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# Principles of Motivational Interviewing in the Physical Therapy Management of a Patient With Neck Pain: A Case Report

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## ABSTRACT

**Background:** This case study demonstrates how motivational interviewing (MI) may be used in the physical therapy management of a patient with persistent neck pain. **Case Description:** The patient was a 57-year-old female with activity limitations of walking >1 mile and riding her stationary bicycle. Motivational interview-based patient education was provided, focused on supporting self-efficacy with symptom self-management and exercise. **Outcomes:** The patient was discharged after 3 in-person visits and 2 additional follow-ups via secure email over 12 weeks. The Fear Avoidance Belief Questionnaire score was reduced by 33% and numeric pain rating scale decreased from 5/10 to 0/10 at rest. In addition to her home program, the patient also reported performing regular aerobic exercise 3 to 4 times per week. **Discussion:** Improvements in activity avoidance beliefs and self-efficacy beliefs related to exercise appeared to be associated with improvement in disability. **Clinical Relevance:** Motivational interview is both clinically feasible and evidence-based to promote beneficial health behavior changes in a patient with persistent neck pain.

**Key Words:** neck pain, motivational interviewing, patient education, intervention

Motivational interviewing (MI) is a communication style that uses specific techniques and strategies as a goal to elicit and strengthen personal motivation for behavior change.<sup>1</sup> When used effectively, a healthcare practitioner can use MI to ‘comfort the afflicted’ and ‘afflict the

comfortable,’ balancing empathy with the need to build enough discrepancy to elicit change.<sup>2</sup> Through MI, practitioners create a non-confrontational and supportive climate with their patients. Ultimately, patients become comfortable expressing both positive and negative aspects of their current behavior.<sup>2</sup>

Unlike other counseling models such as Cognitive Behavioral Therapy or Cognitive Functional Therapy, the concepts of MI allow patients to do much of the psychological work to generate the rationale for change (Table 1).<sup>2</sup> Motivational interviewing begins with the assumption and honoring of patient autonomy – that people make their own behavioral choices, and that the power of choice cannot be appropriated by someone else.<sup>1</sup> Much of the art of eliciting

change comes from a practitioner’s ability to help patients detect possible contradictions in their thoughts and actions and experience the discrepancy between their current actions and who they ideally want to be.<sup>2</sup> Instead of attempting to convince or persuade patients to change, practitioners use subtle techniques to guide patients to contemplate and express individual reasons for and against behavior change and to understand how current behaviors may affect the ability to achieve functional goals. The OARS method is commonly used to put MI into action, consisting of open-ended questions, affirmations, reflection, and summaries (Table 2).

An accumulating body of research evidence supports the clinical use of MI, and MI is becoming more widely introduced

**Table 1.** The Four Strategies of Motivational Interviewing and their Definitions<sup>6</sup>

<b>Show Empathy</b>	Using reflective listening skills, in which one seeks to understand the patient’s perspective, thoughts, and feelings without judgement, criticism, or blame.
<b>Develop Discrepancy/Support</b>	Assist the patient in identifying differences between their current behavior and their goals. This can be used to help ‘tip the balance’ toward change.
<b>Deal with Resistance</b>	Approach resistance without judgement and understand that the patient’s perspective is not the same as the clinician’s (reflection, emphasizing choice, shifting focus of discussion, reframing what was said).
<b>Support Self-efficacy</b>	Highlight the patient’s strengths and reflecting on when a patient has successfully changed.

**Table 2.** The Four Strategies of the OARS Method and Their Definitions<sup>2,6,9,13</sup>

<b>Open-Ended Questions</b>	Gather broad descriptive information to facilitate dialogue, often start with words such as “how,” “what,” “tell me about,” or “describe.”
<b>Affirmation</b>	Genuinely acknowledging and supporting the patient’s struggles and hard work; usually works best when focus is on the patient.
<b>Reflections</b>	Showing interest in what the patient has to say and a desire to truly understand how that person sees things.
<b>Summaries</b>	Reinforcing what has been said to check that the clinician and the patient are working on the same level.

in health professional curricula. Yet, the practice of MI in the clinical setting is currently not widespread. Alperstein and Sharpe<sup>3</sup> found that including MI as an adjunct to traditional physical therapy clinical treatment may have a positive effect on adherence to exercise, however, the evidence included in this study was medium to low in quality. Additionally, a randomized controlled trial by de Vries et al found that including MI in a patient-centered approach showed greater compliance in moderate-intensity physical activity per day.<sup>4</sup> However, the intervention under study was a more generalized approach as opposed to a more focused utilization of the principles of MI. Nooijen et al found that MI combined with physical therapy interventions resulted in significantly greater duration of physical activity in people with subacute spinal cord injury.<sup>5</sup> A systematic review by O'Halloran et al indicated that MI may increase short-term adherence to interventions for people with chronic health conditions.<sup>6</sup> While findings from these studies suggest that MI may have a positive effect on adherence to exercise, none of them examined the use of MI when treating a patient with an orthopaedic diagnosis. This case study presents how the principles of MI can be used to manage a patient with persistent pain in outpatient physical therapy.

