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A Manual for OT Educators and OT Students in a Level II Fieldwork Experience in Hand Therapy

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A Manual for and OT Students OT Fieldwork Educators in a
Level II Fieldwork Experience in Hand Therapy

by

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This Scholarly Project Paper, submitted by Adam J. DeWenter and Erik G. Peterson, in partial fulfillment of the requirement for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

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I. Fieldwork in Hand Therapy: A Manual for OT Students and OT Fieldwork Educators in a Level II Fieldwork Experience in Hand Therapy
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ABSTRACT

According to Leatherwood (1997), approximately 30% of all emergency room injuries are injuries of the upper extremity, amounting to 16 million hand injuries per year seen in the United States. According to the Arthritis Foundation (2008), an estimated 46 million adults in the United States (21%) report having doctor diagnosed arthritis. Traumatic injuries and cumulative trauma such as arthritis are two of the diagnostic categories most commonly treated by hand therapists in the United States and Canada (Muenzen et al., 2002). Often, occupational therapists who specialize in the treatment of clients with upper extremity disorders are responsible for treating persons with the aforementioned diagnoses. Educational backgrounds of these students vary but often include student engagement in an optional hand therapy fieldwork or internship. As these fieldworks are optional, it is obvious that smaller quantity occupational therapy (OT) students engage in these experiences than in required fieldworks and, consequently, it is likely that fewer hand therapy clinics have structure fieldwork protocols for students and fieldwork educators.

Currently, there is no published manual for an OT fieldwork in hand therapy. This scholarly project has addressed the need for a manual for OT students and OT fieldwork educators in a Level II hand therapy fieldwork.

A review of literature revealed a lack of information for OT students in a Level II hand therapy fieldwork. The literature search provided information on competencies of an entry-level hand therapist, diagnostic categories treated by hand therapists, and the
therapeutic procedures utilized in treatment. The literature search also focused on Level II fieldwork in occupational therapy, including benefits and barriers for OT students, fieldwork educators, and fieldwork sites. We found that OT students identified a need for fieldwork educators to provide structure, clear learning objectives, and student expectations to maximize the student’s learning potential and reduce stress throughout a twelve-week Level II fieldwork experience in hand therapy (Mulholland & Derdall, 2007).

Based on the literature findings, a product was developed to guide OT students and fieldwork educators in a Level II fieldwork experience in hand therapy. The information in the manual was selected and ordered according to commonality in hand therapy practice, level of complexity, and relation to other learning objectives being addressed simultaneously. Several hand therapy texts illustrated a similar organization of the material included in the manual (Burk et al., 2005; Cooper, 2006; Mackin et al. 2002; Weiss & Falkenstein, 2005). The topics addressed included, but are not limited to, anatomy, measurement, evaluation, physical agent modalities, splinting, simple trauma, complex trauma, and cumulative trauma. The overall goals of this manual and scholarly project were to provide structure, clear learning objectives, and student expectations for OT students and OT fieldwork educators to maximize the student’s learning potential and identify the areas that should be addressed by the fieldwork educator during a twelve-week Level II fieldwork in hand therapy.
CHAPTER I
INTRODUCTION

The human body's upper extremity includes the hand, wrist, elbow, arm, and shoulder. The intricate bones, joints, muscles, tissue and nerves in the upper extremity make it possible for people to hold a book while reading, type on a computer, pick up a child, rake leaves, prepare food in the kitchen, or throw a baseball. Injury or degenerative diseases in any part of the upper extremity can make everyday tasks and activities a painful challenge.

According to Kasch, Greenberg and Muenzen (2003), hand therapy is specialized from general occupational therapy (OT) and physical therapy (PT) practice. Many OT and PT programs train therapists to treat patients with upper extremity injury or disorders, but a specialist learns to apply the knowledge of the upper extremity in a unique way (Kasch, 2003). Hand Therapy Certification was established in 1989 by the Hand Therapy Certification Commission (HTCC) to certify occupational therapists and physical therapists in the advanced clinical specialty of the upper quarter rehabilitation. Becoming certified in hand therapy involves 4,000 hours or more of direct hand therapy, a minimum of five years with clinical experience and completion of a comprehensive exam (Hand Therapy Commission, 2008).

Graduates from an Accreditation Council of Occupational Therapy Education (ACOTE) accredited program are expected to have a general understanding of patients with upper extremity disorders, but may not be prepared to work in a specialized
orthopedic setting without additional training and experience. To bridge the gap between entry-level knowledge and the knowledge required to practice in a specialized setting, students may choose to complete an additional Level II fieldwork in a specialized setting such as a hand therapy.

According to Costa, Burkhardt, and Royeen (2003), the purpose of OT fieldwork education is to provide OT students with the opportunity to apply the knowledge gained through their program’s curriculum to practice in the clinical setting. The goal of this in-depth fieldwork experience is to compliment the coursework through observation and participation in OT practice and develop competent, entry-level therapists (Costa, Burkhardt, & Royeen, 2003).

Completion of a Level II fieldwork experience in hand therapy requires planning by the fieldwork supervisor to provide the student with a structured fieldwork that will include information necessary to achieve competence upon completion of the twelve-week experience. With the vast amount of detailed information in the specialized field of hand therapy, therapists can often be reluctant to accept students because they are unprepared to fulfill the necessary standards. According to Mulholland and Derdall (2007), OT students identified a need for fieldwork educators to provide structure, clear learning objectives, and student expectations to maximize the student’s learning potential and reduce stress throughout a twelve-week Level II fieldwork experience in hand therapy.

Following a thorough literature review, a manual was developed for OT students and OT fieldwork educators to be used during a twelve-week Level II fieldwork experience in hand therapy. The manual consists of information that is essential for the
student to obtain during his or her optional fieldwork, in order to achieve competency in hand therapy upon the completion of the twelve-week fieldwork experience. The focus of the manual includes the domains of practice in hand therapy; specifically, evaluation, treatment, splinting, the use of modalities, and wound care/scar management.

A review of literature was conducted to identify threshold competencies of an entry-level hand therapist, benefits and barriers of Level II fieldwork, key elements of a Level II hand therapy fieldwork, and the theories used to guide the project. A synopsis of this literature is presented in Chapter II.
CHAPTER II
REVIEW OF LITERATURE

Introduction

According to Muenzen et al. (2002), hand therapists use specialized skills to assess and treat patients with disease or injury to the upper extremity. The patient populations treated by hand therapists include cumulative trauma disorders, fractures and dislocations, peripheral nerve compression and disease (e.g. carpal tunnel syndrome), soft tissue injuries, flexor and extensor tendon injuries, inflammatory and degenerative arthritis, peripheral nerve injuries, and multiple system trauma (Muenzen et al., 2002).

The Hand Therapy Certification Commission (HTCC) defined “hand therapy” as “the art and science of rehabilitation of the upper quarter of the human body” (Muenzen et al., 2002). A Certified Hand Therapist (CHT) uses specialized skills to address patient goals based on prevention of dysfunction, restoration of function and reversal of progression to enhance participation in occupation for individuals with disease or injury of the upper quarter (Muenzen et al., 2002).

For the purposes of this scholarly project we designed a manual to meet the needs of an occupational therapy (OT) student and OT fieldwork educator during a twelve-week Level II hand therapy fieldwork experience. This manual will outline and organize the material necessary to include in the fieldwork in order to provide a quality learning experience for the student.
A literature review was conducted to define hand therapy, outline the competencies of a CHT and profile the diagnostic categories and therapeutic procedures implemented across hand therapy settings. Literary research was also conducted to obtain information on fieldwork in occupational therapy including the purpose, key elements, benefits, barriers and challenges fieldwork educators and students may encounter during a specialized Level II fieldwork experience. The literature we reviewed established the need for a guide to be used by students and educators during a Level II hand therapy fieldwork experience.

According to the HTCC (2001), hand therapy certification was established in 1989 as a voluntary credential to certify occupational therapists or physical therapists in the advanced clinical specialty of upper extremity rehabilitation. Certification in hand therapy was established to provide the public with assurance that therapists have met the high standards set by the HTCC and are qualified to effectively assess and treat patients with upper extremity disorders (HTCC, 2001). To become a CHT, an occupational therapist or physical therapist must successfully pass a comprehensive exam designed to assess advanced clinical skills in upper quarter rehabilitation. Presently a therapist must complete a minimum of 5 years of clinical experience and at least 4,000 hours in direct therapy of the upper extremity to take the certification exam (HTCC, 2001). According to the HTCC, the exam is designed to evaluate knowledge and domains essential to the practice of hand therapy. Examination assessment areas include: anatomy, evaluation, treatment and discharge planning and implementation of treatment plans for patients with
upper extremity disorders. The processes involved in achieving the knowledge, skills, and experience to become a CHT are complex and begin with the occupational therapist’s or physical therapist’s entry-level education.

The curriculum of a masters-level occupational therapy program provides students with foundational information about the anatomy and function of the upper extremity. OT programs provide students with a basic understanding of assessments and treatment methods. The curriculum provides students with limited information involving simple and complex trauma, acute and chronic cumulative conditions involving the upper extremity. The Accreditation Council of Occupational Therapy Education (ACOTE) standards require OT students to understand the basic principles of splinting, but do not require students to be competent in splinting upon graduation from an ACOTE accredited program. A student interested in pursuing a career in hand therapy is expected to seek further opportunities to practice hand splinting to gain competence. Graduates from an ACOTE accredited program are expected to have a general understanding of patients with upper extremity disorders but may not be prepared to work in a specialized orthopedic setting without additional training and experience. To bridge the gap between entry-level knowledge and the knowledge required to practice in a specialized setting, students may choose to complete an additional Level II fieldwork in a specialized setting such as a hand therapy.

An additional Level II fieldwork in hand therapy is designed to provide students with an educational experience addressing the competencies necessary to effectively assess and treat individuals with upper quarter disease or injury. This experience is valuable for a student interested in pursuing a career specializing in hand therapy.
Kasch, Greenberg, and Muenzen (2003) defined competency as “an underlying characteristic of an individual that is related casually to effective or superior performance in a job or situation” (p. 50). Competencies are classified as threshold or differentiating. Threshold competencies are described by the authors as the skills and knowledge needed by all therapists at an entry-level to be minimally competent. Differentiating competencies are developed through clinical experience and distinguish superior from average performers. In 2003, Kasch et al. performed an analysis to obtain information on the characteristics of a minimally competent hand therapist. The purpose of the study was also to identify the variation in competencies shown by therapists at different times in their careers: before specialized practice, during the early years of specialization, and after several years of specialization in hand therapy. The authors further asserted that an entry-level hand therapist was considered to adhere to well-established techniques to achieve goals and identified this as a “novice” level of practicing. As the therapist increased his or her level of competency, he or she was described as beginning to seek out information on new and emerging techniques and applying them to practice. In this study, six areas of competencies were presented and rated by importance to professional effectiveness. These competencies were: clinical judgment/clinical reasoning, scientific knowledge, technical skills, interpersonal and communication skills, professionalism, and resource management. Five of the six competencies were rated moderately or highly critical to professional effectiveness by more than 95% of the survey respondents. The two areas of competency that received the highest ratings were clinical judgment/clinical reasoning and scientific knowledge, which were each rated as being critical to
professional development by over 90% of hand-therapists surveyed. In clinical 
judgment/clinical reasoning, threshold competencies included collecting of basic data and 
limited ability to sort through data and identify pertinent information. According to 
Kasch et al., a competent entry-level hand therapist follows standards and guidelines and 
consults with other clinicians prior to making decisions. He or she is expected to display 
knowledge of established information in clinical sciences and medical/surgical 
interventions as well as rely on journals, textbooks, and continuing education courses as 
primary sources of providing information. Even though the first years of practice in hand 
therapy are rich with growth and experiential learning, an entry-level or novice therapist 
is expected to enter the field with established, but limited skills and knowledge, mostly 
based on didactic learning (Kasch et al., 2003).

