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The Use of Physical Therapy Evaluation and Treatment to Manage a Patient following a Total Knee Arthroplasty: A Case Study

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The Use of Physical Therapy Evaluation and Treatment to Manage a Patient Following a Total Knee Arthroplasty: A Case Study.

by

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Bachelor of Science, Physical Education, Exercise Science, and Wellness
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A Scholarly Project Submitted to the Graduate Faculty of the

Department of Physical Therapy
School of Medicine and Health Sciences
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in partial fulfillment of the requirements for the degree of

Doctor of Physical Therapy

Grand Forks, North Dakota
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This Scholarly Project, submitted by Scott Holm in partial fulfillment of the requirements for the Degree of Doctor of Physical Therapy from the University of North Dakota, has been read by the Advisor and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.

(Graduate School Advisor)

(Chairperson, Physical Therapy)
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**Department**  Physical Therapy

**Degree**  Doctor of Physical Therapy

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Date  10/03/14
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ABSTRACT

**Background and Purpose:** The knee is a significant structure within the musculoskeletal system, which is used for dynamic and static movement in the environment. Obesity has been found to have significant health implications within all of the body’s systems. The purpose of this case study is to evaluate the functional outcomes of an obese patient following a total knee arthroplasty and gain understanding of the impact that obesity has on functional improvement during postoperative physical therapy care of a total knee replacement.

**Case Description:** The patient is a 43 year old female, who has undergone a total knee arthroplasty secondary to osteoarthritis. The patient was admitted to a transitional care unit for physical and occupational therapy evaluation and treatment.

**Discussion:** Current research is inconclusive on the long-term recovery of obese patients who have undergone a total knee arthroplasty. Further research is needed to determine the most efficient and effective method of treatment. It is currently unclear how obesity impacts total knee arthroplasty functional recovery.
CHAPTER I

BACKGROUND AND PURPOSE

The knee is a significant structure within the musculoskeletal system. It serves as a joint for dynamic movement and static stability. The knee bears a significant amount of weight during standing, gait, dynamic movement, and static stability. Knee pain and dysfunction can be extremely detrimental to function. The most common cause of knee disability and pain is arthritis. Most arthritis can be categorized into three main types. The first is osteoarthritis (OA), which develops from “wear and tear” of the knee over time. Over time the protective articular cartilage of the femur, the medial and lateral menisci of the tibia begin to deteriorate, and abnormal bone formation (bone spurs) may occur. The second type is rheumatoid arthritis (RA). RA is a disease in which the synovial membrane that surrounds the joint becomes inflamed and abnormally thick. RA is a chronic inflammatory disease which eventually leads to joint breakdown. The third type is post-traumatic arthritis. Following a traumatic injury to the knee joint fractures, damage to the articular cartilage, and tearing of ligaments or the menisci all may occur. If left untreated, these injuries may lead to further breakdown of the supportive structures within in the knee.

Each year more than 51 million inpatient surgeries are performed in the United States; total knee arthroplasties (TKA) are among the most frequently performed orthopedic surgeries in the US. Knee osteoarthritis (OA) secondary to
overuse and obesity are two of the leading causes of joint damage. In cases when severe OA is present and conservative physical therapy treatment fails, a TKA is often recommended. Today, people are living longer and are more active than previous generations. According to the Center for Disease Control, the life expectancy in the United States was 76.8 years old; as of 2011 the life expectancy had reached 78.7 years. The life expectancy in the United States is expected to continue to rise with improvements in health care technology and a greater focus on health and wellness. On a separate note, obesity has reached epidemic status in the United States. According to the American College of Sports Medicine, obesity is defined as having a body mass index above 30 kg/m² and excess adipose tissue. In the United States, over one third (34.9%) of the adults are obese, which has been linked to significant health conditions.

With increased life expectancy and activity levels as well as an increase in rate of obesity there are health conditions which may arise.

