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School of Occupational Therapy

Occupational Therapy Student's Role in Advancing Clinical Skills in a Hand Therapy Clinic:
Analysis of Gun Shot Wound to the Hand

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Under the direction of the faculty capstone advisor:

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A Capstone Project Entitled

Occupational Therapy Student's Role in Advancing Clinical Skills in a Hand Therapy Clinic:
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Submitted to the School of Occupational Therapy at University of Indianapolis in partial fulfillment for the requirements of the Doctor of Occupational Therapy degree.

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Abstract

Over 67,000 individuals are injured from firearms each year. Occupational therapists are able to treat individuals with upper extremity injuries. Occupational therapy students are trained in school on the basic upper extremity injuries and are able to implement what they have learned through fieldwork rotations. Following a review of literature it has been found that there is an unclear distinction of the expectations of a doctoral capstone student at a hand therapy clinic. The purpose of this project was to bring awareness and education to occupational therapy students and new graduates on the difference between a level II fieldwork rotation and doctoral capstone expectations at a hand therapy clinic. A client analysis guide was also provided as a tool for individuals on the implementation of an advanced hand injury. Assessment tools, such as the QuickDASH can assist therapists in collaborating with patients to establish meaningful goals. The principles of managing pain, preventing infection, and increasing motion were involved during the treatment of a traumatic hand injury patient with the ultimate goal to maximize hand function. After utilizing current literature and providing treatment modalities, the client was able to maximize his daily function.

Introduction

Approximately 32,000 people die from firearms each year and 67,000 individuals are injured (Fowler, Dahlber, Haileyesus, & Annest, 2015). Between 2010 and 2012, males accounted for 90% of nonfatal firearm injuries treated in emergency departments. The upper extremity accounts for 34% of the nonfatal accidental firearm injuries requiring medical attention (Fowler et al., 2015). Occupational therapists have a unique role in upper extremity rehabilitation by enabling clients to participate in meaningful daily life activities (American Occupational Therapy Association, 2014; Amini, D., 2016). Entry-level master's degree occupational therapy students are expected to treat upper extremity injuries at a general level (Commission on Education, 2015). However, entry-level clinical doctoral degree occupational therapy students have the opportunity to treat more advanced injuries (Commission on Education, 2015). This doctoral level student received a general introduction to an outpatient hand therapy clinic for a level II fieldwork rotation. The student also chose to complete the doctoral capstone experience at the same hand therapy clinic to obtain advanced skills in this area. The purpose of this paper is to bring awareness and education to occupational therapy students and new graduates on the difference between a level II and doctoral capstone student expectations at a hand therapy clinic.

Background

The paper analysis is intended for occupational therapy students and new graduates. It is designed to educate individuals on the distinction between level II and doctoral capstone student expectations at a hand therapy clinic. This paper analysis can be used as an additional tool to enhance learning and implementation of interventions on advanced injuries at a hand therapy

clinic including multiple trauma injuries. It is understood that occupational therapy level II fieldworks typically focus on general clinical skills in the specialized setting. With the additional case analysis, students and new graduates will now have an extra tool to enhance their knowledge when working with advanced injuries including gun shot wounds.

Literature Review

Gunshot hand injuries are very complex in nature due to the multiple structures of the hand and its functional importance (Kerkar, 2016). Primary care physicians play an important role with traumatic hand injuries (Cheung, Hathell, & Thoma, 2013). Their role is crucial for acute injury prevention for improper management and long-term consequences. With the proper examination, primary care physicians can ensure a timely recovery and initiate surgery or therapy for upper extremity injuries (Cheung, Hatchell, & Thoma, 2013). Communication between multidisplinary teams consisting of hand therapists, hand surgeons, and mental health providers is crucial when stating information to the client and family for long-term functional outcomes (Jacobs, 2016).

Individuals who have traumatic hand injuries often have significant challenges they face (Hannah, 2011). Along with physical trauma, individuals with traumatic hand injuries often experience psychological or emotional trauma. Occupational therapists and hand therapists are certified in treating upper extremity injuries and play a role in assisting physical and psychosocial issues by providing education (AOTA, 2014; Amini, 2016; Hannah, 2011).

