

# Development of an Occupation-Based Guidebook for Hand Therapy Practice

## Background & Purpose

"Hand therapy is the art and science of rehabilitation of the upper limb, which includes the hand, wrist, elbow and shoulder girdle." (Hand Therapy Certification Commission [HTCC], 2009). Hand therapists are the experts in evaluation and treatment of conditions of the upper extremity. Hand therapists, from both physical and occupational therapy professions, often address the biomechanical issues related upper extremity (American Occupational Therapy Association [AOTA], 2016). For this reason, it is perceived that occupational therapists in the hand therapy setting deviate from the occupational perspective, which is the core of occupational therapy. Occupation-based methods are used less frequently than biomechanical-focused assessments and interventions (Amini, 2011; Colaianni & Provident, 2010; Grice, 2015; Ydreborg, Engstrand, Steinvall, & Larsson, 2015). Research regarding the use of occupation-focused intervention and assessments in hand therapy is lacking in comparison to other methods of treatment; however, available studies have proven incorporation of occupation-based methods to be not only effective but also beneficial (Che Daud et al., 2016). Use of an occupation-based approach to treatment, in addition to biomechanical intervention methods, has been shown to be more effective for achieving functional gains and improving occupational performance than use of biomechanical approaches alone (Che Daud et al., 2016; Colaianni & Provident, 2010; Jack, & Estes, 2010).

The purpose of this capstone project was to gain advanced clinical practice in hand therapy, incorporate occupation-based methods into practice, and develop an occupation-based guidebook for hand therapy.

## Theoretical Foundation

Theories used to guide both therapy interventions and to develop the Occupation-Based Hand Therapy Guidebook:

**Canadian Model of Occupational Performance and Engagement**  
The CMOP- E considers each client's unique perspective regarding his or her own occupational engagement (Wong & Fisher, 2015). Occupational engagement is the desired outcome, which is achieved through interaction among the three components of the person, occupation, and environment (Robinson, Brown, & O'Brien, 2016; Wong & Fisher, 2015). The COPM-E encourages the use of occupation-based methods and client-centered treatment through a partnership between the client and therapist (Robinson et al., 2016). The assessment associated with this model is the Canadian Occupational Performance Measure (COPM) (Law et al., 1990).

## Biomechanical Frame of Reference

A biomechanical approach considers the biomechanical and physiological principles of range of motion, strength, and endurance (Fabrizio & Rafols, 2014). Hand therapy is rooted in the biomechanical frame of reference as many of the techniques used in this setting are focused on body structure and function (Colaianni & Provident, 2010).

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## Methods

### Advanced clinical practice

- Patient care, online education courses, & one-on-one mentorship
  - Flexor tendon injuries
  - Manual therapy techniques
  - Physical agent modalities
  - Fabrication of custom orthoses

### Occupation-based approach to assessment and interventions

- Assessments (COPM)
- Interventions
  - Simulation of ADLs & work tasks, preparatory activities, & compensatory strategies
  - Patient education handouts

### Development of the *Occupation-Based Hand Therapy Guidebook*

- Section 1: Resources
  - Hand therapy resource list
  - CPT codes
  - Documentation examples
- Section 2: Evaluation
  - Evaluation methods
  - Documentation template for COPM
  - Examples of completed COPM
- Section 3: Intervention
  - Biomechanical intervention methods
  - Occupation-based interventions
  - Section 4: Case Narratives
- Section 5: Patient Education Handouts
  - Managing Arthritis in the Hands
  - Activity participation during orthosis wear or activity restrictions for patients with distal radius fracture, tendon transfer, nerve repair, and flexor tendon injury

## Implications for Practice

- The CMOP-E can be used to guide an effective, occupation-based approach to hand therapy.
- The COPM is an effective tool for measuring changes in functional status and establishing creating client-centered goals.
- Use of occupation during intervention encourages the client to be engaged and take an active role in rehabilitation.
- Occupational therapists working in a hand therapy setting can influence the state of evidence by documenting details of how occupation is utilized during treatment and the effectiveness of occupation-based approaches.

## Project Outcomes

The *Occupation-Based Hand Therapy Guidebook* was used to guide treatment for the following patients:

### Case Narrative One: Tendon transfer (EIP to EPL)

Assessment	Week 2	Week 6 (begin)	Week 6 (end)	Week 9	Week 12	Interpretation
Pain	.5/10	-	-	-	3-4/0	• Pain increased
Active range of motion in degrees- thumb	-	Right MP (55), IP (+30-70), palmar abd. (40); Left MP (25), IP (+20-25), palmar abd. (35).	Left MP (35), IP (35), palmar abd. (45)	Left MP (50), IP (+35-55), palmar abd. (50)	Left MP (45), IP (+40-52), palmar abd. (45)	• Left MP less than normal at week 12 (0-50). • Left IP than normal (0-80) with hyperextension • Palmar abduction is less than normal (0-70). • Overall positive trend (77 total degrees)
Active range of motion in degrees- wrist	-	Right flex (60), Ext (60), Ulnar dev. (30), Radial dev. (25); Left flex (15), Ext (45), Ulnar dev. (20), Radial dev. (20)	-	-	Left Flex (45), Ext (55), Ulnar dev. (30), Radial dev. (20)	• Left flexion is less than normal (0-80). • Left extension is less than normal (0-70). • Left ulnar deviation is within normal range (0-30). • Radial deviation is within normal range (0-20). • Complicated by a prior wrist fracture • Overall positive trend (55 total degrees)
COPM	-	-	Total performance score of 9/50 (average 1.8); Total satisfaction score of 5/50 (average 1)	-	Total performance score of 43/50 (average 8.6); Total satisfaction score of 30/50 (average 6).	• OP: fastening a bra, managing an IV, spiking an IV bag, opening packages, carrying laundry basket. • Very little difficulty with performance & some satisfaction • Positive change (6.8 pts performance & 5 pts satisfaction) • Clinically significant change (2 or more points)
Nine Hole Peg Test	-	-	Dominant hand (right) = 17.10 seconds; Non-dominant hand (left) = 20.90 seconds (dropped 1-2 pegs).	-	Dominant hand (right) = 17.24 seconds, Non-dominant hand (left)= 20.78 seconds.	• Dominant hand (right) = 17.24 seconds within 1 SD of the norm (16.54 seconds) • Non-dominant hand (left)= 20.78 seconds within 2 SD of the norm (17.64 seconds). • No significant change • Right increase of .14 seconds • Left decrease of .12 seconds • Very little improvement (initial scores fell slightly slower than the norms) • Right grip strength is within 1 SD higher than the mean (70.4), lateral pinch is within 1 SD above the mean (16.7), and three-point pinch is the same as the mean (17) • Left grip strength is within 2 SD below the mean (62.3), lateral pinch is within 2 SD below the mean (15.8), and three-point pinch is within 3 SD below the mean (16.6) • Only one assessment due to protocol limiting use of maximum strength until this point. • Room for improvement.
Dynamometer/ pinch meter In pounds	-	-	-	-	Right grip (83), lateral pinch (17), Three-point pinch (17); Left grip (48), lateral pinch (11), three-point pinch (7).	

Data for range of motion norms from Whelan (2014), COPM from Law & CAOT (2014), Nine Hole Peg Test from Oxford Grice et al. (2003) and Grip and pinch strength from Mathiowetz et al. (1985)

### Case Narrative Two: Flexor Pollicis Longus Repair

Assessment	Week 1	Week 11	Interpretation
Passive range of motion in degrees	MP flex (50); IP flex (60)	-	• Measure was not repeated
Active range of motion in degrees	-	Right MP (65), IP (-10-80), palmar abd. (50); Left MP (65), IP (-10-25), palmar abd. (45).	• Right MP greater than normal (0-50), IP is limited in extension (natural deformity) and normal in flexion (0-80), palmar abduction is less than normal (0-70). • Left MP greater than normal (0-50), IP is limited in extension (natural deformity) and limited in flexion (site of repair) (0-80), palmar abduction is less than normal (0-70). • Only one assessment due to limitation of treatment protocol • Overall positive trend • Patient gained 15 degrees of IP flexion • Improved her ability to use her left thumb for functional tasks.
Function	Difficulty with the following activities: removing lids of markers, opening wrappers and bottles, putting her shirt on, carrying her lunch tray, showering, tying her shoes, zipping her boots and coat	Without difficulty: putting on her shirt, carrying her lunch tray, showering, tying her shoes, and zipping her boots and coat; Little difficulty: taking lid off markers, opening wrappers, and opening bottles	

Data for range of motion norms from Whelan (2014)

### Case Narrative Three: Flexor Digitorum Profundus Repair

Assessment	Week 1	Week 2	Week 4	Week 6	Interpretation
Pain	5-7/10	3-4/10	2/10 before therapy 4/10 after therapy	2/10 at the beginning of therapy 3-4/10 at worst	• Decrease in pain
Active range of motion in degrees	-	-	-	Right index finger MP (85), IP (90), DIP (60); Left index finger MP (75), IP (80), DIP (50) 17.5/100 (17.5%)	• Right MP, IP, and DIP below normal limits of MP (0-90), IP (0-100), and DIP (0-80), likely due to tissue bulk. • Left MP, IP, and DIP within 10 degrees of the joints on the right • Good motion for this stage of flexor tendon repair • Positive change of 0.8% • Less difficulty with the following activities: garden or yard work, opening a new or tight jar, less pain when performing activities, less difficulty sleeping as a result of pain, less pain overall, and less limitation in performing work or other regular daily activities overall. • Moderate impairment.
DASH	18.3/100 (18.3%)	-	-	-	• Negative change (-7 points) in functional score
FOTO	50/100	-	-	43/100	

Data for range of motion norms from Whelan (2014) and DASH from Institute for Work and Health (2006)

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