Currently, there is conflicting data on the prognosis, quality of life, and functional outcomes of obese patients undergoing a TKA. Some studies illustrate a decrease in quality of life following a TKA for an obese patient, while other studies found no change in function, mobility, or pain for patients who have undergone a TKA.

**Obesity and the Development of Knee Osteoarthritis**

Obesity has been shown to be a risk factor for development of multiple diseases including: cardiovascular disease, metabolic disorders, musculoskeletal dysfunction, and various cancers. Obesity is the fifth leading risk factor for death.

2
globally. In addition, obesity is one of the most significant risk factors for the development of OA.

**Obesity and Total Knee Arthroplasty**

From 2002-2009 the amount of TKAs doubled; with improved technology and greater need for joint replacement, patients were more likely to undergo a TKA. A review of 753,268 TKAs found that 15% of these cases were identified as obese patients with 30% of obese patients presenting with 3 or more co-morbidities. Although research illustrates an increase in the utilization of TKAs by both obese and non-obese patients it is still uncertain the changes in functional outcomes and quality of life following the surgery.

**Current Practice**

Physical therapy treatment is the primary postoperative care option for a patient who has underwent a TKA. Postoperative physical therapy can occur in an acute care, rehabilitation, home, and outpatient settings to improve recovery. Physical therapy treatments are focused on helping the patient regain strength, increase range of motion, decrease pain, and most importantly improve function. There are no universal guidelines outlining the prognosis with much unknown regarding which impairments may affect long-term functional outcomes. Current research is illustrating that early physical therapy treatment is the ideal treatment for short-term recovery (less than 1 year), but it is unknown as to how long a patient will take to fully recover and re-gain full functional ability.
Current Research

The primary goal of a knee replacement is to restore normal function of the joint. In a 2005 study of 243 patients at least 1 year post-TKA, Noble et al. stated, "Patients who had total knee replacements still experienced substantial functional impairments compared with their age and gender matched peers, especially when doing biomechanically demanding activities." (pp.157) The study also showed that 52% of the patients were reporting limitations in their functional activities following their TKA. This data may lead to the conclusion that a TKA does not automatically restore knee function.

Once a patient has undergone a TKA, it is assumed that the knee has returned to normal biomechanical function; however, physical limitations negatively affecting function may still remain. The goal of physical therapy is to decrease the impact that physical limitations are having on function. In 2002 Weiss et al. identified the activities most important to patients following a TKA. Patients were asked both frequency in which they performed an activity and the extent to which their participation was limited following their knee replacement. The authors indicated that the most important activities were stretching, exercise, kneeling, and gardening. The activities that were reported as the most difficult were squatting, kneeling, and gardening. This study illustrates that a TKA may restore biomechanical function to a significant degree; however, following a TKA improvements in knee function are still needed to perform all activities. The role of physical therapy is to assist patients recovery, improve activity, and progress to maximal outcomes.
Finally, unknowns still exist regarding obesity and long-term outcomes in patients who have undergone a TKA. Jagielski et al\textsuperscript{12} stated that there was a prevalence of psychological co-morbidity, including anxiety, depressive disorders, and reduced quality of life among obese individuals. Obesity has an impact on overall quality of life, and it is unknown how performing a total joint replacement will impact the individual and their functional ability.

Postoperative outcomes for obese patients have been researched through various methods. Functional measures and outcome surveys have been predominately used to determine long-term outcomes for obese patients and TKAs. Rajgopal et al\textsuperscript{13} said “the most important finding in our study was that obese patients received the same benefit after a TKA as all other patients” and “The WOMAC and SF-12 mental change scores in this study demonstrate that obese patients are capable of a similar or greater improvement in subjective and objective function compared with non-obese patients after a TKA.” (pp.798) In 2013, Issa et al\textsuperscript{14} evaluated implant survivorship, Knee Society scores, activity scores, and complications in obese patients who had undergone a TKA. They found in obese patients and comparison groups a similar implant survivorship during a mean follow-up of 52 months; however, the Knee Society scores, functional scores, and activity scores were all lower in obese patients during the follow-up period.\textsuperscript{14} In addition, the study showed that post-surgical joint replacement complications were higher in the morbidly obese patients.\textsuperscript{14}