## CASE DESCRIPTION

The patient was a 57-year-old female certified nursing assistant (CNA) referred by her primary care physician for cervical degenerative joint disease, bilateral lateral epicondylitis, and bilateral Achilles tendinitis. The patient's main concerns included a 3-year history of bilateral neck, shoulder, arm, mid back, low back, buttock, posterior thigh, and posterior calf pain. There was no specific mechanism of injury that preceded symptoms. The patient described her symptoms as 5/10 stiffness and achiness at rest and 10/10 at worst on the NPRS, with 0 representing no pain and 10 representing the worst pain imaginable. In addition, the patient reported a one-year history of poorly controlled migraine headaches.

Symptoms had worsened since initial onset and were worsened with all bodily movement. Symptoms particularly limited the patient from going on walks for greater than one mile, as well as other forms of aerobic and strengthening exercises. The patient reported minor relief with ibuprofen. Prior treatment included prescribed non-steroidal medications and chiropractic treatments,

both of which had not improved her symptoms. The patient's goals included returning to walking more than one mile and riding her stationary bicycle.

## Physical Examination

The patient demonstrated full active cervical spine range of motion in all directions but reported pain in her right upper trapezius with left side bending and right rotation. There was full and pain free shoulder range of motion into flexion and abduction. Upper extremity myotomes, deep tendon reflexes, and dermatomes were intact. Finally, she demonstrated negative Hoffman's and inverted supinator tests.

Combined with the fact that no nociceptive pain mechanism was identified, the physical therapist inferred from the subjective examination that the patient developed an avoidance of general exercise. The Fear-Avoidance Beliefs Questionnaire (FABQ) was used to track changes over the patient's course of care. The FABQ objectifies how a patient's beliefs about physical activity and work may affect and contribute to their symptoms and resulting disability.<sup>4</sup> This outcome measure has 2 subsections: physical activity (FABQ-PA) and work (FABQ-W). It is scored on a 0-6 scale, with 0 indicating low fear-avoidance and 6 indicating high fear-avoidance. The minimum score is 0 and the maximum score is 24 and 42 on FABQ-PA and FABQ-W, respectively. The cut-off score indicating elevated fear-avoidance beliefs is 13 and 29 for the FABQ-PA and FABQ-W, respectively. The minimally clinically important difference (MCID) for the FABQ when given to patients with back pain is 13 points.<sup>7</sup> Internal consistency for both subsections are excellent (FABQ-PA: ICC=0.91; FABQ-W: ICC=0.83).<sup>7</sup> Initial FABQ scores as well as FABQ scores at subsequent visits are listed in **Table 3**.

## EVALUATION

Given the patient's full active cervical spine and shoulder ranges of motion, ab-

sence of upper extremity myotomal weakness, and absence of findings warranting additional medical testing and treatment, the physical therapist reasoned that the patient's symptoms likely were due to fear-avoidance of physical activity. The patient demonstrated neck pain that limited her from going on walks greater than 1 mile and participating in aerobic and strengthening exercise. Further limitations in activity participation were related to expectations from immediate family, attitude toward physical activity, and work environment. The initial plan of care included initiation and graded exposure of aerobic exercise, mobility exercise, and strengthening exercise when appropriate.

