginning and had a positive mindset concerning the design and subject-matter of this study. Together with his team of physiotherapists, E. Olivieri provided us with the possiblity to find suitable participants for this study and with a private space to interview patients for our research. We want to thank physiotherapists Stefanie Vanbrabant and Bart Creemers specifically for their interest and collaboration in the patient recruitment. We thank all the patients at this rehabilitation department that participated in the study.

We are gratefull to the University of Hasselt and all the professors for giving us the chance to do this thesis. Within our training as physiotherapists this university gives importance to scientific research and keeping up with new technologies and strategies to help improve the quality of healthcare. When we graduate we will have a good starting position to practice our profession.

We are both very happy with the way we supported each other and handled our workload. We never had arguments concerning the work within this research and were able to find a mutual balance in processing the tasks that needed to be done.

Alken & Neerpelt, 2/6/'14 J.V. & B.C.

Situating the research

Background

Musculoskeletal disorders (MSDs) are highly prevalent worldwide and have a major impact on health by affecting both the physical and the psychological status of the patient [1]. Two percent of all diseases worldwide have a musculoskeletal base [2]. MSDs are currently the most common cause of chronic physical disability [1,3]. The last decade the number of people with musculoskeletal pathologies has increased by 25 % on a global level [2]. It is expected that the impact of these conditions on both the individual and the society will continue to increase during the next decades [1,4], thereby expanding pressure on the health system [1,5].

Research context

This research aims to contribute to the expansion of knowledge regarding patient preferences and motivating factors in rehabilitation of patients with musculoskeletal neck pain. Furthermore the views of these patients on the use of technology in their rehabilitation are inspected. In this way future rehabilitation could be optimized to the global and individual needs of the patients and problems with compliance of patients could be addressed. This information is also needed to develop technology-assisted rehabilitation.

Research framework

The literature study prior to this experimental study (Bert Cuyvers & Jonas Verbrugghe, 2013) has been conducted by the same students in function of a two year ongoing master thesis project. Results from this literature search have been used to compose questionnaires, which have been used in the experimental study. This project started in 2012 as a new research and the design and protocol have been set up by Bert Cuyvers & Jonas Verbrugghe under supervision of Prof. Dr. Timmermans. These two students have done the patient recruitment, data gathering and data analysis of patients completely independently. The students were responsible for the set up and fulfillment of the interviews with the included patients and for the communication with the therapists working in the rehabilitation program during the execution of the research. By communicating with physiotherapists Stefanie Vanbrabant and Bart Creemers sessions for possible new participants were scheduled. Facilitation of the research management (e.g. Possible data for analysis) was discussed with E. Olivieri. The students mastered the follow up by using an email client to communicate with the participants and by doing other follow up interviews. This thesis is structured and written entirely by the two thesis students with systematic amendments by Prof. Dr. Timmermans. During the research the students also inventoried data on motivation and compliance that will be used in future thesis/research projects but will not be reported in this thesis.

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Training preferences and motivation for rehabilitation in patients with neck pain

Prepared according to the guidelines of: 'PlosOne'

http://www.plosone.org/static/guidelines

Abstract

Aim: The aim of this investigation is the inventory of training preferences and motives for motor rehabilitation of patients with neck pain. The second aim of this study is to evaluate to which extent patients with neck pain are familiar with the use of technologies.

Methods: Semi-structured interviews were conducted based on the Neck Disability Index (NDI) and questions concerning technology use were inventoried. The technologies that were examined were: PC/laptop, tablet, smartphone, mobile phone, MP3 player.

Results: Nineteen patients with neck pain (4 male/15 female; NDI=18,47, SD=5,77) have participated in this study. The average age was 40,67 years (SD=13,22). The skills these patients prefer to train on most are: lifting (household and work), driving a car, sitting (desk work and home), walking and ironing. The primary listed training preferences are related to household or work related activities. The motivation of patients for training on these skills pertains to: being fit for work (financial drive & participation in society), parenthood, partnership, hobby, household and personal health. Respondents with neck pain are familiar with the proposed technologies. A mobile phone/smartphone, computer/laptop and tablet are devices that are being used at least on a weekly basis by almost all patients. These electronic devices are used more often for personal use than for work purposes, illustrating voluntary adoption. PC/laptop and tablets are used for a wider arsenal of purposes while mobile phones and smartphones are mainly used only for communication.