Current research is inconclusive regarding the effects obesity has on total knee replacements. The purpose of this case study is to evaluate the functional
outcomes of a obese patient following a total knee arthroplasty and gain
understanding of the impact that obesity has on functional improvement during
postoperative physical therapy care of a total knee replacement.
CHAPTER II
CASE DESCRIPTION

Patient Description

The patient is a 43 year old female, who presents to a transitional care unit within a skilled nursing facility following discharge from the hospital after undergoing a tricompartmental right total knee arthroplasty four days prior. According to the medical history screening provided upon hospital discharge, the patient has developmental delay (level unknown) with cognition more affected than physical function and a past medical history of depression, anxiety, migraines, asthma, osteoporosis, left foot drop, kidney stones, irritable bowel syndrome, fibromyalgia, hyperlipidemia, hypertension (stage unknown), degenerative joint disease, smoking, chronic low back pain, history of deep vein thrombosis, and obesity. She did not participate in physical therapy prior to surgery and has been sedentary for an extended period of time. Currently, the patient is unemployed living with her adult son in a first floor apartment with no stairs to enter. Her son provides approximately 4 hours of daily care with additional assistance from a disability service, who aide with hygiene, medications, and other activities of daily living (ADLs). The patient’s mother lives in another state, but is in close contact with disability services regarding her care. At home, she used a front wheeled walker (FWW) and a four point cane for ambulating extended distances, her bathroom is equipped with grab bars and a
shower bench. She has social support from disability services and her son; surgery should not limit her social functioning. Overall, the patient has a significant past medical history with many co-morbidities; however no significant past surgical history or family medical history were noted. The patient has a wide variety of medications, which were managed by disability services and will be managed by nursing staff during her time at the transitional care unit. Following a transitional care unit stay, the patient's goal is to return home to her apartment.

**Examination**

Upon examination, the patient was confused and disoriented possibly due to pain medication, which was administered prior to leaving the hospital. While seated in a wheelchair she stated that her right knee pain is equal to 8/10 (0-10 scale) at rest. The patient's attention level and cognition were impaired at the time of evaluation. A Mini Mental exam was not performed; however, the patient was assigned an estimated score of 18, indicating mild cognitive impairment. She displayed elevated anxiety during the examination and stated that she "wanted to rest". The patient agreed to perform the examination with much encouragement.

**Systems Review:**

**Cardiovascular:** According to hospital discharge screening the patient's resting heart rate was 77 beats per minute and her resting blood pressure equal to 112/82 mmHg. These numbers indicate normal blood pressure and heart rate. **Integumentary and Edema:** Her right knee was dressed and wrapped upon examination. The patient's dressing changes were to be performed by nursing
staff twice per day to monitor for infection and healing. Through observation at the time of examination there were no signs of infection. The patient had significant bilateral lower extremity edema, which was monitored and managed by occupational therapy during her stay.

Musculoskeletal: Gross range of motion was performed bilaterally. Lower extremity goniometric measurements were recorded and compared to normal limits as outlined in Norkin.\textsuperscript{16} Ranges of motion are listed in the table 1 below.