Level II Fieldwork

Fieldwork in occupational therapy is designed to create an opportunity for OT 
students to integrate classroom knowledge in a clinical setting and become competent in 
providing therapy. Level II fieldwork experiences are designed to begin with a high level 
of supervision and the students’ observation of the fieldwork educator in practice. One 
primary goal for the OT students is to become more independent in practice as their 
experience progresses. According to the 2006 ACOTE standards, the primary goal of a 
Level II fieldwork experience is to develop student’s knowledge and skills for 
occupational therapy practice at an entry level. Level II fieldwork experiences in OT are 
designed to provide hands-on clinical experience and meet the educational needs of OT 
students. Throughout these experiences, students benefit the most, but benefits have also 
been acknowledged for fieldwork educators and the facilities in which they practice.
Benefits of Fieldwork for Educators and Sites

A variety of benefits have been identified for fieldwork educators and practice sites that provide placement for occupational therapy students. These benefits include more time for educators to complete other work within the facility, an increase in profits, students bringing new and emerging ideas and treatment techniques, student assignments that benefit the student, educator and facility, presentation of research articles to apply in practice, potential recruitment for future employment, development of resources for practice and students promoting the facility to OT programs and other OT students.

According to Shalik (1987) and Meyers (1995), fieldwork sites and educators, overall, benefit from providing an educational fieldwork site for OT students. These sites benefit from students’ placements due to the decreased amount of time educators spend with patients; temporal changes that result in more time for the educator to complete other work within the facility. Benefits are not always evident immediately, however, as the student’s level of independence increases, the site benefits from the student providing therapy without requiring the wages of a licensed therapist (Shalik, 1987; Meyers, 1995). Shalik and Meyers asserted further that fieldwork sites do not show an increase in profits until the beginning of the student’s sixth week. Additionally, students provide fieldwork sites with new and emerging ideas and treatment techniques (Meyers, 1995). Facilities often assign a student assignment to benefit the student, educator, and facility. Student assignments often result in the practicing occupational therapists receiving updated information and expansion of their patient care knowledge. Examples of student assignments include the development of a program or in-service to benefit the fieldwork site and the presentation of research articles with information that can be applied to
practice for staff and other students within the fieldwork site. The assignments should be unique for each fieldwork site depending on the needs and interests of the student and needs of the site (Shalik, 1987; Meyers, 1995). Additional, more tangible benefits are also present when occupational therapy students engage in level II fieldworks.

Present literature has supported the concept that clinical educators receive benefits from providing fieldwork placement for students. These benefits include potential recruitment for future employment, developing resources for practice, contribution to the field of OT and improvement of staff skills/supervision skills (Thomas et al., 2007; Sloggett, Kim & Cameron, 2003). It has also been discovered that students may promote the facility to occupational therapy programs and other students after completion of the experience (Thomas et al., 2007).

There is minimal debate regarding the beneficial relationship between fieldwork educators and the occupational therapy students; both benefit from increased knowledge obtained during a Level II fieldwork experience. Students have been acknowledged in the literature for bringing “freshness and enthusiasm” (citation including page number here) into the fieldwork site and implementing new evidence based skills learned through classroom experience (Meyers, 1995). Supervisors have recognized this as being a benefit for both staff and patients. According to Meyers (1995), patients identified minimal difference of treatment between clinical educators and students.

Facilities may also receive long-term benefits for accepting a student for a Level II fieldwork experience. Providing fieldwork education can be a valuable recruiting tool for healthcare facilities who anticipate the need for employment of greater numbers of occupational therapists. Results of a survey study by Thomas et al. (2007) revealed 57%
of occupational therapists reported they were directly involved in the hiring of a new therapist at their facility and 56% indicated the newly hired therapist had completed a fieldwork experience at their facility. Seventy-five percent of fieldwork educators surveyed reported they maintained records of their past students for the purpose of contacting the students in the event of a job opening. These results demonstrate the importance of an educator and student developing a strong working relationship. The benefits of accepting Level II students identified by the therapists surveyed included promoting specific areas of practice in occupational therapy (i.e. hand therapy), preparing students for facility organization, and proving a pool of potential employment recruits (Thomas et al., 2007).

Benefits of Fieldwork for Students

Students completing fieldwork in occupational therapy gain insight and continue to develop toward entry-level therapists practicing the therapeutic skills and exploring the clinical reasoning that is developed throughout the twelve-week fieldwork experience. As the student progresses through the fieldwork, he or she increases the competency level and gains confidence to plan and perform interventions with patients. Fieldwork placement affects the internal and external motivators of a student. According to Phillips, Siggelkow and Legaspi (1995), internal motivators correlate with the student’s ability to have control over certain situations, whereas external motivators are factors related to environment and financial compensation. Phillips et al. described motivation as having a direct influence on the development and growth of clinical skills. Phillips et al. asserted further that students completing Level II fieldwork benefit from participating in assignments of choice as a means to stimulate internal motivation. Fieldwork also
engages communication skills needed as an occupational therapist to interact with other staff and patients. Another benefit that arises from the fieldwork experience is that students often learn healthy coping skills to handle the stress of a full-time job (Phillips, Siggelkow & Legaspi, 1995, Meyer, 1995).

Barriers and Challenges of Fieldwork

While fieldwork provides many benefits in therapist development, OT students may be presented with barriers and challenges while completing a fieldwork experience. According to Mitchell and Kampfpe (1993), OT students have reported high levels of stress while integrating knowledge from their program’s curriculum to the clinical setting early in their experience. Mitchell and Kampfpe further asserted that in addition to working the equivalent of a full time job, students are challenged to complete assignments on fieldwork for both their occupational therapy program and their fieldwork site; tasks that have been reported to result in higher levels of reported stress. Students have also identified the acquisition of an immense amount of new knowledge during their Level II fieldwork experience as a barrier (Mitchell & Kampfpe, 1993). This new information includes reviewing of terms, assessments, treatment techniques, as well as new knowledge specific to practice area of the fieldwork placement and clinical reasoning with actual patients.

As students experience an increase in stress, they are required to confront the situation and overcome this barrier of stress by finding healthy coping skills (Mitchell & Kampfpe, 1993). The development of healthy coping skills while on fieldwork is critical to the occupational therapy student’s development because many of the coping skills used on fieldwork translate to habits for future jobs. Mitchell and Kampfpe identified
examples of healthy coping skills that students integrate in fieldwork that included talking with co-workers, supervisors, peers and other fieldwork students.

Gutman (1998) used student record reviews to identify the common OT student behavioral and communicative characteristics that appeared to create potential problems for occupational therapy students passing their level II fieldwork experiences. Gutman discovered eight problematic communicative and behavioral characteristics which included: rigidity of thinking, discomfort with the ambiguity that accompanies clinical reasoning, lack of psychological insight, difficulty interpreting feedback, externalizing of responsibility, difficulty learning from mistakes, discomfort with physical handling of patients, and dependence on external measures of self-esteem. Following these student record reviews, occupational therapy professors at New York University (NYU) developed preventative interventions to implement into the curriculum of their occupational therapy program to address these student characteristics. The interventions included academic seminars that address professional behavior and interpersonal skills, faculty feedback to students regarding problematic behaviors, clinical and senior student counseling, student remediation programs, and student learning contracts based on specific behavioral objectives. Results of Gutman’s study showed a three percent fieldwork failure rate for the 1996 class of NYU students who received the intervention, compared to approximately ten percent of all students between 1986 and 1995 who either failed one midterm evaluation or one fieldwork experience (Gutman, 1998). This data suggests that the intervention received by the NYU students in the class of 1996 may have resulted in a decrease in fieldwork failure rates. The eight problematic characteristics identified by Gutman in the preventative interventions implemented into
the NYU curriculum should be considered when structuring or supervising a fieldwork experience in OT or hand therapy.

When asked to evaluate fieldwork educators and sites following a Level II fieldwork experience, students identified a need for clear learning objectives/expectations to reduce their level of stress throughout the experience (Mulholland & Derdall, 2007). Other students identified sites as having an excessive amount of work/structure and stated a fieldwork experience with less of each would be more beneficial for future students. According to Mulholland and Derdall, it is also important to evaluate the pace of the facility. The pace of each fieldwork experience is unique depending on the supervisor and the caseload of the site. This illustrates the need for clinical educators to evaluate their fieldwork objectives/caseloads to provide students with objectives that are appropriate for their fieldwork site (Mulholland & Derdall, 2007).

Clinical educators and students experience multiple challenges when providing fieldwork education for students. Meyers (1995) reported that psychological stress was a non-monetary cost for all students and supervisors. Myers further asserted that fieldwork educators reported a need to “take their work home” as a result of spending the majority of their day teaching the student. A loss of revenue was also reported, particularly during the first 6-weeks of the fieldwork experience when supervisors occupied their time educating students rather than treating patients (Myers, 1995; Sloggett, Kim, & Cameron, 2003). During the second half of the level II fieldwork, fieldwork supervisors reported students serve as a revenue source as the interns begin treating patients independently. Financially, there was minimal cost associated with student materials; cost which included items such as manuals. The greatest cost identified by supervisors was locating a
space for the student to work during his or her twelve weeks in the facility (Meyers, 1995; Thomas et al., 2007). Smaller facilities have greater difficulty providing fieldwork placement for students due to insurance issues and lack of caseload (Sloggett et al., 2003). Sloggett et al. also reported that it is difficult subsequently for smaller facilities to earn a profit when providing fieldwork education for students.

Authors of the aforementioned literature identified several benefits and barriers for students, fieldwork educators and facilities during a Level II fieldwork experience. Even with the existing barriers that were reported, fieldwork educators and sites benefited from providing placement for students. Arguably, the benefits outweighed the costs as the students received an educational opportunity essential in the development toward an entry-level therapist; experiences which contributed to the OT student’s greater achievement of patient care competencies.

Key Elements of Level II Fieldwork Experience

Knowles (1980) described the mission of an adult educator as “satisfying three distinct sets of needs and goals: the needs and goals of individuals, the needs and goals of the institution, and the needs and goals of society” (p. 27). For a fieldwork educator to create a positive and successful fieldwork experience, it is important for the educator be cognizant of the needs and goals of the student, the fieldwork site, and the patients who are receiving the services being provided.

The increasing pressure of fieldwork educators to meet American Occupational Therapy Association (AOTA) standards and provide an adequate fieldwork experience has compromised the ability for universities to deliver quality fieldwork placements for students. According to Kirke, Layton, and Sim (2007), a good fieldwork supervisor is
well prepared for the students’ placement and enjoys the experience as much as the student. The educator is “in-tune” with the requirements and standards of both the university and ACOTE and understands the students learning needs. He or she must be able to give positive feedback as well as constructive criticism to contribute to a successful student learning experience. Competent fieldwork educators are comfortable in their role and able to demonstrate flexibility. One of the most commonly identified insufficiencies in fieldwork supervision is inadequate preparation and structure by the fieldwork educator (Kirke, Layton & Sim, 2007). To be successful fieldwork educators, clinicians need to become competent in five critical areas to provide the students with quality fieldwork education. These five areas are knowledge, critical reasoning, interpersonal skills, performance skills and ethical reasoning. It is essential for fieldwork sites to be aware of the therapist’s level of competency for clinical education by evaluating whether or not the therapist is capable of demonstrating competency in these five areas (Dickerson, 2006).

According to Kirke, Layton, and Sim (2007), students who have successful Level II fieldwork experiences have clear expectations, are interested in what the educators have to offer, and understand what they can learn from the experience. The authors also reported that these students are knowledge seekers, self-directed learners and are willing to go “above and beyond” the call of duty to meet or surpass the educators’ expectations. These students are able to apply theory to practice and actively seek feedback from educators and other team members. They are well organized, enthusiastic, and interact with staff and clients in a positive manner. Members of a good fieldwork program
demonstrate concise and effective communication regarding the curriculum and define clearly the expectations for each placement (Kirke, Layton, & Sim, 2007).