Approximately 85% of all hand therapists have an occupational therapy degree. Upper extremity rehabilitation injuries include fractures, tendon and nerve injuries/repairs, arthritis, shoulder replacements, upper extremity pain, and multiple trauma injuries. Occupational therapists'

assessments and interventions are holistic and client-centered driven to ensure maximal function in meaningful activities. The holistic approach goes beyond treating upper extremity injuries and includes the whole person, their roles, and their environment (AOTA, 2014; Amini, 2016). By providing education, valuable feedback, and active participation, occupational therapists are able to use a holistic approach in treating individuals with complex hand injuries (Amini, 2016; Hannah, 2011)

As part of the educational component that occupational therapists receive in graduate school, fieldwork rotations are arranged for hands on experience as part of preparation for post job placements (ACOTE, 2013). Fieldwork rotations are arranged in levels for advancing clinical reasoning and hands on experience. Level I fieldwork is arranged to have the student be introduced to the fieldwork experience with directed observation. Level II fieldwork promotes clinical reasoning and hands on experience for the student with a goal of developing entry-level, general clinical skills. Many schools are transitioning to entry-level clinical doctoral degree programs from master degree programs and are mandated to move to entry-level doctoral degree programs by 2027 (ACOTE, 2013; AOTA, 2018). Entry-level doctoral degree programs offer an additional semester for advancement of clinical skills, research skills, advocacy, administration, and/or theory development during a 16-week doctoral capstone (ACOTE, 2017; AOTA, 2018).

The focus of this doctoral capstone project includes advancing clinical skills beyond the generalist level of hand therapy with a correlated program development project and case analysis. General clinical skills were received at an outpatient hand therapy clinic for a level II fieldwork rotation. At the same outpatient hand therapy clinic, advanced skills are obtained through the doctoral capstone experience. Advanced clinical skills include evaluating and treating more complex injuries that are not typically treated by a level II fieldwork student. These complex

injuries can include shoulder injuries, complex fractures, amputations, tendon repairs, gunshot wounds, and multiple traumas.

Theory

When deciding how this project would be used, theory assisted in guiding this process. The theory that I have chosen to guide this capstone project is the biomechanical/rehabilitative frame of reference. This frame of reference relates to this capstone placement as it focuses on physical deficits (Cole & Tufano, 2008). A main component of this theory is the restorative and rehabilitative approach that is used to guide intervention planning (Cole & Tufano, 2008). This frame focuses on maintaining active range of motion (AROM) and passive range of motion (PROM), reducing edema, promoting wound healing, reducing pain, and providing therapeutic techniques. Possible interventions include positioning, splinting, range of motion, strengthening, and physical agent modalities. These are all typical interventions that are used at this outpatient hand therapy clinic (Cole & Tufano, 2008).

Case Analysis

A 34-year-old male sustained a self-inflicted gunshot wound to his left hand. The gunshot wound resulted in severe injuries to his left carpus, left middle and ring finger metacarpal fractures, extensor tendon lacerations, and common digital nerve lacerations. At his first surgery, the client underwent an open-reduction internal fixation to the carpus with a dorsal spanning plate, left long and ring finger fractures, carpal tunnel release, ring finger extensor tenodesis to long finger extensor tendon, and second common digital nerve repair with allograft. During the second surgery, the client underwent left wrist midcarpal fusion, removal of deep implant and antibiotic beads, and an iliac crest bone graft to left wrist fusion. With limited

motion in the wrist and fingers, the client underwent his third surgery after four months with an extensor tenolysis, metacarpal caps, and hardware removal. Recently the client has been back to therapy for his post fourth surgery with revision of tenolysis, metacarpal caps, and tendon transfer to index finger and long finger intrinsics.