Conclusions: Patients with neck pain prefer to train on exercises that support the improvement of everyday life skills at work or during household activities, such as lifting and (work activities while) sitting. They have adopted the use of technologies in their professional and personal life, which lowers the threshold for the adoption of rehabilitation technologies.

Keywords: Rehabilitation, training preferences, technology, neck pain, client-centered

Introduction

Neck pain from musculoskeletal origin is, together with low back pain, one of the most common musculoskeletal diseases with a high overall lifetime prevalence of 23.1%. In a majority of cases, this condition is not long lasting and provides little functional acute impairment [6,7]. However most of these patients ultimately do not have a complete resolution of symptoms and there is a high risk of recurrence of various neck pain complaints [7-9]. Research shows that neck pain can cause long absenteeism and high costs to the health care system [10]. The use of multidisciplinary rehabilitation for musculoskeletal neck pain has been found to sort positive effects in the rehabilitation of neck pain [11,12].

Although rehabilitation may improve symptoms in patients with musculoskeletal problems, several studies report a problem of non-compliance and reduced adherence to therapy in the treatment of MSDs [13-18]. This non-compliance could be due to different factors that can interfere in the rehabilitation process of the patient such as patient attitudes and beliefs, self-efficacy, lack of positive feedback and barriers patients perceive and encounter [15,19,20]. Rhodes et al. and Lonsdale et al. report that retaining the motivation of rehabilitating patients is crucial for the compliance with their therapy [18,21]. Together with this, adherence seems to be an important interest in the process of rehabilitation [22]. In patients where a chronic course is expected, the importance of psychosocial and cognitive factors is further emphasized [23,24].

In addition to the motivation and adherence of the patient, training preferences regarding rehabilitation and goal setting seem to be important [7,25]. In an RCT of Moffet et al. (2004) it has been shown that taking therapy-setting preferences of patients into account can result in a shortening of the rehabilitation process. Studies with other patient populations (eg. stroke patients) have confirmed the importance of incorporating patient preferences into the therapy setting [26]. Involving patients in the goal setting process can motivate the patient during his/her rehabilitation process [27-29]. Jack et al. found several physical, psychological and social factors that can influence motivation and adherence of the patient during rehabilitation such as low self-efficacy, high degrees of helplessness, poor social support/activity and increased pain levels during exercise. These factors indicate the possible importance of an individualized patient centered rehabilitation program that focuses on these interacting factors [14,30]. A patient centered approach could address these factors by giving the patient the feeling that he/she is involved in setting rehabilitation goals and influencing the rehabilitation progress [31-33]. This way patients do not feel like they are left out of the decision making process and adherence with the proposed therapy can be improved [34,35].

Although general recommendations are established, specific preferences for rehabilitation and motivational factors are not yet clearly established [7,36]. Training preferences can display activities neck patients mostly experience as a burden on their condition. Based on these training preferences, rehabilitation programs that put more emphasis on the specific needs of the individual patient can be developed. The intervening therapist gets a better view on the factors that motivate patients to complete or fail to persevere the therapy.

There is a growing interest for technology to improve rehabilitation. In order to offer technology supported client-centered training, where patients can train on their training goals, it has to be known which tasks patients prefer to improve at. Technology can then be used to offer exercises that match patient training preferences, but also to measure and monitor progress with regard to these activities [37]. In neurological patients, technology to improve the rehabilitation process has been extensively investigated. However, in musculoskeletal rehabilitation, technology supported rehabilitation is rather under-investigated and few technological systems exist. This study aims to 1) identify the training preferences and motives for rehabilitation of patients with neck pain and 2) to evaluate to which extent patients with neck pain are familiar with the use of technologies.

Materials and methods

Aim of the study

The aim of this investigation was 1) the inventory of training preferences and motives for motor rehabilitation in patients with neck pain and 2) to evaluate to which extent patients with neck pain are familiar with the use of technologies.