Purpose of Hand Therapy Fieldwork

Presently, ACOTE standards for an entry-level occupational therapists do not require an immense amount of student experience in orthopedic evaluation and treatment of the upper extremity. Due to the limited information included in master’s level occupational therapy curriculum, students planning to specialize in treatment of the upper extremity benefit from a Level II fieldwork in hand therapy. According to Hodgetts et al. (2007), students near graduation expressed concerns with competency of practicing in specialty areas of occupational therapy. Depending on the caseload of a Level II fieldwork experience in physical disabilities (outpatient, acute, and inpatient), fieldwork sites may provide limited interaction with patients who have an injury of the upper extremity. An optional Level II fieldwork experience in a specialty area, such as hand therapy, will benefit the student’s knowledge and level of competency for future practice.

Key Elements of Level II Hand Therapy Fieldwork Experience

Each student’s experience during a Level II hand therapy fieldwork will vary as a result of the uniqueness in the caseload among fieldwork placements. Despite the variability in practice settings, reliability in some areas of practice is beneficial. The structure of the fieldwork should remain relatively consistent by following the domains, tasks, and skills defined by Muenzen et al. (2002). By including these essential features in each hand therapy fieldwork placement, students will benefit by receiving a quality and well structured fieldwork experience. Muenzen et al. profiled the therapeutic procedures and diagnostic categories implemented across all settings in which hand
therapists were employed. The authors reported areas of focus that should be emphasized in each hand therapy fieldwork placement including standardized and non-standardized assessment tools, exercise/manual therapy, physical agent modalities, and splinting. Fieldwork experiences in each individual placement should include the opportunity to assess and treat patients in the diagnostic categories identified as being the most prevalent across all hand therapy settings.

Theory

The frame of reference implemented to guide this manual is the biomechanical frame of reference. James (2003) defined the biomechanical frame of reference as “a model used to treat individuals with activity limitations due to impairments in biomechanical body structures and functions” (p. 240). These impairments include structural instability, decreased strength, limited range of motion, and poor endurance (James, 2003).

According to James (2003), the biomechanical frame of reference provides a plan of treatment in which intervention modalities are used for the purpose of preventing or decreasing impairment through activity and exercise. These modalities can be purposeful or rote and may not be meaningful to the client. Meaning is brought by restoring the client’s capability to engage in occupation, which is the ultimate goal of treatment (James, 2003).

According to Schier and Chan (2007), the foundation of the biomechanical approach is that an individual’s occupational performance can be improved or regained by addressing underlying impairments that limit his/her performance. This is unique to other frames of reference practiced by occupational therapists because it follows a
“bottom-up” approach in which therapists address performance components and the effect impairment in these components has on engagement in occupation. With the more widely recognized “top-down” approach, therapists evaluate patients’ roles, habits, and activities, funneling down to performance components such as strength, range of motion and endurance (Schier & Chan, 2007). The “top down” approach is not appropriate in this manual because hand therapy is a specialization that focuses on the underlying issue of each patient and the effect these issues have on an individual’s participation in occupation.

In their case report, G.E. Toth-Fejel, G.F. Toth-Fejel, and Hendricks (1998) identified implementing occupation-centered approaches in hand rehabilitation as uncommon because hand therapy is a specialty that has been dominated by biomedical approaches. Third-party payers are becoming increasingly more interested in final occupational outcomes for patients rather than rote activities to address biomechanical body structures and functions (1998). With this trend, the future may hold greater emphasis on occupation-centered practice in hand therapy. Also, a trend toward more cumulative trauma cases and fewer acute injury cases treated by hand therapists creates more potential for occupation-centered practice. Treatment of acute injuries requires specialized knowledge of hand function to produce successful functional outcomes, while treatment of cumulative trauma disorders requires knowledge of psychosocial, contextual, and subjective factors, which creates a need to examine these factors and address them in treatment planning (G.E. Toth-Fejel, G.F. Toth-Fejel, & Hendricks, 1998).
Adult Learning Theories

A Level II fieldwork in OT is a learning experience designed to assist the student in gaining competence as an entry-level therapist. During the fieldwork, the student assumes the role of an adult learner by applying knowledge learned through previous coursework to real life clinical scenarios. To meet the needs of the student it is essential that the site adhere to the concepts of the adult learning established by Knowles (1980). Knowles identified key assumptions about adult learners that have been supported by later research. According to Knowles, adults are motivated to learn information pertaining to needs and personal interest. Adult learning is life centered, therefore, adults learn through life situations and the analyses of experience. Adults are self-directed in learning, which increases the importance a teacher to facilitating a process of mutual inquiry instead of relaying his or her knowledge to the adult learner and assessing their compliance.

The principles of adult learning established by Knowles are consistent with Bryan, Kreuter, and Brownson (2008) who reviewed existing theories and models and identified five principles of adult learning and discussed how each principle can be implemented in public health practice. The principles identified were awareness of the reason for learning the information being presented, motivation to learn by the need to solve problems, respecting and building upon previous experiences, learning approaches to match each individual’s background and diversity, and a need for adults to be actively involved in the learning process (Bryan, Kreuter & Brownson, 2008).

The adult learning theories we found to enrich the adults learning process were constructivism, behaviorist and social. According to M. Braungart and R. Braungart
(2006), the adult learning theory of constructivism relates to the process of building personal understandings and knowledge of the world based on one’s own reflections of experiences. In the constructivist view of learning, when the learner encounters a new experience, he or she processes the information based on previous ideas and experiences (2006). A constructivist learner is an active creator of their own knowledge (2006). In a fieldwork setting, a student demonstrating a constructivism learning style would construct his/her own knowledge through hands-on experience by testing approaches and treatment techniques based on prior information and experiences obtained in coursework and clinical experiences. The student gains knowledge through the application of pre-existing foundations to the new situation (Mezirow, 1996).

M. Braungart and R. Braungart (2006) defined the behaviorist learning theory as “learning that takes place as the result of connections made between the stimulus conditions in the environment and the individual’s responses to the stimulus” (p. 39). In the behaviorist theory, learning is demonstrated by an individual practicing and repeating a new behavior until it eventually becomes a habit (2006). This adult learning theory is evidenced when a student learns a new skill through observation and feedback from the fieldwork educator and is eventually expected to demonstrate the newly learned skill to the educator. When appropriate the educator following the behaviorist theory will correct the student by demonstrating the proper technique, allowing the student to continue attempting the skill until positive reinforcement is provided.

According to the social learning theory, knowledge is gained through the observation of other people and learning from their experiences (M. Braungart and R. Braungart, 2006). In this theory role models act as the central concept and are thought to
influence the learner and contribute to the way the learner thinks feels and acts. The social learning theory is present in a fieldwork setting when a student views the educator as a mentor, learning from the mentor’s demonstration of desirable professional behaviors and clinical skills.

There are numerous models and theories that outline how adults learn. Recurring themes can be taken from each of these models and implemented into education in public health practice to maximize the learning potential of adults. Constructivism, behaviorist and social learning theories should form the foundation for planning learning experiences, including student fieldworks to maximize student learning and address the specific needs of each student.

Need for the Product

Student placement for a fieldwork experience specializing in treatment of the upper extremity can be difficult to obtain due to barriers encountered by fieldwork educators. Presently, there are no published manuals structured for a Level II fieldwork in hand therapy; an absence which requires fieldwork site educators to create their own structure and content for the twelve-week experience. Our inclination was to create a manual for use by occupational therapy fieldwork educators and students throughout a Level II fieldwork. The benefits of this guide include a detailed layout of content and structure of a hand therapy fieldwork experience, which will increase placement opportunity in hand therapy because it will provide fieldwork educators with a resource to design and guide a student’s twelve-week Level II fieldwork experience. The manual will also provide students with a resource that will be used to increase basic knowledge for treating the upper extremity. This manual will be designed for educators providing
fieldwork placements in outpatient treatment and will include information that may have an acute care component of the upper extremity.

Chapter II has outlined the competencies of a CHT and profiled the diagnostic categories and therapeutic procedures implemented across hand therapy settings. The literary research conducted in this chapter obtained information on fieldwork in occupational therapy including the purpose, key elements, benefits, barriers and challenges fieldwork educators and students may encounter during a specialized Level II fieldwork experience.

Chapter III, the methodology section, will provide a general description of the process used to analyze the literature and develop the product that can be found in Chapter IV.
CHAPTER III
METHODOLOGY

The purpose of Chapter III is to provide an overview of the process used developing the product that can be found in Chapter IV. The information in this chapter is presented in a logical order that includes the process used to conduct research, selection of appropriate content for the manual, the order in which the information is presented, and the primary resources used during the entire process.

To formulate a structured learning experience for a student completing a twelve-week hand therapy fieldwork, the authors reviewed textbooks, online medical journals and held informal conversations with potential hand therapy fieldwork educators. Online searches were conducted using PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), The Journal of Hand Therapy, and The American Journal of Occupational Therapy (AJOT). The foci of these searches were competencies of an entry-level hand therapist, diagnostic categories treated by hand therapists, and the therapeutic procedures utilized in treatment. Literature searches also focused on Level II fieldwork in occupational therapy, including benefits and barriers for OT students, fieldwork educators, and fieldwork sites.

Through data interpretation, a twelve-week protocol was developed to outline essential learning objectives and provide a structured fieldwork experience for the student. Diagnostic categories were selected based on the information from a survey by Muenzen (2002) that measured the most common diagnoses treated in hand therapy.
practice. Data from Muenzen were also used to measure the domains of hand therapy practice in which hand therapists rated as the most critical in their profession and the therapeutic procedures implemented in settings where hand therapist are employed.

Several hand therapy texts illustrated a similar organization of material (Burk et al., 2005; Cooper, 2006; Mackin et al. 2002; Weiss & Falkenstein, 2005). Organization of the manual was formulated based on the literature from these texts. The information in the manual was selected and ordered according to commonality in hand therapy practice, level of complexity, and relation to other learning objectives being addressed simultaneously. Learning objectives were developed for each week using Bloom’s Taxonomy. These learning objectives began with an emphasis on knowledge and understanding of foundational information and progressed toward application and analysis of this information to clinical experiences (Anderson & Krathwohl, 2001).

Mackin et al. (2002) identified anatomy as a foundation to support all of the following chapters in their text of the hand and upper extremity. Similar to Mackin et al., anatomy of the upper extremity will act as a tool to acquire foundational knowledge that will be utilized during the entire twelve-week fieldwork experience. The authors of this scholarly project recommend an atlas of human anatomy as an additional student resource for anatomy of the upper extremity. Other learning objectives for week one are based on foundational knowledge that was integrated throughout the remaining twelve weeks. Learning objectives for the week include a basic overview of hand splinting and measurement as a means of patient assessment. To create a fieldwork experience with a maximum learning potential for the student, it is essential for the student to observe the
fieldwork educator and participate when appropriate during all evaluations and treatment, regardless of the patient’s diagnosis or fieldwork schedule.

Muenzen et al. (2002) identified evaluation of the upper extremity as the domain in which hand therapists spent the highest percentage of their time and ranked it as the most critical area in practice. The learning objectives of week two will focus on evaluation, which primarily consists of range of motion testing, edema measurement, and sensibility testing. Physical agent modalities, including state regulations and an orientation to the types of modalities utilized within the fieldwork site are also be addressed in week two. During week two, the student should be assigned the first of several “occupation-based assignments”. These assignments were designed to challenge the student to ensure a focus on client-centered, occupationally based practice, which is one of the core principles of OT.

Prior to week three, the student will have been introduced to treatment through observation of the fieldwork educator. During week three, the focus of the manual consists of treatment of patients with simple trauma. By the end of the third week, the student should be provided with the educational information and hands on experience to treat patients with simple trauma. This section of the manual includes the topics of wound care, fractures, joint injuries, burns, infection and the student’s ability to follow physician’s protocols for treatment.

Weeks four and five consists of treatment of patients with complex trauma injuries, which includes tendon injuries, acute nerve injuries and reconstruction of the hand and wrist. As the student continues to practice splinting, assignments for each week
will encourage the student to fabricate splints relating to the diagnostic categories covered during each week.

