

*Resilience:* STRONGER TOGETHER!



American Society  
of Hand Therapists™

# ASHT 2023

## ANNUAL MEETING

### *San Antonio, Texas*

**HENRY B. GONZÁLEZ CONVENTION CENTER**  
900 E. Market Street • San Antonio, TX 78205

SEPTEMBER 28-OCTOBER 1, 2023

*Final* PROGRAM

2023.asht.org  
#ASHT2023

**A \$235**

discount on the  
Annual Meeting

**Free subscriptions**  
to the *Journal of Hand Therapy*  
**(\$182 VALUE),**  
and the *ASHT Times* magazine  
**(\$100 VALUE),**  
and a **50% DISCOUNT** to  
the *Journal of Hand Surgery*

**ONLINE  
BOOKSTORE**  
discounts up  
to **\$376**

**The value  
OF MEMBERSHIP IN  
ASHT  
REALLY ADDS UP:**

**Free CE  
credit** each  
month by  
participating  
in the  
Journal Club  
**(\$420 VALUE)**

Discounts on  
**ASHT Career  
Center** postings  
**(10% SAVINGS)**

**COMPLIMENTARY**  
listing in the  
**FIND A THERAPIST**  
public membership  
directory

Discounts on the  
continuing education  
Webinar Series  
**(\$500+ savings)**

**IT'S EASY TO SEE**

HOW YOUR MEMBER DUES INVESTMENT  
**PAYS FOR ITSELF!**

*Please see reverse for more information*

**ASHT** is the only association dedicated to meeting the needs of hand therapists.

ASHT offers a wide range of membership levels to **occupational, physical and hand therapists**, as well as hand surgeons, nurse practitioners and allied health professionals!

## BENEFITS

### PUBLICATIONS

- Annual subscription to the quarterly *Journal of Hand Therapy*
- *ASHT Times* quarterly online member magazine
- Over 50% off the price of ASSH's *Journal of Hand Surgery*

### CONTINUING EDUCATION

- Discounted registration to the ASHT Annual Meeting
- Continuing education workshops and events, including: Hand Therapy Review Course, Hands On Orthotics workshops, popular webinar series, ASHT traveling course, UE Institute
- Discounts on publications and products

### PRACTICE MANAGEMENT

- Best practice standards for domain of hand and upper extremity therapy
- Legislative Action Center
- Resources for your hand and upper extremity therapy practice
- Professional liability insurance at member rates

### RESEARCH

- Journal Club — official monthly online discussion forum for the *Journal of Hand Therapy* (earn one free CE credit)
- Practical support for new researchers
- Monthly research updates

### REFERRALS

- Find a Member Therapist online public directory
- Find a Clinic online public directory

### CAREERS

- Enhanced career center for posting & searching jobs
- Mentoring program

### NETWORKING

- Reach therapists across the US and around the world
- Share and discuss a variety of issues in the improved e-Community
- Searchable Find a Therapist member directory
- Eligibility for ASSH Affiliate membership



**American Society  
of Hand Therapists™**

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**The American Society of Hand Therapists (ASHT) gratefully acknowledges the following companies who have elected to sponsor the ASHT 2023 Annual Meeting.**

## PLATINUM:



## GOLD:



## SILVER:



It is my pleasure to share information about the ASHT 2023 Annual Meeting in San Antonio, TX, September 28 – October 1, 2023. This Annual Meeting gives therapists who specialize in the upper extremity a chance to come together for educational sessions, practice updates, advocacy, research, vendor meetings and networking. Our theme this year is "Resilience: Stronger Together!" This emphasizes the hand and upper extremity therapy community working together to overcome challenges and supporting our network, as we are stronger together. We will convene on issues that challenge us, connect to strengthen our practice and grow our community to unite us.

At the ASHT Annual Meeting, we strengthen relationships and are exposed to many new learning opportunities. Networking with other therapists throughout the conference is always an exciting time as we gather to see old friends and meet new ones. The plenary sessions and extensive educational sessions throughout the conference will provide updates and discussion of some of the everyday challenges we face as therapists, as well as evidence-informed practice. Our exhibit hall will have many vendors who are eager to tell you more about their therapy products; their support is so important to us. This meeting will offer in-person opportunities as well as on-demand sessions for those who cannot attend the meeting but wish to have the same educational opportunities.

Plenary sessions will include cadaver dissections, panel discussions, physician talks and an international speaker. Pre-Conference Institutes on September 28 will also be available to enhance your educational experience. We are so excited for these speakers to share their experiences as they educate us on their areas of expertise. The diversity of speakers throughout the conference will help us grow and learn. This year, we are fortunate to be able to offer our attendees a get-together after the last afternoon session on Saturday, September 30. Be sure to stick around for some good ol' Texas fun!

San Antonio is an area full of culture and steeped in history. The San Antonio Marriott Riverwalk hotel and is across the street from the Henry B. Gonzales Convention Center where our sessions will be held. The San Antonio Riverwalk is directly behind the hotel and gives you an opportunity to sightsee, shop and enjoy the fun atmosphere at the various nearby restaurants. Whether you take a river boat cruise or enjoy the walking path from the hotel, you will find a city that is rich in history, bursting with culture and booming with modern attractions.

On behalf of the ASHT 2023 Annual Meeting Committee, we look forward to seeing and hosting you in San Antonio for the ASHT 2023 Annual Meeting.

Missy Thurlow, MBA, OTR/L, CHT  
**ASHT 2023 Annual Meeting Committee Chair**



### MISSION

To build and support the community for professionals dedicated to the excellence of hand and upper extremity therapy.

### VISION

To be the recognized leader in advancing the science and practice of hand and upper extremity therapy through education, advocacy, research and clinical standards.

# WITH OUR Thanks

ASHT is supported by an often-invisible team of volunteers who selflessly dedicate their time and expertise to advance the hand and upper extremity therapy specialty.

We extend our gratitude to all our volunteers. Whether you serve on a committee or contribute materials for a workshop, you are the lifeblood of the society. Thank you for your time and energy, your efforts and your achievements.

## ASHT PAST PRESIDENTS

**2021-2022** Diane Coker, PT, DPT, CHT  
**2020-2021** Rachel Pigott, MPH, OTR/L, CHT  
**2019-2020** Mo Herman, MA, OTR/L, CHT  
**2018-2019** Linda Klein, OTR, CHT  
**2017-2018** Kris Valdes, OTD, OT, CHT  
**2016-2017** Gary Solomon, MBA, MS, OTR/L, CHT  
**2016** Barbara Winthrop, MA, OTR, CVE, CHT, FAOTA  
**2015** Jane Fedorczyk, PT, PhD, CHT  
**2014** Maureen Hardy, MS, PT, CHT  
**2013** Sue Michlovitz, PT, PhD, CHT  
**2012** Dorit H. Aaron, MA, OTR, CHT, FAOTA  
**2011** Jerry Coverdale, OTR, CHT  
**2010** Peggy Boineau, OTR, CHT  
**2009** Joy MacDermid, BScPT, PhD  
**2008** Paige E. Kurtz, MS, OTR/L, CHT  
**2007** Stacey L. Doyon, OTR/L, CHT  
**2006** Christine Muhleman, OTR/L, CHT  
**2005** Donna Breger Stanton, MA, OTR/L, CHT, FAOTA  
**2004** William W. Walsh, MBA, MHA, OTR/L, CHT  
**2003** Chris B. Blake, OTR/L, CHT  
**2002** Ginger Clark, OTR, CHT  
**2001** Lauren Rivet, LOTR, CHT, FAOTA  
**2000** Joan Sullivan, MA, OTR, CHT  
**1999** Karen Stewart Pettengill, MS, OTR/L, CHT  
**1998** Judy Bell-Krotoski, OTR, FAOTA, CHT  
**1997** Terri L. Wolfe, OTR/L, CHT  
**1996** Valerie Holdeman Lee, PT, CHT  
**1995** Missy Donnell, OTR, CHT  
**1994** James W. King, MA, OTR, CHT  
**1993** Heidi Hermann Wright, MBA, OTR, CHT  
**1992** Janet Waylett-Rendall, OTR, CHT  
**1991** Patricia Taylor Mullins, PT, CHT  
**1990** Judy C. Colditz, OTR/L, CHT, FAOTA  
**1989** Nancy M. Cannon, OTR, CHT  
**1988** Lynnlee Fullenwider, OTR/L, CHT  
**1987** Anne Callahan, MS, OTR/L, CHT, CLT  
**1986** Shellye (Bittinger) Godfrey, OTR/L, CDE II, CHT, CWS  
**1985** Georgiann Laseter, OTR, FAOTA, CHT  
**1984** Mary C. Kasch, OTR, CVE, CHT  
**1983** Margaret S. Carter, OTR, CHT  
**1982** Evelyn Mackin-Henry, PT  
**1981** Gloria Hershman, OTR, FAOTA  
**1980** Karen H. (Prendergast) Lauckhardt, MA, PT, CHT  
**1978 - 79** Bonnie Olivett, OTR, CHT

## ASHT 2022-2023 BOARD OF DIRECTORS

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President

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Board Member-at-Large

## ASHT 2023 ANNUAL MEETING COMMITTEE

**Missy Thurlow, MBA, OTR/L, CHT**  
*Annual Meeting Committee Chair*

**Brocha Z. Stern, PhD, OTR, CHT**  
*Annual Meeting Committee Vice Chair*

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**Gwen Weinstock-Zlotnick, Ph.D., OTR/L, CHT**

**Stephanie D. Strouse, OTD, OTR/L, CHT**  
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**Jenny M. Dorich, PhD, MBA, OTR/L, CHT**  
*Research Division Liaison*

**Danielle Sparks, DHS, MOT, OTR, CHT**  
*Practice Division Liaison*

## ASHT STAFF

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Executive Director

**Jess Ercolino**  
Associate Executive Director

**Luci Patalano, MBA**  
Director of Education

**Monica Barnaby**  
Membership and Research Coordinator

**Sue Dobbins**  
Education Coordinator

**Jessica Hayes, CMP, HMCC**  
Meeting Manager

**Jill Steckler**  
Associate Meeting Manager

**Amanda Bray**  
Industry Relations Manager

**Charles Scogna**  
Senior Editorial Manager

### ASHT

1120 Route 73, Suite 200  
Mt. Laurel, NJ 08054

[www.asht.org](http://www.asht.org)

# Awards

## LIFETIME FELLOWSHIP

**Lifetime Fellowship** status is an honor awarded to individuals in recognition of career-long contributions to the Society and the field of hand and upper extremity rehabilitation. Lifelong ASHT Fellows are honored for their long-term Society membership participation, exemplary leadership and documented achievements in the field. The cumulative effects of these recipients have been paramount in advancing the field of hand and upper extremity therapy through ASHT. Their talents have been diverse with integrated accomplishments. The nomination is open to ASHT members in good standing for a minimum of 25 years.

## AWARD WINNERS

Terri Wolfe, OTR/L, CHT  
Susan Michlovitz, PT, PhD, CHT, FAPTA  
Joy MacDermid, PT, PhD  
Kenneth R. Flowers, PT, CHT (retired)  
Sharon Flinn, PhD, OTR/L, CHT  
Donna Breger Stanton, OTD, OTR/L, CHT, FAOTA  
Judith A. Bell-Krotoski, OTR, FAOTA, CHT  
Nancy Cannon, OTR, CHT  
Margaret S. Carter, OTR, CHT  
Gloria DeVore, OTR  
Roslyn B. Evans, OTR/L, CHT  
Elaine E. Fess, MS, OTR, FAOTA, CHT  
Lynnlee Fullenwider, OTR/L, CHT  
Shellye Godfrey, OTR/L, CHT  
Mary C. Kasch, OTR, CVE, CHT  
Jim King, MA, OTR  
Georgiann Laseter, OTR, FAOTA, CHT  
Karen H.P. Lauckhardt, MA, PT, CHT  
Evelyn J. Mackin, PT  
Maude Malick, OTR  
Bonnie Olivett, OTR, CHT

## HONORARY MEMBERSHIP AWARD

The purpose of **Honorary Membership Award** is to recognize persons other than certified hand therapists who have made significant contributions to ASHT and the specialty of hand and upper extremity therapy through education, advocacy, research, public service, marketing and promotion of the ASHT's mission, vision and values; whose achievements are of national or international significance

or influence and have provided notable service to the specialty of hand and upper extremity therapy.

Honorary Membership is awarded to an individual who is not already a member of ASHT and who is not eligible for Active or Associate membership in the society.

## ASHT HONORARY MEMBERS

Rita Patterson, PhD  
Don Lalonde, MD, FRCSC  
Peter C. Amadio, MD  
Lois M. Barber, OTR, FAOTA  
Paul Brand, FRCS  
Paul C. Dell, MD  
Robert J. Duran, MD  
Adrian E. Flatt, MD  
L. Irene Hollis, OTR  
James H. Hunter, MD  
Dorothy Kaufman  
Scott Kozin, MD  
John W. Madden, MD  
John A. McAuliffe, MD  
Robert McFarlane, MD  
Wyndell Merritt, MD, FACS  
Rita Patterson, PhD  
Miguel Pirela-Cruz, MD  
Neal Pratt, PT, PhD  
Erik A. Rosenthal, MD  
Alfred B. Swanson, MD  
Robert M. Szabo, MD, MPH  
Kululu M. Von Prince, OTR, EdD

## NATHALIE BARR LECTURESHIP AWARD

The **Nathalie Barr Lectureship Award** is among ASHT's highest honors, recognizing and honoring an ASHT member who has made significant original contributions to hand and upper extremity rehabilitation and to ASHT. The nominee must have shared this information through publications and speaking presentations and/or shared a unique quality of work, theory, research and education that is original and genuinely supports ASHT's mission, vision and values in one of the following ways:

- Development or refinement of professional theory, clinical methods and/or techniques used in hand and upper extremity therapy

- Outstanding research with outcomes evidence to support hand and upper extremity therapy treatment
- Contributions to hand and upper extremity therapy development as a profession and to ASHT
- Contributions to the specialty of hand and upper extremity rehabilitation and/or healthcare not related to ASHT, specifically the candidate's contributions to public service and/or awareness of hand and upper extremity therapy

The nomination is open to all Active ASHT members in good standing for at least five years. The honorary lecture is announced at the Annual Meeting and given at the following year's meeting.

## NATHALIE BARR LECTURESHIP RECIPIENTS

2020 Kristin Valdes, OTD, OTR, CHT  
2019 Corey McGee, PhD, OTR/L, CHT  
2018 Jane Fedorczyk, PT, PhD, CHT  
2017 Terri Skirven, OTR/L, CHT  
2016 Rebecca Neiduski, PhD, OTR/L, CHT  
2015 Caroline Stegink-Jansen, PT, PhD, CHT  
2014 Karen Pettengill, MS, OTR/L, CHT  
2012 Paul LaStayo, PT, PhD  
2010 Maureen Hardy, MS, PT, CHT  
2009 Karen H.P. Lauckhart, MA, PT, CHT  
2008 Susan Michlovitz, PT, PhD, CHT  
2007 Donna Breger Stanton, MA, OTR/L, CHT, FAOTA  
2006 Patricia Taylor, PT, CHT  
2005 Joy MacDermid, BScPT, PhD  
2004 Jim King, MA, OTR  
2003 Janet Waylett-Rendall, OTR, CHT  
2002 Lynnlee Fullenwider, OTR/L, CHT  
2001 Georgiann Laseter, OTR, FAOTA, CHT  
2000 Jean Casanova, OTR, CHT  
1999 Judith Colditz, OTR/L, CHT, FAOTA  
1998 Mark T. Walsh, PT, MS, CHT  
1997 Anne Callahan, MS, OTR/L, CHT, CLT  
1996 Roslyn B. Evans, OTR/L, CHT  
1995 Carolina S. deLeeuw, MA, OTR  
1994 Kenneth Flowers, PT, CHT  
1993 Nancy Cannon, OTR, CHT  
1992 Bonnie L. Olivett, OTR, CHT  
1991 Mary C. Kasch, OTR, CVE, CHT  
1990 Gloria DeVore, OTR  
1989 Elaine E. Fess, MS, OTR, FAOTA, CHT  
1988 Judith A. Bell-Krotoski, OTR, FAOTA, CHT  
1987 Maude Malick, OTR  
1986 Evelyn J. Mackin, PT

# Awards

## PAUL BRAND AWARD

The **Paul Brand Award** recognizes individuals who have exemplified humanitarianism in their work as a hand therapist in addition to providing clinical and professional excellence in several facets of practice. The candidate for this award is one who strives for the advancement of hand and upper extremity therapy, which may include underserved areas nationally and/or internationally.

The nomination is open to all Active, Lifetime, Associate and Affiliate members of ASHT in good standing for a minimum of five consecutive years including the year nominated.

## PAUL BRAND AWARD RECIPIENTS

2022 Celeste Freeman, OTR/L, CHT  
2020 Cynthia Cooper, MFA, MA, OTR/L, CHT  
2017 Melissa C. Thurlow, MBA, OTR/L, CHT  
2015 Ginny Gibson, OTD, OTR/L, CHT  
2014 Rebecca Neiduski, PhD, OTR/L, CHT  
2011 Caroline Stegink-Jansen, PT, PhD, CHT  
2010 J. Martin Walsh, OTR/L, CHT  
2007 Pamela Silverman, OTR, CHT  
2006 Lynn Bassini, MA, OTR, CHT  
2005 Nancy Chee, OTR/L, CHT; Linda Lehman, MPH, OTR  
2004 Dorit Aaron, MA, OTR, CHT, FAOTA  
2003 Shrikant Chinchalkar, BScOT, OTR, CHT  
2002 Judith A. Bell-Krotoski, OTR, FAOTA, CHT

## MACDERMID LIFETIME SCIENTIFIC AWARD IN HAND THERAPY

The **MacDermid Lifetime Scientific Award in Hand Therapy** recognizes an ASHT member who has made contributions through research to the science and practice of hand and upper extremity rehabilitation, which have subsequently changed hand and upper extremity therapy professional standards. The award is announced at the ASHT Annual Meeting. The recipient of the award will present his/her research contributions during the MacDermid Lectureship at the following year's Annual Meeting.

This nomination is open to ASHT members in good standing who have demonstrated career-long research-related endeavors that have had a lasting and transformative impact on the science and practice of hand and upper extremity therapy.

## MACDERMID LIFETIME SCIENTIFIC AWARD IN HAND THERAPY RECIPIENTS

2013 Joy MacDermid, PT, PhD

## ASHT HALL OF FAME

The **ASHT Hall of Fame** recognizes hand and upper extremity therapists who have reached the pinnacle of excellence in all areas of hand therapy. The areas identified for excellence include clinical practice, research, advocacy, education, international involvement and innovation, but this may evolve as hand and upper extremity therapy continues to evolve.

The nomination is open to former hand and upper extremity therapists currently retired from the profession. Nominees must be former (or current Retired) ASHT members with previous volunteer and leadership experience within the Society.

## ASHT HALL OF FAME

Susan Michlovitz, PT, PhD, FAPTA (2022)  
Donna Breger Stanton, OTD, OTR/L, FAOTA (2021)  
Judy Bell-Krotoski, OTR, FAOTA, CHT (2020)  
Margaret Carter Wilson, OTR, CHT (2020)  
Mary Kasch, OTR, CVE, CHT (2020)  
Evelyn Mackin, PT (2020)  
Bonnie Olivett, OTR, CHT (2020)  
Karen Prendergast Lauckhardt, MA, PT, CHT (2020)

## JOURNAL OF HAND THERAPY FIRST-TIME WRITER'S AWARD

This award recognizes a first-time writer's contribution to evidence that supports the hand and upper extremity therapy profession.

