Physical Therapy Adherence: An Initial Examination of Self-compassion as Reported by Patients and Practitioners

by
Kendra Nicole Sherman

A THESIS

submitted to
Oregon State University
University Honors College

in partial fulfillment of
the requirements for the degree of

Honors Baccalaureate of Science in Exercise and Sport Science (Honors Associate)

Presented May 18, 2016
Commencement June 11, 2016
This study was an initial exploration of the role self-compassion plays in adherence to physical therapy programs. Self-compassion refers to treating oneself with the same kindness and understanding that is usually shown towards loved ones when they are facing difficult life experiences, and has been associated with factors that could facilitate adherence such as self-motivation and coping skills. Fifty-six physical therapy patients (26 male, 30 female) and five physical therapists (4 male, 1 female) participated in the investigation. A practitioner’s observation of self-compassion for each patient was positively related to rehabilitation adherence. Additionally, patients’ stages of rehabilitation moderated this relationship. That is, the correlation was significant if patients had completed more than 70% of their rehabilitation, but no significant correlation was observed for patients who had completed less than 70% of their rehabilitation. This study suggests that practitioner observed self-compassion might play a role in physical therapy compliance.

**Key Words:** motivation, rehabilitation, compliance, injury, healing

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APPROVED:

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I understand that my project will become part of the permanent collection of Oregon State University, University Honors College. My signature below authorizes release of my project to any reader upon request.

______________________________
Kendra Nicole Sherman, Author
Introduction

In physical therapy, exercises are assigned to aid recovery and assist in the healing process. If exercises are not completed, the healing process is slowed immensely and the likelihood of patients needing to continue physical therapy or return at a later time increases. Many patients, however, find it difficult to be sufficiently motivated to complete the necessary prescribed exercises both inside and outside of appointments, where patients who adhere to the program designed for them will experience a more positive outcome and reach the goals set by practitioners (Brewer, 2002). Adherence may encompass a variety of behaviors including attending scheduled appointments, using full effort while completing exercises and stretches at the appointment, completing the assigned at-home exercises, avoiding participation in activities that could be harmful to the healing process, and wearing any given devices designed for protection and/or supplementing therapy (Kolt, 2007).

Several factors can influence one’s level of adherence to rehabilitation protocols. Wiese-Bjornstal and colleagues (1998) presented a model focused on responses to injury regarding a person’s psychological, physical, and sociological state. The model depicts how history of stressors, situational factors, and personal factors such as self-perceptions, self-motivations, and coping skills affect an injured person’s cognitive appraisal, which, in turn, influences the recovery outcomes. These outcomes include an emotional response (i.e. fear of the unknown, frustration, positive attitude) and a behavioral response including adherence to rehabilitation that is the focus of the current investigation.

Interestingly, the concept of self-compassion is associated with the antecedents to rehabilitation adherence that have been identified in the literature. Neff (2003) defines
self-compassion as being open to and moved by one’s own suffering so as to feel a desire
to ease the pain through kindness, patience, understanding, and recognizing all humans
are flawed. By forgiving one’s self for making mistakes prone to all people and
approaching pain with understanding, a person can successfully cope with any hardship
that may arise in life. Self-compassion is inversely related to negative emotions
experienced following injury such as fatigue, depression, and anxiety, as well as
positively related to coping skills (Neff, 2003).

Not only might self-compassion assist injured individuals in managing the
psychological ramifications of being injured, but self-compassion also is the impetus for
increased self-care capacity as depicted in the conceptual model of self-compassion
posited by Reyes (2012). In this model, Reyes looks at the antecedents, attributes, and
consequences of self-compassion and the relation of each to one another. The main
antecedent to self-compassion is suffering, which is unique across individuals, but may
include decreased capacity for self-care, decreased ability to relate, diminished
autonomy, and decreased self-worth. When people reach the realization that they are
capable of changing their life, they experience the attributes of self-compassion including
self-kindness, mindfulness, and common humanity that contribute to positive emotional
responses such as learning from failure and the motivation to try again. One consequence
of these positive emotional responses is an increased capacity for self-care. Thus,
according to the model, individuals who are higher in self-compassion are more likely to
engage in self-care behaviors such as adhering to their rehabilitation protocols.