The focus of weeks six and seven consists of treatment of patients with cumulative trauma. Cumulative trauma, in the manual, includes compression neuropathies and any other conditions that occur over time. The treatments of cumulative trauma and chronic pain are complex and vary from patient to patient, and thus, appropriately follow the information on anatomy, evaluation, and simple and complex trauma.

The material in weeks one through seven in the manual is designed to provide foundational knowledge the student will continue to utilize and build on in weeks eight through twelve. Weeks eight through twelve are designed to provide the student with clinical experiences to apply the foundational knowledge gained during the first seven weeks of the fieldwork. In this section of the manual, assignments, observations, self-assessments, and evaluations are provided to promote the student’s growth toward being a competent entry-level therapist. An effectiveness survey is included at the end of the section. This survey is intended to provide data with which we can measure the OT students and OT fieldwork educators’ satisfaction with each section of the manual. Further, it provides the future respondents an opportunity to identify other topics, diagnostic categories, and therapeutic procedures that he or she feels would be a beneficial addition to the manual.

The information gathered for this scholarly project was integrated into a manual for OT students and OT fieldwork educators to provide structure, clear learning objectives, and student expectations to maximize the student’s learning potential and reduce stress.
throughout a twelve-week Level II fieldwork experience in hand therapy (Mulholland and Derdall, 2007). Chapter IV consists of a brief product description. The product (i.e. the complete manual) is located in the appendix.
CHAPTER IV

PRODUCT

The purpose of this project was to develop a manual to guide occupational therapy (OT) students and OT fieldwork educators in a Level II fieldwork experience in hand therapy. The manual was structured for use during a twelve-week OT fieldwork experience. The content was organized by weeks. Each week includes learning objectives, reading assignments, assignments, tests, treatment logs and student self-reflections pertaining to the topics for the week. Each section also includes an overview of the student’s role throughout each week including observation, co-treating, and independently treating patients.

This product is intended to be used as a guide to treat patients whose diagnoses correlate with those most commonly treated by hand therapists. These diagnostic categories should be addressed in all Level II hand therapy fieldwork experiences. The information in the manual was selected and ordered according to commonality in hand therapy practice, level of complexity, and relation to other learning objectives being addressed at the same time. The manual is not designed to limit the student’s learning experiences to the topics being covered in each week, but, instead, should be used as a guide to structure the student’s studies throughout the twelve-week fieldwork experience. When possible, the patients the student is assigned to evaluate and treat independently during each week of the fieldwork should correlate with the topics being covered in the manual during that particular week.
Fieldwork in Hand Therapy: A Manual for OT Students and OT Fieldwork Educators in a Level II Fieldwork Experience in Hand Therapy was designed specifically for OT students and OT fieldwork educators because it addresses patient’s occupational performance and participation in meaningful activities affected by the underlying impairments being treated in therapy. These areas, which are unique to the fundamental concepts of OT, are addressed through a series of “occupation-based assignments” that are integrated throughout each week of the manual. An effectiveness survey is included at the end of the manual to provide data with which we can measure the OT students’ and OT fieldwork educators’ satisfaction with each section of the manual. Further, it provides the future respondents an opportunity to identify other topics, diagnostic categories, and therapeutic procedures that he or she feels would be a beneficial edition to the manual.

The frame of reference implemented to guide this manual was the biomechanical frame of reference. The biomechanical frame of reference was relevant to this product because it is used to treat individuals with activity limitations due to impairments in biomechanical body structures and functions (James, 2003). This frame of reference was also relevant to this product because it is implemented by hand therapists across all hand therapy settings.

The adult learning theory and the constructivism, behaviorist, and social learning theories were used as a guide to develop the product. The adult learning theory is implemented into fieldwork education to address the learner’s needs and maximize his or her learning potential throughout the fieldwork experience (Knowles, 1980). Constructivism, behaviorist and social learning theories relate to the OT student’s style of
learning during different stages of the twelve-week fieldwork experience (M. Braungart and R. Braungart, 2006).

The product, *Fieldwork in Hand Therapy: A Manual for OT Students and OT Fieldwork Educators in a Level II Fieldwork Experience in Hand Therapy*, can be found in the appendices section of this scholarly project. The product, along with the other chapters of this scholarly project, was developed in partial fulfillment of the requirements for the degree of Master’s of Occupational Therapy at the University of North Dakota. The references used within the entire scholarly project can be found in the references section following Chapter V.

In Chapter IV, we reviewed the global purpose and structure of the product of this scholarly project. Chapter V consists of a summary of this scholarly project.
CHAPTER V
SUMMARY

The purpose of this project was to develop a manual to guide occupational therapy (OT) students and OT fieldwork educators in a Level II fieldwork experience in hand therapy. Currently, there is no published manual for an OT fieldwork in hand therapy. This scholarly project has addressed the need for a manual for OT students and OT fieldwork educators in a Level II hand therapy fieldwork.

*Fieldwork in Hand Therapy: A Manual for OT Students and OT Fieldwork Educators in a Level II Fieldwork Experience in Hand Therapy* was developed to provide structure, clear learning objectives, and student expectations for OT students and OT fieldwork educators to maximize the student’s learning potential and identify the areas that should be addressed by the fieldwork educator during a twelve-week Level II fieldwork in hand therapy. The product is structured to reflect learning experiences for each week of the twelve-week fieldwork experience. Each section includes learning objectives, reading assignments, assignments, tests, treatment logs and student self-reflections pertaining to the topics being covered throughout the week. Each section also includes an overview of the student’s role throughout each week including observation, co-treating, and independently treating patients.

The overall goal of this product was educate students to become entry-level hand therapists following a twelve-week Level II fieldwork experience in hand therapy that utilizes this manual. An effectiveness survey is included for the OT student and OT
fieldwork educator at the end of the manual. This survey is intended to provide data with which we can measure the OT students’ and OT fieldwork educators’ satisfaction with each section of the manual. Further, it provides the future respondents an opportunity to identify other topics, diagnostic categories, and therapeutic procedures that he or she feels would be a beneficial edition to the manual. The theoretical background from which this project was derived includes the biomechanical frame of reference, adult learning theory, and the constructivism, behaviorist and social learning theories.

*Fieldwork in Hand Therapy: A Manual for OT Students and OT Fieldwork Educators in a Level II Fieldwork Experience in Hand Therapy* was designed to be utilized by OT fieldwork students and OT fieldwork educators in a hand therapy setting to structure a twelve-week Level II fieldwork experience. The manual was designed specifically for OT students and OT fieldwork educators because it addresses patient’s occupational performance and participation in meaningful activities affected by the underlying impairments being treated in therapy. These areas, which are unique to the fundamental concepts of OT, are addressed through a series of “occupation-based assignments” that are implemented throughout each week of the manual.

The manual is not designed to limit the student’s learning experiences to the topics being covered in each particular week, and instead, should be used as a guide to structure the student’s studies throughout the twelve-week fieldwork experience. A possible limitation of the manual is the variation of patients treated among fieldwork sites. When possible, the patients the student is assigned to evaluate and treat independently during each week of the fieldwork should correlate with the topics being covered in the manual during that particular week.
Ideally, this project could be published and or presented at state conferences, the American Occupational Therapy Association (AOTA) conference, and the American Society of Hand Therapists (ASHT) conference. This project has potential to be advanced through implementation in the authors’ own fieldwork experiences in hand therapy and through feedback from OT students and OT fieldwork educators who utilize the manual in hand therapy fieldwork.

According to Mulholland and Derdall (2007), OT students identified a need for fieldwork educators to provide structure, clear learning objectives, and student expectations to maximize the student’s learning potential and reduce stress throughout a twelve-week Level II fieldwork experience in hand therapy. *Fieldwork in Hand Therapy: A Manual for OT Students and OT Fieldwork Educators in a Level II Fieldwork Experience in Hand Therapy* was designed to be utilized by OT fieldwork students and OT fieldwork educators in a hand therapy setting to structure a twelve-week Level II fieldwork experience.
REFERENCES


APPENDIX

Product

Fieldwork in Hand Therapy: A Manual for OT Students and OT Fieldwork Educators in a

Level II Fieldwork Experience in Hand Therapy
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Intro to the Manual

Fieldwork in Hand Therapy: A Manual for OT Students and OT Fieldwork Educators in a Level II Fieldwork Experience in Hand Therapy was designed to enrich the learning experience for a student during the completion of an occupational therapy student’s Level II fieldwork in hand therapy. The manual should be used as a guide to provide a structured outline for both the student and fieldwork educator. When designing this manual, the goal of the authors was to provide the student and fieldwork educator with a basic outline of the information included in a 12-week fieldwork experience in hand therapy. The material is presented in the order in which the student should focus his or her studies on during the fieldwork. The beginning of each section includes a summary of the student’s expected responsibilities for the week (e.g. observation, co-treating, treating independently). To create a fieldwork experience with a maximum learning potential for the student, it is essential for the student to observe the fieldwork educator and participate when appropriate during all evaluations and treatments, regardless of the area of focus for each week.

This manual is intended to be used as a guide to identify the most commonly treated diagnostic categories by hand therapists. These diagnostic categories should be addressed in all Level II hand therapy fieldwork experiences. The information in the manual was selected and ordered according to commonality in hand therapy practice, level of complexity, and relation to other learning objectives being addressed simultaneously. The manual is not designed to limit the student’s learning experiences to the topics being covered in each particular week, and instead, should be used as a guide to structure the student’s studies throughout the twelve-week fieldwork experience. When possible, the patients the student is assigned to evaluate and treat independently during each week of the fieldwork should correlate with the topics being covered in the manual during that particular week.

This manual was designed specifically for OT students and OT fieldwork educators as it addresses patient’s occupational performance and participation in meaningful activities affected by the underlying impairments being treated in therapy. These areas, which are unique to the fundamental concepts of OT, are addressed through a series of “occupation-based assignments” that are implemented throughout each week of the manual.
Week 1

Anatomy

Measurement

- Orientation to facility
  - Tour
  - Staff
  - Policies
  - Schedule
  - Documentation
  - Student Objectives

- Anatomy of the upper extremity
  - Skeletal
  - Muscular
  - Tendons
  - Ligaments
  - Nerves
  - Soft Tissue
  - Zones

- Measurement
  - Range of motion (ROM)
  - Grip and pinch Strength
  - Scars
  - Wounds

- Splinting
  - Orientation to materials within facility

During Week 1, the fieldwork educator should present the student with this hand therapy fieldwork manual and other texts that will be used during each of the twelve weeks.
Student’s Role in Week 1:

During Week 1, the student’s primary role will be observation of the fieldwork educator. The student’s observation is vital during this week to complete the orientation to the facility and become familiar with the fieldwork educator’s role as a hand therapist within the facility. By the end of Week 1, the student should be able to independently apply measurement techniques used in hand therapy practice to accurately measure ROM, grip and pinch strength, wounds, and scars. Although anatomy and measurement are the focus of Week 1, it is essential for the student to observe the fieldwork educator and participate when appropriate during all evaluations and treatments throughout the week.

Weekly Meeting:

At the end of Week 1, the student and the fieldwork educator should arrange a meeting to discuss the student’s performance, answer any questions the student or educator may have, and preview the topics and expectations for Week 2.

NOTE: Treatment logs are included in “Weeks 4-5” and “Weeks 6-7” of this manual. These logs are designed for the student to record information for each patient with a complex and cumulative trauma diagnosis treated during the 12-week fieldwork. This chart can be used throughout the entire fieldwork experience and, therefore, should be utilized as soon as the student begins co-treating or independently treating patients with these diagnoses.
Learning Objectives for Week 1:

1. The student will complete orientation to the facility to gain familiarity with safety, staff, supplies, scheduling procedures, and the student’s expectations/role within the facility.

2. The student will demonstrate knowledge of the anatomy of the upper extremity including skeletal, muscular, nerves, tendons, ligaments, soft tissue, and flexor/extensor zones of the hand.

3. The student will apply measurement techniques used in hand therapy practice to accurately measure ROM, grip and pinch strength, wounds, and scars.