Screening/Evaluation

This project was created to provide education on the expectations of a doctoral capstone student in an outpatient hand therapy clinic and a case analysis of a traumatic hand injury with assessment and intervention recommendations. The project took place at an outpatient hand therapy clinic in Lafayette. The facility has two sites, where the supervisor and student transferred back and forth to treat clients. The population for at this site consisted of five occupational therapists, with a majority of the therapists as Certified Hand Therapists, three hand surgeons, and individuals being treated for upper extremity injuries. One client specifically was chosen for this project as he was seen previously by the student as a level II student and has continued therapy due to the nature of his complicated injury. This outpatient hand therapy clinic was chosen based on personal interest of the student.

In order to conduct the review of literature, various resources were gathered and utilized. Evidence-based journal articles were found through a systematic search of the University of Indianapolis database. Search engines included EBSCOhost and OT search, along with Google Scholar, the site's database, American Journal of Occupational Therapy, and textbooks from previous coursework from the Doctorate of Occupational Therapy program. Key words used included: *occupational therapy, hand therapy, gun shot wounds, traumatic hand injuries, hand injury statistics, and doctoral capstone occupational therapy*. Articles were obtained and analyzed for relevant information pertaining to the purpose of my doctoral capstone project.

Additionally Jody L. Lee, MOT, OTR, CHT, a therapist and supervisor at this placement provided valuable resources that she has collected over the years.

After the review of literature was collected and analyzed, it was evident that students are unaware of the expectations of a doctoral capstone student advancing clinical skills in a hand therapy clinic. A need's assessment was also conducted to determine any issues or needs that were important to the facility. After face-to-face interviews with the supervisor, the feedback was analyzed and written into goals. It was apparent that the facility was lacking written information and guidelines that new employees should follow. The facility would benefit from orientation manuals for new employees in the outpatient hand therapy clinic that consisted of documentation guidelines, modality competencies, and common diagnoses and protocols.

To better understand the expectations, a goal attainment scale (GAS) was used to measure the student's expectations during the capstone experience. A GAS is a way to measure progress towards identified goals (Krasny-Pacini, Evans, Sohlberg, & Chevignard, 2016). The GAS states five levels of goal attainment per goal addressed. The supervisor and student collaborated on the goals and expectations, as this was the first doctoral capstone student at this site. The GAS was utilized at the beginning and end of the doctoral capstone experience to determine whether or not the goals were met. As an entry-level clinical doctoral capstone student, the expectations were to observe initially, progress to hands-on treatment, then to treat multiple trauma clients with minimal assistance by the end of the 16 weeks. The expected outcome goal was to treat all shoulders and basic hand and elbow injuries with less than one verbal prompts by the end of the 16 weeks. Due to the student's previous experience in the hand therapy clinic, the supervisor expected the student to gradually progress to the next levels of advanced injuries. The goals for less than expected were established by the expectations of a

level II student and the goals for more than expected were recognized as the expectations of an experienced hand therapist of more than 1 year. *Figure 1* shows the goals and expectations listed.

Assessments

For the purpose of the case analysis, a pre- and post-test was administered to the client to measure his functional outcome and goals throughout his therapy sessions. The QuickDASH is an 11-item questionnaire that measures disabilities of the arm, shoulder, and hand (Southam, Driessens, Burton, Pope, & Thurnwald, 2016). It was chosen for this client for many purposes, 1) availability at the site, 2) applicable to the client, and 3) easy to administer. The QuickDASH was administered to the client at his initial evaluation with therapy and at the 50th visit.

The QuickDASH was chosen for this client in an outpatient setting, however it may not be appropriate for an individual with a hand injury admitted in inpatient stay or skilled nursing facility. The QuickDASH follows a medical model that focuses on the disability, whereas the Canadian Occupational Performance Measure focuses on the whole person (Cole & Tufano, 2008; Van de Van-Stevens, 2015). Another assessment that would be appropriate for this client is the Canadian Occupational Performance Measure (COPM). The COPM can be used with a variety of client and diagnoses and does not generalize to a specific person. The COPM focuses on the whole person and looks at every aspect (Cole & Tufano, 2008; Van de Van-Stevens, 2015). Although the COPM focuses on the client's performance and satisfaction, the QuickDASH focuses on the level of disability and severity of the client, which is appropriate for the outpatient hand therapy setting. The QuickDASH also utilizes multiple-choice questions that allow quick and easy access to fill out when given a short amount of time.