## JOURNAL OF HAND THERAPY FIRST-TIME WRITER'S AWARD RECIPIENTS

2022 Mary Whitten, DHSc, MOT, CHT  
2021 Alice Orts Hansen, OT, PhD  
2020 Shirley J. F. Collocott, MHSc  
2019 Sandy C. Takata, OTD, OTR/L  
2018 Burcu Dilek, PhD, PT  
2017 Hector Gutierrez-Espinoza, MD  
2016 Ahmad Zamir Che Daud, PhD (Aus), BSc. Hons (UK), Dip (Mal)  
2015 Ulrika Wijk, OT, MSc  
2014 Betty Smoot, PT, DPTSc  
2013 Christos Karagiannopoulos  
2012 Benjamin Boyd, PT, DPTSc, OCS

## BEST GRASSROOTS EFFORT AWARD

### The Best Grassroots Effort Award

recognizes an ASHT member or group's (e.g, state association, hospital system, academic institution, etc.) passionate and consistent involvement in governmental affairs at the national, state and/or local level during that calendar year.

The purpose of this award is to:

- Motivate others to increase political involvement
- Lead by example, showing that one person can make a difference through consistent involvement in governmental affairs activities
- Demonstrate strategic thinking in organizing or helping to organize a legislative or grassroots campaign
- Initiate coalitions to maximize advocacy efforts
- Raise the visibility and influence of the specialty (individually and personally)

Nominees for the Best Grassroots Effort must be either an Active ASHT member or an Affiliated Group (that includes at least one active ASHT member for at least two years).

## BEST GRASSROOTS EFFORT AWARD RECIPIENTS

2022 Mary Barnes, MOT, CHT, CIND

## EMERGING HAND THERAPIST AWARD

The **Emerging Hand Therapist Award** will address the issues and achievements faced by Certified Hand Therapists within the first five years of initial HTCC certification as they begin in their specialty careers. The purpose of this award is to foster awareness and activity in newly certified hand therapists to encourage a legacy of participation in the profession.

Nominees for the Emerging Hand Therapist Award must be an Active member in good standing of ASHT for at least three years.

## EMERGING HAND THERAPIST AWARD RECIPIENTS

2022 Macyn Stonner, OTD, OTR/L, CHT

# GENERAL *Information*

## IN-PERSON SCHEDULE OF ACTIVITIES

### ONSITE REGISTRATION HOURS:

#### LOCATION: MAIN LOBBY – STREET LEVEL

Thursday, September 28	9:00 AM – 7:00 PM
Friday, September 29	6:00 AM – 7:00 PM
Saturday, September 30	6:00 AM – 6:00 PM
Sunday, October 1	7:00 AM – 12:00 PM

### ONSITE SPEAKER READY ROOM HOURS:

#### LOCATION: ROOM 215 – MEETING LEVEL

All presentations must be preloaded onto the network computer system. Presentations can be uploaded 24 hours in advance of your presentation. Please be sure to check in at the Speaker Ready Room at least four hours before your presentation time.

Thursday, September 28	9:00 AM – 7:00 PM
Friday, September 29	7:00 AM – 7:00 PM
Saturday, September 30	7:00 AM – 6:00 PM
Sunday, October 1	7:00 AM – 11:00 AM

## CHILDREN AND THE ASHT ANNUAL MEETING

The ASHT Annual Meeting is a professional, scientific meeting. ASHT does not permit anyone under the age of 18 to attend Pre-Conference Institutes, plenary, instructional concurrent, scientific and poster sessions, exposition and social events. For safety reasons, only registered exhibitors and poster presenters are permitted in the exposition/poster hall during set-up and take-down hours. Anyone 18+ must register and buy applicable individual tickets if not attending/registering as a student.

## EVENT PHOTO/VIDEO WAIVER

For good and valuable consideration, the receipt of which is hereby acknowledged, I grant to American Society of Hand Therapists and those acting under its permission or authority (collectively, "ASHT"), the irrevocable royalty-free right and permission to record, copy, publicly display, publicly perform, publish, modify, use and reuse my voice, image, photograph, portrait, likeness, and biographical information, including portions, composites, likenesses or distortions or alterations of same ("Likeness"), made during or in connection with my attendance of this ASHT Annual Meeting, for use in any Materials to be shown in all media now known or hereafter devised, for an unlimited term. I acknowledge that all such Materials are the property of ASHT as a work made for hire (or, if not, then I assign all of my rights in and to the Materials to ASHT), and that I will not receive any compensation as a result of any use of my Likeness in such Materials. I waive any right to inspect or approve the finished Materials, and release, waive and agree not to make any claim against ASHT in connection with any use of the Likeness, including, without limitation, any claim that such use invades any right of privacy, publicity and/or personality, defamation, libel, moral right, and any other personal and/or property right under the law of any country or jurisdiction. This agreement shall inure to the benefit of and shall be binding upon the parties' respective successors, licensees, assigns, heirs and personal representatives, and cannot be amended except by written agreement.

### ONSITE EXHIBIT HOURS:

#### LOCATION: EXHIBIT HALL 2 - STREET LEVEL

\*Dedicated hall hours (does not compete with educational sessions)

#### Thursday, September 28

\*Welcome Reception 7:00 PM – 9:00 PM

#### Friday, September 29

\*AM Coffee Break 9:30 AM – 10:00 AM

\*Lunch 12:45 PM – 2:15 PM

\*PM Coffee Break 4:15 PM – 5:00 PM

#### Saturday, September 30

\*AM Coffee Break 8:30 AM – 9:00 AM

\*Lunch 12:50 PM – 3:00 PM

### ONSITE E-POSTER

e-Poster kiosks will be available throughout the meeting in Exhibit Hall 2 – Street Level. Personal headphones and styluses were provided to each attendee when they received their badge. **There will be no physical posters for presentation.**

#### Designated e-Poster hours:

**Poster Session I:** Friday, September 29 12:45 PM – 2:15 PM

**Poster Session II:** Saturday, September 30 12:50 PM – 3:00 PM

## ELECTRONIC DEVICES

As a courtesy to other meeting attendees, please turn off or silence all electronic devices during all workshops, sessions and presentations.



### WI-FI INFORMATION

ASHT is happy to provide Wi-Fi in all of the meeting space at the Henry B. González Convention Center. To login to the Wi-Fi on site, please use the following information:

**NETWORK:** ASHT2023

**PASSWORD:** ASHT2023



# GENERAL *Information*

## VIRTUAL SCHEDULE OF ACTIVITIES

ASHT will record all plenary and concurrent sessions.\* These select sessions will be uploaded to the conference platform post event in two installments. (See schedule below.) There are no live stream sessions.

### VIRTUAL ON-DEMAND SCHEDULE

#### THURSDAY, SEPTEMBER 28

Available On-Demand at 10:00 PM ET

Plenary Cadaver Session 1  
Cadaver Session 2

#### FRIDAY, SEPTEMBER 29

Available On-Demand at 10:00 PM ET

Plenary Session 2  
Plenary Session 3  
Plenary Session 4  
Plenary Session 5

#### SATURDAY, SEPTEMBER 30

Available On-Demand at 10:00 PM ET

Plenary Session 6  
Plenary Session 7  
Plenary Session 8

#### MONDAY, OCTOBER 16

Available On-Demand at 10:30 AM ET

Instructional Concurrent Sessions  
Special Sessions  
Scientific Session I  
Scientific Session II  
AHTF Happy Hour with a Scholar (ticketed event)  
Pre-Conference Institutes (ticketed event)  
Preparing for the CHT Exam  
International Committee Invited Lecturer Luncheon

*\*Virtual attendees can obtain CEUs by viewing sessions as they become available. The virtual on-demand platform will automatically keep track of the sessions you view. Attendees can submit session evaluations and retrieve their CE certificate through the on-demand platform. **All attendees must retrieve their certificate by January 31, 2024.** The ASHT on-demand platform will be available through September 1, 2024.*

### VIRTUAL EXHIBITOR DIRECTORY:

The virtual exhibitor directory encompasses ASHT's 2023 Annual Meeting exhibitors and sponsors. Check out our industry supporters and get the latest on their products and services. The exhibitor directory can be accessed in the on-demand conference platform starting September 28, 2023 through September 1, 2024.



### SHARE THE gLOVEs

This year, ASHT is partnering with **Believe It Foundation** for our **Share the gLOVEs** drive. Believe It Foundation has an adaptive bike program in schools throughout San Antonio and the surrounding area. They are currently in 14 school districts serving 203 schools (with a waiting list). They need bike gloves to assist the kids with gripping and steering of their bikes. You can order gloves through our **Amazon Wish List** or by making a donation when you register for ASHT 2023 Annual Meeting. Gloves ordered through Amazon can be shipped directly to ASHT. Gloves need to be received by **September 8**. The representatives from Believe It Foundation will be on site Saturday, September 30, to accept our donation along with your contributions!

# GENERAL *Information*

## OVERVIEW

The American Society of Hand Therapists (ASHT) is proud to present its 46th Annual Meeting. The 2023 program will emphasize evidence-informed practice for rehabilitation of the hand and upper limb. Presented by distinguished faculty known regionally, nationally and internationally, the format and content will encourage the exchange of new scientific and clinical information to facilitate best practice and improve patient outcomes in hand and upper extremity therapy. The program includes topics such as:

- Novel scientific research in platform and poster sessions
- Hand and upper extremity therapy practice considerations – reimbursement, legislation, regulation and advocacy
- Clinical topics covering relevant anatomy, surgery and updated rehabilitation strategies

## LEARNER OBJECTIVES

Upon the completion of the Annual Meeting, participants will be able to:

- Integrate hand and upper limb treatment plans based on evidence, research and instruction.
- Construct new strategies and clinical ideas to improve patient outcomes through inter-disciplinary collaboration.
- Employ innovative treatment ideas into clinical practice for a variety of clinical conditions.
- Discuss and implement current legislative and regulatory policies into clinical practice.
- Discuss and implement leading business and operational practices into clinical practice.

## TARGET AUDIENCE

ATC – Certified Athletic Trainer  
COTA – Certified Occupational Therapy Assistant  
OT – Occupational Therapist  
PT – Physical Therapist  
PTA – Physical Therapy Assistant

## INSTRUCTIONAL LEVEL

Entry  
Intermediate  
Advanced

## PREREQUISITES

None

## ABSTRACTS

Selected abstracts will be presented at the Annual Meeting during the plenary scientific sessions and throughout the conference via the e-Poster kiosks. These abstracts will highlight the most outstanding papers from a variety of subspecialties relating to hand and upper extremity therapy. Selected abstracts will be published in the *Journal of Hand Therapy*, the official journal of ASHT.

## EXHIBITS

Educational and informational exhibits will be available to visit in the exhibit hall during the ASHT Annual Meeting. Representatives will be on hand to answer questions and discuss their innovative products. An exhibitor directory is posted on the conference website and mobile app. Please explore the exhibits as they are an integral part of the meeting

## CONFERENCE SYLLABUS

Session handouts for the ASHT Annual Meeting will be available to registered attendees for downloading and printing on the conference platform prior to the conference. As you build your itinerary, you can download all available\* handouts for the educational sessions you have selected. All session materials are the original works of the speakers, and reproduction or use of these materials must be cited in any personal use.

**\*PLEASE NOTE: While speakers are encouraged to provide handouts, it is NOT a requirement. Not all sessions will have handouts based on the speakers' choice.**



# GENERAL *Information*

## CONTINUING EDUCATION INFORMATION

### COURSE ACCREDITATION

This continuing education activity offers a maximum of 26.5 continuing education hours or 2.65 CEUs.

- Annual Meeting Educational Program – 21.5 CE Hours
- Pre-Conference Institutes (ticketed event) – 4 CE hours
- AHTF Scholar Lecture (ticketed event) – 1 CE hour

### OCCUPATIONAL THERAPISTS



The American Society of Hand Therapists is an approved provider of continuing education by the American Occupational Therapy Association (AOTA). The assignment of AOTA CEUs does not imply endorsement of specific course content, products or clinical procedures by the AOTA.

### PHYSICAL THERAPISTS

Continuing education requirements are regulated by the state boards of physical therapy. Each state licensing board has its own policies and procedures related to continuing education of its licensees. State boards of physical therapy place the responsibility on licensees to follow rules and regulations related to the practice of physical therapy and maintenance of licensure in their states. Licensees should verify acceptance of continuing education courses with their state licensing board by reviewing the **relevant state practice act and/or administrative code**.

The New York State Education Department of Physical Therapy recognizes ASHT as an approved provider of PT and PTA continuing education.

Should you use the ASHT 2023 Annual Meeting in your state physical therapy recertification process, ASHT will reimburse up to \$200\*\* of the cost of the application. Please send ASHT a copy of your state physical therapy continuing education application to receive this reimbursement. Additionally, ASHT will supply on request, a continuing education packet containing all generally accepted required documentation. Please contact ASHT at [asht@asht.org](mailto:asht@asht.org) or call 856-380-6856 for more information.

*\*\*This reimbursement applies only to the first person to apply within each state. Subsequent applicants will not be charged by their state for filing.*

*PLEASE NOTE: State accrediting agencies may change the number of contact hours awarded for an independent study course.*

### CERTIFIED HAND THERAPISTS

All content of this course is accepted as Category A credit toward recertification by the Hand Therapy Certification Commission.



### MAINTENANCE OF LICENSURE AND/OR CERTIFICATION

To enter the professional development hours, you have earned for the ASHT Annual Meeting:

- Go to the HTCC website, [www.htcc.org](http://www.htcc.org).
- On the HTCC homepage, under the Recognized Specialist in Hand Therapy banner (upper right corner), click CHTs Login Here.
- Enter your CHT ID# and your password in the login field (this may be your CHT number again or a password you created) and click Enter. Your CHT ID# will always be used in the login field. Your CHT ID# is 10 digits long.
- Once logged in to "CHTs Only," click "Enter Professional Development Hours" and then click "Category A: Formal Courses in Upper Quarter Therapy, Greater Than 3 Hours."
- Enter your Professional Development hours onto the form and then scroll to bottom of page and click "Submit" to capture your information
- Email or fax the certificate to HTCC at 866-329-1476 toll free, (international attendees 916-922-0210) or email your certificate to [info@htcc.org](mailto:info@htcc.org). If you have any questions, please contact HTCC at [info@htcc.org](mailto:info@htcc.org).

Credits will be awarded based on the date printed on the CE Certificate. For instance, if an individual's renewal cycle is 01/01/2021 to 11/15/2026 and the CE transcript and certificate is completed on 01/31/2024, all of the CE hours will be applied to that renewal cycle.



### ATHLETIC TRAINERS

The American Society of Hand Therapists is recognized by the Board of Certification, Inc. to offer continuing education for Certified Athletic Trainers.

# GENERAL *Information*

## CONTINUING EDUCATION INFORMATION

### OBTAINING CEUS

**CE certificates should be created by January 31, 2024.**

After the meeting, attendees will receive a link to create their CE transcript. Attendees will also be able to provide feedback to speakers of the sessions they attended. Questions can be directed to [meetings@asht.org](mailto:meetings@asht.org).

#### **Participants must:**

1. Have paid the registration fee
2. Attend their chosen sessions in their entirety
3. Complete an online evaluation form after the conference. CE certificates will be available immediately upon submission of evaluation form. Attendees should only claim credit commensurate with the extent of their participation in the activity

### DISCLOSURE STATEMENT

All contributors who can affect American Society of Hand Therapists continuing education content (including leadership, program committee, faculty members, moderators and staff), in their respective roles, are required to disclose all relevant financial relationships with any commercial interest that could be viewed as a real or perceived conflict of interest. This policy is in effect to maintain adherence with the conflict of interest guidelines set by American Occupational Therapy Association Approved Provider Program, the Board of Certification, Inc. for Athletic Trainers and the Federation of State Boards of Physical Therapy. Attendees will be made aware of any affiliation or relevant financial interest that may affect the development, management, presentation or evaluation of the CE activity and will be printed in the final program and projected in slide format before each presentation. Individuals who refuse to disclose relevant financial relationships will be disqualified from being a contributor, and cannot have control of, or responsibility for, the development, management, presentation or evaluation of the CE activity.

### TAX INFORMATION:

As a 501(c)(3) organization, the national dues or education registration fees are not deductible as a charitable contribution for federal tax purposes. However, they may be deductible as ordinary business expenses. Please consult your financial advisor.

### ACCESSIBILITY SERVICES:

The American Society of Hand Therapists wishes to take steps to ensure that no individual with accessibility needs is excluded, denied services, segregated, or otherwise treated differently than other individuals because of the absence of auxiliary aids or services. If you need any auxiliary aids or services identified in the Americans with Disabilities Act, or any assistance in registering for this conference, please contact ASHT Meetings Staff at [meetings@asht.org](mailto:meetings@asht.org).

As is our policy, it is the responsibility of the attendee to make any accessibility needs known prior to attendance at the conference. Advance notification provides ASHT adequate time to ensure that it can arrange for requested services.

### ONLINE EVALUATION & CE CERTIFICATE SITE

Complete your evaluation and certificate paperwork all in one site.

Attendees can access the CE portal directly through the conference platform to claim credit for sessions participated in, evaluate sessions and submit overall meeting conference feedback.

Once you evaluate all sessions you wish to claim credit for, you can print a certificate.

- If you only wish to collect a certificate in 2024, you will need to wait until January 1, 2024 to evaluate sessions attended.
- You may only complete each session evaluation once, so please do not proceed until you have completed your participation for each certificate cycle.
- The conference platform will automatically keep track of the sessions you watched.

In-person attendees should keep record of the sessions attended.

**Note:** The evaluation system will give you credit only for the total elapsed time spent in education sessions. Credit cannot be doubly awarded for sessions taking place in the same Instructional Concurrent Session block; this also applies to virtual attendees. Categories not eligible are: Non-medical, Exhibitor and Exhibits.

# ADDITIONAL *Events*

(Receptions, Committee/Division Meetings, Ticketed Events)

DATE	MEETING	PROGRAM TIME	LOCATION
Thursday, September 28	Welcome Reception	7:00 PM – 9:00 PM	Exhibit Hall 2
Friday, September 29	Let's Be New Together: First-Time Attendee, New Member & Student Networking Breakfast	6:30 AM – 7:30 AM	Hemisfair C3 Ballroom
Friday, September 29	Research Division Meeting	12:45 PM – 2:15 PM	Room 211
Friday, September 29	Outreach Division Meeting	12:45 PM - 2:15 PM	Room 209
Friday, September 29	Leadership Development Committee Meeting	12:45 PM - 1:45 PM	Room 212B
Friday, September 29	Preparing for CHT Exam <i>Presented by Mary Dimick, OTR, CHT, Martin Walsh, OTR/L, CHT and a panel of therapists who recently passed the exam.</i>	12:45 PM – 2:15 PM	Hemisfair C3 Ballroom
Friday, September 29	Student Meetup	1:00 PM - 2:00 PM	Room 210B
Friday, September 29	Journal of Hand Therapy Editorial Board Meeting <i>*invitation only</i>	4:30 PM – 6:30 PM	Room 210B
Friday, September 29	American Hand Therapy Foundation Happy Hour with a Scholar: On the Shoulders of Mortals David Green, MD <i>*Ticketed event</i>	6:30 PM – 8:00 PM	Hemisfair C3 Ballroom
Saturday, September 30	Practice Division Meeting	1:15 PM – 2:15 PM	Room 209
Saturday, September 30	Education Division Meeting	1:15 PM – 3:15 PM	Room 210B
Saturday, September 30	International Committee Invited Lecturer Luncheon "Enhancing Global Health & Upper Extremity Therapy: Experiences, Challenges and Opportunities" Lynn Bassini, MA, OTR/L, CHT	1:30 PM - 3:00 PM	Room 214D
Saturday, September 30	Kicking It Up in Old San Antone!	6:00 PM – 8:00 PM	Alamo Ballroom Marriott Riverwalk
Saturday, September 30	ASHT Night Out & Badge Around Town	8:00 PM	On Your Own

# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

THURSDAY, SEPTEMBER 28

12:00 PM – 4:00 PM

Pre-Conference Institutes (Ticketed Sessions) **4 CE HOURS**

## ROOM 214A - MEETING LEVEL

### Partnering in Prosthetic Care: The New Model for Upper Extremity Amputees

Alta Fried, MS, OTR/L, CHT  
Haley Van Escobar, MOTR/L, CHT  
Ajul Shah, MD

In this session, you will gain an understanding about the new, multidisciplinary care model for upper extremity amputees and discuss the abundance of this patient populace. Join us to get up to speed about the latest advancements in manufacturing technology necessitating this improved standard for care.