Terry (2011) theorized that self-compassion may enable healthy behavior due to
all the benefits of thinking positively, continuously re-evaluating goals, self-regulating,
and complying to medical recommendations. The relationship between self-compassion and reactions to illness was investigated by Terry, Leary, Mehta, and Henderson (2013) in a series of studies. One study involved 196 participants (52 men, 122 women) recruited from the community who varied in age from 20 to 83 years. As predicted, self-compassion had a negative correlation with anxiety, depression, and illness. Self-compassion also had a positive correlation with health consciousness, motivation to avoid unhealthiness, health satisfaction, and health status. Another study included 117 participants (47 men, 70 women) varying in age from 18 to 37 years. The results supported the other study in that those who were more self-compassionate indicated they would seek medical attention sooner, associated being healthy with having a high level of well-being, adapted to changes in life more readily, and worried less about their health. In combination, these studies support the notion that levels of self-compassion affect people’s health behaviors, where those with higher levels of self-compassion manage stress and illness more effectively.

Another line of inquiry investigating self-compassion has explored the role of self-compassion in romantic relationships (Neff & Beretvas, 2012). Of interest to the current investigation is the finding that partners were able to accurately report on each other’s levels of self-compassion, suggesting that self-compassion is an observable characteristic. Such a result offers the possibility that physical therapists involved in professional interpersonal relationships with patients could recognize levels of self-compassion in their patients and, subsequently, be in a position to help patients who lack self-compassion. It is reasonable to expect that practitioners would have the opportunity to hear the self-talk of patients in response to challenges throughout the rehabilitation
process (“I am so pathetic” versus “Oh well, I am only human”) that would provide insights about a patient’s level of self-compassion. We are not aware of any research to date that has examined the ability to observe self-compassion in others in the context of professional relationships.

The purpose of this study was to conduct an initial exploration of the role of self-compassion in adherence to physical therapy protocols. First, we hypothesized a significant positive relationship between patient reported levels of self-compassion and practitioner observations of patient self-compassion. Second, we hypothesized those patients who scored higher on a measure of self-compassion would also receive higher scores on an assessment of rehabilitation adherence because those with high levels of self-compassion were expected to take care of themselves in all situations, including recovery from injury. Third, we hypothesized that the practitioner’s observation of self-compassion for each patient would positively relate to rehabilitation adherence.

Methods

Participants

A total of five physical therapists participated in the study from four separate clinics. Practitioners included four men and one woman and based on the reported data, the practitioners had a mean age of 34.5 years and all identified ethnically as white. In addition, they had been practicing as physical therapist for an average of 8.5 years.

Fifty-six patients participated after one patient was excluded due to incomplete information. Patient participants included 26 men and 30 women between the ages of 18 and 81 years. Patients reported a wide range of injuries sustained including torn labrum, low back pain, torn achilles, broken elbow, whiplash, ankle sprain, broken ankle, stroke,
concussion, hamstring rupture, trigger finger, torn meniscus, knee replacement, hip replacement, spinal cord injury, bursitis, degenerative disc, and generalized pain throughout the body. Twenty percent of patients had sustained the same injury before, where injuries occurred within the last 6 months (58%), 6 months to 2 years ago (22%), or longer than 2 years ago (20%). Patients reported a range of physical therapy sessions attended with most having attended 10 sessions or less (52%), followed by 11-20 sessions (25%), and in some cases more than 20 sessions (23%). Of all the patients, 18% reported having zero experience working with a physical therapist prior to their current injury, 33% of patients had extensive experience working with a physical therapist prior to their current injury, and the remaining 49% of patients reported a moderate amount of experience working with a physical therapist prior to their current injury. In regards to one’s physical activity lifestyle, 11% of patients regarded themselves as sedentary, 32% as moderately active, and 57% as very active. Participant demographic characteristics are shown in Table 1.
Table 1. Descriptive characteristics of the participants by gender ($N = 56$)

<table>
<thead>
<tr>
<th>Race</th>
<th>Male ($n = 26$)</th>
<th>Female ($n = 30$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latino</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Native American</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Asian Pacific Islander</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>African American</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>House Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $19,999$</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>$20,000 to $49,999$</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>$50,000 to $99,999$</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>$100,000 or more</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>High school/GED</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Some College</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>2-year college degree</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>4-year college degree</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Beyond 4-year college degree</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Age (M yr.)</td>
<td>51.04</td>
<td>47.70</td>
</tr>
</tbody>
</table>

Procedures

An Institutional Review Board approved this study prior to data collection.

Recruitment emails were sent to physical therapy practitioners in the Pacific Northwest who had current email addresses online, and a few practitioners referred recruitment information to fellow physical therapists. Practitioners interested in the study contacted the researchers who reviewed the study protocol and then delivered a packet of materials to the practitioners. Practitioners completed a background survey that took approximately five minutes to complete. Practitioners then advertised the study in their clinic, and completed a survey for each patient who agreed to participate in the study.