Research questions

At the start of this study three research questions were formed:

1. Which are the training preferences in a rehabilitation program for patients with neck pain?
2. To which “life roles” do the training preferences in a rehabilitation program for patients with neck pain pertain?
3. To which extend are patients with neck pain familiar with the use of technologies?

Hypotheses

At the start of this study three hypotheses were formed:

1. Patients with neck pain prefer to train on specific functional activities within their rehabilitation program.
2. Patients have specific life roles to relate to specific functional activities on which they want to train within their rehabilitation program.
3. Patients are accustomed to using electronic devices that could also be used for support in rehabilitation settings.

Study design

This exploratory cohort research used a prospective longitudinal study design. Medical ethics approval for the study has been obtained from the medical ethical committee of Jessa Hospital (Hasselt, Belgium) and Hasselt University (Hasselt, Belgium).

Subjects

Recruitment

This study aimed to identify 20 participants (n=20) who were recruited at the Department of Physical Medicine and Rehabilitation at the Jessa Hospital in Hasselt, Belgium. This department is led by Dr. G. Claes (head of department) and E. Olivieri (head of paramedical service). Recruitment was done by distributing information about the study at admission to the rehabilitation. When interested to participate, the willing participants were screened for in- and exclusion criteria and were asked to sign the informed consent for participation to the study.

In- and exclusion criteria

Participants to the study were subject to the following inclusion criteria: a) patients with neck pain b) patients older than 18 years, c) patients without other orthopedic problems at the level of the upper limb. Exclusion criteria were: comorbidity that may affect the motivational status for the rehabilitation process, e.g. depression (medically diagnosed). The in- and exclusion criteria are schematically presented in table one.

Table 1: Overview of inclusion and exclusion criteria

Inclusion	Exclusion
• Neck pain • Older than 18 • No other orthopedic problems at the level of the upper limb	• Comorbidity that may affect the motivational status for rehabilitation

Procedure

Participants in this study followed a 12-16 week rehabilitation program (described below) at the department of Physical Medicine and Rehabilitation in Jessa Hospital (Hasselt). At the start of this program, the questions on patient characteristics and the semi-structured interview about training preferences and life roles were conducted. The interviews were conducted by one of the researchers in a separate room to ensure privacy and a quiet interview environment. The interviews were repeated after eight weeks of rehabilitation. Weekly questions were asked on motivation and treatment compliance. In this thesis, only data on initial training preferences, initial motives and use of technology by patients will be reported.

Characteristics of the rehabilitation program

The three-month rehabilitation program was prepared by therapists of the Jessa Hospital in Hasselt, under supervision of E. Olivieri. This program consisted of two hours of outpatient exercises at the hospital two times a week. In these two hours patients received standard exercise therapy with emphasis on functional retraining of the neck and shoulder region. Patients always followed one course of back school and depending on the needs and characteristics of the patients, manual techniques (eg. Mobilizations, traction, …) and active posture training were applied in further individualized training sessions. Patients were encouraged to perform a daily home program, based on paper exercise instructions, with progressive exercises for at least 20-30 minutes per day. The researchers in this study didn't have any influence on the given exercise programs. The duration of this study was eight weeks (sixteen rehabilitation sessions per patient completed in Jessa Hospital), starting at the beginning of the rehabilitation program of the included participants.

Measurements

The measures were manifested at the levels of activity. A schematic presentation of the whole procedure and data processing is presented in figure one.

Neck Disability Index (NDI):

This index has a test-retest reliability of 0.89 and validity of 0.60 for mapping the inability of performing the daily activities that are most affected by neck problems (Vernon et al, 1991). A Dutch version is available.