Table 1: Lower extremity range of motion at initial examination

<table>
<thead>
<tr>
<th>Lower Extremity Range of Motion</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip Flexion</td>
<td>Limited secondary to pain</td>
<td>Within normal limits (WNL)</td>
</tr>
<tr>
<td>Hip Abduction</td>
<td>WNL</td>
<td>WNL</td>
</tr>
<tr>
<td>Hip Adduction</td>
<td>WNL</td>
<td>WNL</td>
</tr>
<tr>
<td>Knee Flexion</td>
<td>73(^{\circ})</td>
<td>WNL</td>
</tr>
<tr>
<td>Knee Extension</td>
<td>24(^{\circ})</td>
<td>WNL</td>
</tr>
<tr>
<td>Ankle Dorsiflexion</td>
<td>WNL</td>
<td>Deferred due to ankle foot orthosis</td>
</tr>
</tbody>
</table>
Gross Strength testing was also performed bilaterally on the lower extremity with the patient in a seated position. The patient's lower extremity motions were scored on a 5 point scale as outlined in Reese. The lower extremity strength scores are listed in the table below.

Table 2: Lower extremity strength at initial examination

<table>
<thead>
<tr>
<th>Lower Extremity Strength</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip Flexion</td>
<td>4+</td>
<td>5</td>
</tr>
<tr>
<td>Hip Abduction</td>
<td>4+</td>
<td>4+</td>
</tr>
<tr>
<td>Hip Adduction</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Knee Flexion</td>
<td>Deferred secondary to patient's pain</td>
<td>4+</td>
</tr>
<tr>
<td>Knee Extension</td>
<td>Deferred secondary to patient's pain</td>
<td>5</td>
</tr>
<tr>
<td>Ankle Dorsiflexion</td>
<td>4+</td>
<td>Deferred secondary to ankle foot orthosis</td>
</tr>
</tbody>
</table>

**Palpation:** Light touch tenderness was noted throughout the right knee. The most painful areas were the anterior aspect of the patella and the superior portion of the tibia was the most painful. This was the area of the surgical incision.

**Anthropometric measures:** According to hospital discharge screening, the patient's height is 5 feet 6 ½ inches and weight is 329 pounds resulting in a total body mass index calculation of 52.3 kg/m².

**Neuromuscular:** The patient's balance was assessed at various levels, predominately seated and standing. Her static balance in a seated position was good with no loss of balance noted; seated dynamic balance was not assessed.
at this time due to the patient’s display of anxiety and pain. Her standing static and dynamic balance were both poor, with significant swaying evident and assistance required. She was unable to stand safely and required the assistance of two therapists to remain in a static standing position.

**Ambulation:** Ambulation was assessed by having the patient walk with the use of a front wheeled walker in her room and through the transitional care unit hallways. A gait belt was applied for patient safety. She was able to ambulate 8 feet on two separate occasions with moderate assistance from two therapists. She displayed an atalgic gait pattern exhibiting decreased step and stride length bilaterally secondary to pain. The patient’s ability to ambulate stairs was not assessed due to the patient’s report of significant pain.

**Transfers:** The functional ability to transfer was examined from various positions throughout the patient’s room. The patient required moderate assistance of two therapists to perform transfers from sitting to/from supine on the bed, sitting on edge of bed to/from standing, and sitting on the toilet to/from standing.

Transfers to and from the bed were performed with the use of bed rails. The bathroom transfers were performed with a FWW and toilet grab bars. During each transfer the patient repeatedly cried and voiced her pain throughout the movement stating her pain was equal to 10/10 (0-10 scale).

**Communication/Cognition:** The ability to communicate was monitored throughout the examination. As stated above, the patient has developmental delay which affects her cognitive ability. She was able to communicate effectively; however, she lacked cognitive reasoning based on information
obtained in the medical record. She was oriented to person, place, and time; she seemed to learn best through visual cueing.

**Evaluation**

This patient presents as a typical case based on her primary total knee arthroplasty diagnoses; however, her secondary diagnoses of obesity and developmental delay may alter the case rendering it atypical. With the use of physician referral and examination findings baseline data and outcome measures were established. Using the International Classification of Functioning, Disability and Health the therapy team was able to organize the patient's active pathology, body structures, impairments, and participation limitations. The active pathology of a TKA was known upon admission. The body structures affected included decreased range of motion, strength, balance and endurance as well as increased pain. The patient had significant impairments that altered her gait pattern and limited her ability transfer independently. She was unable to perform self-care, home management, and leisure activities without assistance. The patient will be continually monitored for safety by the therapy team and the nursing staff. Along with interventions specific to her TKA the plan of care will also include exercise for general health and improved fitness.