4. The student will complete orientation of the splinting supplies and therapy equipment within facility.

All suggested reading assignments in this manual were acquired from:

*Chapter numbers are subject to change as the result of a new edition to this text being published.*

Suggested reading assignment for Week 1:
• Rehabilitation of the Hand and Upper Extremity (Hunter, Mackin & Callahan)
• Part 1: Chapters 1-6
Orientation to the Facility:

On the first day of the fieldwork experience, the fieldwork educator should provide the student with a tour and orientation to the fieldwork setting. This orientation should include all information that the educator thinks is important for the student to know before beginning the 12-week hand therapy fieldwork experience.

This orientation process should include:

- Tour of the facility
- Staff Members
  - General understanding of the job description and role each healthcare professional employed within the facility
- Mission statement
- Orientation to the general patient population treated in the facility
- Overview of expectations for the student
  - How will the student's role change as the fieldwork progresses
- The student's expectations for the fieldwork educator
- Safety precautions
- Policies
- Equipment and supplies
- Daily and weekly schedule
- Documentation
  - Date base/charts
  - Referrals
  - Assessments
  - Treatment plans
  - Progress notes
- Brief overview of this fieldwork manual
  - Assignments for Week 1
Figure 1: Creases and Eminences of the Hand

1. ________________________
2. ________________________
3. ________________________
4. ________________________
5. ________________________
6. ________________________
7. ________________________
8. ________________________
9. ________________________
10. ________________________
Figure 2: Skeletal Structure of the Hand

1. ___________
2. ___________
3. ___________
4. ___________
5. ___________
6. ___________
7. ___________
8. ___________
9. ___________
10. ___________
Figure 3: Bones of the Wrist (Volar)
Figure 4: Bones of the Wrist (Dorsal)

1. ______________________ __ 4. ____________________ __
2. ______________________ __ 5. ____________
3. ______________________ __ 5. Web space of the thumb
Figure 5: Musculature and Tendons of the Hand

1. ______________________
2. __________________
3. __________________
4. ______________________
5. ______________________
6. ______________________ (tendon)
7. ______________________ (bony prominence)
8. ______________________
Figure 6: Musculature and Tendons of the Hand

1. __________________________
2. __________________________
3. __________________________
4. __________________________
5. __________________________
6. __________________________
7. __________________________
8. __________________________
9. __________________________ (artery)
10. __________________________ (artery)
Figure 7: Musculature and Bony Landmarks of the Elbow and Forearm

1. ______________________ 4. ______________________
2. ______________________ 5. ______________________
3. ______________________ 6. ______________________
Figure 8: Musculature of the Shoulder and Back

1. ___________ 
2. ___________ 
3. ___________ 
4. ___________ 
5. ___________
6. ___________ 
7. ___________ 
8. ___________ 
9. ___________ 

10. ___________
Figure 9: Shoulder and Back: Bony Landmarks

1. ____________________ 3. ____________________
2. ____________________ 4. ____________________
Figure 10: Anterior Shoulder: Musculature and Bony Landmarks

Answers for Figures 1-10 can be found on page 110
Zones of the Hand:

On the picture below, the student should draw and label the flexor tendon zones on the volar side of the hand.
Zones of the Hand:

On the picture below, the student should draw and label the *extensor tendon zones* on the *dorsal* side of the hand.
Student Assessment of Surface Anatomy

By the end of Week 1, the student should demonstrate the ability to locate/palpate the following structures of surface anatomy on the fieldwork educator or patients.

Hand:

___ Metacarpal bones I-V
___ Head of metacarpal III
___ Shaft of metacarpal III
___ Base of metacarpal III
___ Proximal phalanx I-V
___ Middle phalanx I-IV
___ Distal phalanx I-V
___ Thumb web space
___ Proximal palmar crease
___ Distal palmar crease
___ Thenar crease
___ Proximal digital crease (I-V)
___ Middle digital crease (I-IV)
___ Distal digital crease (I-V)
___ Thenar eminence
___ Hypothenar eminence
___ Abductor pollicis brevis muscle
___ Flexor pollicis brevis muscle
___ Abductor pollicis longus tendon
___ Adductor pollicis muscle
___ Extensor pollicis longus tendon
___ Extensor pollicis brevis tendon
Wrist:

- Flexor digiti minimi muscle
- Abductor digiti minimi muscle
- First dorsal interosseous muscle
- Anatomical snuff box
- Extensor digitorum tendons (4)

- Styloid process of the radius
- Styloid process of the ulna
- Capitate
- Proximal palmar crease of wrist
- Distal palmar crease of wrist
- Hook of the hamate
- Lunate
- Pisiform
- Scaphoid
- Trapezium
- Trapezoid
- Triquetrium
- Flexor carpi radialis tendon
- Palmaris longus tendon
- Flexor digitorum superficialis
- Flexor carpi ulnaris tendon
- Location of radial artery in wrist
- Location of ulnar artery in wrist
Elbow and forearm:

- Medial epicondyle of humerus
- Lateral epicondyle of humerus
- Olecranon process
- Head of the radius
- Brachioradialis muscle
- Extensor carpi radialis brevis muscle

Shoulder:

- Inferior angle of the scapula
- Vertebral border of the scapula
- Spine of the scapula
- Acromion process
- Clavicle
- Coracoid process

Trapezius muscle

- Superior fibers
- Middle fibers
- Inferior fibers

Deltoid muscle

- Anterior fibers
- Middle fibers
- Posterior fibers
- Pectoralis major muscle
- Biceps brachii muscle
Tricep brachii muscle
Infraspinatus and teres minor muscles
Teres major muscle
Acromioclavicular joint
Sternoclavicular joint
Latissimus dorsi muscle
By the end of Week 1, the student should demonstrate the ability to accurately measure the following items.

ROM – Universal Goniometer

Hand and Wrist:

____ PIP and DIP flexion/extension
____ Metacarpophalangial MCP flexions/extension
____ MCP adduction/abduction
____ Wrist flexion/extension
____ Wrist ulnar and radial deviation
____ PIP thumb flexion/extension
____ CMC flexion/extension
____ CMC abduction
____ Thumb carpometacarpal flexion/extension
____ Thumb opposition (ruler)

Elbow and Forearm:

____ Elbow flexion/extension
____ Forearm pronation/supination

Shoulder:

____ Shoulder flexion/extension
____ Shoulder abduction
____ Shoulder horizontal adduction/abduction
____ Shoulder internal/external rotation
Strength – Dynamometer and pinch gauge

___ Grip strength
___ Chuck / 3 fingered pinch
___ Lateral key pinch
___ Tip pinch

Measurement of Wounds

___ Length
___ Width
___ Depth

Measurement of Scars

___ Length
___ Width
___ Height
Student Notes
Week 2

Evaluation

- Evaluation
  - Upper quarter screen and evaluation of posture
  - Manual muscle testing
  - Edema
    - Measurement
    - Volumeter
  - Sensibility Testing
    - Semmes-Weinstein monofilaments
    - Nerve lesions/lacerations

- Physical Agent Modalities (PAMS)
  - State Regulations
  - Orientation to PAMS within facility

- Splinting
  - Overview of weekly splinting assignments
  - The student will demonstrate the ability to fabricate a soft splint to fit supervisor

- Occupation-Based Assignment #1
Student's Role in Week 2:

During Week 2, the student will continue to observe most patients treated by the fieldwork educator. As the emphasis of Week 2 is on evaluation, the student is encouraged to actively participate in all evaluations at the educator’s discretion. By the end of Week 2, the student should be independently treating and completing all treatment planning and documentation for one patient from the current caseload. All treatment planning and documentation should be completed to meet the standards within the facility. Although evaluation is the focus of Week 2, it is essential for the student to observe the fieldwork educator and participate when appropriate during all treatments throughout the week.

Weekly Meeting:

At the end of Week 2, the student and fieldwork educator should arrange a meeting to discuss the student’s performance throughout the week and level of competency in evaluation. The educator should review and discuss the treatment planning, treatment, and documentation for the patient the student treated independently during Week 2. During this meeting, the student and educator should preview the agenda for Week 3 to prepare the student for the week ahead to provide the student with resources that may be helpful.
Learning Objectives for Week 2:

1. The student will apply manual muscle testing to accurately measure muscle strength in the hand, wrist, and shoulder.
2. The student will demonstrate competency in evaluation of sensibility testing and analyze the results with monofilament mapping.
3. The student will apply evaluating skills to accurately measure edema of the upper limb.
4. The students will understand important criteria regarding evaluation and assessment to be included in documentation.
5. The student will apply the skills necessary to fabricate a soft splint to fit the supervisor.

Suggested reading assignment for Week 2:
• Rehabilitation of the Hand and Upper Extremity (Hunter, Mackin & Callahan)
• Part 2: Chapters 7-18
Upper Quarter Screen

- Because the source of a patient's symptoms is often unclear, a screening examination can be helpful in providing an efficient mechanism to more precisely identify the regions that may be contributing to the symptoms. An upper quarter screening examination is utilized to determine the anatomic region contributing to the patient's symptoms and to rule out gross, sensory and neurological deficits.

- The upper quarter screen is used as a tool to identify areas to be examined in greater detail.
- Assessment can also be beneficial for treatment if to examine abnormal posture secondary to an injury.

Upper quarter screen acquired from:

- Due to the fact that many facilities have their own documentation for upper quarter evaluations (i.e. checklist) fieldwork educatory should familiarize the student with the format of the screen that is implemented within the facility.

Important areas to consider during all evaluations:

- Client
- Client complaints
- Date of injury
- Functional status prior to injury
- Present functional status
- Medical history
- Precautions
- Pain level
- Current medications
- Occupation
Manual Muscle Testing

Student and fieldwork educator should discuss the grading scale that is used within the facility. This includes numerals vs. letters and "+" and "-" grades.

Fieldwork educator should provide the student with a detailed description of the grading scale used within the facility. This may come from a textbook.

Student should be introduced and familiarize themselves with the process of documenting manual muscle testing based on facilities standards.

Student Assessment of Manual Muscle Testing

By the end of Week 2, student should demonstrate the ability correctly and accurately perform the following manual muscle tests on fieldwork educator or patients.

Manual muscle tests lists acquired from:


Hand and wrist:

____ Wrist flexion
____ Wrist flexion and radial deviation
____ Wrist flexion and ulnar deviation
____ Wrist extension
____ Wrist extension and radial deviation
____ Wrist extension and ulnar deviation
____ Finger metacarpophalangeal extension
____ Metacarpophalangeal abduction
____ Metacarpophalangeal adduction
Finger metacarpophalangeal extension and interphalangeal extension
Finger proximal interphalangeal flexion
Finger distal interphalangeal flexion
Thumb interphalangeal flexion
Thumb metacarpophalangeal flexion
Thumb interphalangeal extension
Thumb radial abduction
Thumb palmar abduction
Thumb adduction
Opposition of the thumb and fifth finger

Elbow and forearm:

Elbow flexion

  Biceps
  Brachialis
  Bracioradialis

Elbow extension

  Supination
  Pronation
Edema Measurement

___ Volumeter assessment

Tape measure (circumference)

___ Digits

___ Wrist

___ Elbow

___ External millimeter caliper
Sensibility Testing

Student should be introduced to monofilament mapping and shown examples provided by the fieldwork educator. Student can also refer to Chapter 13 of Mackin et al. (2002).

Tests:
Physical Agent Modalities (PAMs)

According to Bracciano (2008), PAMs is defined as procedures and interventions that are systematically applied to modify specific client factors that may be limiting occupational performance; which use various forms of energy in order to modulate pain, modify tissue healing, increase tissue extensibility, modify skin and scar tissue, decrease edema, inflammation, or decreased occupational performance secondary to musculoskeletal or skin conditions; and which are used as an adjunctive method preparatory to engagement in occupational (p. 2).

PAMs utilized at each facility will vary depending on the setting and types of patients treated. Each PAM is applied to patients depending on diagnoses, indications, contraindication, and precautions.