Training preferences and life roles

Before the start of the treatment program semi-structured interviews and multiple questionnaires were used to identify training preferences and descriptive data of enrolled patients such as age, sex, specific diagnosis of the pathology, time since first neck pain, education, occupation, history of rehabilitation, etc. In the identification of these training preferences methodology were used comparable to Timmermans et. al. (2009). The interview was based on activities mentioned in the Neck Disability Index (NDI, see appendix one). Participants were asked to add five extra activities on which they want to improve within their rehabilitation. Patients gave their top five training preferences from this composite list (Neck Disability Index and five additional skills) and organized them in degree of importance. Scores one to five were given to these training preferences (five = most chosen activity, one = least chosen activity). This way a preference score was formed. A complete list was made with all preferences mentioned by the participants (preferences receiving scores one to five). Preferences scores of each training preference were accumulated (= overall preference score) and training preferences were ordered according to their overall preference score (descending order). A skill grouping strategy downsized the total list of preferred training skills. Participants were asked in which life roles they situated the activities they wished to improve. This list gave the researchers the motives for choosing these training skills. A list was made with all the life roles mentioned by the participants based on the same characteristics as the method used for identify the training preferences (scores one to five given to mentioned life roles and setup of a list with ordering in function of overall occurrence to achieve a total life role score) (see appendix one).

Questions concerning technology use

In preparation for technology-oriented research three main questions were asked concerning technology use by the patients. Firstly the frequency of use was surveyed, secondly the reasons of use (personal or work purposes) and thirdly the applications of use. These questions give a structured image of the habits of using electronic devices in everyday life. Patients have to cross in fields in a table that most correspond to their normal habits of use. These questions are in Dutch (see appendix two).

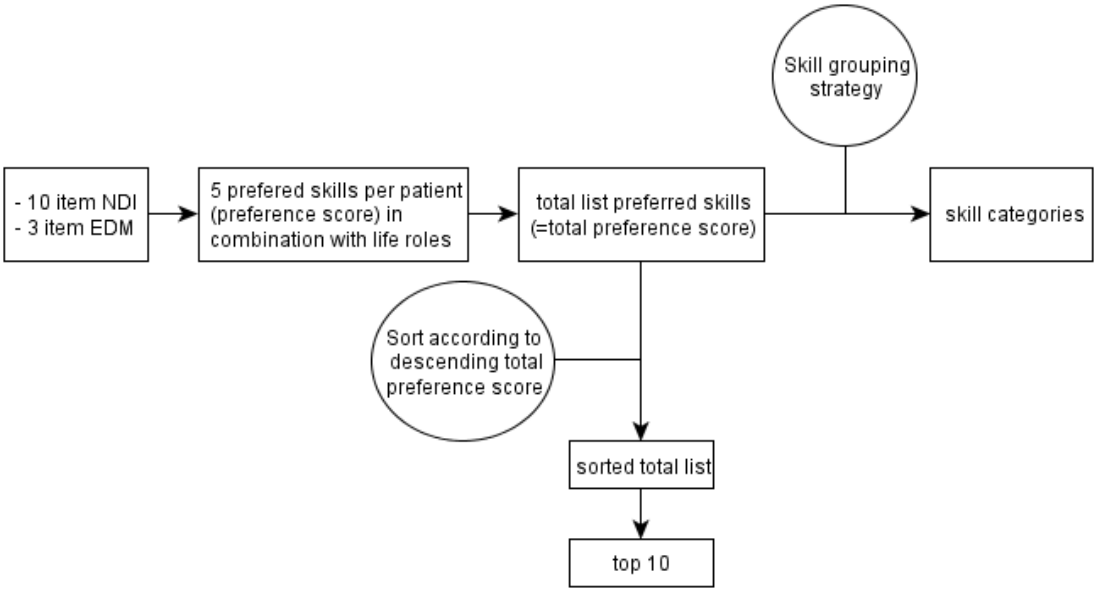

Figure 1: Schematic presentation of the procedure and data used for processing

Data analysis

For communication with patients during the research standard e-mail was used. A specific account was set up for patients to send information to and ask questions when needed. SPSS was used for the descriptive data analysis to display patient characteristics. This analysis was performed for following patient characteristics: gender, age, diagnose time, education, NDI score. The answers of the patients on the questions: “which activities would you like to train on in your rehabilitation?” and “why is this an important activity for you?” were analyzed qualitatively through open coding. SPSS and Microsoft Office Excel were used for analysis of patient training preference scores and motive scores.

Time planning

The implementation of this study was planned in the academic year of 2013-2014. This year ran from September 2013 until June 2014. The recruitment of participants ran from September 2013 to May 2014. The implementation of the study (see table two) started from the moment the first participants were recruited and available for the start and complete execution of the established program. The statistical analysis and data extraction were carried out upward of the end of the treatment program en ran until the end of Mai 2014. The presentation of the study was due the 24th of June 2014.