From the experts, expect to learn first-hand how to establish your own care team of surgeon, hand therapist, mental health therapist and prosthetist to work collaboratively with the innovators of prosthetic solutions towards improving prosthetic adoption rates.

If you are looking to position yourself as an expert in caring for upper extremity amputees, you will want to take advantage of this learning opportunity.

## ROOM 214B - MEETING LEVEL

### Hands-on Orthotics: Orthotic Fabrication for Traumatic Injuries-A Case-based Approach

Stephanie Strouse, OTD, OTR/L, CHT  
Cara Smith, PT, DPT, CHT

This course will include orthotic fabrication for traumatic injuries for the hand and wrist and include case studies to incorporate decision making skills for those injuries that may include tendon, nerve, bone, amputation or soft tissue injuries. Orthosis that will be fabricated will include tendon blocking orthoses, fabricating around fixation methods for the hand and wrist, protective pan splints for the hand and fabricating orthosis for the burned hand. Case studies will be provided and attendees will learn how to problem solve on the orthotic fabrication process incorporating common problems you may experience. Instruction will include special consideration that needs to be included when treating the pediatric population in an orthopedic setting.

## ROOM 214C - MEETING LEVEL

### Treating Without Pain: An Achievable Goal

Alison Taylor, OTR/L, CHT, CKTI, NDTc

Therapists are trained to think pain is acceptable part of the rehabilitation process; however, in this session you will find out why this concept should be put aside for a non-painful approach. The physiological background on pain and the bodies response to pain will highlight the need to challenge current thoughts and approaches.

This class will have demonstrations, supporting video evidence and lab opportunities to understand how to treat a variety of pain diagnoses, and participants will leave with new tools and techniques which will be immediately transformative with patients.

4:00 PM – 4:30 PM

HEMISFAIR FOYER - BALLROOM LEVEL

Coffee Break

4:30 PM – 4:40 PM

HEMISFAIR C1/C2 BALLROOM - BALLROOM LEVEL

Welcome

# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

## THURSDAY, SEPTEMBER 28 (CONTINUED)

4:45 PM – 5:45 PM

Plenary Session 1 | Opening Session **1 CE HOUR**

### HEMISFAIR C1/C2 BALLROOM - BALLROOM LEVEL

#### The Brachial Plexus

Fernando Levaro, MD  
Kathy Brou, OTR, CHT

As Dr. Levaro performs a brachial plexus dissection, he will talk through brachial plexus basic anatomy. He will also discuss mechanisms of injury including lacerations, GSW, traction injuries, avulsions and compressions. Learn how to do a brachial plexus (AROM) exam and the differences between adult and pediatric cases.

5:45 PM – 6:00 PM

### HEMISFAIR C1/C2 BALLROOM - BALLROOM LEVEL

#### Last Hand Standing

6:00 PM – 7:00 PM

### HEMISFAIR C1/C2 BALLROOM - BALLROOM LEVEL

#### Tendon and Nerve Transfers **1 CE HOUR**

Fernando Levaro, MD  
Kathy Brou, OTR, CHT

This presentation will provide a brief review of the micro and macro peripheral nerve anatomy to prepare the audience for the dissection topic. The presenter will discuss the effects of nerve injury from the perspective of the peripheral nerves, the central nervous system and the end target organs. The dissection will serve to establish anatomical correlations to upper extremity injury, the healing process and the rehabilitation. The speaker will present selective nerve transfers and tendon transfers and perspective functionality for the injured patient.

7:00 PM – 9:00 PM

### EXHIBIT HALL 2 - STREET LEVEL

#### Exhibitor Welcome Reception

## FRIDAY, SEPTEMBER 29

6:30 AM – 7:30 AM

### HEMISFAIR C3 BALLROOM - BALLROOM LEVEL

#### Let's Be New Together

New Member/Student/First-time Attendee Breakfast

7:00 AM – 10:00 AM

### ROOM 212 - MEETING LEVEL

#### Self-Guided Cadaver Tour

7:30 AM – 9:30 AM

Instructional Concurrent Session I **2 CE HOURS**

### ROOM 214D - MEETING LEVEL

#### Biotensegrity, CRPS and Neural Tension – The Things We Have Never Considered!

Alison Taylor, OTR/L, CHT, CKTI, NDTc

CRPS is a very complex diagnosis with a lot of variability; however, there are multiple factors that are not discussed or considered during the treatment of this diagnosis.

The body is made up of six physiological layers and while we only look at muscle and joint relationships, we are missing a very important part - the SKIN and FASCIAL network throughout the body. The vascular, neural and lymphatic systems are continuous and should be considered highly influential in these most complex of cases.

This class will present concepts and treatment applications never seen or discussed related to pain and movement dysfunction diagnoses. It will provide information on identify other factors and new treatment concepts to assist this patient population.

FRIDAY, SEPTEMBER 29 (CONTINUED)

## ROOM 214A - MEETING LEVEL

### **Guideline-Focused Care for Lateral Elbow Tendinopathy: Implementing Best Evidence**

Ann Lucado, PT, PhD, CHT  
Joy MacDermid, PT, PhD  
Jane Fedorczyk, PT, PhD, CHT

This educational session will provide an overview of evidence-based management of individuals who present with lateral elbow tendinopathy (LET). The purpose of this session is to highlight important topics included in the recently published *Lateral Elbow Tendinopathy Clinical Practice Guideline* (2022). Topics include information about the clinical course of the condition including risk factors for the development and/or persistence of LET, symptom classification and the examination process. Most importantly, it will provide an evidence-based approach for the development and implementation of interventions based on the most up-to-date available evidence. The classification of LET symptomatology will serve as the basis for establishing the plan of care. Optimal strategies of care will be provided for symptom modulation, restoration of joint and soft tissue mobility and restoring load capacity in persons with LET.

## ROOM 214B - MEETING LEVEL

### **Pain Mechanisms: How to Choose the Right Treatment for the Right Patient**

Karen Mainzer, OT, CHT  
Rhonda Marsh, OTR/L, CHT  
Andrew Bracken, MOT, OTR/L, CHT

Chronic pain has a significant impact on quality of life, the overall health of our patients and the cost to our healthcare system. Approximately 25% of the hand therapy patients (n=6721 from 1/1/2022-3/1/2023) in our organization have chronic pain defined by International Association for the Study of Pain (IASP) as "pain that persists or recurs for over three months." Pain is complex and can be difficult to treat. According to an article in the *Journal of Hand Therapy* in 2020 by Stern and Howe, hand therapists are aware of pain neuroscience but need more training to understand how to treat pain. There are different ways to organize thoughts and treatment approaches when encountering patients with chronic pain. This course will include an introduction to pain mechanisms and offer a framework to assist in treatment selection for hand therapy patients with complex pain presentations to improve outcomes. We will use case studies to illustrate how this information can be relevant and applicable in clinical practice.

## ROOM 214C - MEETING LEVEL

### **The Evolution of the Center for the Intrepid: Providing Resilience for the Military Amputee**

Rebecca Hooper, PT, COL(Ret)  
Lisa Smurr Walters, OT, CHT  
Meghan Lewis, MOT, OTR/L

This session is designed in three parts and will serve as an introduction to military medicine as well as an upper extremity amputation rehab update. The first segment will provide the history, vision and mission of the Center for the Intrepid (CFI), a state-of-the-art multidisciplinary outpatient rehabilitation center at Brooke Army Medical Center in San Antonio, TX. The second segment will delve into the unique considerations in the treatment of the military upper extremity amputee. Included in this discussion will be treatments, prosthetic advancements and research outcomes that were a direct result of work done at the CFI. The third segment will discuss the evolution of the CFI to its current mission. Time will be allotted for questions and answers.



# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

FRIDAY, SEPTEMBER 29 (CONTINUED)

## ROOM 213 - MEETING LEVEL

### What Effect Does a Distal Flexor Digitorum Profundus Laceration and Repair Have on the Associated Lumbrical(s)?

Mike Cricchio, MBA, OT/L, CHT

Kim Knight, OTR/L, CHT

This two-hour presentation will discuss the potential of a spectrum of paradoxical extension following distal flexor digitorum profundus tendon injuries. It will outline the normal and pathological anatomy surrounding flexor digitorum profundus tendon injuries and the complications that are associated with achieving full active digital flexion and extension.

9:30 AM – 10:00 AM

EXHIBIT HALL 2 - STREET LEVEL

Coffee Break, Exhibit Hall, Posters

10:00 AM – 11:00 AM

Plenary Session 2 **1 CE HOUR**

## HEMISFAIR C1/C2 BALLROOM - BALLROOM LEVEL

### Symbiosis. The Therapist-Surgeon Relationship. How Has it Changed?

David Green, MD

The aim of this presentation is to define symbiosis and describe why the relationship between therapist and surgeon ought to be a mutually beneficial one in which the two parties complement each other with the goal of providing the best possible outcome for our patients.

11:00 AM – 11:15 AM

HEMISFAIR C1/C2 BALLROOM - BALLROOM LEVEL

Stretch with Stacy

11:15 AM – 11:45 AM

Plenary Session 3 **.5 CE HOURS**

## HEMISFAIR C1/C2 BALLROOM - BALLROOM LEVEL

### Practice & Advocacy

This presentation will provide advocacy and legislative updates from the current year regarding hand and upper extremity therapy. This session includes discussion about ASHT Practice Division activity, division strategic direction and goals and insight into the critical role of policymaking has on shaping payment and practice. The session will also include Medicare updates and orthotic reimbursement updates. Attendees will learn what efforts are underway to address current issues in hand and upper extremity therapy.

11:45 AM – 12:45 PM

HEMISFAIR C1/C2 BALLROOM - BALLROOM LEVEL

Scientific Session I **1 CE HOUR**

12:45 PM – 2:15 PM

EXHIBIT HALL 2 - STREET LEVEL

Lunch and Poster Sessions

12:45 PM – 2:15 PM

HEMISFAIR C3 BALLROOM - BALLROOM LEVEL

Preparing for the CHT Exam (Hand Therapy Certification Commission) **1 CE HOUR**

Presented by Mary Dimick, OTR/L, CHT, Martin Walsh, OTR/L, CHT and a panel of therapists who recently passed the exam.

1:00 PM – 2:00 PM

ROOM 210B - MEETING LEVEL

Student Meetup

# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

FRIDAY, SEPTEMBER 29 (CONTINUED)

2:15 PM – 4:15 PM

Instructional Concurrent Session II **2 CE HOURS**

## ROOM 214C - MEETING LEVEL

### Getting a Grip on TOS!

Ann Porretto-Loehrke, PT, DPT, CHT, COMT, CMTPT

Why isn't my hand patient with paresthesias and weakness getting better? Sometimes we find our patients with distal nerve symptoms can have a proximal component that is limiting progress. As our world gets "techier" with using smaller and smaller electronic devices, our patients find themselves more and more hunched over. These poor postures can also often be a contributing factor to the development of thoracic outlet syndrome (TOS). Gain a better understanding of this "elusive" diagnosis and have an opportunity for hands-on practice during the session! Join us for an overview of TOS including clinical testing with an introduction to treatment techniques involving the 1<sup>st</sup> rib, scapula, glenohumeral joint and trunk with the use of lecture, videos and demonstration to get your patient on the road to recovery! This presentation will change the way you see your patient and give you treatment ideas that can produce lasting results!

## ROOM 214A - MEETING LEVEL

### Table Talk: Problem Solving the Care for the Painful Thumb

Virginia O'Brien, OTD, OTR/L, CHT

The painful thumb occurs in more than the diagnosis of osteoarthritis of the basal joint of the thumb. This session will present the basics of the dynamic stability program to seed conversation with the attendees to problem solve conservative care of the painful thumb. Every hand therapist requires the skills to care for painful thumbs.

## ROOM 214D - MEETING LEVEL

### The Unforgiving Elbow: Treatment Strategies to Optimize Patient Outcomes

Jane Fedorczyk, PT, PhD, CHT

Mary Whitten, DHSc, MOT, OTR, CHT

Emily Altman, PT, DPT, CHT, CLT, OCS, CWC

Traumatic elbow injuries may have profound effects on upper extremity function. Due to the high incidence of post-traumatic stiffness of the elbow following elbow injuries, the elbow has earned the reputation as the unforgiving joint. Therapists are challenged to optimize motion while maintaining stability of the elbow. Factors that contribute to the development of arthrofibrosis include congruent/intricate anatomy, traumatic pathology, patient characteristics and delayed referral to therapy. Evidence-informed guidelines for therapy management are limited due to the paucity of scholarly work and low prevalence of traumatic injuries limiting clinical experience. This session will provide recommendations for comprehensive client management including clinical examination and targeted interventions to achieve optimal patient outcomes for traumatic elbow injuries.

# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

FRIDAY, SEPTEMBER 29 (CONTINUED)

## ROOM 214B - MEETING LEVEL

### Fostering Resiliency Through Collaboration in the Brachial Plexus and Amputee Populations

Bryan Loeffler, MD  
Jen Dodson, OTD, OTR/L, CHT

Brachial plexus injuries and amputations are devastating injuries that affect all aspects of a person's life. The complexity of these injuries requires a specialized team-based approach to address the multifaceted aspects of returning the patient to meaningful occupations. Advancements in nerve transfer surgery restore hope and function in those who have sustained brachial plexus injuries. In the first half of the session, three nerve transfer procedures will be introduced that improve function of the shoulder, elbow, and hand in the brachial plexus population, followed by rehabilitation principles to optimize surgical outcomes.

Lack of restoring individual finger control in patients with partial hand amputations can result in significant limitations in performing daily tasks. With limited prosthetic options, the "Starfish Procedure" was developed to restore individual finger function using a myoelectric prosthesis. The last hour of the session will focus on the details of this procedure. Come join this therapist/surgeon team as they discuss the importance of collaboration to foster resilience in two populations that present with life-altering injuries.

## ROOM 213 - MEETING LEVEL

### Evaluation and Treatment for Common Pediatric Conditions

Amy Lake, OTR, CHT  
Scott Oishi, MD  
Lindsey Williams, OT, CHT  
Ashley Pitman, OTR, CHT

This session will provide a comprehensive overview of common pediatric hand injuries that could end up in an adult hand clinic. Speakers will provide a comprehensive overview of each injury and provide education on evaluation and treatment. Common injuries will include: the young athlete, flexor tendon injuries in pediatrics, common pediatric fractures, wrist pain and volar plate injuries.

4:15 PM - 5:00 PM

## EXHIBIT HALL 2 - STREET LEVEL

### Coffee Break, Exhibit Hall, Posters

5:00 PM - 5:30 PM

### Plenary Session 4 | Presidential Invited Lecture .5 CE HOURS

## HEMISFAIR C1/C2 BALLROOM - BALLROOM LEVEL

### Embracing Resiliency

Krisi Probert, OTD, OTR/L, CHT

In 30 short minutes, Embracing Resiliency will demonstrate that we should not just endure difficulties and expect to emerge as more resilient, but how we should prepare for every situation proactively and intentionally plan on becoming stronger because of challenges we endure. We will briefly unpack how our skills as treating therapists have uniquely prepared us to handle every situation we encounter, whether we are facing a frustrating diagnosis or a complex business quagmire.

# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

## FRIDAY, SEPTEMBER 29 (CONTINUED)

5:30 PM – 6:30 PM

Plenary Session 5 | 2023 Presidential Address and Panel **1 CE HOUR**

### HEMISFAIR C1/C2 BALLROOM - BALLROOM LEVEL

#### Resilience: Stronger Together!

Kendyl Brock Hunter, OTR/L, CHT  
Ricky Allen  
Amy Todd, MS, OTR/L, CHT  
Bryan Loeffler, MD

When life leaves you “limbless” and what you hear is “limitless”. Come hear a life-changing story of resilience and hope and see what happens when an innovative care team comes together to advance positive outcomes in complex patients.

6:30 PM – 8:00 PM

### HEMISFAIR C3 BALLROOM - BALLROOM LEVEL

#### AHTF Fundraiser - Happy Hour with a Scholar (Ticketed Session) **1 CE HOUR**

On the Shoulders of Mortals  
David Green, MD

Mingling from 6:30 PM - 7:00 PM, lecture starts at 7:00 PM.

On the shoulders of mortals is about how we teach and how we learn. Many different styles of teaching are described in this presentation, illustrated by real-life great teachers and caricatures of bad teachers.

## SATURDAY, SEPTEMBER 30

7:30 AM – 8:30 AM

Instructional Concurrent Session III **1 CE HOUR**

### ROOM 214A - MEETING LEVEL

#### Review of Flexor Tendon Injuries, Repairs and Rehabilitation

Brian Sager, MD

Learn about the types of flexor tendon injuries, discuss relevant anatomy, methods of fixation, challenges in fixation and discuss the rehabilitation of these injuries.

### ROOM 214D - MEETING LEVEL

#### Treatment of Distal Radius Fractures

Ryan Rose, MD

Orthopaedic surgeon discussing distal radius fractures, including personal cases from a Level 1 trauma center in San Antonio. This session will cover the basics of treatment and fixation, postoperative therapy management, expected outcomes, pearls and pitfalls.

### ROOM 214C - MEETING LEVEL

#### Making Sense of the Complex Wrist: Understanding Carpal Kinematics

Josh MacDonald, MS, OTR/L, CHT

Learning carpal kinematics can be daunting. This intermediate-level course will demystify and clarify it and send you away with the tools to understand instability between and within carpal rows.

SATURDAY, SEPTEMBER 30 (CONTINUED)

## ROOM 213 - MEETING LEVEL

### **Comprehensive Trigger Finger/Thumb Management: More Options, Better Outcomes**

Karen Schultz, MS, OTR/L, CHT, FAOTA

This course will describe the anatomy, pathology and evidence-informed conservative management of trigger finger and thumb (digital stenosing tenosynovitis). The presenter will also address complications of surgical management and treatment of this symptom constellation. Therapy best practice includes a strategic and complete evaluation. Treatment includes activity analysis and ergonomic modification, orthosis management, edema management, application of physical agent modalities, soft tissue approaches, stage appropriate exercise and patient education. The presenter will discuss and demonstrate innovative orthosis management approaches.

While therapists frequently address this diagnosis both pre-and post-operatively, the gamut of treatment rationale is not widely understood and options are not widely practiced. The author has gleaned this fact after working in and visiting hand clinics both in the US and internationally, as well as reviewing the literature on conservative management.

Effective conservative management has demonstrated the ability to resolve symptoms in 75% of digits presenting with this diagnosis. More informed hand therapy practice will serve to decrease the necessity of injections and surgery with their inherent risks of infection and complications. Improved outcomes will encourage hand health colleagues (surgeons, rheumatologists, general practitioners, PAs) to refer to hand therapists for effective management of this pathology.

## ROOM 214B - MEETING LEVEL

### **Through the Looking Glass: Graded Motor Imagery in Upper Extremity Rehabilitation**

Christine Eddow, PT, PhD, DPT, OCS, WCS, CHT, CLT

Physical and occupational therapists specializing in upper extremity diagnoses encounter a variety of pathologies and traumatic injuries that result in substantial loss of function and profoundly impact quality of life. The associated loss of neurological pathways to an involved limb has proven to be problematic and challenging regarding optimal rehabilitation outcomes. Using graded motor imagery approaches including mirror box therapy in conjunction with standard rehabilitative strategies has shown to be highly effective in patients who present with limited return of function and expedite functional return to those identified early. In this session, the concept of graded motor imagery is reviewed and applications in commonly encountered but challenging conditions are discussed. In addition, conditions not often considered for this treatment approach, such as limb replantation, are presented. Strategies using these techniques are demonstrated. Participants have the opportunity to practice techniques during the session.