Patients, when they attended a session with their physical therapist, were alerted
to the study by the physical therapist(s), office staff working with the physical therapist(s), or a recruitment flyer placed in the physical therapy facilities. Conditions of inclusion required patients to have been attending physical therapy for at least two weeks. Patients who chose to participate read through an Explanation of Study document regarding the study details and proceeded to fill out a survey that took approximately five minutes to complete. Upon completion of the survey, participants either placed it in a designated envelope or handed it to an employee (not including any physical therapists) for collection. The patients then informed the practitioners that they had completed the survey, stated the code number that was on their survey, and the practitioners then recorded the patient’s number on the survey they completed regarding the patient to ensure that the numbering of surveys stayed in sync between the patients and practitioners. Two envelopes were used to separate the patient and practitioner surveys, and a final envelope was used for the practitioner to send back all the completed materials to the research team.

**Measures**

A series of self-report measures were completed to address the research questions of interest. These measures included the following:

a) A background assessment completed by the patient of the injury and length of time in rehabilitation, date when the injury occurred, whether or not the patient had previously suffered the same injury, age, ethnicity, gender, total household income, and highest level of education completed;

b) A background survey completed by each practitioner that included demographic questions including age, ethnicity, gender, and a record of professional
experience;

c) The Sport Injury Rehabilitation Adherence Scale (SIRAS; Brewer, 2002) that was completed by the practitioners. The SIRAS was initially developed to assess patient adherence by the practitioner during the in-clinic appointments for sport-related orthopedic injuries, although the measure is generic enough to apply to multiple rehabilitation settings in the United States (Kolt, 2007). The three items assess the practitioner’s perception of a patient’s behaviors that constitute adherence. These include the intensity with which the patient completes rehabilitation exercises, how frequently the patient follows the practitioner’s instructions and advice, and how receptive the patient is to changes in his or her rehabilitation program. The practitioner rates each of these items on a 5-point Likert-type scale ranging from 1 (Never) to 5 (Always). Preliminary support was provided for test-retest reliability (intra-class correlation=0.77 over a 1-week period), internal consistency (Cronbach α=0.82), and inter-rater agreement index values ranging from 0.84-0.95 (Brewer, 2002). In the current study, a fourth item was added with regard to completing rehabilitation exercises at home that read, “How frequently do you think the patient completes at-home rehabilitation exercises that you prescribe?”; and,

d) The Self-Compassion Scale—Short Form (Neff, 2011) that assessed self-compassion. Within the scale, there are three subscales: self-kindness, common humanity, and mindfulness. Each subscale has four items, rated on a 5-point Likert-type scale ranging from 1 (Almost Never) to 5 (Almost Always). According to Neff (2011), this scale has a high internal reliability (α = 0.90) and test-retest consistency. In the current study, the scale was completed by patients in relation to themselves (“Indicate how often you behave in the stated manner…”) as well as practitioners in relation to each
of their own patients (“Indicate how often you think the patient behaves in the stated manner…”). Revising the original statements (for example, from “When I fail at something important…” to “When the patient fails at something important…”) was consistent with the protocol adopted by Neff and Beretvas (2012).

Results

Preliminary Analyses

As shown in Table 2, the Cronbach’s alpha internal consistencies of the self-compassion measure in the present study ranged from .63 to .85 for the versions completed by both patients and practitioners. Results regarding patient reported common humanity should be interpreted with caution as this was the one subscale less than the recommended alpha value of .70 or greater (Nunnally, 1978). The common humanity subscale was retained in the analyses for this study, however, given the exploratory nature of this investigation. In addition, the measure assessing patients’ rehabilitation adherence was found to have a Cronbach’s alpha value of .75. Means and standard deviations for all of the variables are also presented in Table 2.

Table 2. Descriptive statistics and internal consistency for self-compassion and rehabilitation adherence

<table>
<thead>
<tr>
<th>Variables</th>
<th>Assessed by patient</th>
<th>Assessed by practitioners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>α</td>
<td>M</td>
</tr>
<tr>
<td>Self-Kindness</td>
<td>.742</td>
<td>3.41</td>
</tr>
<tr>
<td>Common Humanity</td>
<td>.627</td>
<td>3.48</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>.702</td>
<td>3.75</td>
</tr>
<tr>
<td>RA</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. M = Mean; SD = Standard deviation; RA = Rehabilitation adherence
Correlational Analyses

In testing the first hypothesis, no significant relationship was found to exist between patients’ self-reported self-compassion and patients’ levels of self-compassion observed by their practitioners ($r = .23, p = .08$), although the relationship approached statistical significance. Given the non-significant association, a t-test analysis was conducted to determine whether self-compassion differed when reported by patients versus practitioners. The results revealed a statistically significant difference, $t(111) = 4.97, p < .001, d = .94$. Specifically, patient self-compassion reported by patients ($M = 3.55, SD = 0.64$) was lower than patient self-compassion observed by practitioners ($M = 4.15, SD = 0.62$).