Table 2: Timeline

	Point of time	Event	Description
T-0	At start of the treatment	Patient characteristics + baseline measurements	Neck Disability Index + 5 additional factors
			Training preference and life roles
			Questions on technology use

Results

Patient characteristics

A table with patient characteristics is presented (see table three). The results that are reported are based on the results of interviews with 19 patients (4 male and 15 female; age: average=40.5, SD=13.94) with neck pain (NDI: average= 18.71, SD=6.1).

Table 3: Patient characteristics

Characteristics	Total (n=19)
Gender	
Male	4
Female	15
Diagnose time	
Subacute (3-6 months)	2
Chronic (>6 months)	17
Age	
Average	40,67
SD	13,22
Total range	17-70
Education	
Secondary	14
Higher education	4
University degree	1
NDI	
Average	18,47
SD	5,77
Total range	10-28

Skill training preferences at the start of the rehabilitation

A total of 31 skills were listed by the patients (see table four). A list of the ten most preferred skills at the start of the rehabilitation, i.e. with the highest total preference scores is presented in Table two. The skills that patients prefer to train on most are: 'lifting' (household and work), 'driving a car', 'sitting' (desk work and home), 'walking' and 'ironing'. Most training preferences are related to household or work related activities.

Table 4: Ranking of skills according to the ten highest total preference scores from the total patient group (n=19).

Skills as named by patient	Total group R (tps)
Lifting objects	1 (39)
Driving a car	2 (33)
Sitting posture	3 (32)
Recreational walking	4 (19)
Ironing	5 (17)
Reading (sustained neck flexion)	6 (14)
Housekeeping in general	7 (12)
Prolonged standing	8 (10)
Recreational cycling	9 (10)
Taking care of child	10 (9)

R, ranking of skills; tps, total preference score

Motives for choosing preferred training skills

From the total inventory of motives that patients mentioned for choosing certain skills as their most preferred skill to train on, nine categories could be formed. The top five motives of patients for training on these skills pertain to being fit for work, parenthood, partnership, hobby, and personal health (see table five).

Table 5: Ranking of motives according to the five highest total preference scores from the total patient group (n=19).

Liferoles as named by patient	Total group R (tls)
Work	1 (87)
Parenthood	2 (52)
Hobbies and recreation	3 (39)
Partnership	4 (31)
Household	5 (24)

R, ranking of scores; tls, total liferole score

Use of technology

A table with results of the questions on technology use is presented (see table six). All patients but one use a computer or laptop (58% of the patients daily). All but two patients use a tablet (47% on a daily basis). All patients use a mobile phone. One on every three patients uses a specialized smartphone. Nine patients never use an MP3 player and four patients rarely use one. The electronic devices, as mentioned in the questionnaire, are used more often (depending on which device twice or more as much) for personal use than for work purposes (total ratio personal/work = 3:2). PC/laptop and tablets are, while mainly used for communication and information searches, also used to visit social network sites, games, music and to watch a video. Mobile phones and smartphones are mainly used for communication purposes.

Table 6: Results from the questions on use of technology

Questions	answers					
1	I don't know what it is	Never	Seldom	Monthly basis	Weekly basis	Daily basis
a. Computer/laptop	0	1	1	4	2	11
b. Tablet	0	2	4	2	2	9
c. Smartphone	1	8	1	0	0	9
d. Phone	0	0	1	1	0	17
e. MP3 player	1	9	4	1	1	3
2		Personal use			Work	
a. Computer/laptop		16			11	
b. Tablet		15			6	
c. Smartphone		10			4	
d. Phone		16			7	
e. MP3 player		12			1	
3	Communication	Information	Games	Listening Music	Watching movies	Social networking
a. Computer/laptop	16	16	3	4	6	10
b. Tablet	11	10	5	5	7	7
c. Smartphone	9	6	3	4	3	5
d. Phone	19	6	1	3	2	5
e. MP3 player	1	1	1	10	2	1

1, 'How often do you use these devices?'; 2, 'What do you use the devices for?'; 3, 'What kind of applications do you use on these devices?'