8:30 AM – 9:00 AM

EXHIBIT HALL 2 - STREET LEVEL

**Coffee Break, Exhibit Hall, Posters**

# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

SATURDAY, SEPTEMBER 30 (CONTINUED)

9:00 AM – 10:00 AM

Instructional Concurrent Session IV **1 CE HOUR**

## ROOM 214C - MEETING LEVEL

### **Taking Your Idea to Market: Designing & Producing a New Clinical Product**

Judy Colditz, OT/L, CHT, FAOTA

This one-hour session for experienced therapists will clarify the available paths for converting a clinical idea into a marketable product. To illustrate the steps in bringing a product to market, the development of a NEW product being introduced at this ASHT Annual Meeting will be illustrated.

Included in this review will be answers about patents, trademarks, product names, FDA regulations, liability insurance, design process, prototyping, material choice, sizing, field testing, manufacturing and marketing resources needed to bring a product to market. Audience questions are encouraged.

## ROOM 214B - MEETING LEVEL

### **A Collaborative Approach to Improve Outcomes for Patients with Symptomatic Hypermobility Spectrum Disorder**

Carrissa Shotwell, OT, MEd, DHS

Shannon Darnell, PT, MPT

Patients with hypermobility spectrum disorders (HSD) commonly experience pain, weakness, and joint instability that impacts upper extremity function. Symptomatic Hypermobility Spectrum Disorder (HSD) is associated with chronic joint pain, but can present with multisystem involvement. Common symptoms include headaches, dysautonomia, fatigue, anxiety and depression. This session will highlight intervention strategies for hand therapists to address patient concerns related to joint pain and instability within the context of their HSD and highlight a multi-disciplinary approach for addressing additional concerns and symptoms for maximizing overall function and quality of life. This course will outline an evidence-based approach to caring for patients with HSD including collaborative goal setting, outcome measures, therapeutic intervention and multi-disciplinary treatment collaboration.

## ROOM 214D - MEETING LEVEL

### **Getting the Whole Picture: Psychosocial and Pain Considerations in Upper Extremity Rehab**

Alyssa Phillips, CScD, MOT, OTR/L

This session will focus on the psychosocial components of upper extremity rehabilitation and offer strategies to both recognize and address this piece to improve compliance and clinical outcomes. This session will also explore pain, more specifically chronic and acute pain, and pain's impact on well-being, psychosocial factors and clinical outcomes. The purpose of this session is to improve a clinician's ability to recognize "yellow flags" or factors that could negatively impact upper extremity rehabilitation (if not addressed) and to address them with confidence and competence.

## ROOM 214A - MEETING LEVEL

### **Hand and Wrist Sports Injuries – A Team Approach**

Amy Brossard, MS, OTR/L, CHT

Hand therapist and sports medicine specialist have a lot more in common and can share enough common ground to benefit from one another's expertise. Understanding how the hand therapist and the hand surgeon work together and equally play a key role in their community of not only treating athletes and returning athletes to play, but working with parents, coaches, and training staff to decrease risk of injury and return to play faster and safe.

# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

SATURDAY, SEPTEMBER 30 (CONTINUED)

## ROOM 213 - MEETING LEVEL

### Present and Future Leaders: Developing Effective Leadership Skills in Hand Therapy

Kimberly Masker, OTD, OTR/L, CHT  
Robert McClellan, OTR/L, CHT, COMT-UL  
Theresa Hallenen, MS, OTR/L, CHT  
Juliet Steffe, OTD, OTR/L, CHT  
Cara Smith, PT, DPT, CHT  
Gary Solomon, MBA, MS, OTR/L, CHT  
Megan Meisenheimer, PT, DPT, OTR/L, CHT

The presentation will discuss what makes leaders effective. Participants will understand how continuing to develop leadership skills as hand therapists will contribute to the profession's growth and provide opportunities to contribute to healthcare policy and reform. Participants will gain insight into the definition of leadership, types of leadership styles and skills needed to be an effective leader. Current leaders in the profession will share their path to leadership. Presenters will provide suggestions on improving or growing leadership skills through informal and formal opportunities. Through presentation, examples and open discussion, audience members will gain strategies for developing a leadership plan to pursue their leadership goals. This educational opportunity is presented by the ASHT Leadership Development Committee.

10:00 AM - 10:10 AM

### Transition Break

10:10 AM - 11:10 AM

### Plenary Session 6 | International Invited Lecture **1 CE HOUR**

## LILA COCKRELL THEATRE - STREET LEVEL

### CMC Anatomy, Biomechanics and Neuromuscular Control: Patient Age Influence

Mireia Esplugas, MD, EBHS

This course will describe the anatomy, the biomechanics, and the evidence-based conservative management of CMC joint. The presenter will discuss how age influences all these aspects and how management approaches should be modified depending on each patient's biological and chronological age.

11:10 AM - 11:50 AM

### Plenary Session 7 **.5 CE HOURS**

## LILA COCKRELL THEATRE - STREET LEVEL

### Business Meeting and Community Stewardship, Incoming Presidential Address, ASHT 2023 Business Meeting & Emerging Issues

11:50 AM - 12:50 PM

### Scientific Session II **1 CE HOUR**

## LILA COCKRELL THEATRE - STREET LEVEL

12:50 PM - 3:00 PM

## EXHIBIT HALL 2 - STREET LEVEL

1:30 PM - 3:00 PM

## ROOM 214D - MEETING LEVEL

### Lunch and Poster Sessions

### International Committee Invited Lecturer Luncheon **1.5 CE HOURS**

### Enhancing Global Health & Upper Extremity Therapy: Experiences, Challenges and Opportunities

Lynn Bassini, MA, OTR/L, CHT

# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

SATURDAY, SEPTEMBER 30 (CONTINUED)

3:00 PM – 3:30 PM

Plenary Session 8 **.75 CE HOURS**

LILA COCKRELL THEATRE - STREET LEVEL

**AAHS Presidential Invited Lecture**

**Post Traumatic Stiffness of the Wrist: Etiology and Management**

David Ruch, MD

3:30 PM – 3:45 PM

LILA COCKRELL THEATRE - STREET LEVEL

**Research and Named Awards**

3:45 PM – 4:00 PM

**Transition Break**

4:00 PM – 4:45 PM

Special Sessions **.75 CE HOURS**

ROOM 214A - MEETING LEVEL

**Hands that Help: Volunteering on Medical Missions**

Missy Thurlow, MBA, OTR/L, CHT

Lynn Bassini, MA, OTR/L, CHT

Kimberly G. Kraft, PT, DPT, CHT

Karen Roeming, OT, MA, CHT

Susan Blackmore, MS, OTR/L, CHT, COMT-UL

Organized medical mission trips to foreign countries often go to underserved areas around the world and provide assistance to people who live in far from ideal conditions. Therapists and physicians often work together to provide critically needed surgery, care and therapy to these patients. Come listen to a group of hand therapists (both OT and PT) who have experienced the commitment and personal enrichment of providing care to these patients who need help the most. Problem solving abilities are often put to the test on these trips to provide what is needed to these wonderful people. A wide variety of experiences will be discussed in this 45-minute session. Prepare to be motivated to consider doing a medical mission trip in the future!

LILA COCKRELL THEATRE - STREET LEVEL

**Biomechanics and Neuromuscular Control of the Scapholunate Joint: Forearm Rotation Influence**

Mireia Esplugas, MD, EBHS

This course will describe the biomechanics and the evidence-based conservative management of the scapholunate joint. The presenter will discuss how forearm rotation influences the scapholunate joint alignment and its muscular control and how management approaches should always consider forearm rotation.

4:45 PM – 5:00 PM

PARK VIEW FOYER - MEETING LEVEL

**Coffee Break**

5:00 PM – 6:00 PM

Instructional Concurrent Session V **1 CE HOUR**

ROOM 214C - MEETING LEVEL

**A Multidisciplinary Approach to Treating Pediatric Hand and Wrist Trauma**

Jennifer Kargel, MD

Purushottam Nagarkar, MD

Jessica Johnson, MOTR/L, CHT, CPAM

This course will discuss the mechanism of injury and clinical presentation of common hand and wrist injuries in the pediatric patient population. It will include recommendations for surgical and non-operative management of these conditions and tailored age-appropriate rehabilitative treatment plans.



SATURDAY, SEPTEMBER 30 (CONTINUED)

## ROOM 213 - MEETING LEVEL

### **Connecting Fun to Function: Using Magic and other Creative Treatments to Maximize Outcomes**

Deborah Fisher, OTR, MSOT, CHT

The job of a therapist is never easy, especially in settings with limited resources such as tele rehab and home health. Trying to find inexpensive and innovative methods that keep clients focused and excited about therapy can be a challenge. Regardless of age, patient interest and participation are vital to the rehab process. Salient and "skilled dependent" treatments can not only help improve participation with exercises, but can be the key to maximizing physical performance, cortical plasticity, and ultimately function. Participants will learn how magic and juggling, and other creative treatments can be invaluable tools to enhance gross/fine motor skills, range of motion, balance, sensory-motor, communication skills, cognition, proprioception, etc. These techniques can be integrated with little to no added expense and in any treatment setting for many different age groups. Whether you are a PT or OT, this course provides a brief introduction to "out-of-the-box" therapeutic interventions that can easily be incorporated in most treatment settings. You can enhance patient outcomes while putting the FUN back into function!

## ROOM 214D - MEETING LEVEL

### **Sensorimotor Evaluation and Interventions for the Wrist and Hand: Evidence Update**

Kristin Valdes, OTD, OTR/L, CHT

Nancy Naughton, OTD, OTR/L, CHT

Sensorimotor deficits can impair function and may be present in individuals with hand and wrist conditions. Researchers have reported sensorimotor deficits exist in patients with common upper extremity conditions such as carpal tunnel syndrome, distal radius fracture and complex regional pain syndrome (CRPS). To combat these conditions, many types of interventions can be incorporated into practice to enhance proprioception input and restore hand and wrist function. This course will provide the rehabilitation professional with the tools needed to understand the complex sensorimotor dysfunction of the upper extremity and to assess sensorimotor dysfunction and implement proprioception activities into their practice based on the latest evidence.

## ROOM 214B - MEETING LEVEL

### **Distal Phalanx Injuries: Small Structures/Big Problems**

Amanda Whitley, OTR/L, CLT, CHT

This course looks at the variety of distal phalanx injuries, complications and both surgical and conservative treatment options. It begins with detailed review of the anatomy and structures at the distal phalanx to include the nailbed. The classifications of distal phalanx amputations are discussed followed by the indications for various grafting techniques and subsequent orthosis, treatments and wound care. We then move on to the classifications of P3 fractures with a detailed overview of conservative vs surgical interventions and subsequent protocols/guidelines for each. We look at CRPP vs ORIF and review rehabilitation guidelines to include immobilization timeframes and early range of motion considerations. This talk concludes with a comprehensive look at mallet injuries to include anatomy review, mechanism of injury and conservative vs surgical management. A step-by-step fabrication is detailed in photo slides for both a removable and non removable custom orthosis with instruction for six- to eight-week management protocol. In each topic of discussion, we look at possible complications and therapeutic interventions.

# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

**SATURDAY, SEPTEMBER 30** (CONTINUED)

**ROOM 214A - MEETING LEVEL**

**Relative Motion Orthosis (RMO) – Less Pain and Real Gain**

LeAnn Bowler, OTR/L, CHT

The Relative Motion Orthosis (RMO) is a versatile orthosis that can be utilized for more than extensor tendon repairs. Functional use and finger ROM can be achieved through mechanical advantage that allows for greater soft tissue performance with less pain. In this presentation, participants will learn about ways to utilize the RMO for various pathologies. A review of case studies and tips on fabrication will be included.

**6:00 PM – 8:00 PM**  
**ALAMO BALLROOM - SECOND FLOOR**  
**MARRIOTT RIVERWALK**

**Kicking It Up in Old San Antone!**

**8:00 PM**

**ASHT Night Out (On Your Own)**

**SUNDAY, OCTOBER 1**

**9:00 AM – 10:00 AM**

**Instructional Concurrent Session VI** **1 CE HOUR**

**ROOM 214B - MEETING LEVEL**

**Virtual Reality in Hand and Upper Extremity Rehabilitation: A Unique Treatment Intervention for Your Toolbox**

Robert McClellan, OTR/L, CHT, COMT-UL

Mary C. Barnes, MOT, CHT, CIDN

Virtual reality has been used to manage pain, fear, depression and anxiety. Recent studies show growing clinical evidence that virtual reality reduces acute pain during hand therapy making it an excellent tool to improve the patient's comfort level during their rehabilitation journey. There are reported benefits from exercise using VR that enables the patient to use the upper extremity for more functional skills to improve outcomes. During this session, participants will be introduced to the psychological and physical benefits of virtual reality. Headsets will be available to allow the participants the opportunity to explore the world of virtual reality and the therapeutic effects.

**ROOM 214A - MEETING LEVEL**

**StrongerTogether! Surgical, Conservative and Therapeutic Management of PIP Joint Dislocations and Fracture Dislocations**

Gary Solomon, MBA, MS, OTR/L, CHT

David Ruch, MD

This proposed session is a collaborative surgeon-therapist instructional course designed to demonstrate treatment algorithms and options for both the surgeon and therapist when addressing these common yet potentially debilitating hand injuries. Treatment management will include orthosis options, positioning and fabrication techniques, surgical options including external fixation, ORIF and Hemi-Hamate joint reconstruction. Post-operative management and clinical methods to facilitate patient recovery will be addressed.

SUNDAY, OCTOBER 1 (CONTINUED)

## ROOM 214C - MEETING LEVEL

### **Therapeutic Use of Pilates for Chronic Upper Extremity Repetitive Stress Conditions**

Tina Sehremelis, OTD, OTR/L, CHT

Chronic repetitive stress injuries of the upper extremity can significantly limit overall functioning and quality of life. For individuals with conditions such as rotator cuff tendonitis, lateral or medial epicondylitis, carpal tunnel syndrome, cubital tunnel syndrome and deQuervain's tenosynovitis, overuse of the upper extremities is often secondary to poor trunk control and weak core musculature. Decreased postural control, decreased core strength and lack of ergonomic awareness increase symptom chronicity and severity ultimately impacting quality of life. Ensuring patients properly utilize core and trunk muscles not only promotes improved posture, but ultimately decreases stress on the upper extremities and the injured area. As Certified Hand Therapists and hand therapists, it is key to address trunk strength and postural control as weakness or misuse of these areas play a direct role in the overuse syndrome. This session intends to describe the connection between posture, core strength, and the upper extremity injury as well as describe beneficial exercises to implement with overuse syndromes. Additionally, this session plans to describe the program development and overall success of a Therapeutic Pilates Rehab Program implemented in a outpatient hand therapy hospital-based setting in New York City.

## ROOM 213 - MEETING LEVEL

### **I Have a Research Question. . . What Next? Collaborating in Hand Therapy Research**

Jenny Dorich, PhD, MBA, OTR/L, CHT

Cindy C. Ivy, OTD, MEd, CHT

Sarah Doerrer, PhD, OTR/L, CHT, CLT

Hand therapists working in clinical practice are well positioned to identify clinically impactful research questions. In this session, members of the ASHT Research Division will focus on empowering hand therapy clinicians to fully execute their research questions. Course faculty will cover key strategies for developing research ideas into feasible research projects. This course will begin with an overview of developing a PICO question, literature review procedures for evaluating the current state of the evidence related to a research topic of interest, and resources available for conducting a literature search. Then course faculty will highlight research study designs that are most feasible in a clinic setting and outline the steps in drafting a basic research proposal. Finally, course faculty will discuss how clinicians can access resources to successfully conduct research projects. The course will include 15 minutes of roundtable discussion focused on problem solving course attendees' challenges and questions with participating in hand therapy research.

## ROOM 214D - MEETING LEVEL

### **Building Resilience in Patients with Overuse Injuries**

Haley Van Escobar, MOTR/L, CHT

Overuse injuries present many challenges to the typical hand therapist's caseload. High-risk occupations not only create overuse injuries, but also perpetuate the cycle of pain and damage. For the patient, this diagnosis is chronically painful, slow to change and resistant to improvement. The process of healing can be discouraging to both patient and therapist as it takes a longer time than is expected. Helping patients stay mentally strong is critical to returning to health after an overuse injury.

This entry-level session will review the science of the healing process, encourage resilience in both therapist and patient, and offer practical strategies to support behavioral change to stop re-injury and help progress towards pain-free activity.

# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

SUNDAY, OCTOBER 1 (CONTINUED)

10:00 AM – 10:30 AM  
PARK VIEW FOYER - MEETING LEVEL

Coffee Break

10:30 AM – 11:30 AM

Instructional Concurrent Session VII **1 CE HOUR**

**ROOM 214A - MEETING LEVEL**

### **The Last Mile: Advanced Rehabilitation, Functional Training and Return To Sport Programming for the Upper Extremity Specialist To Safely Return Athletes To Play**

Michael Mueller, OTR/L, CHT  
Cynthia Watkins, PT, DPT, CHT

Sports participation is increasing and so are upper extremity injuries to the athletes that play at all ages and levels. Hand therapists are experts in upper extremity rehabilitation, but require additional skills to safely return athletes to their maximum performance and safely return to play. This course will focus on sports-focused advanced rehabilitation interventions, functional movement analysis to develop functional training programs and return to sport process development. Clinical cases will be presented with video to enhance the participants learning and integration of new skills into their treatment.

**ROOM 214D - MEETING LEVEL**

### **Update on Management of Complex Extensor Tendon Reconstruction in the Hand**

Rebecca Saunders, PT, CHT

This course will cover surgical and therapy management of complex extensor tendon reconstructions. The course will cover the anatomy and physiology of extension, surgical and therapy management of complex reconstructions in the hand. Principles of surgical and therapy management will be illustrated through lecture and case presentations.

**ROOM 213 - MEETING LEVEL**

### **Hand Therapists' Research Priorities and AHTF Resources for Grants and Scholarships**

April C. Cowan, OTD, OTR, CHT  
Caroline Stegink-Jansen, PT, PhD, CHT

In 2002, the AHTF Board of Directors published a research agenda based on responses of therapists surveyed in 1998. It guided the AHTF program for 20 years. Much has changed in healthcare and hand therapy practice since 2002. An AHTF-appointed taskforce repeated the survey in 2021, questioning hand therapists not only about funding needs for research and education, but also about hand therapy practice and barriers to conducting research. Of the 28 questions asked, 19 were close-ended questions and nine were open-ended that encouraged participants to express their knowledge, feelings and understanding of question subject matter. We will share survey outcomes for both types of questions.

The session will include interaction with members of the AHTF research agenda taskforce and participants. A complete overview of the AHTF grants and scholarships currently available will be provided. Participants may compare, contrast and potentially expand on the insights brought forward by 2021 survey participants, and additionally may comment on AHTF grants and scholarship resources and website clarity and ease of application.

# ASHT 46<sup>TH</sup> ANNUAL MEETING Program

SUNDAY, OCTOBER 1 (CONTINUED)

## ROOM 214B - MEETING LEVEL

### **A Biopsychosocial Perspective of Treating Clients with Chronic Pain**

Jarrold Maddox, OTD, OTR, CHT

This course will provide treatment strategies for engaging clients with chronic pain from a biopsychosocial perspective. Covered topics include: 1) pain neuroscience education using storytelling and metaphor to explain the purpose of pain, how persistent pain works and that pain can change over time. 2) Integrative strategies for addressing chronic pain including stress management, mindfulness, physical activity, nutrition and sleep. 3) Using an occupation-based perspective in chronic pain management. Additional pain education handouts, resources, books and tools will be provided.