Regulations regarding the application of PAMs with patients vary among each state. Prior to the student utilizing the application of PAMs when treating patients, the supervisor and student should familiarize themselves with the current regulations of the state in which they are practicing.
Orientation and Types of PAMs Utilized by the Facility
The student should identify the PAMs that are applied in treatment within their fieldwork facility.
Splinting Assignment for Week 2:

Overview of weekly splinting assignments:

- The splinting assignments established throughout this manual are arranged based on level of difficulty in fabrication of the splint and the relation to the diagnoses and conditions being covered in each particular week. Students should not be limited to only constructing the splints displayed in each week. The supervisor is encouraged to evaluate the level of student’s performance in splinting and allow the student to fabricate or assist in the fabrication of additional splints upon when appropriate.

Week 2 splinting assignment:

- The student should fabricate a soft splint to fit the supervisor. If the facility uses pre-fabricated splints, the student should fit the supervisor with the appropriate splint for a specific diagnosis and explain his or her rationale for the splint choice and fit.

Occupation-Based Assignment #1:

The student should complete an “occupational profile” for one patient from the current caseload. This analysis will consist of detailed information including:

- Who is the patient?
- Why is the patient seeking service?
- What was the patient’s date of injury or surgery?
- What are the patient’s current concerns relative to engaging in occupations and daily life activities?
- What contexts support engagement in desired occupations?
- What contexts are inhibiting engagement?
- What is the patient’s occupational history (i.e. interests, values, life experiences, previous patterns of engagement in occupations and the meanings associated with them)
- What are the patient’s priorities and desired targeted outcomes?
Simple Trauma
Physical Agent Modalities

- **Treatment**
  - Wounds
    - Management
    - Classification
    - Skin grafts and flaps
  - Edema
  - Infection
  - Burns

- **Fractures**
  - Carpal
  - Wrist
  - Distal radius/humerus
  - General principles
  - Surgical management
  - Nonarticular and intraarticular
  - Joint injuries

- **Physical Agent Modalities**
  - Modalities applied within the facility
  - Contraindications and precautions

- **Physician protocols**

- **Splinting**

- **Occupations-Based Assignment #2**
Student’s Role in Week 3:

As the emphasis of Week 3 is simple trauma, the student is encouraged to actively participate in the treatment of all patients with simple trauma at the educator’s discretion. By the end of Week 3, the student should be independently treating and completing all treatment planning and documentation for two patients from the current caseload. If possible, both of these patients will have a simple trauma diagnosis (e.g. wounds, burns, fractures, etc.). All treatment planning and documentation should be completed to meet the standards within the facility. Although simple trauma is the focus of Week 3, it is essential for the student to observe the fieldwork educator and participate when appropriate during all evaluations and treatments throughout the week.

Weekly Meeting:

At the end of Week 3, the student and fieldwork educator should arrange a meeting to discuss the student’s performance, especially in the treatment of simple trauma. The fieldwork educator should review and discuss the treatment planning, treatment, and documentation for the two patients the student treated independently in Week 3. The fieldwork educator should also review the student’s evaluation skills, therapeutic use of self, and communication skills with patients, staff, and the fieldwork educator. During this meeting, the student and fieldwork educator should preview the agenda for Week 4 to prepare the student for the week ahead in order to provide the student with resources that may be helpful.
Learning Objectives for Week 3:

1. The student will understand three color concept of wound classification and the description of each wound.
2. The student will have an understanding of the three stages of the wound healing process and the key physiological characteristics of each stage.
3. The student will differentiate between the methods for debridement, cleansing, topical treatment, dressings and desired goals for each wound classification.
4. The student will recognize an infected wound and the process for treating wounds if they have become infected.
5. The student will understand the techniques for scar management.
6. The student will understand the types of fracture fixations and the advantages and disadvantages of each type.
7. The student will understand the indications, contraindications, and precautions of each modality applied within the facility.
8. The student will understand the use of occupation-based interventions in a hand therapy setting.
9. The student will begin to build knowledge on the types of fractures in of the hand, wrist, and elbow as well as a hand therapist’s role in treating patients with these fractures.

Suggested reading assignment for Week 3:

- Rehabilitation of the Hand and Upper Extremity (Hunter, Mackin & Callahan)
  - Part 3: Chapters 19-21
  - Part 4: Chapter 22
  - Part 5: Chapters 23-25
Wound Classification and Management

Wound Assessment: The Three-Color Concept

During Week 3, the student should review the universal “three color concept” used by therapists for classification of open wounds. Use the space provided below to record notes on the description of each color as well as debridement, cleansing, topical treatment, and dressing information.

Red

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Yellow

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Black

________________________________________________________________________

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Important areas of wound care that should be addressed during Week 3 of the fieldwork experience:

- Descriptions of each wound in methods for:
  - Debridement
  - Cleansing
  - Topical treatment
  - Dressing
    - Wet and Dry
    - Types of dressings most often used within that facility
    - Indications, characteristics, function and precautions of each dressing
  - Desired goals

- Wound packing

- Characteristics of an inflected wound

- PAMS with wounds

**Scar Management:**

- ROM and massaging to prevent scar from adhere
- Techniques for the management of cutaneous scars
  - Pressure garments
  - Elastomers
  - Silicone gel
  - Paper shape

- Hypertrophic scar management

- Keloid scar management

- Skin Graphs and flaps
  - Effect on treatment of wounds
  - Contraindications and Precautions when treating patients with skin graphs or flaps
Wound Healing: 3 Phases

In the chart below, the 3 phases of the wound healing process are listed. In the space provided, the student should identify the time frame in which each stage occurs and the key physiological characteristics of each stage.

- Phase 1: Inflammation
- Phase 2: Fibroplasia
- Phase 3: Maturation
Infections

Students should be able to recognize the signs and symptoms of multiple types of infections and identify the precautions when treating the infections.

➤ Types of infections the students should be aware of:
  ✔ Cellulitis
  ✔ Lymphangitis
  ✔ Flexor sheath infections
    • Flexor Tenosynovectomy
  ✔ Pyogenic Tensosynovitis
  ✔ Paronychias
  ✔ Felons
  ✔ Subepidermal abscesses
  ✔ Fascial-space infections

Notes about Infection
Fractures:

Fractures are classified by multiple factors. These factors include: location, angle, number of fractures (simple or comminuted) and whether the fracture is closed or open.

Fracture Fixations:

Student can use this page to increase his or her knowledge and write notes about multiple types of fixations. Each type of fixation has its advantages and disadvantages during assessment and treatment of patient.

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Types of Fractures within the hand

Below is a list of commonly treated fractures of the hand. The student should use this sheet to define or record notes on each fracture.

Condylar

T-Condylar

Y-Condylar

Articular Avulsion

Articular Depression

Transverse

Oblique

Stellate

Longitudinal
Common Fractures of the Hand:
- Metacarpal Fracture
- Middle Phalanx Fracture
- Proximal Phalanx Fracture
- Distal Phalanx Fracture
- Tuft Fracture
- Bony Mallet

Carpal Fractures:
- Bennett’s Fracture
- CMC Fracture
- Distal Radius Fracture (Colle’s Fracture)
- Distal Radius Fracture (External Fixation)
- Lunate Fracture
- Scaphoid Fracture
- Scaphoid Fracture
- Ulnar Styloid Fracture

Elbow Fractures:
- Olecranon Fracture
- Radial Head Fracture

Humerus Fracture:
- Humeral Fracture (proximal 1/3)
- Humeral Fracture (midshaft)

✓ Protocols for treatment of Simple Trauma:
Many doctors and facilities have protocols and guidelines for therapists to follow when treating a patient. During Week 3, student should be introduced to the different protocols the facility utilizes for treatment.
Splinting Assignment for Week 3:

During Week 3, the student should fabricate a splint with a case scenario of a wrist, hand or elbow fracture. The splint can be completed on therapist or patient depending on the therapist’s discretion of the student’s splinting skills.

Occupation-Based Assignment #2:

During Week 3, the student should locate the following journal article through an online database. After reading the article, the student should discuss the information in the article with the fieldwork educator and other staff members or students.


Physical Agent Modalities:

- The following diagrams are designed for the student to identify the indications, contraindications, and precautions for the modalities most often applied in hand therapy

- The last two diagrams are included and to be used for any other modalities that the educator identifies as being commonly applied in the facility
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**Iontophoresis**
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Student Notes
Complex Trauma

- Tendon Injuries
  - Flexor and extensor
    - Evaluating function
    - Postoperative management
    - Complications

- Acute nerve injuries
  - Peripheral nerve injuries
    - Types of nerve injuries
    - Classification of nerve injuries
  - Repair
  - Therapist’s role in rehabilitation

- Sensory reeducation

- Home Programs
  - Home Program Assignment

- Splinting
  - Tendon injury
  - Peripheral nerve injury

- Occupation-Based Assignment #3

- Student completion of self-assessment #1

- Treatment log for complex trauma
Student's Role in Weeks 4 & 5:

With the emphasis of Weeks 4 and 5 being on complex trauma, the student is encouraged to actively participate in the treatment of all patients with complex trauma at the educator’s discretion. By the end of Week 4, the student should be independently treating and completing all treatment planning and documentation for three or four patients from the current caseload. As many of these patients as possible should have a complex trauma diagnosis (e.g. tendon and nerve injuries). All treatment planning and documentation should be completed to meet the standards within the facility. Although complex trauma is the focus of Weeks 4 and 5, it is essential for the student to observe the fieldwork educator and participate when appropriate during all evaluations and treatments throughout the week.

By the end of Week 5, the student should be independently treating and completing all treatment planning and documentation for five patients from the current caseload.

Weekly Meetings:

At the end of Weeks 4 and 5, the student and fieldwork educator should arrange a meeting to discuss the student’s performance, especially in the treatment of complex trauma. The fieldwork educator should review and discuss the treatment planning, treatment, and documentation for patients the student treated independently during the week. The fieldwork educator should also review the student’s evaluation skills, therapeutic use of self, and communication skills with patients, staff, and the fieldwork educator. During this meeting, the student and fieldwork educator should preview the agenda for the week ahead in order to provide the student with resources that may be helpful.

For the purpose of this manual, chronic pain associated with cumulative trauma is defined as any pain that persists one month beyond the normal course of acute disease.

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Learning Objectives for Weeks 4 & 5:

1. The student will demonstrate knowledge on the postoperative management of flexor and extensor tendon injuries, including evaluation of tendon function and awareness of complications during treatment of these injuries.
2. The student will have a general understanding of the varying tendon injuries specific to each flexor and extensor zone.
3. The student will demonstrate knowledge of the types and classifications of acute nerve injuries.
4. The student will be able to identify the muscles involved in a nerve injury based on the affected nerve and the level of lesion.
5. The student will understand the therapist’s role in each phase of a nerve injury.
6. The student will understand the role of sensory reeducation in the treatment of patients with peripheral nerve injuries.
7. The student will be familiar with the home programs used by the facility and the process of implementing the programs with patients.
8. The student will be familiar with the splints used in the treatment of patients with tendon and peripheral nerve injuries.
9. The student will begin recording data for each patient with a complex trauma injury treated during the 12-week hand therapy fieldwork.

Suggested reading assignment for Weeks 4 & 5:

- Rehabilitation of the Hand and Upper Extremity (Hunter, Mackin & Callahan)
  - Part 6: Chapters 26-31
  - Part 7: Chapters 32-35
During Week 4, the student should review the flexor and extensor tendon anatomy from Week 1. The student should also review and be competent in identification of the flexor and extensor zones of the hand.