With regard to the second hypothesis, no significant relationship was observed between patients’ self-reported self-compassion and their rehabilitation adherence ($r = .02, p = .87$).

In testing the third hypothesis, Pearson correlations showed a significant relationship between patients’ self-compassion observed by practitioners and patients’ rehabilitation adherence ($r = .40, p < .01$). Furthermore, we found that patients’ stage of rehabilitation moderated this relationship. That is, while the correlation was significant if patients completed more than 70% of rehabilitation ($r = .40, p < .05$), no significant correlation was observed for patients who completed less than 70% of their rehabilitation ($r = .35, p = .09$).

Multivariate Analyses

Additional multivariate analyses were conducted as a follow-up to the significant univariate relationship between patients’ self-compassion observed by
practitioners and patients’ rehabilitation adherence. The additional analyses provided a more detailed examination of exactly what specific components of self-compassion and rehabilitation were related to each other. A canonical correlation analysis revealed a significant multivariate relationship between practitioner observed self-compassion and rehabilitation adherence, Wilks’ lambda = .62, $F$ (12,132) = 2.17, $p < .05$. Three functions or unique solutions were significant. Only the first function was interpreted, however, as it alone had a meaningful redundancy index, where a redundancy index of at least 10% is considered to be significant and meaningful (Pedhazur, 1982).

The first canonical correlation between the two sets of variables was $R_c = .52$. We used the canonical loading cut-off value of ≥.30 (Pedhazur, 1982) and found the most significant predictor variables contributing to the canonical variate was common humanity (.99), followed by mindfulness (.72) and self-kindness (.67). For the criterion variate, effort during rehabilitation exercises was the most significant criterion variable (.95), followed by compliance with at-home rehabilitation exercises (.55) and rehabilitation exercise frequency (.46). Receptiveness to rehabilitation exercises did not contribute to the multivariate relationship.

Furthermore, the redundancy index revealed that 17.6% of the variance in the set of adherence variables was explained by the set of self-compassion variables. The canonical loadings and redundancy index for the first function are presented in Table 3.
Table 3. Canonical loading and redundancy index for the first canonical function

<table>
<thead>
<tr>
<th>Variate/Variables</th>
<th>Canonical loading</th>
<th>Average loading squared</th>
<th>Canonical $R^2$</th>
<th>Redundancy index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predictor variables assessed by practitioners</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common humanity</td>
<td>.991</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mindfulness</td>
<td>.722</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-kindness</td>
<td>.671</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictor variate</td>
<td></td>
<td>.651</td>
<td>.271</td>
<td>.176</td>
</tr>
<tr>
<td><strong>Criterion variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rehabilitation exercise effort</td>
<td>.952</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At-home rehabilitation compliance</td>
<td>.552</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rehabilitation exercise frequency</td>
<td>.467</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rehabilitation exercise receptiveness</td>
<td>.112</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criterion variate</td>
<td></td>
<td>.360</td>
<td>.271</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* The redundancy index is calculated as the average loading squared times the canonical $R^2$

**Discussion**

The purpose of this study was to explore the role of self-compassion in adherence to physical therapy protocols. The first hypothesis was not supported that there would be a significant positive relationship between patient self-reported levels of self-compassion and practitioner observed levels of self-compassion. This result suggests that, unlike a romantic partner as in the Neff and Beretvas (2012) study, practitioners cannot readily observe their patient’s level of self-compassion. The professional setting in which a practitioner sees a patient may prevent physical therapists from being able to truly observe a patient’s level of self-compassion. Furthermore, it is possible that patients project a more positive image of how they treat themselves to their practitioners than how they actually treat themselves. This possibility is consistent with the mean value for patient reported self-compassion being statistically significantly lower than the mean value for the practitioner observed self-compassion in this study.
An alternative explanation given the findings were approaching statistical significance is that patient reported self-compassion might be observable by practitioners in certain circumstances and with certain patients. For example, one factor could be more time spent together over a greater number of sessions, or during each session if the type of therapy lends itself to increased patient-practitioner interaction. Furthermore, some patients could be more open to sharing personal feelings such as frustration, isolation, and inadequacy. Future research could explore the extent to which practitioners are mindful of monitoring patients for expressions of self-compassion, and engaging patients in conversations that could inform practitioners about the patients who could benefit most from a more self-compassionate approach to their rehabilitation.