Client goals are set after the first visit, once the initial assessment is completed. At this facility, goals are already addressed for each client in the evaluation, but can be chosen

specifically for the client. Regarding the complex case analysis with a gunshot wound to the hand, all goals were chosen for this client. The goals chosen include: managing pain when completing tasks, independent in all self care tasks and work tasks, ability to don/doff clothing, ability to weight bear, ability to participate in desired leisure/activities, and ability to complete all activities of daily living including cooking, cleaning, and grooming.

Implementation

According to Kataria, Sharma, and Kanojia (2007), the unusualness of multiple fracture dislocations at the carpal-metacarpal joints is often associated with high-energy trauma. Individuals who experience multiple fractures have a high correlation with the ability to maintain employment and daily occupations, thus creating a socioeconomic barrier (Amini, 2016; Guike et al., 2018). This shows the need for occupational therapists to enable individuals to manage their pain and range of motion through rehabilitation, thus enabling a return to daily occupations. Under the biomechanical frame of reference, occupational therapists emphasize wound-healing procedures, provide scar management techniques, reduce edema, gain active range of motion (AROM) and passive range of motion (PROM), and provide strengthening exercises (Amini, 2016; Jack & Estes, 2010). The case analysis is intended to provide students and new graduates with education on implementation of an advanced hand injury. This will also be a resource for new graduates or therapists to educate clients on identifying what they can do functionally after surgery to promote successful recovery for occupational performance. For the case analysis and purposes of Health Insurance Portability and Accountability Act (HIPPA), the client is given the name “John”.

Interventions

John's gunshot wound injury to the hand is considered a section four multiple trauma injury with the expected outcome to be seen over multiple visits and taken close look at. John was evaluated for occupational therapy services two and a half weeks after his second surgery that consisted of a left wrist midcarpal fusion, bone graft of iliac crest to the left wrist fusion, removal of deep implant and antibiotic beads. Orders for therapy consisted of 1-2 times weekly for edema control with gauze, ACE wrap, and elevation, initiation of scar massage, initiation of AROM/PROM to the intrinsic muscles only, and custom fabricated wrist immobilization with metacarpals blocked. At the initial visit, the client was given a self-reported QuickDASH assessment to measure how well he is able to participate in the written descriptions of activities with his injured hand. The client scored a 0 on the QuickDASH, which refers to 100% disability.

Ultrasound was recommended and initiated to the client to heal scar extensibility and temperature of the scar for the dorsal hand. Parameters were set to 100%, 1.0 mm., 3 mHz for 8 minutes after the initial screening due to the size and density of the scar. After few trials, the client and therapist collaborated to continue ultrasound to decrease the density and appearance of the scar. The client reported significant pain throughout the beginning of therapy and was sent home with a home exercise program after each visit. After two weeks with no significant improvement of range motion in the digits, John was provided with a neuromuscular electrical stimulation (NMES) unit to pull the tendons through, after understanding and consent. The NMES electrodes were placed on the extensor digitorum communis and flexor muscles with the orthotic in place to block the wrist from movement. A dynamic static progressive orthotic was also added to the client's home program to increase his range of motion of the metacarpals of the index, middle, and ring digits.

The third surgery took place three months after the second surgery for hardware removal, extensor tenolysis, and metacarpal caps. Two days after this surgery, the client was re-evaluated for continued therapy. Light compressive dressing and edema control was taken place to protect wound healing. AROM and PROM were also re-measured during the re-evaluation. The client has made slow progress but continues to have tightness in the digits. Significant pain continued to occur throughout the day and a transcutaneous electrical stimulation (TENS) unit was trialed during this session to subside the pain. Yet, the client continued to have complaints of pain with digital motion. A custom fabricated extensor resting pan orthotic was fitted for protection at nighttime. Ultrasound, scar massage, and NMES were trialed again to enhance the scar extensibility to the dorsal hand and range of motion in the digits. To enhance the client's range of motion, a static progressive metacarpal orthotic with dynamic flexion at the PIP joint was fabricated in the clinic for the index, middle, and finger digits for 20-30 minute intervals four times a day. A figure eight orthotic was also provided to the client for a reverse block and metacarpal block during the day to increase IP motion.