Based on findings from the initial visit, the patient's prognosis was estimated to be fair due to the physical requirements of her job and her responsibilities to care for her aging father. These 2 factors led to increased emotional lability at visit 1, suggesting an emotional willingness to change. The factors of the patient's job, social situation, emotional state, and peripheral symptoms demonstrated a fair prognosis. Several other factors, however, raised the physical therapist's estimate of her prognosis. First, the patient demonstrated a good understanding of the positive effect exercise can have on one's mental and physical health, which was magnified when she was taught exercises that did not exacerbate her symptoms. Finally, the patient also had a very supportive husband. It is known that having just one person who provides practical or social support can impact one's disability and prognosis.<sup>7</sup>

## CASE OUTCOMES

### Visit 1

During the initial visit, principles of MI were used. The physical therapist displayed empathy by asking about the nature of the patient's symptoms, understanding the location of symptoms, main concerns, and related functional impairments and activity limitations. Open-ended questions were asked that demonstrated genuine

**Table 3.** Fear-Avoidance Beliefs Questionnaire Scores at Each Visit

	FABQ Score (maximum 96)	FABQ-PA (maximum 24)	FABQ-W (maximum 42)
Session 1	70	20	34
Session 2	59	18	31
Session 3	47	15	21

Abbreviations: FABQ, Fear-Avoidance Belief Questionnaire; FABQ-PA, Fear-Avoidance Belief Questionnaire-Physical Activity; FABQ-W, Fear-Avoidance Belief Questionnaire-Work

understanding toward the patient's socio-environmental situation while avoiding asking questions in a "check-list" format. Affirmation and reflection were practiced during the subjective examination, in which the patient discussed their social demands. The therapist's posture was welcoming; his shoulders, knees, and feet were directly facing that of the patient's. The physical therapist also maintained an appropriate special distance from the patient and maintained eye contact during the majority of the subjective examination to demonstrate his undivided attention to her.

The patient described her physically demanding role as a CNA. Additionally, the patient described her responsibility of caring for her father and assisting him with activities of daily living, which led the patient to cry and express how difficult her overall situation was for her. The physical therapist responded empathically by gently placing his hand on the patient's shoulder and allowing a moment of silence before proceeding with the visit. After she outlined her social demands and briefly discussed her Filipino culture, the therapist affirmed the difficulty of juggling a full-time job and caretaking of her father. The physical therapist's acknowledgement of the cultural expectations contributing to the patient's social demands was confirmed through sharing of similar cultural background to that of the patient.

While mobility exercises were performed, the patient reported that her symptoms decreased from a 5/10 to a 3/10. While the initial home program was aimed at modulating the patient's symptoms, support was also given to provide ease of access to perform the patient's home program. During this session, various strategies were suggested for the patient to complete her home program while managing her social demands. Initially, the patient was resistant to performing regular exercise because of her social demands and perceived lack of time. In response, the patient was asked, if she could spare only 5 minutes every day to her home program. The patient was agreeable to the suggestion and offered to performing select exercises during her breaks at work. By providing the education on the physical benefits of exercise in modulating the patient's symptoms, she understood the value of changing her current activity levels.

### Visit 2

Visit 2 began with a 10-minute warm-up on the treadmill. As in visit 1, the physical therapist exhibited positive body posturing

and non-verbal behavior to convey undivided attention to the patient. Exhibiting empathy when asking about the patient's daily routine, her work as a CNA, and details about caring for her father, the physical therapist expressed genuine curiosity through positive tone of voice and speaking cadence, to foster an open dialogue thus, minimizing the feeling of a formal interview. Additionally, the physical therapist responded with facial expressions appropriate to the conversation to further show his genuine curiosity. Open-ended questions such as "how has everything been since our last visit?" offered the patient confidence to report that her resting symptoms consistently decreased to 2/10. From further dialogue it was learned that the patient is the sole family member available and willing to help care for her father, and as the oldest of her siblings is culturally expected to do so. To validate her feelings and show empathy, the physical therapist expressed how frustrating and difficult the patient's situation must have been.

The patient's stress and difficulty in juggling her job as a CNA and taking care of her father were compassionately acknowledged. Additionally, the physical therapist complimented the patient for sharing her stories, despite her personal difficulties and showed support by commending the patient for being able to perform her exercises despite her busy schedule.

Upon reviewing the home program with the patient, her self-efficacy was supported by highlighting that performing her exercises tended to decrease her symptoms. The patient also acknowledged this observation by noting that her decrease in symptoms tend to last for 1-2 hours after performing her home program. Tactile cuing with exercise instruction was limited to promote greater self-efficacy with her exercises. The patient displayed resistance when asked what her plan was moving forward; she responded that she did not have a plan. The patient responded positively when the physical therapist offered to help develop a plan. The patient's autonomy was recognized working with the patient to provide a plan for how to progress her activity levels outside of physical therapy. Together, the patient and physical therapist agreed to increase her walking time by 5 minutes every week and the volume of her home program by 1 set every week.

### Visit 3

Like the second visit, the third visit started with an open-ended question of "how has everything been since our last visit?"