**Diagnosis**

The patient's diagnosis of postoperative total knee arthroplasty falls into the APTA Guide to Physical Therapy Practice pattern 4H; impaired joint mobility, motor function, muscle performance, and range of motion associated with joint
arthroplasty. The medical diagnosis for a total knee arthroplasty has an ICD-9 code of V43.65, joint replacement of the knee.

**Prognosis**

According to the APTA Guide to Physical Therapy Practice, over the course of 6 months the patient will demonstrate optimal joint mobility, motor function, muscle performance, and range of motion. During this time the patient will return to functional tasks and ADLs. With this patient's large number of co-morbidities, she is at risk for delayed healing, slower progression of function, and at a higher risk for joint replacement failure. Throughout the episode of care the patient's progression was monitored for optimal improvement and recovery.

**Plan of Care**

The episode of care was determined based on Medicare regulations using RUG levels. Initially, the patient was placed into an ultra-high category; within this category the patient received 720 minutes of therapy within seven days by at least two disciplines. The patient was seen 4 times per day (2 physical therapy and 2 occupational therapy sessions) for 6 days of the week. The treatments were a 40-minute treatment and a 30 minute treatment. The episode of care is expected to last 2 months with treatment modifications made depending on the patient's progress.
Goals for this patient included:

Following PT intervention, the patient will be able to perform the following to be independent in her room (within 4-6 weeks.)

1. Transfer from sit to stand modified independent with a FWW.
2. Transfer from sit to supine modified independent with bed rails.
3. Ambulate 20 feet on a level surface with a FWW modified independent.

Following PT intervention, the patient will be able to perform the following to return home safely (within 6-8 weeks).

1. Transfer from sit to stand independently.
2. Transfer from sit to supine independently.
3. Descend and ascend 5 steps with a FWW and minimum assistance from one.
4. Ambulate to/from the dining room (about 150 feet) modified independent with a FWW.

The discharge criterion was determined based on the patient meeting her goals, performing therapy consistently, and feeling prepared to return home. The patient was required to have a home safety evaluation performed prior to discharge, and disability services were consulted to resume assistance at home. In addition, upon discharge the patient was also referred for outpatient physical and occupational therapy.

The plan of care for physical therapy was focused on decreasing pain, increasing range of motion, strength, and functional mobility to allow the patient
to return home safely. During her stay, the nursing staff monitored medications, ADLs, transfers and general safety. Occupational therapy treatment was involved for ADL training and upper extremity strengthening. The patient was continually monitored by the attending physician while she was a resident at the transitional care unit.
CHAPTER III

INTERVENTIONS

Based on the patient’s diagnosis and evaluation findings, interventions were selected to increase range of motion, strength, functional mobility, and decrease pain. The interventions selected were based on the rehabilitation and patient goals. Treatments were performed with a single physical therapist or in conjunction with occupational therapy; therapy sessions were individual instruction for various time frames.

Each day interventions were documented through the daily treatment note. Interventions were placed into four main categories: gait training, therapeutic exercise, neuromuscular re-education, and therapeutic activities. During the treatment sessions, the therapist selected interventions based on the patient’s progress and the previous treatment session.