## ROOM 214C - MEETING LEVEL

### **Informing Interdisciplinary Upper Limb Amputation Rehabilitation Using an Outcomes-based Perspective to Promote Patient Well-being**

Kelly Dunbar, OTR/L, CHT

Amy Todd, MS, OTR/L, CHT

The multi-disciplinary team approach during care of the upper limb amputee has been shown to have positive results in patient outcomes (Latour, 2022). This course will explore how to use outcomes to strengthen the collaborative team working with upper limb amputees using patient-centered treatment plans to promote maximum patient well-being. We will explore the current trends of the multi-disciplinary team and the effects on the outcomes of rehabilitation, including the results of an enhanced collaboration between prosthetists and therapists focusing on shared goals. We will provide therapists with an improved understanding of how to access support and resources when working with a patient with an upper limb amputation or prosthesis to promote skill and comfort level when working with this population. This course will use established outcome measures to help identify patient-specific challenges to then apply to treatment plans that target participation and patient-identified goals. The therapist will also come away with skills to implement in the clinic when working with clinicians of different disciplines with a goal of improving patient overall well-being.



# SCHEDULE *at a Glance*

	THURSDAY, SEPTEMBER 28	FRIDAY, SEPTEMBER 29	SATURDAY, SEPTEMBER 30	SUNDAY, OCTOBER 1
6:00				
6:15				
6:30				
6:45		New Member/Student/First-Time Attendee Breakfast 6:30 AM – 7:30 AM "Let's Be New Together"		
7:00				
7:15				
7:30				
7:45				
8:00			One-Hour Instructional Courses 7:30 AM – 8:30 AM	
8:15				
8:30		Two-Hour Instructional Courses 7:30 AM – 9:30 AM	Coffee Break, Exhibit Hall, Posters 8:30 AM – 9:00 AM	
8:45				
9:00			One-Hour Instructional Courses 9:00 AM – 10:00 AM	One-Hour Instructional Courses 9:00 AM – 10:00 AM
9:15				
9:30		Coffee Break, Exhibit Hall, Posters 9:30 AM – 10:00 AM		
9:45				
10:00			Transition Break 10:00 AM – 10:10 AM	Coffee Break 10:00 AM – 10:30 AM
10:05				
10:15		Plenary Session 2 10:00 AM – 11:00 AM		
10:30			Plenary Session 6 International Invited 10:10 AM – 11:10 AM	
10:45				One-Hour Instructional Courses 10:30 AM – 11:30 AM
11:00		Stretch with Stacy – 11:00 AM – 11:15 AM		
11:15		Plenary Session 3 (Practice & Advocacy) 11:15 AM – 11:45 AM		
11:30			Plenary Session 7 Business Meeting & Community Stewardship 11:10 AM – 11:50 AM	
11:45		Scientific Session I 11:45 AM – 12:45 PM		
12:00			Scientific Session II 11:50 AM – 12:50 PM	
12:15				
12:30				
12:45				
1:00		Lunch, Poster Sessions & Committee Meetings 12:45 PM – 2:15 PM		
1:15				
1:30		Division Lunches (Research, Outreach and Leadership); HTCC Preparing for the CHT Exam 12:45 PM - 2:15 PM; Student Meetup 1:00 PM - 2:00 PM	Lunch, Poster Sessions & Committee Meetings 12:50 PM - 3:00 PM	
1:45			International Committee Invited Lecturer Luncheon; Division Lunches (Practice & Education)	
2:00	Pre-Conference Institutes 12:00 PM – 4:00 PM			
2:15				
2:30				
2:45				
3:00				
3:15			Plenary 8 3:00 PM - 3:45 PM AAHS Presidential Invited 3:00 PM - 3:30 PM Research and Named Awards 3:30 PM - 3:45 PM	
3:20		Two-Hour Instructional Courses 2:15 PM – 4:15 PM		
3:30			Transition Break 3:45 PM - 4:00 PM	
3:45				
4:00				
4:05	Coffee Break 4:00 PM – 4:30 PM			
4:15				
4:30	Welcome 4:30 PM – 4:40 PM			
4:35		Coffee Break, Exhibit Hall, Posters 4:15 PM – 5:00 PM		
4:45				
4:50			Coffee Break 4:45 PM – 5:00 PM	
4:55				
5:00	Plenary Session 1 Opening Session Cadaver Dissection 4:45 PM – 5:45 PM	Plenary Session 4 Presidential Invited 5:00 PM – 5:30 PM		
5:05				
5:15			One-Hour Instructional Courses 5:00 PM – 6:00 PM	
5:30				
5:45	Last Handing Standing - 5:45 - 6:00 PM	Plenary Session 5 2023 Presidential Address and Panel 5:30 PM – 6:30 PM		
6:00				
6:15				
6:30	Cadaver Dissection 6:00 PM – 7:00 PM			
6:45		AHTF Fundraiser Happy Hour with a Scholar 6:30 PM – 7:30 PM		
7:00				
7:15				
7:30				
7:45	Exhibitor Welcome Reception 7:00 PM – 9:00 PM			
8:00				
8:15				
8:30				
8:45				
9:00				
9:30				

REGISTRATION HOURS 9:00 AM – 7:00 PM

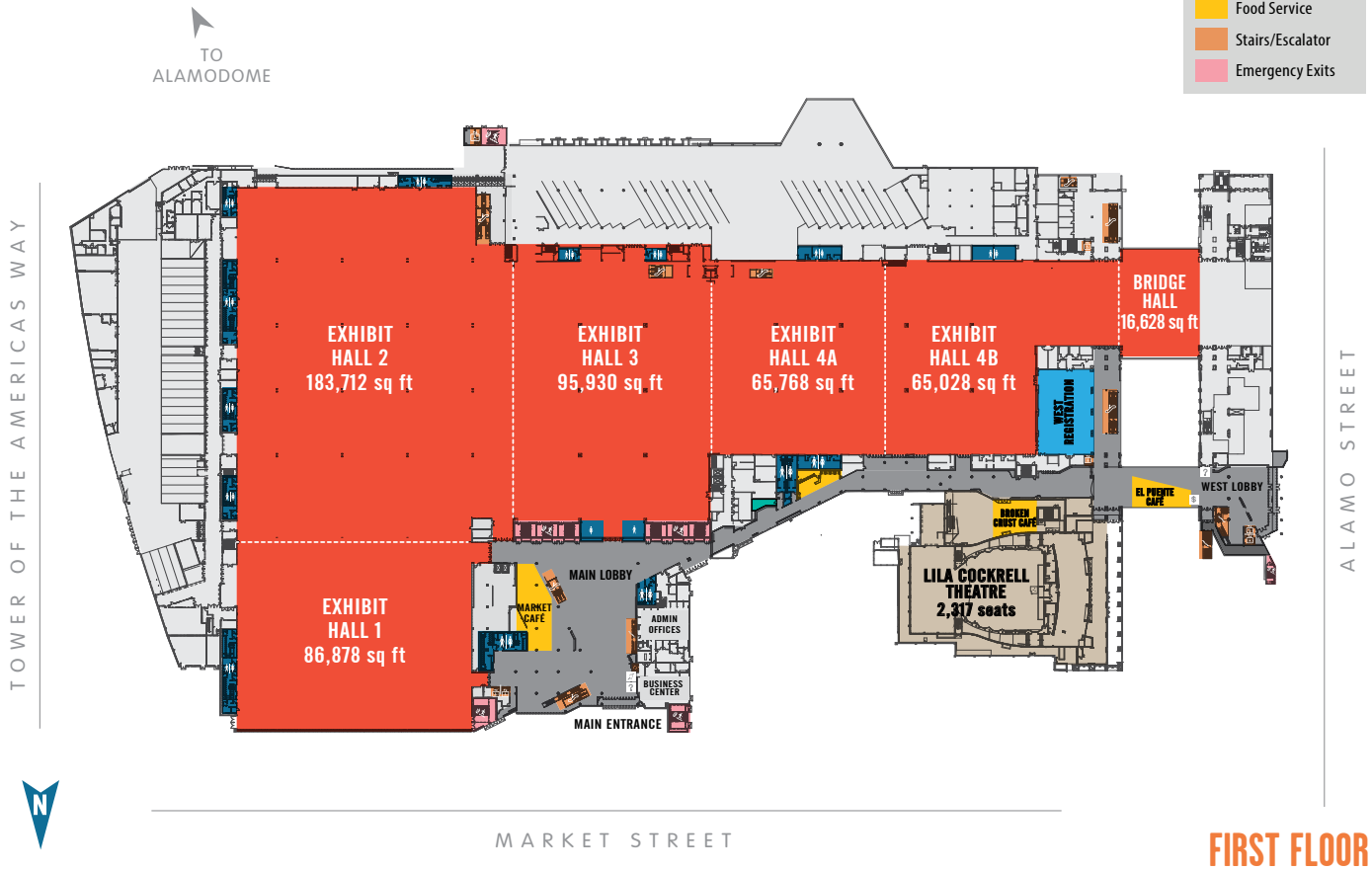
REGISTRATION HOURS 6:00 AM – 7:00 PM

REGISTRATION HOURS 6:00 AM – 6:00 PM

REGISTRATION HOURS 7:00 AM – 12:00 PM

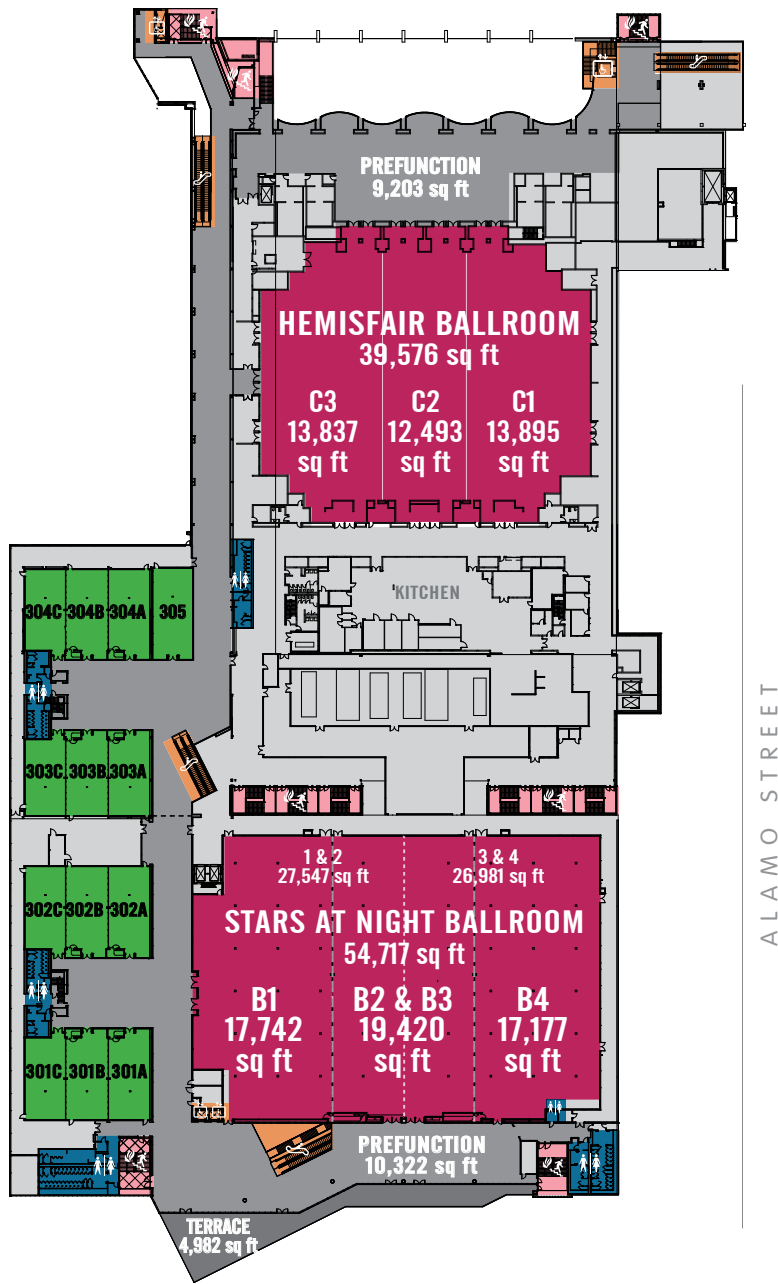
# Floor Plan

LEGEND	
<span style="color: red;">■</span>	Exhibit Halls
<span style="color: green;">■</span>	Meeting Rooms
<span style="color: purple;">■</span>	Ballrooms
<span style="color: grey;">■</span>	Prefunction
<span style="color: blue;">■</span>	Restrooms
<span style="color: yellow;">■</span>	Food Service
<span style="color: orange;">■</span>	Stairs/Escalator
<span style="color: pink;">■</span>	Emergency Exits



# Floor Plan

LEGEND	
<span style="color: red;">■</span>	Exhibit Halls
<span style="color: green;">■</span>	Meeting Rooms
<span style="color: purple;">■</span>	Ballrooms
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<span style="color: blue;">■</span>	Restrooms
<span style="color: yellow;">■</span>	Food Service
<span style="color: orange;">■</span>	Stairs/Escalator
<span style="color: pink;">■</span>	Emergency Exits



ALAMO STREET

MARKET STREET



**THIRD FLOOR**



## 3- Point Products **GOLD SPONSOR**

**BOOTH: 305**

[www.3pointproducts.com](http://www.3pointproducts.com)

3-Point Products continues to innovate with NEW products including Oval-8 CLEAR Finger Splints. The NEW 3-Point website features our full line of effective UE Orthoses including classic ulnar deviation splints, static progressive Step Splints and a full line of Thumb Orthoses with unique features for optimal patient comfort. Learn about 3pp Clinic Connect live product demos and free clinic samples.

## Allard USA

**BOOTH: 112**

[www.allardusa.com](http://www.allardusa.com)

Check out Allard's Ulnar Deviation Splint and Smart Orthotic Treatment Line of Orthoses. All are low profile and lightweight and your patients will love the ease of application. The aluminum core in the Resting Hand orthosis provides good biomechanical positioning. Pick up your FREE Goniometer!

## American Hand Therapy Foundation **PLATINUM SPONSOR**

**BOOTH: 103**

[www.ahtf.org](http://www.ahtf.org)

The mission of the American Hand Therapy Foundation is to improve patient outcomes by promoting evidence-based practice through funding clinical and scientific research and education. We are committed to promoting a culture that respects diversity, inclusion, equity, and justice for all stakeholders involved in the delivery and research of upper extremity care.

## Angular Ortho

**BOOTH: 201**

[www.angularortho.com](http://www.angularortho.com)

Angular Ortho's new products are designed to improve finger and thumb flexion contractures. These dynamic orthoses provide warmth and compression with a comfortable design to enable longer wearing times during the day and night. They are scientifically tested to accommodate mild to steep contractures as well as restore thumb IP hyperextension.

## Axogen Nerve Repair **GOLD SPONSOR**

**BOOTH: 402**

[www.axogeninc.com](http://www.axogeninc.com)

Axogen is the leading company focused specifically on the science, development, and commercialization of technologies for peripheral nerve regeneration and repair. We are passionate about helping to restore nerve function and quality of life to patients with peripheral nerve injuries by providing innovative, clinically proven, and economically effective surgical solutions for nerve repair.

## BraceLab **SILVER SPONSOR**

**BOOTHS: 100 and 101**

[www.bracelab.com](http://www.bracelab.com)

BraceLab® is a premium orthosis company, and exclusive US Push® distributor, focusing on helping people do what they love, without pain/discomfort. We provide patients and medical professionals with high-quality braces designed for optimal support while maximizing function. Additionally, our Clinicians Classroom offers a wealth of clinical resources for therapists.

## BTE Technologies LLC

**BOOTH: 202**

[www.btetechnologies.com](http://www.btetechnologies.com)

We are the best-in-class solution for achieving superior evaluation, treatment, and training outcomes. Expand your rehab services and keep your clients motivated with objective, functional treatment plans. Set yourself apart with a fun, interactive experience – helping your clients reach their goals, faster.

## Bullseye Brace, Inc.

**BOOTH: 301**

[www.bullseyebrace.com](http://www.bullseyebrace.com)

Bullseye Brace is a premier manufacturer of orthopedic braces featuring our patented silicone technology and targeted compression. Our innovative braces provide comfortable, effective relief from thumb arthritis, tennis and golfer's elbow, and TFCC injury. Please visit us in booth #301.

## Cedaron Medical Inc.

**BOOTH: 405**

[www.cedaron.com](http://www.cedaron.com)

CONNECT is the only rehab EMR developed in partnership with the ASHT, AOTA and APTA. Therapists trust the easy-to-use plan of care, charge, scheduling, and reporting workflows.

Cedaron's customer family says this software pays for itself!

- Integrated hand tools
- 23% decreased overhead
- 12% increased productivity
- 74% reduced denials
- 100% compliance

## ePULSE

**BOOTH: 419**

[www.epulseusa.com](http://www.epulseusa.com)

Epulse is a pioneer of modern health and wellness devices, our devices are targeted to deliver non-invasive pain relief solutions That work great in office settings or on the go!

## Essity

**BOOTH: 106**

<https://www.essity.com/>

Essity provides high-quality, innovative wound and incontinence care, orthopedic, and compression products. Our innovative products and solutions, coupled with our expertise, cutting edge technology, and global coverage, allows us to offer a more complete value proposition.

Cost-effective solutions and evidence-based approaches for improved care outcomes allow us to better support residents. Additionally, our customers and partners value our support through state-of-the-art training and education.

Many of our products are also available for ordering through leading group purchasing organizations and distributed by most major medical distributors.

## Evidence Based, LLC

**BOOTH: 304**

[www.charlestonhandtherapy.com](http://www.charlestonhandtherapy.com)

- 360+ page comprehensive manual
- 95 therapy treatment protocols for the most common surgical and non-surgical diagnoses
- An easy week-by-week format
- Based on the most current medical evidence
- Uniformly outlined surgical outcome limitations
- "Clinical Pearls" section providing clinical outcomes, trends, and/or information

20% DISCOUNT USE CODE ASHT23 | OFFER EXPIRES 10/31/23

## Exploring Hand Therapy **SILVER SPONSOR**

**BOOTH: 214**

[www.exploringhandtherapy.com](http://www.exploringhandtherapy.com)

Exploring Hand Therapy is an online education organization which offers the largest variety of hand and upper extremity courses in the world designed for occupational and physical therapists, Certified Hand Therapists, and other medical professionals. Learn and earn your CEUs and certifications with over 100 courses and products.

## Fabrication Enterprises, Inc.

**BOOTH: 206**

[www.fabent.com](http://www.fabent.com)

Fabrication Enterprises Inc is a manufacturer, importer, and master distributor of products for hand therapy, physical therapy, occupational therapy, chiropractic, athletic training, home care, and more. FEI's products are sold to hospitals, clinics, fitness centers, professionals, etc. by a network of dealers. For more information visit our website (listed above) or email [sales@fab-ent.com](mailto:sales@fab-ent.com).

## Fiix Body

**BOOTH: 403**

[www.fiixbody.com](http://www.fiixbody.com)

Elbow tendinosis is a stubborn condition that requires time and compliance to heal the root cause. Designed by physical therapists, the Fiix Elbow by Fiix Body is the world's only FDA Registered automated tendon scraping program. The Fiix Elbow robot replicates manual scraping, helping clients to heal the root cause and "fix" their pain!

## Grace & Able

[www.graceandable.com](http://www.graceandable.com)

Grace & Able empowers people with hand pain with wearable joint support. Our braces and compression gloves are effective, comfortable, and stylish. Run by a hand therapist and an arthritis patient. Check us out at our website (listed above) and come and say hi to learn about our Hand Therapist Affiliate Program.

**BOOTH: 303**

## GripAble **GOLD SPONSOR**

[www.gripable.co/us](http://www.gripable.co/us)

GripAble's mobile rehab platform delivers gamified therapy activities for the upper extremity - encouraging patient engagement, improving outcomes and producing more data for therapists. The handheld sensor measures and trains wrist movements and grip and release. It is extremely sensitive, making it suitable in measuring progress across a wide patient population.

**BOOTH: 412**

## Hand in Mind

[www.handinmind.com](http://www.handinmind.com)

Hand in Mind is a therapist-owned company specializing in creative, custom-made treatment activities, anatomy education, and the largest selection of hand-related jewelry on the web. Please come visit our booth to see what's new!