Discussion

Although the importance of patient centered care is stressed in recent research, there are still difficulties with the measurement of patients preferences and motives for rehabilitation in the therapy setting [36]. The knowledge of these preferences and motives is paramount in order to develop patient-centered training for technology-supported rehabilitation. To our knowledge there has not yet been any prior research investigating the specific functional activities that this patient sample would like to train on within their rehabilitation program. By gathering this information a more specific approach to rehabilitation can be set up when treating these patients.

The first aim of this study was to identify skill-training preferences of patients with neck pain. The skills that patients prefer to train on are mostly related to household and work activities. The three most important activities are lifting objects, driving a car and being able to sit for a prolonged time without pain. These activities are very specific functional tasks, which means that analysis and training of these movements can be implemented in rehabilitation. Based on results of this study it is expected that improving lifting capability, training correct upper extremity movements and correcting posture could help the rehabilitation. Ascertainment of these propositions is however not within the scope of this research. These results are similar to the results of a research done by Timmermans et al. in 2009, in which they inventoried skill training preferences and motives for skill training preferences of subacute and chronic stroke patients. This research also showed very functional movements as results, which were related to daily life activities. In patients with stroke however the results pertained more to the ability to regain self-care while neck patients don't seem to have much problems with personal hygiene and care (in neck patients respectively placed at only the sixth and ninth place). In neck patients preferred trained activities are more found on a participation level (e.g. Being able to work again, being able to provide for family needs) [26].

The second aim of this study was to find out what the motives for training preferences are. To reflect these motives, life roles were inventoried. The results of these live roles conclude that patients are focused primarily on work and parenthood related tasks as most important roles to be able to fulfill even when enrolled in a rehabilitation program. These results reflect a financial drive and desire to be able to provide for the own family. Also the possibility to keep participating in society is important (eg. being able to do hobbies and recreational activities). Therapists should ask patients why they want to train on certain movements or activities to get a better image of the underlying reasons of patients to train. For these motives there is a methodological difference between this research and Timmermans et al. The stroke patients in Timmermans et al. were asked to give the motives for wanting to train their preferred skills. However, in this study the life roles behind those motives were inventoried. The participants in Timmermans et al. presented motives that are related to being able to perform certain movements and to perform activities of daily living in an acceptable way in their surroundings (e.g. eating without spilling food) [26]. Patients with neck pain don't have enough personal functional impairment to encounter these problems or consider these as main issues (see also training preferences stated earlier). This is, based on results from this study, why neck patients tend to care more about participation issues as going back to work and being able to function as normal as

possible next to living with their pathology. Their live roles reflected these worries (e.g. being able to work on first place, being able to have hobbies and have social interaction on second place).
A third aim of this study was to evaluate to which extent patients with neck pain are familiar with the use of technologies. Patients seem to be accustomed with the proposed technologies. the use of electronic devices is in most cases (computer, tablet, (smart)phone) at least a weekly utensil. Also the use of a smartphone instead of a regular phone supports the possibility to use this device as an answering device when sending more complicated data to patients in the future (eg. emails, use of specific apps).Only the use of an MP3 player is lacking with most patients although this is to be expected because of the increasing possibility to use the same functions on a smartphone. The participants in this study used these devices more for personal reasons than for work. This illustrates voluntary adoption. It seems that the device that is used with the greatest variety in tasks is still the computer. Although this means that still a lot of the tasks are done at home and not on the move, also the use of portable devices, such as the tablet and the smartphone, is high. Because of these results we believe that the incorporation of technology in the rehabilitation of this patient population would be possible. Electronic devices such as a muscle activity sensors, smartphones and video systems could be used for various motivational purposes in the rehabilitation of specific training preferences (eg. to increase exercise variability during rehabilitation, to give the person extra understanding of exercises when doing them at home, to give the patient a better view on his long-term progress). In this way a contribution can be made to the adherence and compliance of patients to their rehabilitation and to the quality of the home exercise program [38].