**Gait Training:** Gait training is an intervention in which the therapist provides skilled training on proper gait mechanics, pattern, and safety. During the episode of care, our goal as therapists was to improve gait efficiency and safety while finding the appropriate assistive device to promote function. Gait training was performed daily to improve the patient’s ability to ambulate. Early in treatment the patient used a FWW with minimal to moderate assist to ambulate throughout the halls of the facility. Goals of gait training were to improve step and stride length, increase endurance and ensure patient safety. Ambulation was
measured in feet and progressed at the therapist’s discretion. The patient was required to perform ambulation with a FWW with stand-by assistance prior to ambulating without an assistive device. As the patient progressed, ambulation without an assistive device was performed. As well as therapy progression, the patient was also evaluated and declared to be safe to walk to and from meals independently with her FWW. Prior to discharge, the patient had progressed and she was allowed to ambulate independently with a FWW throughout her room and the facility. The patient’s personal four point cane was used for a short time, but was determined to be unsafe and discontinued.

Gait training has shown to be an effective intervention in early rehabilitation following a TKA to improve functional capacity. In a 2013 study of gait and patient satisfaction outcomes, Turcot et al\textsuperscript{21} found improvement in pain, functional capacity and quality of life as well as significant improvements in gait mechanics. The researchers stated, “This study demonstrated the contribution of both gait and clinical outcomes to patients’ satisfaction during early recovery following TKA.”\textsuperscript{21} Therefore, gait training may be an effective intervention in the early postoperative treatment of a TKA.

**Therapeutic Exercise:** Therapeutic exercise was a consistent intervention throughout the episode of care due to the ability to improve function and recovery. Early exercise treatments included supine and seated exercise due to the patient’s inability to stand for prolonged periods of time secondary to pain. Supine exercises included: straight leg raises, quad sets, hamstring sets, short-arc quads, heel slides, ankle pumps, and hip abduction. Supine exercises
were initially performed for two sets of ten repetitions. As the patient progressed we increased the number of repetitions to 15 and eventually 20 in order to adhere to the principle of overload. Seated exercises were added and included hip flexion, long-arc knee extension, knee flexion, hip abduction, and hip adduction. Both seated and supine exercises were progressed as the patient improved. Initially, all exercises were performed without external resistance; as the patient improved external resistance was applied. External resistance sources included: therapists manual resistance, stretch bands, and ankle weights. Once tolerated, standing exercises were incorporated including: partial squats, hip abduction, hip extension, knee flexion, and marching.

A majority of our therapeutic exercise was based on the idea that recovery of function is closely tied to both performing functional exercises and addressing quadriceps weakness as a main impairment limiting function. Meier et al\textsuperscript{9} stated muscle weakness following a TKA may persist for years. This statement indicates the need for improvement on the muscular level to impact overall function. The researchers went on to say increasing quadriceps strength may decrease these impairments and result in improved recovery. \textsuperscript{9}

\textbf{Neuromuscular Re-education:} In addition to therapeutic exercise dynamic and static balance exercises were included. The patient performed single leg stance, standing on various surfaces, and obstacle courses; all to improve the patient's balance and coordination. The exercises were performed both with and without an assistive device to progress and challenge the patient.
Therapeutic Activities: Therapeutic activities were used to promote recovery of day-to-day activities. Therapeutic activities included various transfers from various surfaces to challenge and progress the patient. Throughout the clinic, the therapists had access to chairs of various heights and a hi-low plinth. With the use of these seating options we were able to challenge the patient by having her sit to stand from different seats. Progression was also based on the amount of assistance that the patient required. Throughout every treatment therapeutic activity was performed. Therapeutic activities were included to improve the patient’s safety and progress toward independence.

Modalities: Modalities were used on a limited basis throughout the clinic. With a majority of the patients in the transitional care unit their pain was controlled by medication. Cold packs were used as requested by the patient to decrease swelling and pain. The cold packs were supplied by the rehab department and the nursing staff at the patient’s request.

Interventions were selected to promote patient recovery and progress to functional independence. As a team of therapists, we were able to select interventions based on clinical judgment, outcomes from prior interventions, and areas of needed improvement. The focus of the interventions was always to improve function.
CHAPTER IV
OUTCOMES

The patient received physical therapy intervention twice a day for six days a week for two weeks. Following the initial two weeks, the patient was seen for one physical therapy treatment a day for five days a week for two weeks. Treatments included various combinations of the interventions listed above as well as occupational therapy interventions.