**BOOTH: 409**

## Hand Rehabilitation Foundation

[www.handfoundation.org](http://www.handfoundation.org)

Hand Rehabilitation Foundation promotes research & education for physicians & therapists working with children and adults with hand disorders and conditions. HRF sponsors an annual symposium known as The Philadelphia Meeting, with a faculty of surgeons and therapists teaching and demonstrating current advances in hand rehabilitation correlated with hand surgery.

**BOOTH: 417**

## Hanger Clinic **SILVER SPONSOR**

[www.hangerclinic.com](http://www.hangerclinic.com)

Hanger Clinic is the leading national provider of prosthetic and orthotic care, creating customized solutions for people of all ages to promote functional independence and maximize quality of life. The Upper Limb Program fabricates state-of-the-art prosthetic devices whether passive, body-powered, myoelectric, hybrid or activity-specific, at any level of amputation, from shoulder girdle to digit.

**BOOTH: 302**

## Hely & Weber

[www.hely-weber.com](http://www.hely-weber.com)

Hely & Weber is the only bracing company dedicated to bringing innovative upper extremity designs to the market. Our well-established line of elbow, wrist, and hand orthoses are excellent solutions to use in conjunction with custom fabrication. Come see us at booth 315!

**BOOTH: 315**

## HominidX Corp.

[www.hominidx.com](http://www.hominidx.com)

Hominid X is a Massachusetts-based company designing innovative assistive grasping tools. Our products reflect our commitment to enhancing people's lives, empowering them to overcome physical challenges and achieve their goals. We believe that everyone should live their best life. Join us in creating a more inclusive world.

**BOOTH: 316**

## Hand Therapy Certification Commission **GOLD SPONSOR**

[www.htcc.org](http://www.htcc.org)

The Hand Therapy Certification Commission, Inc., (HTCC) incorporated in 1989, is a non-profit agency that provides a voluntary credentialing program to certify occupational therapists and physical therapists in the advanced clinical specialty of rehabilitation of the upper limb.

**BOOTH: 105**

## IRG Physical and Hand Therapy

**BOOTH: 114**

[www.irgpt.com](http://www.irgpt.com)

IRG Physical & Hand Therapy is the Northwest's premier physical and hand therapy group. Locally owned and operated, we have locations throughout the Puget Sound of Washington state so you'll never have to travel far to receive exceptional service.

Our certified hand therapists use the latest treatment methods, techniques, and technology to get our patients back to their best selves and doing the activities they love and without discomfort. Our hand therapy services coupled with our physical therapy offerings allow us to serve the whole you.

## Jane App

**BOOTH: 317**

[www.jane.app](http://www.jane.app)

Jane is a complete practice management software that offers helpful features like patient-friendly online booking, flexible scheduling, customizable charting, and a fully integrated payment solution called Jane Payments.

To learn more about Jane's full suite of features, head to [jane.app/physicaltherapy](http://jane.app/physicaltherapy) to book a 1-on-1 demo.

## Joint Jack Company

**BOOTH: 108**

[www.jointjack.com](http://www.jointjack.com)

The Joint Jack Company specializes in products effective for the rehabilitation of the hand and upper extremity. The products we offer include splints for full finger extension, correction of flexion deformities, and a solution to RSD (CRPS) through stress loading to the tissues.

## JST Art & Design

**BOOTH: 407**

[www.jefftdesign.com](http://www.jefftdesign.com)

As an artist married to an OT Hand Therapist, we have a shared goal of creating interactive artwork that can be utilized therapeutically in an occupational/hand therapy practice. I make interactive wooden puzzles that serve as therapeutic exercises for patients. Additionally, I enjoy creating customized journals, one-of-a-kind record album clocks, screen prints on old albums, and moveable magnetic tiles for wood wall art - all designed to bring joy and fun to our customers' lives.

## Kinetec USA, Inc. **SILVER SPONSOR**

**BOOTH: 200**

[www.kinetecusa.com](http://www.kinetecusa.com)

Manosplint® is the hand therapy brand of Kinetec. We offer a significant range of thermoplastics and accessories. Kinetec offers unique printing technology, precuts as well as custom options using Manosplint thermoplastics. New to Kinetec is X-Lite a non-toxic biocompatible and biodegradable thermoplastic material. Stop by for product demonstrations.

## Lafayette Instrument

**BOOTH: 102**

[www.lafayetteinstrument.com](http://www.lafayetteinstrument.com)

For more than 75 years, professionals in rehabilitation, occupational and physical therapy, and sports medicine have come to trust Lafayette Instrument for their evaluation and assessment needs. Our commitment to these markets is underscored by the investments that we have made in quality and innovative products.

## Medline Industries

**BOOTH: 416**

<https://www.medline.com/>

Medline is a healthcare company—a medical supply manufacturer, distributor and solutions provider focused on improving the overall operating performance of healthcare. Partnering across the continuum of care, Medline helps providers to activate the clinical and supply chain resources needed to deliver their best care. With the agility to solve problems quickly and the scale to partner with providers for their sustained success, Medline is able to invest in its customers for the future and rapidly respond to a dynamically changing market with customized solutions.

Headquartered in Northfield, Illinois, Medline has 34,500+ employees worldwide and does business in more than 125 countries and territories. Medline is the largest privately-held manufacturer and distributor of medical supplies, and is uniquely positioned to provide products, education and support across the continuum of care. Our ability to bring best practices from one care setting to another—from large healthcare systems and independent physician practices to home health patients and their families, is what sets us apart.

## MedTech International Group

**BOOTH: 104**

[www.medtechinternationalgroup.com](http://www.medtechinternationalgroup.com)

At MedTech International Group, our mission is to make a positive impact on the healthcare industry by providing top-notch LED illumination solutions to practitioners worldwide. We take great pride in helping healthcare professionals deliver the best possible care to their patients.

## Naked Prosthetics **SILVER SPONSOR**

**BOOTH: 313**

[www.npdevices.com](http://www.npdevices.com)

Naked Prosthetics engineers functional, high-quality finger and partial-hand prostheses that get end-users back to work and activities of daily living. We partner with Certified Prosthetists, therapy practitioners, physicians, and surgeons to facilitate our innovative devices – the PIPDriver™, MCPDriver™, ThumbDriver™, and GripLock Finger™.

## Neuro Rehab Recovery

**BOOTH: 415**

[www.neurorehabrecovery.com](http://www.neurorehabrecovery.com)

We are a patient focused company run by clinicians that provide innovative, effective, easy to use and affordable technologies to people in need with on-going clinical support. Our goal is to offer a full product portfolio that meets the needs of those that have had a neurological injury or disease.

## North Coast Medical

**BOOTH: 213**

[www.ncmedical.com](http://www.ncmedical.com)

For nearly four decades, North Coast Medical, Inc. (NCM) has manufactured, supplied and distributed a broad range of industry-leading products. Servicing the needs of in-patient/out-patient hospitals, clinics, private practice, IDN's and consumers, NCM is a recognized leader in occupational, physical and hand therapy medical markets. We are more than just a distributor and manufacturer of products, equipment and supplies. North Coast is a strategic supply chain partner, providing innovative opportunities for our customers and business partners.

## Orfit Industries America **GOLD SPONSOR**

**BOOTH: 113**

[www.orfit.com/physical-rehabilitation](http://www.orfit.com/physical-rehabilitation)

Orfit is a leader and innovator in the manufacture of thermoplastic materials for orthotic fabrication. We are dedicated to developing and producing materials that enhance your orthoses and help your patients. We are also dedicated to supporting and educating clinicians to help design comfortable and effective orthoses for their patients.

## Ortho-RPM

**BOOTH: 203**

[www.ortho-rpm.com](http://www.ortho-rpm.com)

OrthoRPM is dedicated to revolutionizing rehabilitation for patients, surgeons, and therapists by bringing smart technology to therapy to improve function, outcomes, and satisfaction. Our remote therapy monitoring grip device optimizes hand strength and dexterity, while tracking progress to give patients and their providers critical information to enhance therapy results.

## OrthoPress Inc.

**BOOTH: 120**

[www.orthopress.com](http://www.orthopress.com)

OrthoPress aims to help people regain the use of their hands. Founder Andy Skelton injured his finger and then developed a new device to straighten it out. Now hand therapists are recommending the FingerPress PIP Extension Orthosis for many types of flexion contractures up to eighty degrees.

## Ossur Americas

**BOOTH: 406**

[www.ossur.com/en-us](http://www.ossur.com/en-us)

Known for developing innovative upper limb prosthetic devices, Össur's Touch Solutions, are designed to help people with upper limb deficiencies live a Life Without Limitations. We welcome you to visit our booth to learn more about our i-Limb® and i-Digits™ technology along with LivingSkin. For more information, please visit our website <https://www.ossur.com/en-us/prosthetics/touch-solutions>

## Performance Health

**BOOTH: 401**

[www.performancehealth.com](http://www.performancehealth.com)

Performance Health is a leader in consumer healthcare and the largest global manufacturer and distributor of products to the rehabilitation and therapy markets. The company's products are sold to leading healthcare facilities and practitioners such as hand therapists, athletic trainers and occupational and physical therapists as well as direct to consumers. Its market-leading brands, which are sold in over 100 countries, include Rolyan®, TheraBand®, Cramer® & Sammons Preston®.

## Pillet Hand Prostheses

**BOOTH: 212**

[www.pillet.com](http://www.pillet.com)

The Pillet passive function aesthetic prosthesis has become a major component of the comprehensive professional and social rehabilitation program for amputees. The prostheses are custom designed to provide an aspect of normality to a disfigured hand while serving an important functional role.

## Point Designs

**BOOTH: 216**

[www.pointdesignsllc.com](http://www.pointdesignsllc.com)

Point Designs is a team of industry experts dedicated to the innovation of partial hand prosthetic devices. We develop and manufacture robust prosthetic fingers that provide prosthetists with solutions to meet the unique needs of each patient. We specialize in durable prostheses for people with partial hand amputation.

## PT Recruiters - Recruiting Division of US Physical Therapy

[www.ptrecruiters.com](http://www.ptrecruiters.com)

PT Recruiters is a recruiting division of US Physical Therapy. We have been connecting our partnerships to talent since 1990. US Physical Therapy has over 655 outpatient therapy clinics in 40 states where we offer physical, occupational, and hand therapy services. Please visit us at [www.PTrecruiters.com](http://www.PTrecruiters.com) to learn more about us and the opportunities we have across the country.

## Select Medical

**BOOTH: 306**

[www.careers.selectmedical.com](http://www.careers.selectmedical.com)

Select Medical is a nationally prominent, locally driven provider of outpatient physical rehabilitation and the largest employer of certified hand therapists. Through our family of brands — more than 1,900 centers in 39 states and the District of Columbia — we take pride in creating an exceptional patient experience.

## Shok•Tek™ Gloves **SILVER SPONSOR**

**BOOTH: 413**

[www.shocktek.com](http://www.shocktek.com)

Shock•Tek, designed by renowned Neurologist Dr. A. Robert Spitzer, is the original provider of carpal tunnel protection in gloves. Featuring a tested, unique channel in the padded palm of a glove, which prevents external pressure or vibration from reaching the median nerve, greatly relieving the symptoms of CTS and Repetitive Stress Injury (RSI).

## Somos

**BOOTH: 312**

[www.somosxr.com](http://www.somosxr.com)

Somos is excited to announce SignWave, the remote therapeutic monitoring platform that turns home exercise into a game, while tracking hands with millimeter precision. SignWave is crafted by a veteran team of video game designers collaborating with Walter Reed and the Applied Physics Laboratory at Johns Hopkins for CHTs and occupational and physical therapists serving patients everywhere.

## Therabath Professional Paraffin Products

**BOOTH: 207**

[www.therabath.com](http://www.therabath.com)

Since 1962, the Therabath Professional Paraffin Bath has been manufactured, hand assembled and tested to FDA Class II Medical Device standards in our Minnesota, USA facility. Therabath focuses on paraffin therapy benefits and proper treatment technique education, emphasizing our passion for returning chronic pain sufferers to healthy, active lifestyles!

## Thought Technology Ltd.

[www.thoughttechnology.com](http://www.thoughttechnology.com)

Thought Tech equipment is used in many therapeutic treatments and clinical assessment protocols for muscle rehabilitation disorders. Standard EMG biofeedback, including sEMG-triggered stimulation protocols, is used to train clients to increase or decrease muscle activity of targeted muscles. Our devices can be used stand-alone with Android device app, or PC. MyOnyx 4-Channel Encoder System.

**BOOTH: 400**

## Thumb Anchor

[www.thumbanchor.com](http://www.thumbanchor.com)

The Thumb Anchor is a glove with built-in thumb support designed by a hand surgeon with over 30 years of experience. While there are many thumb braces on the market, there are few options available that allow you to stay active while wearing them. Thumb Anchor is designed to give your active life back with less pain.

**BOOTH: 118**

## Triumph LTD

[www.triumph-ltd.com](http://www.triumph-ltd.com)

Triumph LTD is a red-light therapy device designed specifically for treating hand ailments. The design of Triumph is specific for hands, the light chamber controls the dosing variables and deliver a revolutionary drug-free treatment modality for hand pain sufferers. In addition to the dual frequency red light therapy, Triumph also delivers infrared warming and vibration massage during the 15-minute treatment session which work together to rejuvenate cell growth, bring comfort, promote circulation and lubricate joints.

**BOOTH: 300**

## United Brachial Plexus Network

[www.ubpn.org](http://www.ubpn.org)

The United Brachial Plexus Network (UBPN) is an organization formed to inform, support, and unite families and those concerned with brachial plexus injuries (BPI) and the treatment and prevention of BPI worldwide. UBPN works to: increase awareness of and work towards the prevention of brachial plexus birth injuries; provide support for individuals and families affected by brachial plexus injuries; educate medical and legal professionals, politicians, and the general public on the issues surrounding this disability; and create and maintain a network of information and support that will unite all those concerned with this injury worldwide.

**BOOTH: 116**

## US Army Healthcare Recruiting

[recruiting.army.mil/mrb](http://recruiting.army.mil/mrb)

The San Antonio Medical Recruiting Station recruits highly qualified and motivated healthcare professionals to serve as US Army Officers in order to provide the medical strength for the warrior class of American citizens.

**BOOTH: 314**

## Virtual Hand to Shoulder Fellowship, LLC **SILVER SPONSOR**

[www.virtualhandfellowship.com](http://www.virtualhandfellowship.com)

Virtual Hand to Shoulder Fellowship, LLC is an AOTA Approved Provider that delivers curriculum-based education in the specialty of upper limb and hand therapy coupled with personalized mentorship. From foundational to advanced-level concepts, our curriculums are strategically designed to cultivate the needed critical thinking for optimization of patient care and continued professional development.

We've been educated as generalists. Our mission is to educate you as specialists.

**BOOTH: 117**

## Western University

[www.uwo.ca/fhs/programs/ahcp/upper\\_rehab/index.html](http://www.uwo.ca/fhs/programs/ahcp/upper_rehab/index.html)

Western University, in partnership with the Roth McFarlane Hand and Upper Limb Centre, is on the cutting edge of excellence in care for complex conditions affecting hands, wrists, elbows and shoulders. Our one-year, online Master of Clinical Science in Upper Extremity Rehabilitation prepares occupational and physical therapists to deliver advanced upper limb treatment and care through clinical skill development, research capacity and specialized depth of knowledge.

**BOOTH: 110**

## ASHT PROGRAM CODE OF CONDUCT

All ASHT events aim to be inclusive of the largest number of contributors, with the most varied and diverse backgrounds possible. As such, ASHT is committed to providing a professional, collegial, safe, supportive and respectful meeting environment (virtual and face-to-face), regardless of a person's race, color, ethnicity, national origin, citizenship status, age, religion, disability status, gender, gender identity, sexual orientation, genetic information, physical appearance or other characteristics ("personal characteristics"). ASHT expects individuals to uphold the professional and educational purposes of ASHT and its events by respecting the rights, privacy, safety and dignity of all persons. ASHT expects individuals to exercise professionalism, consideration and respect in their speech and actions. ASHT expects individuals to refrain from harassing speech and other harassing behavior.

## SCOPE AND APPLICATION

The Program Code of Conduct and this Policy apply to any virtual gathering or in-person event that is hosted or sponsored by ASHT, including but not limited to virtual educational symposia, exhibits, committee meetings, written comment and discussion groups, professional gatherings and platforms and setting ancillary thereto (each an "ASHT Event"). This Policy applies to any and all participants in ASHT Events, including but not limited to employees, members, volunteers, guests, vendors, contractors, exhibitors, faculty and other attendees (each a "Participant").

## UNACCEPTABLE BEHAVIOR

Unacceptable behavior is defined as:

- Unwelcome and uninvited attention or contact with another Participant;
- Verbal or written comments, or visual images, that are sexually suggestive, or that denigrate or show hostility or aversion toward an individual, or group of individuals, or that create an intimidating, hostile or offensive environment, or that unreasonably interfere with an individual's ability to participate in the ASHT Event;
- Unwelcome sexual advances, requests for sexual favors, or other unwelcomed physical, verbal, visual, or other conduct of a sexual nature;
- Inappropriate, unnecessary, or irrelevant use of nudity and/or sexual images;
- Intimidating, harassing, abusive, defamatory, profane, discriminatory, derogatory or demeaning speech;
- Harmful or prejudicial verbal or written comments or visual images related to personal characteristics;
- Deliberate intimidation or stalking;
- Harassing photography or recording;
- Sustained or repeated disruption of talks or other events;
- Express or implied threat of physical or professional harm;
- Actual or threatened personal or professional retaliation for a rejection or report of unacceptable behavior;
- Failing to stop unacceptable behavior when requested by a Participant or ASHT.

## REPORTING UNACCEPTABLE BEHAVIOR

Any Participant whose safety is threatened or violated is urged to contact local law enforcement immediately.

In addition, any Participant who feels unsafe or experiences unwelcome conduct, who observes or experiences unacceptable behavior, or who believes there has been a violation of this Policy, is encouraged to come to the registration desk immediate to report this violation to a member of the ASHT Staff, or send an email to [meetings@asht.org](mailto:meetings@asht.org) or call (856) 380-6851.



## CONSEQUENCES OF REPORTED UNACCEPTABLE BEHAVIOR

Upon receiving a report of unacceptable behavior, ASHT's first priority will be the safety and security of Participants. In order to preserve a safe, educational environment, ASHT reserves the right to remove a Participant from an ASHT Event, suspend or terminate specific features available to a Participant or to suspend or terminate the Participant's entire account. In addition, ASHT reserves the right to prohibit Participant attendance at any future ASHT Event.

Violation of this Policy, as determined by ASHT in its sole discretion, is grounds for any action that ASHT deems appropriate, including but not limited to warning the offender, denying the offender access to an ASHT Event (including revoking or denying registration to an ASHT Event), suspending or terminating the offender's access to the ASHT Event, and barring the offender from other ASHT Events. ASHT reserves the right to take whatever action it, in its sole discretion, deems appropriate, with respect to the investigation of any matters related to this Policy.

Any person who is denied access to or whose access is terminated during an ASHT Event based on this Policy may request that ASHT review the matter after the ASHT Event has concluded. However, ASHT's action will be effective immediately and will continue until and unless ASHT issues a contrary decision. Unless a contrary decision is issued, any person who is denied access to or removed from an ASHT Event based on this Policy will not be eligible for a refund of any registration fees paid for access to or participation in the ASHT Event.

**By registering for an ASHT program (virtual or in-person), you acknowledge your registration is subject to ASHT's Program Code of Conduct Policy.**

If you have any questions regarding this policy or attendee conduct, please contact [meetings@asht.org](mailto:meetings@asht.org) or [asht@asht.org](mailto:asht@asht.org).

## ANTITRUST AVOIDANCE

United States antitrust law is a collection of federal and state government laws, which regulates the conduct and organization of business corporations, generally to promote fair competition for the benefit of consumers. Antitrust law prohibits the exchange of information among competitors or collusive practices that would minimize competition or result in the restraint of trade.