The client was recently seen after his fourth surgery of a tendon transfer to the index and long digital intrinsics, metacarpals pinning in full flexion, and revision of tenolysis and metacarpal caps. Orders from the surgeon included extensor resting pan to safe position at night and between exercises, a fabricated P1 block during exercises, hold metacarpal movement and to initiate interphalangeal AROM/PROM. Ultrasound, scar massage, and NMES were continued to enhance the scar extensibility to the dorsal hand and range of motion in the digits. After four weeks, the client was given the ok by the surgeon to initiate slow AROM to the metacarpal joints. The client was educated to slowly decrease wearing time of orthotics over time to enhance functional mobility. At eight weeks post surgery, gentle strengthening was initiated with putty

and functional grasp. Functional grasp was assessed through the ability to pick up a cylinder lightweight jar and progressing to smaller items like blocks and beads.

Education on how to adapt with significant trauma was provided throughout the duration of therapy. Over the duration of therapy, John lost his job due to aggressiveness hands-on skills that were required. At times John reported decreased motivation and hope of returning to work. According to Hannah (2011), intense emotions can arise immediately after an individual's severe hand injury and can continue throughout their life. By educating individuals with normal responses and positive attitude can help to enhance their psychosocial responses. Active participation and providing individuals with activities has been found to increase their overall attitude and independence (Hannah, 2011).

Project

After collaboration between the student and supervisor, orientation manuals were created for new employees at the outpatient hand therapy clinic. The orientation manuals consisted of checklists of general information including documentation guidelines, important phone numbers, location of modalities, types of splints fabricated, competency checklists, and guidelines for diagnoses. The facility previously made a template for the orientation manuals of new employees, but was altered and tailored towards both occupational and physical therapy by the student.

Leadership

As an entry-level clinical doctoral student, I have a better understanding of providing leadership skills and found that the overall experience has challenged my knowledge on hand, elbow, and shoulder protocols. With previous experience during the level II fieldwork rotation, I was able to advance my knowledge and provide leadership skills with treatment protocols earlier

than expected. As this being the first doctoral capstone experience at my site, I provided self-directed skills and expectations with my therapist.

I have been able to collaborate and communicate with multiple hand therapists, physical therapists, and surgeons throughout this process. Communication amongst these individuals has provided me with growth for professional development. With advanced clinical skills as my primary focus during the doctoral capstone experience, assistance and direction is required in order to provide best practice. With that being said, this experience also allows for some self-direction to gain professional development with hand to shoulder injuries. The doctoral capstone experience has given me the opportunity to gain leadership skills and become an expert, as this is a specialized area that I have previous experience in during my level II fieldwork rotation.

Staff Development

There are many multidisciplinary team members that work at this facility. I have had the opportunity to connect with many therapists and surgeons at the hand therapy clinic. I was able to collaborate with occupational therapists, physical therapists, and surgeons to ensure best practice for the clients. It is vital to collaborate with these individuals to provide the best quality of care for the clients receiving treatment. I have also collaborated with the supervisor as I develop my own role as a staff member and doctoral capstone student to ensure the best learning experience. Collaboration and communication with the supervisor has enabled me to grow professionally and facilitate an independent work experience and manage my own clients.

Outcomes/Discontinuation

Client Analysis

Tenodesis is a frequent result of extensor tendon injuries (Browne & Ribik, 1989). Due to the nature of tenodesis on the extensor side, it can often cause tethering with flexion and decreased grip strength (Browne & Ribik, 1989). Functional grasp and strengthening exercises were initiated to John to increase his functional grasp due to the tenodesis. During the functional task activity, the client was able to pick up a jar, but had diminished sensation in the hand and fingers, thus causing it to be difficult to grasp the jar without concentration. John was able to grasp and hold a lightweight jar but demonstrated shaking during the functional grasp, indicating weakness. However, with the ability to hold a lightweight jar, John could return to opening/twisting/turning items with his nonaffected hand during daily activities. At this time, John was unable to pick up multiple small blocks and beads, without dropping, with his affected hand. John was instructed to practice fine motor activities for his home exercise program to improve his manipulation and dexterity that will be needed to perform daily tasks.