At the time of discharge, the patient's overall range of motion (knee flexion: 94° and knee extension: 14°) improved, her pain decreased without the use of pain medication, and her functional mobility increased. She reported a significant decrease in pain with functional activity. Gross lower extremity strength was significantly improved.

The patient significantly improved her functional capacity. Her bed mobility was performed independently and all transfers from various heights required only standby assistance. She progressed to being independent in her room and the facility.

The interventions which appeared to provide the greatest improvement and recovery of function included gait training and therapeutic exercise. During gait training, the patient was continually encouraged to increase her distance and decrease the amount of rest required during ambulation. As the patient improved, circuit style training with external resistance, increased volume, and decreased
rest time. Also during therapeutic exercise treatments, interval training was utilized on the NuStep. The patient would maintain a set level of steps per minute as determined by the therapist, followed by a decreased level of steps per minute as a form of active recovery. Interval times were varied based on the therapist's discretion. Times varied from 30 seconds to one minute of work, followed by 30 seconds to one minute of active recovery (rest).

Upon discharge, the patient was referred to outpatient physical therapy to improve balance and increase range of motion. The patient's goals were met and she was discharged to home with assistance.
CHAPTER V
DISCUSSION

Current research is inconclusive on the long-term effects that obesity may have on patients who have undergone a TKA. As outlined previously, researchers identified a variety of outcomes which have made determining the prognosis for obese post-TKA patients difficult. Weiss et al\textsuperscript{11} found that TKAs are restoring the biomechanical function within the knee joint itself; however, there are still limitations in the functional ability following a TKA. With these uncertainties in functional recovery therapists may have a difficult time tracking the long-term recovery of their patients. Issa et al\textsuperscript{14} concluded that joint replacement longevity may be similar in obese patients and comparison groups; however, functional ability and activity scores may be limited in the obese patients indicating a potential for decreased functional recovery. Overall, there is still limited research with conclusive evidence to the effects that obesity has on the functional recovery of a patient post-TKA.

Within this case report, the patient exhibited accelerated short-term recovery when compared to current research. One limitation, when comparing to research, is that we were unable to track the patient’s long-term recovery. Upon discharge from the transitional care unit, the patient was referred to outpatient therapy for continued progress toward functional recovery. It is unknown what the
joint replacement survivorship will be as well as the length of time that functional limitations may persist due to a lack of follow-up.

Interventions which appeared to significantly improve the patient’s functional recovery included therapeutic exercise entailing strengthening and gait training for proper gait mechanics. Therapeutic exercise was first focused on improving range of motion and progressed to improving strength, specifically in the quadriceps. Gait training was used throughout the episode of care, with the initial focus on improving mechanics and progressing toward increasing distance with limited assistance. Overall, the patient improved within each specific intervention which may have contributed to her accelerated short-term recovery and eventual discharge.

There were some limitations within this study, which could be further evaluated to improve the results of the study. The patient was exposed to various therapists, treatment styles, and intervention prescriptions, which may lead to skewed results. Within the transitional care unit, it is common practice to expose patient’s to various therapists due to a large variety of therapists’ availability. This variety in therapists could be further researched using a single therapist in comparison to a large number of therapists treating one patient. Another limitation of the case study was inconsistencies in the treatment styles of each therapist. Each therapist was allowed to establish their own treatment based on previous intervention as well as the broad plan of care developed by the examining physical therapist. Due to this variety the patient was exposed to multiple treatment styles, volume prescriptions, and intervention combinations.
Further research could examine a single treatment style or intervention technique to determine the best source for functional recovery. With further research there are many aspects of obesity and post-TKA recovery which could be evaluated.
REFERENCES