**Important information the student should learn during Weeks 4 & 5:**

- Postoperative management of flexor tendon injuries
- Awareness of complications during postoperative management
- Evaluating tendon function
- Familiarity with physicians’ protocols for tendon injuries
- 3 Approaches of tendon management rational and indications
  - Immobilization
  - Early passive mobilization
  - Early active mobilization
- Injury and surgery related factors
  - Level of injury
  - Type of injury
  - Sheath integrity
  - Surgical technique
  - Timing of repair
- Postoperative management for tenolysis
Flexor Tendon Injuries:

- Zone repairs
  - Zones I, II, III: Early passive mobilization
  - Zones I, II, III: Early active mobilization (tenodesis program)
  - Zones I, II, III, IV: Delayed mobilization
  - Zones IV, V: Mobilization program

- Step-cut lengthening
- Flexor - pronator slide
- Kleinert-Louisville program

- Thumb
  - Thenar muscle repair
  - FPL repair: Early passive motion program
  - FPL repair: Early active motion
  - FPL repair: Delay AROM mobilization program

- Wrist
  - FCR repair
  - FCU repair

Staged Reconstruction

- Stage I: Active tendon implant
- Stage II: Active tendon replacement
Extensor Tendon Injuries:

Zone I – Mallet
- Conservative management
- Surgical management
- Terminal tendon repair

Zones II, III, IV
- Extensor tendon repair
- Lateral band repair
- Boutonniere deformity
- Acute
- Chronic
- Pseudo-boutonniere deformity

Zones V, VI
- Transverse sagittal band repair and partial extensor tendon repair (MP joint level)
- Extensor tendon repairs

Zones VII, VIII
- Extensor tendon repairs

Zones V, VI, VII, VIII
- Early mobilization program for extensor tendon repairs

Thumb
- Extensor pollicis longus repair
- EPB & APL repair

Extensor Tendon Reconstruction
- Extensor tendon repositioning (conservative management)
- Extensor tendon repositioning (surgical management)
- Extensor tendon repositioning (surgical management for RA)
- Elliott boutonniere reconstruction
- Littler lateral band tenodesis
- Matev procedure
- Dolphin release
- Spiral oblique retinacular ligament (SOL) reconstruction
- Fowler procedure
During Weeks 4 & 5, the student should review the assigned reading material on the anatomy of nerves from Week 1.

**Acute nerve Injuries**

Traumatic peripheral nerve injuries

**Transection**

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Crush

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**Compression (acute and chronic)**

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**Stretch**

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Classification of Nerve Injuries

1\textsuperscript{st} Degree

2\textsuperscript{nd} Degree

3\textsuperscript{rd} Degree

4\textsuperscript{th} Degree

5\textsuperscript{th} Degree
With a radial nerve lesion at the forearm-level, the following muscles are involved:

• ____________________
• ____________________
• ____________________
• ____________________
• ____________________
• ____________________
• ____________________

With a radial nerve lesion at or above the elbow, in addition to the muscles in Column 1, the following muscles are also involved:

• ____________________
• ____________________
• ____________________
• ____________________
## Median Nerve Lesions

With a **median nerve** lesion at the **wrist-level**, the following muscles are involved:

- ____________________
- ____________________
- ____________________
- ____________________
- ____________________

With **median nerve** lesion at **or above the elbow**, in addition to the muscles in Column 1, the following muscles are also involved:

- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
With a **ulnar nerve** lesion at the **wrist-level**, the following muscles are involved:

- __________________
- __________________
- __________________
- __________________
- __________________
- __________________
- __________________
- __________________
- __________________
- __________________

With an **ulnar nerve** lesion **at or above the elbow**, in addition to the muscles in Column 1, the following muscles are also involved:

- __________________
- __________________
Therapist Role and Rehabilitation of Nerve Injuries:
By the end of Week 5, the student should demonstrate a general understanding of a hand therapist’s role in each of the 3 phases of nerve injuries.

✓ Acute phase
✓ Recovery phase
✓ Chronic phase

Sensory Reeducation
By the end of Week 5, the student should have an understanding of sensory reeducation and his or her role in treating patients with peripheral nerve injuries. During Weeks 4 & 5, the student should observe or treat a patient with a peripheral nerve injury and utilize sensory reeducation in his or her treatment plan.

Home Programs
By the end of Week 5, the supervisor should introduce the student to the most commonly used home programs within the facility.

✓ Home Program Assignment
  • The student should design a home program for a patient on the current caseload. If possible in the facility, the student is encouraged to implement the home program with the patient with who he or she is working.
Splinting Assignment for Weeks 4 & 5:

Mackin et al. (2002). Chapter 34

During Weeks 4 & 5, the student should fabricate a splint for a patient with a peripheral nerve injury and a splint for a patient with a tendon injury. Both splints should be fabricated and applied on the supervisor or patient, depending on the student’s splinting abilities.

Occupation-Based Assignment #3:

Interpret the results from an evaluation of a patient from the current caseload and identify problem areas in the patient’s occupational activities. How does the deficit/impairment affect function?
Student Self-Assessment #1 (Week 4)

1. How would you describe your knowledge of the anatomy of the upper extremity? Do you think it is adequate for a student in his or her fourth week of a Level II fieldwork in hand therapy? What is your goal in this area by the end of this fieldwork?

2. Describe your current level of competence with measurement and evaluation (manual muscle testing, sensibility, ROM, edema, wounds, etc.).

3. Describe your level of confidence in treating a patient with simple trauma. How has your confidence changed since Week 1?

4. Describe your preferred style of supervision? How does this compare to the supervision style of your fieldwork educator?

5. During the first four weeks of this fieldwork experience, which areas have you found to be the most beneficial to your learning?

6. Has this manual been helpful for you? Are there any changes you would make to the content or layout?

7. What areas would you like to learn more about during the remaining eight weeks of this fieldwork experience?
The student should use the chart below to record information for each patient with a complex trauma diagnosis treated during the 12-week fieldwork. This chart can be used throughout the entire fieldwork experience.

<table>
<thead>
<tr>
<th>Date</th>
<th>Patient Initials</th>
<th>Diagnosis</th>
<th>Units Treated</th>
<th>Co-Treated/Independently Treated</th>
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<td></td>
<td>Include zone # for all tendon injuries treated</td>
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# Complex Trauma

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<th>Date</th>
<th>Patient Initials</th>
<th>Diagnosis Include zone # for all tendon injuries treated</th>
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Student Notes
Weeks 6-7

Cumulative Trauma

- Overview of evaluation
- Overview of treatment
- Cumulative trauma disorders
  - Carpal tunnel syndrome
  - Cubital tunnel syndrome
  - Radial tunnel syndrome
  - Thoracic outlet syndrome
  - Lateral epicondylitis
  - Medial epicondylitis
  - Myofascial pain
  - DeQuervain tenosynovitis
  - Tendonitis and tenosynovitis
  - Bursitis
  - Osteoarthritis
  - Rheumatoid arthritis
  - Dupuytren’s disease
- Mid-term evaluation with supervisor
- Begin planning for special project
- Occupation-Based Assignment #4
  - Disabilities of the Arm, Shoulder, and Hand (DASH) outcome questionnaire
- Splinting
- Assignment of special project
- Treatment log for cumulative trauma
Student's Role in Weeks 6 & 7:

As the emphasis of Weeks 6 and 7 is on complex trauma, the student is encouraged to actively participate in the treatment of all patients with cumulative trauma disorders at the educator’s discretion. By the end of Week 6, the student should be independently treating and completing all treatment planning and documentation for six patients from the current caseload. As many of these patients as possible should have a cumulative trauma disorder. All treatment planning and documentation should be completed to meet the standards within the facility. Although cumulative trauma is the focus of Weeks 6 and 7, it is essential for the student to observe the fieldwork educator and participate when appropriate during all evaluations and treatments throughout the week.

By the end of Week 7, the student should be independently treating and completing all treatment planning and documentation for seven patients from the current caseload.

Weekly Meetings:

At the end of Weeks 6 and 7, the student and fieldwork educator should arrange a meeting to discuss the student’s performance, especially in the treatment of cumulative trauma. The fieldwork educator should review and discuss the treatment planning, treatment, and documentation for patients the student treated independently during each week. The fieldwork educator should also review the student’s evaluation skills, therapeutic use of self, and communication skills with patients, staff, and the fieldwork educator. During this meeting, the student and fieldwork educator should preview the agenda for the week ahead in order to provide the student with resources that may be helpful.
Learning Objectives for Weeks 6 & 7:

1. Student will identify important areas of evaluation for patients with cumulative trauma disorders.
2. Student will apply the information gained through evaluation to treatment planning for patients with cumulative trauma disorders.
3. Student will demonstrate knowledge of the most commonly seen cumulative trauma disorders including anatomy, clinical symptoms, and the therapist’s role in rehabilitation.
4. Student will apply the clinical symptoms of cumulative trauma disorders by designing and fabricating a splint for a patient experiencing a specific condition addressed during Weeks 6 and 7.
5. Student will understand the importance of using activities as a means of assessment by administering and analyzing the Disabilities of the Arm, Shoulder, and Hand outcome questionnaire or another standardized exam selected by the fieldwork educator.

Suggested reading assignment for Weeks 6 & 7:

- Rehabilitation of the Hand and Upper Extremity (Hunter, Mackin & Callahan)
- Cumulative trauma disorders: Chapters 58-60
- Nerve gliding: Chapter 45
- Carpal tunnel syndrome: Chapters 36-37
- Cubital tunnel syndrome: Chapters 38-39
- Radial tunnel syndrome: Chapters 40-41
- Thoracic outlet syndrome: Chapter 42
- Lateral and medial epicondylitis: Chapters 78-79
- Rheumatoid arthritis: Chapters 93-99
- Osteoarthritis: Chapters 100-101
Evaluation of Cumulative Trauma Disorders:

The student should be introduced to the evaluation methods for cumulative trauma disorders used within the facility.

Important areas of evaluation that should be considered:

- Health history
- Review progression of the injury
- Location of the injury
- Duration of symptoms
- Relationship between activity and pain, tingling or numbness
- What relieves the pain?
- What exacerbates it?
- How quickly does the pain return when activity is resumed?
- Body pain chart
- Body posture
- Measurements
  - ROM
  - Grip and pinch strength
  - Edema measurement
- Note complaints during any movements

Work Related Risk Factors for Cumulative Trauma Disorders:

- Repetition
- High force
- Awkward postures
- Direct pressure
- Vibration
- Prolonged static positioning
Treatment of Cumulative Trauma Disorders:

Treatment of cumulative trauma disorders should be observed, co-treated and independently treated throughout the 12-week hand therapy fieldwork experience.

Nonoperative treatments commonly used when treating cumulative trauma disorders:

✓ Rest
✓ Pain control
✓ Strengthening
✓ Splinting
✓ Patient education
✓ ROM
✓ Modification of work, leisure and ADL’s
✓ Edema control
✓ Physical agent modalities
✓ Nerve gliding

Progression of treatment programs:

✓ Symptom control
✓ Strengthening
✓ Conditioning

Ergonomic assessment and recommendations

✓ Relation to cumulative trauma disorders
✓ Therapist’s role in assessment and recommendations
Cumulative Trauma Disorders:
During Weeks 6 & 7, the student should review the anatomy and clinical features of each cumulative trauma disorder covered in this section.

Carpal Tunnel Syndrome

➢ Compression at the median nerve at the wrist.

Anatomy review: Identify the contents of the carpal canal (9 tendons and a nerve)

➢ Conservative and surgical management
  ▪ Therapist role in conservative/nonoperative treatment
  ▪ Surgical
    ✓ Carpal tunnel release
    ✓ Post operative rehabilitation following carpal tunnel release

Cubital Tunnel Syndrome

➢ Compression, stretch or friction of the ulnar nerve.

➢ Evaluation
  ▪ Tinel’s test
  ▪ Elbow flexion test

➢ Operative treatment
  ▪ Therapist role in postoperative rehabilitation

Radial Tunnel Syndrome

➢ Entrapment or compression of a nerve within the forearm.