John's range of motion scores of his digits have improved significantly since the first visit. Table 2 shows the scores between the first visit and 50th visit. It has been found that early rehabilitation for post-traumatic tendon injuries is correlated with increased range of motion scores and an improved QuickDASH score (Buegja, Mifsud, & Zammit, 2016). By the 50th visit, the client was able to demonstrate increased independence with a score of 40, indicating 40% disability on the QuickDASH.

At this time John has met a majority of his goals. Goals that have been achieved include grooming self, performing over-reaching tasks, fastening his seat belt, and donning/doffing clothing. He has partially met buttoning/zippering tasks, meal preparation, and pain management,

however continues to have difficulty achieving these goals. John continues to work on gripping and opening jars with the affected hand, weight bearing, lifting items, completing work tasks, and performing desired leisure activities.

Due to the client's choice, John decided to take a break from therapy to improve his motivation and hope in finding a job. John was educated on the benefits of continuing therapy due to his range of motion deficits, decreased strength, and decreased scar extensibility. John was encouraged to apply to multiple businesses that required non-aggressive work and was given suggestions of settings that would be similar to his previous job and are also meaningful to him. Since John has taken time off from therapy, he has reported a possible job placement meaningful to him. The client also reported that he is expecting to seek services at this site in the near future following insurance coverage, to regain ROM and strength.

Quality Improvement

Throughout the doctoral capstone experience, the therapist reviewed the goal attainment scale to ensure the student maintained the expectations. With the capstone experience nearing the end, the student met the expected outcome goal to treat all shoulder and basic hand and elbow injuries with less than one verbal prompt. The student is now working towards meeting the expectations that were beyond initially expected. With the additional experience of having a level II fieldwork and doctoral capstone experience at the same site, the student was able to progress through the goals and meet the expectations.

Needs of Society

By providing clinical skills in a hand therapy clinic, a student must adapt to the needs of society by helping clients overcome obstacles. For the client analysis, the student was able to respond to the needs of society by helping the client increase his independence with functional

tasks. Providing the client with exercises, modalities to manage pain, and scar massage techniques helped to increase his independence. The student was also able to assist the client to return to work by providing a home exercise program that enables the client to continue working towards his goals. The student also responded to the needs of society by providing this paper analyses to educate individuals on a doctoral capstone student can gain additional clinical skills.

Conclusion

The paper analyses is a protocol intended to educate occupational therapy students and new graduates on how a doctoral capstone student in a hand therapy clinic can gain additional clinical skills. A clinical guide on an advanced hand injury client analysis was also provided. The clinical guide includes assessments and interventions implemented on the client and the results of the effectiveness of the intervention. This guide can also be effective for the site as a way to guide students during their fieldwork experience with the interventions provided.

Overall Learning

Overall, many learning goals were met and the student was able to enhance professional growth through communication. There were many opportunities to communicate with other health care providers, clients, and their families. Throughout the doctoral capstone experience, one-on-one time with the occupational and hand therapists was applicable with demonstration on splint making, modality overview, and protocols for injuries. Written communication was also provided through documentation, which enabled the therapists to provide feedback. There was close interaction with the hand and orthopedic surgeons to discuss the protocols and development of clients. Communication with the client and their families were achieved through intervention protocols and written instructions on a home exercise program. The supervisor was a great model on how to provide appropriate communication to the clients and other health care

providers. The supervisor offered effective communication, which enabled the student to provide appropriate nonverbal professional communication by listening to others with full attention and showing a positive attitude through facial expressions.