Limitations of the study and future research

Due to the timing and limited duration of this research, the sample within this research was fairly small. We estimate that a sample of at least 40 patients (which is the long-term inclusion target for this research project) would give a more balanced image of results. In this study, more female than male patients were included. It is not clear to which extend this may have influenced the results. This study has included patients with neck pain with no further diagnose differentiation. In future research it could be interesting to categorize subacute and chronic neck patients. There could possibly be a difference in training preferences and motives between these two patient groups. It was not within the scope of this study to perform adaptations to the rehabilitation program in function of the inventoried training preferences. In future research a more individualized training program could be set up with the possibility to make adjustments in exercises etc. in function of the training preferences. These adjustments could be done with customized technological devices set up to help the rehabilitation program. Also future research should follow up motivation in time during a rehabilitation program to see if there is a correlation between fluctuation of motivation and adherence to the rehabilitation program. Finally, it is possible that patient preferences change during a rehabilitation program. For this reason preferences should be monitored at the end of a program to compare these two results.

Conclusion

Patients with neck pain prefer to train on exercises that support the improvement of everyday life skills at work or during household activities, such as lifting and (work activities while) sitting. Patients have adopted the use of technologies in their professional and personal life, which lowers the threshold for the adoption of rehabilitation technologies.

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APPENDIX 1: Neck Disability Index, Dutch

Duidt aan welke uitspraak het beste overeenkomt met uw toestand:		
1. Pijn	Ik heb nu geen pijn	
	Ik heb nu weinig pijn	
	Ik heb nu matige pijn	
	Ik heb nu vrij hevige pijn	
	Ik heb nu zeer hevige pijn	
	Ik heb nu de slechts denkbare pijn	
2. Persoonlijke verzorging (wassen, aan- en uitkleden)	Ik kan goed voor mezelf zorgen zonder dat de pijn toeneemt	
	Ik kan goed voor mezelf zorgen hoewel dat de pijn doet toenemen	
	Voor mezelf zorgen is pijnlijk en gaat langzaam en voorzichtig	
	Voor mezelf zorgen lukt goed, maar vaak met enige hulp	
	Elke dag voor mezelf zorgen lukt meestal alleen met hulp	
	Ik kan mezelf niet aankleden; mezelf wassen gaat moeilijk en ik blijf in bed	
3. Tillen	Ik kan een zwaar gewicht tillen zonder dat de pijn toeneemt	
	Ik kan een zwaar gewicht tillen, maar dat doet de pijn toenemen	
	De pijn weerhoudt mij van het optillen van een zwaar gewicht van de grond, maar zou dat wel kunnen wanneer dat gewicht hoger (bijv. op een tafel) gelegen is	
	De pijn weerhoudt mij ervan om zware dingen op te tillen, maar het lukt me wel om lichte tot middelzware gewichten te tillen als ze makkelijk geplaatst zijn	
	Ik kan alleen zeer lichte gewichten tillen	
	Ik kan helemaal niets tillen of dragen	
4. Lezen	Ik kan zoveel lezen als ik wil zonder pijn in mijn nek	
	Ik kan zoveel lezen als ik wil met weinig pijn in mijn nek	
	Ik kan zoveel lezen als ik wil met matige pijn in mijn nek	
	Ik kan niet zoveel lezen als ik zou willen vanwege de matige pijn in mij nek	
	Ik kan bijna niet meer lezen vanwege de hevige pijn in mijn nek	
	Ik kan helemaal niet meer lezen	
5. Hoofdpijn	Ik heb helemaal geen hoofdpijn	
	Ik heb af en toe lichte hoofdpijn	
	Ik heb af en toe matige hoofdpijn	
	Ik heb vaak matige hoofdpijn	
	Ik heb vaak hevige hoofdpijn	
	Ik heb bijna altijd hoofdpijn	
6. Concentratie	Ik kan mij goed concentreren zonder moeite wanneer ik dat wil	
	Ik kan mij goed concentreren met enige moeite wanneer ik dat wil	
	Het kost mij duidelijk moeite om te concentreren wanneer ik dat wil	
	Het kost mij veel moeite om te concentreren wanneer ik dat wil	
	Het kost mij zeer veel moeite om te concentreren wanneer ik dat wil	
	Ik kan mij helemaal niet concentreren	
7. Werk	Ik kan zoveel werk doen als ik wil	
	Ik kan alleen mijn gewone werk doen, maar niet meer	
	Ik kan het grootste deel van mijn werk doen, maar niet meer	
	Ik kan mijn gewone werk niet doen	
	Ik kan bijna geen enkel werk meer doen	
	Ik kan helemaal niet meer werken	
8. Autorijden	Ik kan autorijden zonder enige nekpijn	
	Ik kan autorijden zo lang als ik wil met weinig pijn in mijn nek	
	Ik kan autorijden zo lang als ik wil met matige pijn in mijn nek	
	Ik kan niet autorijden zo lang als ik wil vanwege de matige pijn in mijn nek	
	Ik kan bijna niet meer autorijden vanwege de hevige pijn in mijn nek	
	Ik kan helemaal niet meer autorijden	
9. Slapen	Ik heb geen moeite met slapen	
	Mijn slaap is heel licht gestoord (minder dan 1 uur wakker)	
	Mijn slaap is licht gestoord (1 tot 2 uur wakker)	
	Mijn slaap is matig gestoord (2 tot 3 uur wakker)	
	Mijn slaap is fors gestoord (3 tot 5 uur wakker)	
	Mijn slaap is volledig gestoord (5 tot 7 uur wakker)	
10. Vrije tijd	Ik kan aan alle activiteiten meedoen zonder enige pijn in mijn nek	
	Ik kan aan alle activiteiten meedoen met enige pijn in mijn nek	