➢ Therapist role in rehabilitation
  ▪ Conservative
  ▪ Postoperative

Thoracic Outlet Syndrome

➢ Compression of vessels and nerves in the area of the clavicle

➢ Therapist role in management
  ▪ Correcting posture
  ▪ Reducing overhead reaching
  ▪ Altering biomechanics at work
• Stretching tight structures in upper extremity and chest

**Lateral Epicondylitis (Tennis Elbow)**

- *Any condition causing lateral elbow pain*
- **Treatment techniques**
  - Injection of steroid into the tendon of extensor carpi radialis brevis at the lateral humeral epicondyle
  - Limit amount of work/overuse

**Medial Epicondylitis (Golfers Elbow)**

- *Pain at the common flexor origin, at the medial humeral epicondyle*
- **Treatment Techniques:** Similar to lateral epicondylitis

**Myofascial Pain**

- *Pain that results from "overworking" the muscle*
  - Overuse of a muscle causes hyperirritability
  - "Trigger points"

**DeQuervain Tenosynovitis**

- *Inflammation of the sheath that surrounds the extensor pollicis longus and abductor pollicis brevis*
- **Diagnosis test**
  - Finkelstein test
- **Therapist role in treatment**

**Tendinitis and Tenosynovitis**

- The student should recognize the difference between these two diagnoses and the therapist role in evaluation and treatment.

**Bursitis**

- Review anatomy of the bursa
- Physiology of bursitis
- Therapist role in treatment
The next set of diagnoses are not classified as cumulative trauma, but are included in the cumulative trauma section of this manual based on their similarity in treatment.

**Inflammatory and Degenerative Arthritis**

**Osteoarthritis**

- Evaluation
- Clinical symptoms
- Therapist role in treatment
- Splinting
- Post operative management

**Rheumatoid Arthritis**

- Evaluation
- Clinical symptoms
- Therapist role in treatment
  - Hand and wrist
  - Thumb
  - Elbow
- Deformities
- Splinting
- Post operative management
  - Arthroplasty

**Dupuytren’s Disease**

- Nodular thickening and contraction of the palmer fracture of the hand
- Clinical symptoms

Definitions adapted from:

Splinting Assignment:
The student should fabricate or fit a splint for a patient experiencing a cumulative trauma disorders. The student should also verbally explain the directions of indications and precautions of wearing the splint to the patient.

Occupation-Based Assignment #4:
During Week 4, the student will administer the Disabilities of the Arm, Shoulder and Hand (DASH) outcome questionnaire. Following the administration of the DASH, the student will score the assessment and evaluate the impact the results will have on the patient’s treatment. From the results of the assessment, the student should be able to recognize the impact of the patient’s disability on social activities, work, sleep, and self-image, etc.

Assignment: Student Special Project:
During this Level II fieldwork experience, the student is required to complete a special project. This project needs to demonstrate new learning and experiential use of the new learning while at this facility.

This project should be in an area of special interest to the student, but should also be beneficial to the fieldwork site.

During the final week (or when the student is ready), the student will present the special project to staff and other students at the facility. Presentation of this project will be critiqued on the following components:

- Content of presentation
- Style of presentation
- Application of knowledge to practice
Cumulative Trauma: The student should use the chart below to record information for each patient with a cumulative trauma disorder treated during the entire 12-week fieldwork. This chart can be used throughout the entire fieldwork experience.

<table>
<thead>
<tr>
<th>Date</th>
<th>Patient Initials</th>
<th>Diagnosis Include zone # for all tendon injuries treated</th>
<th>Units Treated</th>
<th>Co-Treated/Independently Treated</th>
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# Cumulative Trauma

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Student Notes
All of the material covered thus far in Weeks 1-7 was intended to provide foundational knowledge that the student will build on in Weeks 8-12. Through further observation and hands on experiences, the student will apply the material from previous weeks throughout the rest of the fieldwork placement.

- Tasks to be completed during Weeks 8-11
  - Occupation-Based Assignment #5
  - Occupation-Based Assignment #6
  - Student observation of surgery
  - Optional observation of a different fieldwork site
  - Student completion of self-assessment #2
**Student's Role in Weeks 8 - 11:**

For the rest of the fieldwork experience, the student should be independently treating and completing all treatment planning and documentation for the entire caseload. All treatment planning and documentation should be completed to meet the standards within the facility.

**Weekly Meetings:**

At the end of Weeks 8 and 11, the student and fieldwork educator should arrange a meeting to discuss the student’s performance. The fieldwork educator should review and discuss the treatment planning, treatment, and documentation for patients the student treated independently during each week. The fieldwork educator should also review the student’s evaluation skills, therapeutic use of self, and communication skills with patients, staff, and the fieldwork educator. During this meeting, the student and educator should discuss the tasks to be completed during these weeks and make arrangements for the assignments and observations of surgery and other facilities.
Occupation-Based Assignment #5:
The student should find a research article about the implementation of occupation-based activities in hand therapy. The student should highlight the information in the article and present the findings to the fieldwork educator or other staff within the facility.

Occupation-Based Assignment #6:
The student should select one patient from the current caseload and generate a list of occupation-based activities that could be used in treatment to address the patient’s diagnosis, injury, or deficit of a particular movement. Next, the student should select the 3 activities that would be the most meaningful to the patient.

Student Observation of a Surgery:
During Weeks 8-11, the fieldwork educator should explore opportunities for the student to observe a surgery. This observation should take place with an orthopedic or plastic surgeon and should be on a patient with an upper extremity injury or condition. If possible, this surgery should be with a patient the student will be treating during the rest of the fieldwork.

Student Observation of a Different Fieldwork Site:
During Weeks 8-11, the fieldwork educator should explore opportunities for the student to spend a day or a portion of a day in another hand therapy facility within the area. This opportunity will be beneficial to the student because it will provide him or her with a chance to see a different facilities approach to treating patients. It may also be beneficial to the fieldwork educator because the student may be able to bring these new experiences back to the facility and apply them to treatment.
Student Self-Assessment #2 (Week 8)

1. Give an example of how you assessed client factors, occupational function and context to develop treatment plans for this fieldwork?

2. How have you used the principles of occupation-based practice in formulating and implementing therapeutic intervention plans?

3. How have you considered and integrated psychosocial factors influencing engagement in occupation into therapy to ensure client-centered outcomes?

4. How have you used research evidence to make informed practice decisions during this fieldwork?

5. Describe a situation when you were forced to use your own judgment during this fieldwork. How did the situation turn out?

6. Has this manual been helpful for you? Are there any changes you would make to the content or layout?

7. What areas would you like to learn more about during the remaining four weeks of this fieldwork experience?
Student Notes
Special Project

Final Evaluation

➤ Presentation of special project

➤ Student completion final self-assessment

➤ Student and supervisor’s completion of evaluation of this manual

➤ AOTA Final Fieldwork Evaluation Form

➤ Turn in all confidential information and keys
Special Project Presentation Score Sheet

Special project content:

Project is necessary/ relevant to patient population
1  2  3  4  5

Project is beneficial to fieldwork site
1  2  3  4  5

Presentation of special project:

Student maintained good eye contact:
1  2  3  4  5

Presentation was loud and clear, student positioned self so all audience could see:
1  2  3  4  5

Presentation was well organized:
1  2  3  4  5

Presentation flows well and has good transitions:
1  2  3  4  5

Total Score ___/30

Comments:
Student and Fieldwork Educator Evaluation of this Manual

To provide OT students and OT fieldwork educators in a hand therapy fieldwork with a manual that will provide the student with the best possible learning experience, the authors of this manual are committed to continuously editing and adding new content. As users of this manual, your input is important to this process. Please complete the evaluation forms included and submit them to the authors.

Please cut out the manual evaluation forms and submit them to:

Erik Peterson
9707 Oakwood Drive
Chaska MN, 55318

Adam DeWenter
4647 Sugarbush Court NE
Bemidji, MN 56601

This information can also be typed in an e-mail and electronically submitted to the authors at:

adewenter@medicine.nodak.edu

or

epeterson@medicine.nodak.edu
Student’s Evaluation of this Manual

On a scale of 1-10, rank how helpful this manual was for you in each of the topics listed below. (1 = not helpful, 10 = extremely helpful)

_____ Orientation to the facility
_____ Anatomy
_____ Measurement
_____ Evaluation
_____ Simple trauma (wounds, fractures, burns, etc.)
_____ Complex trauma (tendon and nerve injuries)
_____ Cumulative trauma disorders
_____ Splinting
_____ Physical agent modalities
_____ Occupation-based assignments
_____ Student self-assessments

What would you like to see added to this manual?

Describe your satisfaction with the layout of the information in the manual.

Any additional comments:
Fieldwork Educator’s Evaluation of this Manual

On a scale of 1-10, rank how helpful this manual was for you in each of the topics listed below. (1 = not helpful, 10 = extremely helpful)

____ Orientation to the facility
____ Anatomy
____ Measurement
____ Evaluation
____ Simple trauma (wounds, fractures, burns, etc.)
____ Complex trauma (tendon and nerve injuries)
____ Cumulative trauma disorders
____ Splinting
____ Physical agent modalities
____ Occupation-based assignments
____ Student self-assessments

What would you like to see added to this manual?

Describe your satisfaction with the layout of the information in the manual.

Any additional comments:
Student Notes
Answers for Week 1 Surface Anatomy:

Figure 1: Creases and Eminences of the Hand
1. Thenar eminence
2. Hypothenar eminence
3. Distal palmar crease
4. Proximal palmar crease
5. Thenar crease
6. Proximal digital crease
7. Middle digital crease
8. Distal digital crease
9. Distal palmar crease of wrist
10. Proximal palmar crease of wrist

Figure 2: Skeletal Structure of the Hand
1. Distal phalanx (II)
2. Middle phalanx (II)
3. Proximal phalanx (II)
4. Metacarpal bone I
5. Metacarpal bone II
6. Metacarpal bone IV
7. Metacarpal bone V
8. Head of metacarpal III
9. Shaft of metacarpal III
10. Base of metacarpal III

Figure 3: Bones of the Wrist (Volar)
1. Pisiform
2. Hook of the hamate
3. Triquetrium
4. Scaphoid
5. Trapezoid
6. Trapezium

Figure 4: Bones of the Wrist (Dorsal)
1. Capitate
2. Lunate
3. Styloid process of the radius
4. Styloid process of the ulna
5. Thumb web space

Figure 5: Musculature and Tendons of the Hand
1. Anatomical snuff box
2. First dorsal interosseous muscle
3. Adductor pollicis muscle
4. Extensor pollicis longus tendon
5. Extensor pollicis brevis tendon
6. Abductor pollicis longus tendon
7. Styloid process of the ulna
8. Extensor digitorum tendons

Figure 6: Musculature and Tendons of the Hand
1. Flexor carpi radialis tendon
2. Palmaris longus tendon
3. Flexor digitorum superficialis
4. Flexor carpi ulnaris tendon
5. Flexor pollicis brevis muscle
6. Abductor pollicis brevis muscle
7. Flexor digiti minimi muscle
8. Abductor digiti minimi muscle
9. Location of radial artery in wrist
10. Location of ulnar artery in wrist

Figure 7: Musculature and Bony Landmarks of the Elbow and Forearm
1. Olecranon process
2. Lateral epicondyle of humerus
3. Head of the radius
4. Medial epicondyle of humerus
5. Brachioradialis muscle
6. Extensor carpi radialis brevis muscle

Figure 8: Musculature of the Shoulder and Back
1. Superior fibers of the trapezius muscle
2. Middle fibers of the trapezius muscle
3. Inferior fibers of the trapezius muscle
4. Anterior fibers of the deltoid muscle
5. Middle fibers of the deltoid muscle
6. Posterior fibers of the deltoid muscle
7. Infraspinatus and teres minor muscles
8. Teres major muscle
9. Latissimus dorsi muscle

Figure 9: Shoulder and Back: Bony Landmarks
1. Acromion process
2. Spine of the scapula
3. Inferior angle of the scapula
4. Vertebral border of the scapula

Figure 10: Anterior Shoulder: Musculature and Bony Landmarks
1. Clavicle
2. Sternoclavicular joint
3. Pectoralis major muscle
4. Acromion process
5. Acromioclavicular joint
6. Coracoid process
7. Biceps brachii muscle
8. Triceps brachii muscle