The same strategies as visit 1 and 2 were employed to show empathy on visit 3. The patient reported that she had increased her walking time to 15 minutes per day and increased the number of sets of her exercises to 5 total. Her resting symptoms decreased to 0/10, and her overall affect and tone of voice suggested that she was pleased with her progress. The physical therapist's tone of voice, speaking cadence, and facial expressions appropriately matched the emotion evoked by the patient, helping to contribute to the supportive atmosphere. Overall, the patient performed her exercises consistently and reported that exercises helped to decrease her symptoms. The patient also reported that she started to perform additional exercises to increase her activity levels. At this time, the patient's husband had recently bought her an exercise equipment that allowed her to start resistance training. During the subjective examination, reflection was implemented, in which the physical therapist showed engagement in discussion with the patient. Interest was expressed in wanting to fully understand the patient's experience and situation.

During the visit, the patient expressed how performing regular exercise not only decreased her resting symptoms but also allowed her to feel more energized. Return to performing resistance exercises on her home exercise machine was added as a patient-stated goal. The physical therapist reinforced the patient's improved self-efficacy by explaining how gradual exercise helped the patient progress further toward her functional goals. The physical therapist then commended her for being able to see the positive effects of performing her exercises. The physical therapist practiced affirmation in acknowledging how much the patient had overcome over the course of her care. Summarization reinforcing the original physical therapy goal with updated exercises to progress the patient toward increasing her activity levels, strengthening her lower and upper extremities, and developing her cardiovascular fitness was then employed by the physical therapist.

At the last visit, the patient demonstrated clinically significant improvements between visits as well as by the end of treatment (Session 1: FABQ 70/96, session 3: FABQ 47/96), improving by 23 points – well above the MCID of 13 points.<sup>4</sup> While the patient was just above the cutoff score for the FABQ-PA by session 3 (FABQ-PA = 15), she was well below the cutoff score for the FABQ-W (FABQ-W = 21).<sup>4</sup> After the last clinic visit, the patient tested positive for novel coronavirus disease (ie, COVID-19)



and was unable to attend further physical therapy visits. After the patient recovered, she e-mailed the physical therapist that she was continuing to improve, and no longer needed to be seen as a patient for physical therapy.

## DISCUSSION

This case study demonstrates that MI principles can be easily integrated into the management of chronic pain in the physical therapy clinic. Motivational interviewing principles were utilized based on the patient's relevant contextual factors, activity limitations, self-perceived barriers, and physical therapy goals (Table 4). The specific therapeutic exercise interventions selected at each visit were prescribed based on the patient's change in symptoms from the previous session and ability to perform her prescribed home program. Motivational interviewing principles applied to the treatment of this patient were aimed at changing fear-avoidance beliefs, which were one of the largest barriers to being more active. Additionally, the MI principles were aimed at enabling the patient to exercise more often.

The clinical utility of MI in eliciting and strengthening motivation for change within the healthcare setting is supported by the literature.<sup>8-10</sup> However, as outlined previously, the use of MI in managing patients within the physical therapy setting is limited.<sup>3-6</sup> This is surprising as more and more physical therapy programs are incorporating MI principles into their curriculum. The positive effects of using MI principles in the physical therapy setting has been documented, but the amount of research continues to be limited. Therefore, further research, especially interventional studies, should study the use of MI among patients with chronic pain in order to test the clinical utility of MI in this population. Additional research should also be performed on the use of MI to manage additional patient populations, including those with other musculoskeletal disorders.

## CONCLUSION

This case study highlights the use of MI principles in the management of a patient with chronic pain in outpatient physical therapy. After 3 in-person visits and 2 follow-ups via electronic messaging over 12 weeks, the patient's FABQ was reduced by one-third and her resting pain scale was reduced by 100%. Additionally, the patient reported performing regular aerobic exercise 3 to 4 times per week, a notable increase from her initial report of no exercise at all. Im-

**Table 4.** The Strategies of Motivational Interviewing That Were Used at Each Visit

	Visit 1	Visit 2	Visit 3
Open-ended Questions		■	■
Affirmation	■	■	■
Reflections		■	■
Summaries	■	■	■
Show Empathy	■	■	■
Develop Discrepancy	■	■	
Deal with Resistance	■	■	
Support Self-efficacy		■	■

provements in activity avoidance beliefs and activity levels were associated with improvement in disability. Since the MI principles were performed throughout each session, little extra time was needed to use MI, demonstrating ease of integration into physical therapy practice. Therefore, this case study provides physical therapists with specific examples of how to successfully incorporate the principles of MI into their practice.

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