### 14.2.1 Potential Areas for Antitrust Violation

- pricing of services
- surveys
- membership exclusion or expulsion
- product standards
- code of ethics
- standard setting
- articles, publications, website
- discussion forums
- meetings, speakers
- certification
- tradeshow and advertising exclusion
- referrals and recommendations
- discount programs

To ensure that the Society and its members comply with antitrust laws, the following principles will be observed:

- The Society or any division, committee, task force or activity of the Society shall not be used for the purpose of bringing about or attempting to bring about any understanding of agreement, written or oral, formal or informal, expressed or implied, among two or more members or other competitors with regard to prices or terms and conditions of contracts for services or products. Therefore, discussions and exchanges of information about such topics will not be permitted at Society meetings or other activities.
- There will be no discussions discouraging or withholding patronage or services from or encouraging exclusive dealing with any supplier or purchaser or group of suppliers or purchasers of products and services, any actual or potential competitor or group of actual potential competitors, or any private or governmental entity.

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**CONTROL ID:** 3907445

**TITLE:** CRITICALLY APPRAISED TOPIC: THE NEED FOR AN UPPER LIMB SPECIFIC PSYCHOSOCIAL ASSESSMENT FOR HAND THERAPY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** S. Wade<sup>1, 2</sup>, K. Melton<sup>3</sup>, S. Giedraitis<sup>4</sup>

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4. Occupational Therapy, Northern Arizona University, Phoenix, AZ, United States.

### **ABSTRACT BODY:**

**Purpose:** Background/clinical scenario

The purpose of this critically appraised topic is to gather information regarding the utility and need for the creation of an upper limb specific psychosocial assessment to be utilized in hand therapy settings. There is growing evidence that even though most hand therapy practices operate through a biomechanical approach, the psychosocial factors surrounding a client's experience and recovery should not be ignored. There is a question of comfort level among certified hand therapists to openly address psychosocial factors. Some might argue it is not in their scope of practice, but would the proper assessment and treatment training equip certified hand therapists to adequately address the holistic needs of their clients?

Evidence based question

Is there a need for an upper limb specific psychosocial assessment for patients with upper limb injuries receiving hand therapy?

**Methods:** Search strategy and study selection including inclusion criteria

In order to search for articles regarding the topic of psychosocial assessment in hand therapy, utilization of searches through Pubmed, Mayo Library, and NAU Library were performed.

Mayo Library database key terms:

hand therapy AND psychosocial AND assessment

Pubmed database key terms:

hand therapy AND psychosocial AND assessment

psychosocial factors AND hand therapy

psychosocial AND upper limb injuries

NAU Library database key terms:

hand therapy AND psychosocial AND assessment

Articles that were 10 years or older were excluded for the purposes of this appraisal in order to maximize most current evidence surrounding the topic.

Data extraction or pertinent information on each included study

Pertinent information that was included in the appraisal of the available evidence included, the population, the sample sizing, the method of sampling, the type of assessments used, and the conclusions made by the authors of each study.

**Results:** Main findings of each study

Main findings of each study can be found in the provided table.

Critical appraisal of the included studies

At this time there are not very many high levels of evidence showing the need for an upper limb specific psychosocial assessment apart from therapists addressing psychosocial needs in general for several populations (cumulative trauma, chronic shoulder pain, or hand trauma). Regardless of this current lack of higher level evidence, the

therapeutic process guides us to start with an assessment in order to guide our treatment, which must be the first step in support therapists in their ability to treat holistically.

**Conclusion:** Limitations

Critical appraisal of the included studies showed that many had low levels of evidence as data collection was done using surveys, interview methods, and utilized purposive sampling. Limitations for this critical appraisal also include a small body of evidence available concerning psychosocial assessments apart from psychosocial treatments in hand therapy settings for patients with upper limb injuries as well as a poor understanding of the specific areas of need for the psychosocial assessments.

Conclusion

However, several newer articles have found that there is a growing need to assess psychosocial factors in hand therapy patients. Hand therapists are not equipped with field specific tools at this time to address the range of psychosocial needs in patients with upper limb injuries.

Clinical implications and recommendations

An upper limb injury specific psychosocial assessment would allow hand therapists to more effectively identify the psychosocial needs of patients that may be affecting their recovery and clinical outcomes.

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**Clinical implications and recommendations**

An upper limb injury specific psychosocial assessment would allow hand therapists to more effectively identify the psychosocial needs of patients that may be affecting their recovery and clinical outcomes.

(No Image Selected)

**TABLE:**

*Note: The PDF table below is only an approximation of the HTML content and may not match formatting exactly.*

Evidence Table					
Author & Year	Design & Sample Size	Main Findings	Effect Size	Limitations	Level of Evidence
Kurrus et al., 2022	Mixed-Method, 117 survey respondents, 9 focus groups	Occupational therapists primarily use the biomechanical approach to treat hand therapy patients and do not often formally assess and treat	Not available	-Self developed survey without established reliability and validity -Possible bias based on primary researcher's own experience as an OT and CHT -Accuracy	D

# Abstracts

(abstracts are listed in numeric order by control ID number)

		<p>psychosocial factors impacting function. Informal methods such as observation are most often used to assess psychosocial factors by hand therapists. The results of this study showed a need for a standardized assessment that can be used to identify psychosocial factors impacting a client's functional performance in everyday activities.</p>		<p>of participants responses could not be determined - Incomplete responses - Purposive sampling biased to only occupational therapists who were also CHTS. May not generalize to all OTs who treat clients with hand injuries - Virtual platforms and survey distribution - Missing data due to some focus groups not being reported</p>	
Chester et al., 2018	<p>Longitudinal cohort study Over 1000 participants</p>	<p>-There were five factors that were associated with a</p>	<p>Not available</p>	<p>-Only prognostic factors significant in three or four</p>	<p>B</p>

# Abstracts

(abstracts are listed in numeric order by control ID number)

	<p>better outcome including: patient expectation of complete recovery compared to a slight improvement as a result of physiotherapy treatment, lower pain severity specifically at rest, the absence of a previous major operation, the absence of pain in the opposite upper quadrant, and change in pain or range of shoulder elevation with manual facilitation of the scapula during elevation of the arm.</p>		<p>models for each outcome were presented -There was a differential non-response at follow up which may have decreased the power of the study to detect a more consistent association of these factors with outcome and represent a potential source of bias. -Low number of patients with extreme anxiety and depression participated in the study which decreased the power of the study to detect an</p>	
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# Abstracts

(abstracts are listed in numeric order by control ID number)

				associatio n between anxiety and	
Dogu et al., 2014	Longitudinal study including 57 participants	-The psychological impact of the event reduces significantly within 6-9 months, and the functional outcomes improve in the later stage of recovery. - Psychosocial impact of the event, depression level, and hand function were found to be correlated to each other in the acute and the later stages.	Not available	depression -Did not evaluate the presence of pain in the patients in terms of it affecting their quality of life or social factors such as the timing for return to work -Did not assess severity of injury	B
Babatunde et al., 2020	Mixed methods approach with semi structured interviews, observatio	-The purpose of this study was to provide an overview of HOCOS	Not available	Most participants were comfortable using the computer	D

# Abstracts

(abstracts are listed in numeric order by control ID number)

	ns, and questionnaires	and report the findings of how user friendly this system is for managing psychosocial challenges while they are receiving hand therapy. Overall, therapists found this to be a useful resource for meeting the patients' psychosocial needs.		which limits the ability of the study to be generalized.	
King et al., 2021	Single-phase qualitative study 11 participants	-Axial coding brought in elements of perceptions by the participants of being misunderstood by others, and that their suffering was not recognized	Not available	-Difficulty recruiting participants because of complications with workers compensation and expressed concerns of confidentiality -None of the	D

# Abstracts

(abstracts are listed in numeric order by control ID number)

	-Selective coding brought forward several elements of maladaptive experiences, or sense of helplessness, and fear of revealing dysfunction in personal behaviors, relationships with others and uncertainty of the future social consequences of withdrawal.		participants had young children at home therefore not able to allow qualitative examination of issues with childcare -limited amount of information for participants with how CTDs related to sleep disturbances and leisure impact	
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**TABLE FOOTER:**

**TABLE TITLE:** Evidence Table

**TITLE:** CRITICALLY APPRAISED TOPIC: THE NEED FOR AN UPPER LIMB SPECIFIC PSYCHOSOCIAL ASSESSMENT FOR HAND THERAPY

**CONTROL ID:** 3914861

**TITLE:** PILOT STUDY EVALUATING THE EFFECTS OF A BRIEF CHRONIC PAIN EDUCATION PROGRAM IN OCCUPATIONAL THERAPY PRACTITIONERS, OCCUPATIONAL THERAPY STUDENTS, AND LAY PEOPLE

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** R. McAndrew<sup>1</sup>, J. Sturtevant<sup>1</sup>, V. Kaskutas<sup>1</sup>

**INSTITUTIONS (ALL):**

1. NA, Kirkwood, MO, United States.

**ABSTRACT BODY:**

**Purpose:** Acute pain arises as a response to tissue damage and alerts us to pay attention and allow for healing. However, many individuals experience pain long after tissues have healed, turning acute pain into a chronic disease state. Contemporary understanding of chronic pain moves away from the thought that it arises from ongoing structural damage and towards acknowledging it as a product of abnormal nerve signaling or individual differences in pain sensitivity. Past research indicates patients, students, and Occupational Therapy (OT) clinicians have limited understanding of chronic pain.

The purpose of this study was to evaluate the effect of a brief program to educate individuals about chronic pain and to evaluate differences among groups regarding pain beliefs.

**Methods:** This study used a pre-post intervention with three groups: Registered OTs, OT students, and lay people. The session took place over Zoom. The session began by assessing the participant's beliefs about pain by rating their level of agreements with four statements:

strongly disagree=1, disagree=2, slightly disagree=3, slightly agree=4, agree=5, and strongly agree=6.

1. A more intense pain correlates to more tissue damage in your body. (abbreviated pain-damage)
2. It is safe to perform everyday tasks when you are experiencing pain. (abbreviated tasks-pain)
3. It is possible to have significant pain without evidence of tissue damage on medical tests. (abbreviated pain-tests)
4. After an injury, you should adjust your activity level based on the amount of damage found on medical test. (abbreviated activity-tests)

Next, a scripted case study was used to describe an individual slipping on the ice, falling on their back, and experiencing severe back pain that prevents work, leisure, or household activities eight months after injury despite unremarkable medical tests. Then an example of acute pain experienced after a broken arm was presented. The difference between acute and chronic pain was explained using visuals demonstrating how the levels of pain, tissue damage, and disability correlate with acute pain, but not in chronic pain. The researcher provided brief education on the neurological system and the disconnected nature of pain, tissue damage, and disability with chronic pain. After the intervention participants re-rated their agreement with the statements.

Means were computed for each statement for the entire sample and each of the three study groups. Pre-post changes were analyzed using Wilcoxon Signed Rank Test. Group scores for each statement were compared using Kruskal-Wallis test with Bonferroni correction with  $p < 0.05$  with post-hoc analysis. Composite scores were computed by summing the scores for the four statements, with statements one and four reverse-scored so higher scores represented more accurate answers for all statements. Wilcoxon Signed Rank Test compared pre-post composite scores.

**Results:** Forty study participants (30 females and 10 males), included 11 licensed occupational therapists, 11 OT students, and 18 lay people. The overall mean age of the entire sample was 40, but the OT student group's mean age was 24. The Zoom session lasted approximately 15 minutes.

The highest accurate knowledge at baseline occurred for statement 3, pain-tests (Table 1). The largest improvement after the intervention was noted for statement 1, pain-damage. Statistically significant improvements occurred for each statement.

Mean ratings for the three groups for each statements before and after the intervention are demonstrated in Figure 1. Knowledge improved pre to post-intervention for all statements, with greatest improvements in lay people.

Improvements were statistically significant for pain-damage, pain-tests, and activity-tests in lay people, pain-damage and tasks-pain in the OT students, and none in the OTs.

Prior to the intervention, statistically significant differences among the groups were noted for the tasks-pain statement,  $\chi^2(2, N = 40) = 6.96, p = 0.031$  and the activity-tests statement,  $\chi^2(2, N = 40) = 9.66, p = 0.008$ . Post hoc analysis indicated that OTs demonstrated more accurate knowledge about the tasks-pain statement than OT students ( $p =$

0.027) as well as more accurate knowledge about the activity-tests statement than both lay people ( $p = 0.007$ ) and OT students ( $p = 0.087$ ). No statistically significant differences between the groups' scores were noted post-intervention. Composite scores are shown in Figure 2. Lay people had the lowest understanding of chronic pain prior to the intervention, yet they made the greatest improvement after the intervention. The entire sample's composite mean score demonstrated statistically significant improvements at  $p < 0.001$ . Statistically significant improvements were noted for the lay people ( $p < 0.001$ ) and OT student groups ( $p = 0.005$ ).

**Conclusion:** The results of this pilot study demonstrate a brief education program can impact people's understanding of chronic pain, especially lay people without formal education in pain science.

**Purpose:** Acute pain arises as a response to tissue damage and alerts us to pay attention and allow for healing. However, many individuals experience pain long after tissues have healed, turning acute pain into a chronic disease state. Contemporary understanding of chronic pain moves away from the thought that it arises from ongoing structural damage and towards acknowledging it as a product of abnormal nerve signaling or individual differences in pain sensitivity. Past research indicates patients, students, and Occupational Therapy (OT) clinicians have limited understanding of chronic pain.

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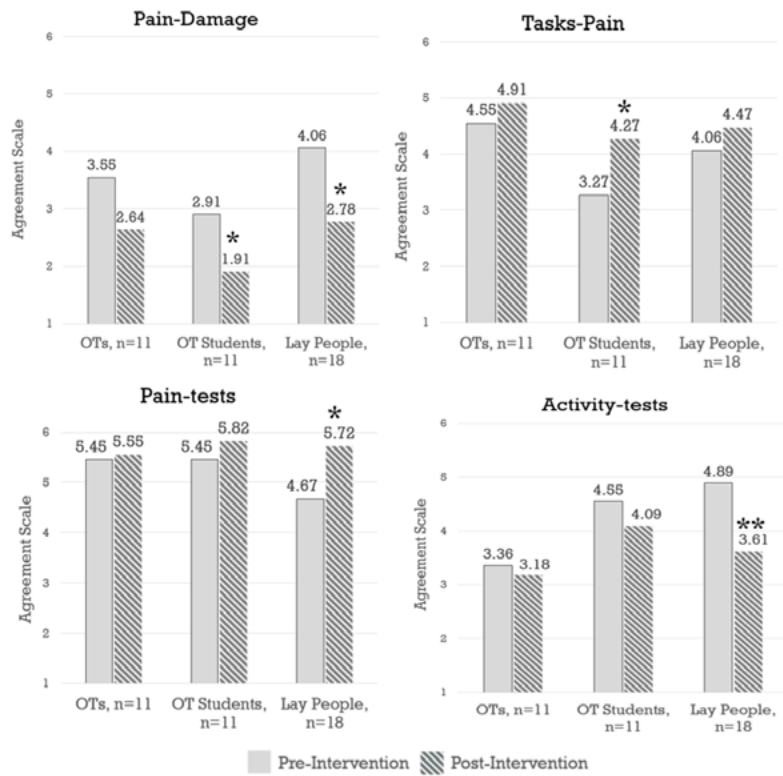
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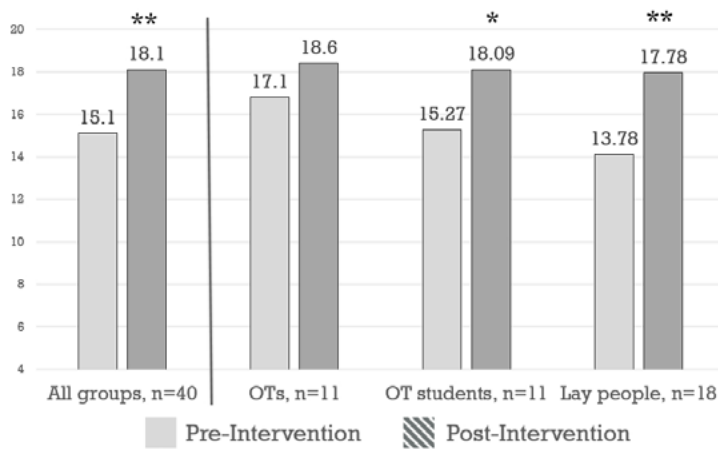
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Mean pre and post-intervention score for each statement by group and statistical significance, n=40.

\*  $p$ -value  $\geq 0.05$ , \*\* $p$ -value  $\geq 0.001$ , Wilcoxon Signed Rank Test.

Strongly disagree = 1, disagree = 2, slightly disagree = 3, slightly agree = 4, agree = 5, and strongly agree = 6. Higher scores on statements tasks-pain and pain-tests demonstrate more accurate chronic pain knowledge, whereas lower scores on statements pain-damage and activity-tests demonstrate more accurate chronic pain knowledge



Pre and post-intervention composite score and statistical significance for entire cohort and each group.  $p$ -value = 0.005,  $p$ -value > 0.001, Kruskal-Wallis test with Bonferroni correction with  $p$  05 for multiple tests. Higher composite scores demonstrate more accurate chronic pain knowledge as two items were reverse-scored prior to computing composite score.



**IMAGE CAPTION:** Mean pre and post-intervention score for each statement by group and statistical significance, n=40.

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Pre and Post-Intervention Means and Wilcoxin Sign-Ranked Results, Entire Sample					
Statement	Pre	Post	Change	Z Score	p-value
1. A more intense pain correlates to more tissue damage in your body (pain-damage).	3.60	2.50	-1.1	-3.78	<0.001
2. It is safe to perform everyday tasks when you are experiencing pain (tasks-pain).	3.98	4.53	0.55	-2.87	0.004
3. It's possible to have significant pain without evidence of tissue damage on medical tests (pain-tests).	5.10	5.70	0.60	-3.33	<0.001
4. After an injury, you	4.37	3.62	-0.75	-3.17	0.002

<p>should adjust your activity level based on the amount of damage found on medical test (activity-tests).</p>	
<p>n=40.            Strongly disagree = 1, disagree = 2, slightly disagree = 3, slightly agree = 4, agree = 5, and strongly agree = 6.            Higher scores on statements 2 and 3 demonstrate more accurate chronic pain knowledge, whereas lower scores on statements 1 and 4 demonstrate more accurate chronic pain knowledge.</p>	

**TABLE FOOTER:** n=40.

Strongly disagree = 1, disagree = 2, slightly disagree = 3, slightly agree = 4, agree = 5, and strongly agree = 6.

Higher scores on statements 2 and 3 demonstrate more accurate chronic pain knowledge, whereas lower scores on statements 1 and 4 demonstrate more accurate chronic pain knowledge.

**TABLE TITLE:** Pre and Post-Intervention Means and Wilcoxin Sign-Ranked Results, Entire Sample

**TITLE:** PILOT STUDY EVALUATING THE EFFECTS OF A BRIEF CHRONIC PAIN EDUCATION PROGRAM IN OCCUPATIONAL THERAPY PRACTITIONERS, OCCUPATIONAL THERAPY STUDENTS, AND LAY PEOPLE

**CONTROL ID:** 3915402

**TITLE:** THE EFFECTS OF PALMARIS LONGUS STRENGTHENING

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** R. Altahif<sup>1</sup>, H. Crisp<sup>2</sup>, J. Davidson<sup>2</sup>, T. Hutchins<sup>2</sup>, S. Podnar<sup>2</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Baylor University, Waco, TX, United States.
2. Occupational Therapy Student, University of Mary Hardin-Baylor, Belton, TX, United States.