	Vanwege de pijn in mijn nek kan ik aan de meeste, maar niet alle, gebruikelijke activiteiten meedoen	
	Vanwege de pijn in mijn nek kan ik aan maar weinig gebruikelijke activiteiten meedoen	
	Vanwege de pijn in mijn nek kan ik nagenoeg aan geen activiteiten meedoen	
	Ik kan aan geen enkele activiteit meer meedoen	

Geef vijf extra activiteiten waarop u zou willen trainen:

#	5 belangrijkste activiteiten

Orden in bovenstaande tabel nu de vijf activiteiten in volgorde van belang, 5 zijnde de belangrijkste activiteit, 1 de minst belangrijke. In de ordening mogen de activiteiten uit de NDI ook meegeteld worden.

Levensrollen

Tot welke levensrollen behoren de vijf belangrijkste activiteiten?

- Ouderschap (ouder, grootouder)
- Zorgverlener (behoeftig, bijvoorbeeld een zieke ouder)
- Werk/studie
- Hobby's
- Echtgenoot/partner
- …

	Activiteit	Levensrol
1		
2		
3		
4		
5		

APPENDIX 2: EDM: questionnaire about technology, Dutch

1. Hoe vaak maakt u gebruik van onderstaande toestellen?

	Ken ik niet	Nooit	Zelden	Enkele keren per maand	Enkele keren per week	Dagelijks
Computer / laptop						
Tablet						
Smartphone						
GSM						
MP3 speler / iPod						

Opmerkingen?
_____
_____

2. Voor welke doeleinden gebruikt u deze toestellen?

	Persoonlijk gebruik	Werk
Computer / laptop		
Tablet		
Smartphone		
GSM		
MP3 speler / iPod		

Opmerkingen?
_____
_____

3. Voor welk soort toepassingen gebruikt u deze toestellen?

	Communicatie (SMS, e-mail, chat, etc.)	Informatie opzoeken	Games / spelletjes spelen	Muziek beluisteren	Filmpjes bekijken	Sociale netwerk sites (bv. Twitter, Facebook)
Computer / laptop						
Tablet						
Smartphone						
GSM						
MP3 speler / iPod						

Opmerkingen? Andere toepassingen?
_____
_____

Auteursrechtelijke overeenkomst

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Training preferences and motivation for rehabilitation in patients with neck pain

Richting: **master in de revalidatiewetenschappen en de kinesitherapie-revalidatiewetenschappen en kinesitherapie bij musculoskeletale aandoeningen**
Jaar: **2014**

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Voor akkoord,

Cuyvers, Bert **Verbrugghe, Jonas**