A second hypothesis also unsupported by this study was that patients who scored higher on a measure of self-compassion would score higher on the rehabilitation adherence scale. This non-significant finding was surprising given the conceptual models that support (a) self-compassion as the impetus for self-care (Reyes, 2012), and (b) antecedents to rehabilitation adherence to be factors that have a demonstrated relationship with self-compassion such as self-motivation and coping skills (Wiese-Bjornstal et al., 1998). Moreover, there has been a significant relationship reported in the empirical literature (Terry, Leary, Mehta, & Henderson, 2013) between self-compassion and variables such as the likelihood to seek medical attention, as well as motivation to avoid unhealthiness. Of course, relationships established in the context of illness might not necessarily translate to the context of injury. Moreover, the behavior of rehabilitation compliance could be influenced by numerous factors beyond self-compassion, such that the frequency with which patients complete rehabilitation exercises at home, for example,
could be hindered by constraints (e.g., competing demands for time) that overshadow any variance explained by one’s level of self-compassion. Patients might also exhibit little effort during appointments, as another example, because of the reasons they are attending the sessions, be they mandated or of the patient’s own volition. Clearly more research is warranted to unravel the methods and circumstances that best reveal the extent to which a significant relationship between self-compassion and adherence behaviors might exist.

Lastly, the third hypothesis was supported that the practitioner’s observation of self-compassion for each patient would positively relate to a measure of rehabilitation adherence. In addition, the percentage of rehabilitation completed had a significant moderating effect on the association, where the relationship was significant with those patients who were further along in their rehabilitation program. This tells us that practitioners judge patients to try harder, be more receptive to change in their rehabilitation program, follow instructions and advice to a greater degree, and more often complete exercises at home when the practitioners think the patients treat themselves with kindness, keep their emotions in balance, and understand failing is part of the human condition.

This different outcome in the performance of some patients compared to others could conceivably pertain to leadership dynamics evident in theories such as the self-fulfilling prophecy (see Horn, Lox, & Labrador, 2010, for an overview). That is, practitioners might expect particular patients to be more successful in rehabilitation based, perhaps, on an initial assessment of self-compassion, which provokes the practitioner to act with more support toward those patients the practitioners believe are most likely to take care of themselves. This differential treatment by some practitioners
could explain why patients respond with varying degrees of effort and receptiveness to their rehabilitation program. Alternatively, the practitioner’s assessment of patient adherence might influence how he or she views the patient’s level of self-compassion. For example, a practitioner who observes a patient showing very little adherence might assume that patient has a lower level of self-compassion without considering other factors, which is then reflected in the reported patient observed self-compassion variable. Of course, such explanations are beyond the scope of the current investigation and would need to be systematically examined along with additional possible explanations to better understand such a finding if it is replicated in future research.

The findings revealed the set of practitioner observed self-compassion variables explained a significant and meaningful amount of variance in the set of rehabilitation adherence variables. This suggests directionality in the association between these sets of variables, and lays the foundation for further examining practitioner observed self-compassion as an antecedent to rehabilitation adherence that is modifiable and, therefore, a potential mechanism to be considered in future intervention work. All subscales contributed to the multivariate relationship except for patient receptiveness to rehabilitation exercises, although practitioner observed shared humanity, or a sense of connection to others, and effort exerted during rehabilitation made the greatest contributions. From a practical perspective, this suggests that the patients who try harder are the patients who, from the perspective of the practitioner, understand that feelings of failure and inadequacy are shared by most people. Therefore, patients would benefit from being reminded they are not alone in dealing with challenging circumstances and that
other patients also feel down at times, which speaks to sharing not only success stories of other patients but the struggles of other patients that preceded the success stories.

There were limitations and strengths that characterized this exploratory study. The limited sample size requires that the analyses be interpreted with caution. Furthermore, additional moderating factors such as the length of time in rehabilitation and experience of the practitioner could not be considered in the analyses due to the limited sample size. Moreover, the design of the cross-sectional study only permitted the assessment of associations among the variables of interest, where any causal relationships could not be determined. That said, the study addressed research questions with practical relevance in the real-world setting, was grounded in conceptual frameworks that integrated literatures from psychology of injury rehabilitation and positive psychology, utilized established measures as well as preferred protocols such as having practitioners observe patient adherence as opposed to having patients self-report adherence behaviors, and explained a significant and meaningful amount of variance in adherence behavior. In sum, this study suggests that the role played by self-compassion in the injury rehabilitation process should continue to be explored in the hope of further enhancing the patient experience during physical therapy in the future.
References