With an interest in hand therapy, communication with clients and health professionals in a hand therapy clinic was effectively learned. For future practice, clinical learning skills that were developed during the doctoral capstone experience will be applied into a hand therapy clinic. Observation and interaction with therapists enabled the student to demonstrate positive attitude, effective communication, and effective time-management, which will be important for a good relationship with employees in future practice.

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Table 1

Goal Attainment Scale			
Level of Expected Outcome:	Rating:	Expected Outcomes: Goal 1	Expected Outcomes: Goal 2
MUCH MORE than EXPECTED	2+	<i>Student will treat all patients classified under section 4 with 2-3 verbal prompts per patient by the end of 16 weeks.</i>	<i>Student will convert 100% of the materials/information requested by the supervisor into orientation manuals by the end of 10 weeks.</i>
MORE than EXPECTED	1+	<i>Student will treat all patients classified under section 4 with minimal assistance by the end of 16 weeks.</i>	<i>Student will convert 100% of the materials/information requested by the supervisor into orientation manuals by the end of 12 weeks.</i>
EXPECTED Outcome	0	<i>Student will treat all patients classified under sections 1-3 with 1 or less verbal prompts per patient by the end of the 16 weeks.</i>	<i>Student will convert 100% of the materials/information requested by the supervisor into orientation manuals by the end of the 16 weeks.</i>
LESS than EXPECTED	1-	<i>Student will treat all patients classified under sections 1-3 with 2-3 verbal prompts per patient by the end of the 16 weeks.</i>	<i>Student will convert 75% of the materials/information requested by the supervisor into orientation manuals by the end of 16 weeks.</i>
MUCH LESS than EXPECTED	2-	<i>Student will treat all patients classified under sections 1-3 with minimal assistance per patient by the end of the 16 weeks.</i>	<i>Student will convert 50% of the materials/information requested by the supervisor into orientation manuals by the end of 16 weeks.</i>

Table 1. Goal Attainment Scale. This table shows the goals addressed by the supervisor and student over the course of the 16 weeks. The sections of hand therapy injuries are stated below.

Section 1: conservative/releases for basic diagnoses – ex: CTR, CuTR, Trigger Finger, lateral/medial epicondylitis

Section 2: basic fractures, basic tendon repairs, amputations, medial epicondylectomy

Section 3: shoulders injuries – ex: impingement, rotator cuff tear

Section 4: tendon transfers, arthroplasty, brachial plexus, CRPS, multiple traumas, bad crush injuries

Verbal/physical prompt: therapist giving a verbal/physical correction during the treatment

Minimal Assistance: helping with 25% of the treatment

As part of a doctoral capstone student advancing skills in a hand clinic, it is expected for the student to ask the therapist any questions or protocols before treatment in order to ensure best practice.

Table 2

Digits	Active Extension/Flexion (/Passive Flexion)		
Index	MP	PIP	DIP
1 st Visit	Held	25/45 (/55)	15/15 (/60)
50 th Visit	5/75 (/80)	15/80 (/90)	0/60 (/70)
Difference	TAM = 70 TPM = 80	TAM = 85 TPM = 145	TAM = 60 TPM = 130
Middle			
1 st Visit	Held	30/40 (/50)	15/25 (/60)
50 th Visit	15/70 (/75)	15/70 (/90)	5/45 (/80)
Difference	TAM = 55 TPM = 75	TAM = 65 TPM = 140	TAM = 50 TPM = 140
Ring			
1 st Visit	Held	35/45 (/65)	5/25 (/60)
50 th Visit	5/70 (/85)	10/95 (/95)	+5/25 (/80)
Difference	TAM = 65 TPM = 85	TAM = 25 TPM = 30	TAM = 40 TPM = 140
Small			
1 st Visit	Held	10/40 (/45)	10/20 (/60)
50 th Visit	+5/70 (/85)	0/85 (/90)	0/60 (/75)
Difference	TAM = 65 TPM = 85	TAM = 115 TPM = 135	TAM = 70 TPM = 135

Table 2. Range of motion of the patient from the initial evaluation to the 50th visit. TAM (Total Active Motion), TPM (Total Passive Motion).