**ABSTRACT BODY:**

**Purpose:** The Palmaris Longus (PL) is a muscle located in the forearm and is considered a weak wrist flexor or abductor of the thumb. The PL has a higher prevalence in elite athletes indicating that the PL may provide an advantage in functional activities. To our knowledge studies on the functional role of the PL have been mostly retroactive with an emphasis on prevalence rather than activation. Due to this gap in the literature, it is challenging to determine the contribution of the PL on hand function which limits the ability to incorporate the PL into a rehabilitation program. In this study, researchers aimed to determine how strengthening the PL would affect hand function in patients with hand pathologies.

**Methods:** Two participants were recruited and randomly assigned to the PL or control HEP. Adults aged 18-65 with chronic hand pathology (>3 months) and PL present in affected extremity were included. Participants with a CNS disorder, developmental disability, or inability to understand the HEP were excluded from the study. The participants received a \$50 gift card following the conclusion of the study. Demographics: PL HEP: 24 y/o female, R scaphoid fracture; Control HEP: 46 y/o female, R trigger finger release in digits three and five. Data Collection Procedure: Surface electromyography (sEMG) was performed on four of the researchers to measure PL activation during various grasp patterns and develop the PL HEP. The control HEP consisted of two generic hand exercises (composite grip, key pinch); the PL HEP consisted of two exercises which maximized PL activation during sEMG testing (palmar grasp, flat fist). Hand function and strength were measured using the Quick DASH, Jebsen Hand Function Test, and dynamometer. Data was collected at baseline and following a 6-week period of HEP participation. Pre- and post-test results were compared between participants.

**Results:** The PL participant demonstrated functional improvement of 16.1s (28%) via the JHFT, the control participant demonstrated an improvement of 10.8s (17%). In grip strength, the PL demonstrated an improvement by 1.8 lbs (2%), the control participant demonstrated an improvement of 17 lbs (38%). In the QuickDASH, the PL participant reported and improvement of 4.5%, the control participant reported and improvement of 2.3%. Both participants saw an improvement in hand function, with a greater improvement for the PL participant. The control participant saw greater improvement in grip strength. The QuickDASH scores were unremarkable for both participants.

**Conclusion:** Both participants demonstrated improvements in hand function, however the PL participant did show a greater functional improvement. The control participant demonstrated increased strength relative to the PL participant. Our results may demonstrate that the PL may play a significant role in hand function. The control HEP was comprised of general hand strengthening exercises, which can describe their greater improvement in grip strength. If a patient is having hand-based functional limitations with no strength deficits, a PL based program may help them achieve their functional goals faster than a general strengthening program. This is a noteworthy distinction as previous studies indicate there is no correlation between hand function and grip strength. Our findings are consistent with previous literature indicating that those with a PL may have increased functional hand performance. It is also consistent with literature that identified that grip strength and hand function do not strongly correlate. Limitations of this study include a small sample size, low symptom scores on the Quick Dash at baseline, using sEMG to detect muscle activation of the PL, and differences in participant hand pathologies, age, and acuity of injuries. Future research is warranted and should recruit a larger sample size which would allow a more detailed statistical analysis and increase validity. Using EMG rather than sEMG would provide more accurate PL activation results. A study targeting a single diagnosis or population may improve the reliability of the results.

Our study found that a HEP targeting PL activation can increase functional performance of the hand. Occupational therapy (OT) practitioners commonly work with patients who have decreased function due to hand pathology, therefore our study may provide OT practitioners with a novel intervention to consider when working with their patients.

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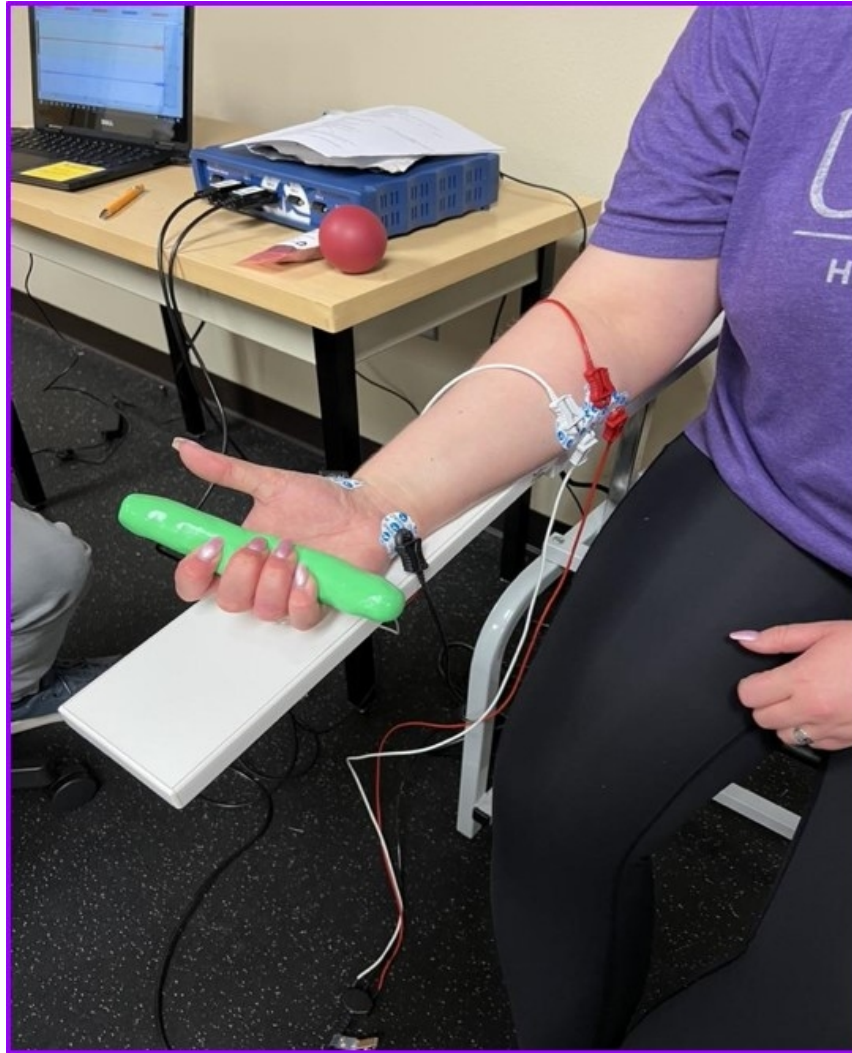
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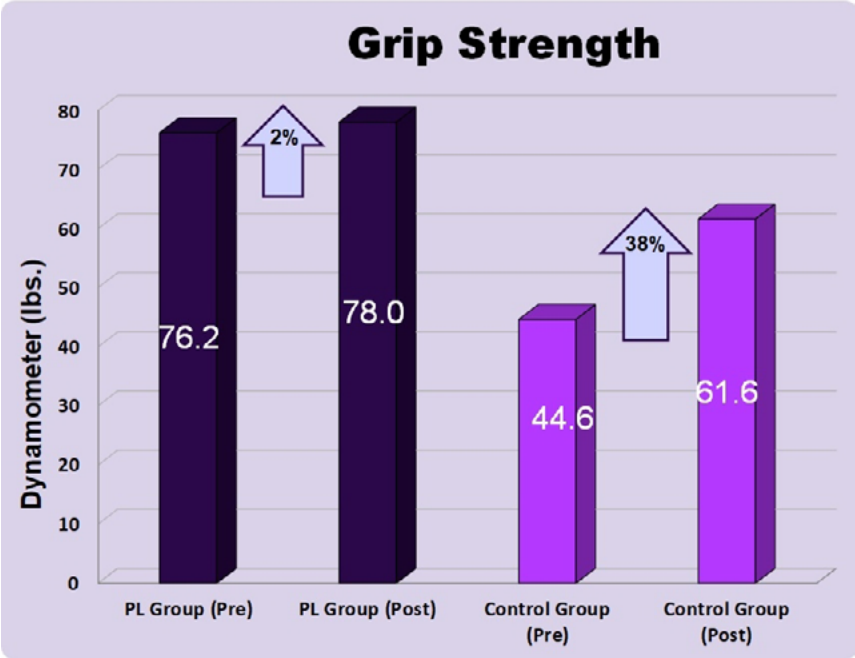
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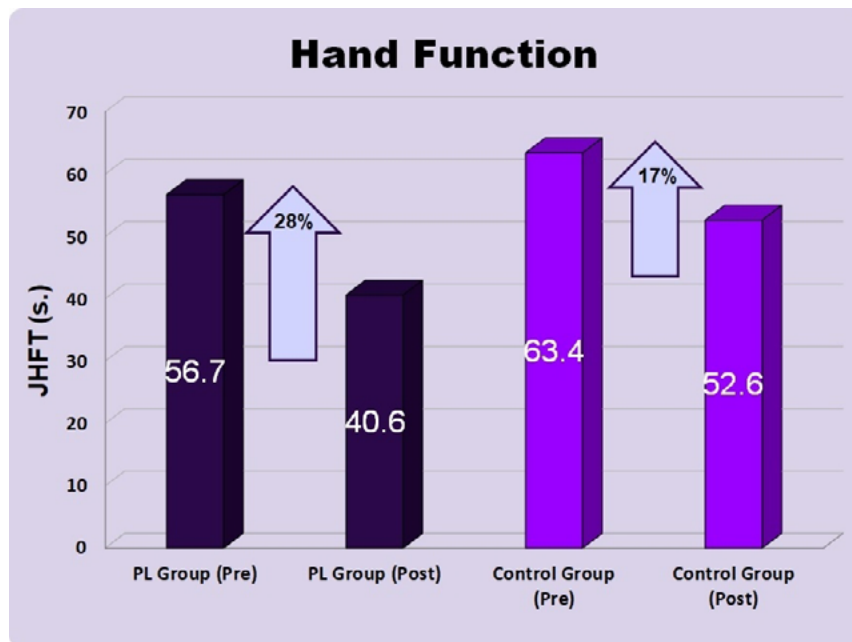
sEMG electrode placement.



sEMG testing for PL activation. Hook grasp.



Grip strength via Dynometry (pre- and post-test).



Hand Function via JHFT (pre- and post-test).



**IMAGE CAPTION:** sEMG electrode placement. sEMG testing for PL activation. Hook grasp. Grip strength via Dynamometry (pre- and post-test). Hand Function via JHFT (pre- and post-test).

**TABLE:**

Note: The PDF table below is only an approximation of the HTML content and may not match formatting exactly.

PL activation (sEMG)	
Grasp Pattern	Average PL Activation (mV)
Flat Fist	0.3605
Palmar Grasp	0.3602
Spherical grasp	0.2980
Tip Pinch	0.2080
Hook Fist	0.1985

Average PL activation during selected grasp patterns. Average of measurements taken from 4 authors. Separate measurement were taken from PL, FDS, FDP to account for contaminants. Data was obtained, analyzed, and cleaned via Biopac MP 36 Four Channel Data Acquisition System.

Results				
Assessment Tool	PL Pre-Test	PL Post-Test	Control Pre-Test	Control Post-Test
Dynamometer (lbs.)	76.2	78	44.6	61.6
JHFT (s.)	56.7	40.6	63.4	52.6
QuickDash (%)	4.5	0	2.3	0

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**TABLE TITLE:** PL activation (sEMG)

Results

**TITLE:** THE EFFECTS OF PALMARIS LONGUS STRENGTHENING

**CONTROL ID:** 3915469

**TITLE:** PERSPECTIVES ON REMOTE LEARNING OF ORTHOTIC FABRICATION BY CERTIFIED HAND THERAPISTS

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** K. Schofield<sup>1</sup>, D. Schwartz<sup>2</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Midwestern University, Glendale, AZ, United States.
2. Occupational Therapy, Yeshiva University, New York, NY, United States.

**ABSTRACT BODY:**

**Purpose:** Background: The recent COVID-19 pandemic caused many professional organizations to adhere to social distancing guidelines, limit mass gatherings, and convert to virtual platforms for meetings and continuing educational programs. In response, continuing educational opportunities for hand therapists were offered via online platforms, including virtual orthotic fabrication courses. It is important to study the effectiveness and benefits of these courses for educating both novice and experienced clinicians to determine if this method of remote learning has continued merit and relevance.

Purpose: To investigate the value and effectiveness of orthotic fabrication courses taught in a virtual format.

**Methods:** Study Design: Cross-sectional, mixed methods survey study

Methods: A 31-item survey consisting of Likert-type, direct response, and open-ended questions about experiences and opinions of virtual orthotics courses was electronically delivered to 4452 Certified Hand Therapists listed on the Hand Therapy Certification Commission (HTCC) website. Data analysis included descriptive and correlational statistics to highlight frequencies, ranges, and relationships between the participant demographics and opinions/experiences. Thematic analysis guided the coding of the qualitative data.

**Results:** Results: A total of 459 responded, with a response rate of 9.7%. Most respondents had not participated in online courses on orthotic fabrication. Those that did reported high satisfaction with online instruction but noted that clinical experience and knowledge from previous courses significantly influenced this experience. Most participants felt that novice clinicians and students would not gain enough skills and confidence from online courses. However, participants with all levels of experience found the courses to be of value.

**Conclusion:** Conclusions: Online orthotic fabrication courses became more readily available since the COVID-19 pandemic halted in person instruction. Results of this survey suggest that while online learning of this skill set is valuable and effective, it is most beneficial for experienced clinicians. Disadvantages included the lack instructor feedback necessary for hands-on skill development and lack of peer interaction. Advantages included convenience of time, cost, accessibility, and ability to revisit the topic as needed. Online learning of orthotic fabrication skills is a sustainable option for practicing hand therapists seeking to advance their skills.

Keywords: Orthotic fabrication, virtual learning, education, hand therapy, survey research

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(No Image Selected)

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**TITLE:** PERSPECTIVES ON REMOTE LEARNING OF ORTHOTIC FABRICATION BY CERTIFIED HAND THERAPISTS

**CONTROL ID:** 3916109

**TITLE:** IMPLEMENTING A NOVEL ORTHOTIC FABRICATION TECHNIQUE USING 3-DIMENSIONAL MODELS FOR PATIENTS WITH SCLERODERMA AND ARTHRITIS

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** G. E. Fichera<sup>1</sup>, C. Mulligan<sup>1</sup>, C. Freeman<sup>2</sup>, D. Graves<sup>1</sup>, D. Collette<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Russell Sage College, Cornwall, NY, United States.
2. Hand Therapy, St. Peters Hand Rehabilitation Center, Albany, NY, United States.

**ABSTRACT BODY:**

**Purpose:** Populations such as Scleroderma, osteoarthritis (OA), and rheumatoid arthritis (RA) may benefit from wearing custom static resting hand orthotics due to joint contractures or limited range of motion and minimize progressing deformity from the chronic disease process. Orthotic fabrication with these populations is often contraindicated due to poor tolerance of direct contact to skin of low-temperature thermoplastic material at the maximum drapability temperature. This pilot study aimed to discover the experience of five female patients with scleroderma, one female patient with a dual diagnosis of scleroderma and osteoarthritis, and one female patient with rheumatoid arthritis wearing a resting hand orthosis during hours of sleep for six consecutive weeks.

**Methods:** Outcome measures included the Disability of the Arm, Shoulder, and Hand, range of motion measurements, a sleep log, pain scores, an interview, photographs to assess skin integrity, and an orthosis wear log. This non-randomized pilot study involved six patients with either scleroderma or arthritis wore a resting hand orthosis made on a 3D model of their hand for six weeks. The analysis involved T-tests, One-way repeated ANOVA, Pearson correlation, and paired sample T-tests.

**Results:** 18 of the 23 range of motion measurements showed improvement or stability. If there were sufficient power in the current analysis, the observed data pattern would indicate that the more hours participants wore their orthosis, the higher their comfort level and hours of sleep.

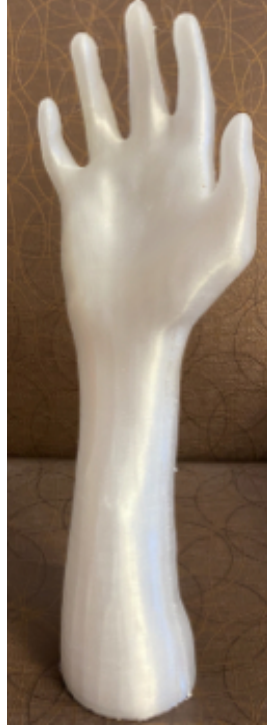
**Conclusion:** Fabricating orthotics on 3D models of patients' hands is a viable form of providing orthotics to patients with sensitive skin to improve their quality of life. This research study demonstrates that the novel orthotic fabrication technique is feasible for patients with hypersensitive skin, as it prevents direct contact with warm thermoplastic material on the patients' skin. This original technique allows clinicians to mold an orthosis more easily by being able to place the whole 3D model and thermoplastic material into the hot water.

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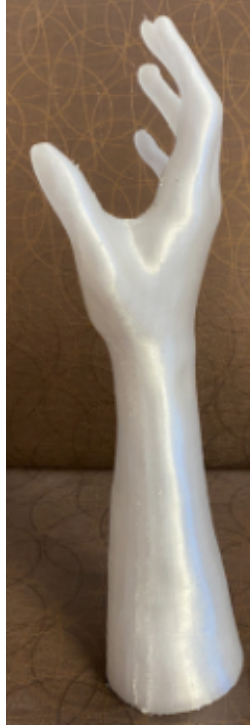
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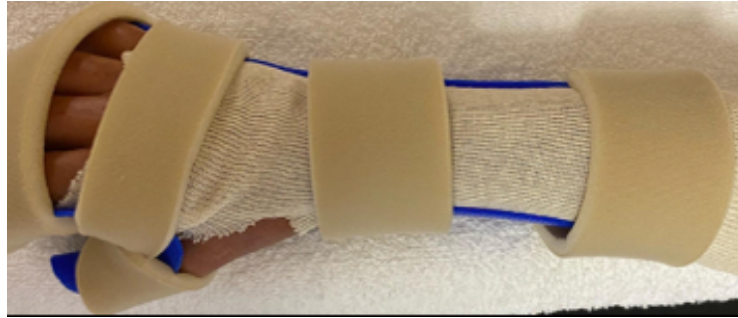
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Anterior view of the 3D model



Side view of the 3D model



Orthosis

# Abstracts

(abstracts are listed in numeric order by control ID number)





**IMAGE CAPTION:** Anterior view of the 3D model Side view of the 3D model Orthosis  
(no table selected)

**TITLE:** IMPLEMENTING A NOVEL ORTHOTIC FABRICATION TECHNIQUE USING 3-DIMENSIONAL MODELS FOR PATIENTS WITH SCLERODERMA AND ARTHRITIS

**CONTROL ID:** 3916636

**TITLE:** CLINICAL DECISION-MAKING USING EVIDENCE BASED PRACTICE TO MAXIMIZE OCCUPATIONAL PERFORMANCE IN A NEW MOTHER WITH A MONTEGGIA ELBOW FRACTURE-DISLOCATION AND LIMITED THERAPY ACCESS: A CASE STUDY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** R. B. Larson<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Hand Therapy Department, Rothman Orthopaedic Institute, Spring City, PA, United States.

**ABSTRACT BODY:**

**Purpose:** Rising healthcare costs and constraints on therapy benefits, such as visit limits and high cost-sharing, continue to challenge clinicians to utilize evidence-based practice to improve outcomes and minimize healthcare burden. Evidence-based practice (EBP) is an ongoing evaluative process that integrates appraised scientific research, experience from clinical practice and expert opinion, and individual patient values to direct care and measure the impact of intervention. This case report describes the application of EBP to maximize outcomes in a patient with a complex elbow injury, therapy constraints, and unique occupational demands as a mother of a newborn.

**Methods:** The patient was a 39-year-old right hand dominant female who sustained a left Monteggia fracture-dislocation at 39 weeks of pregnancy. Injuries included a midshaft ulna fracture, posterior dislocation, coronoid fracture, and displaced comminuted radial head fracture. Following C-section delivery of her baby, she underwent open reduction internal fixation (ORIF), radial head replacement and lateral collateral ligament repair. Time, financial, and childcare constraints as the mother of a newborn limited therapy attendance to once weekly. Evaluation found limited range of motion in the left elbow and forearm limiting her ability to care for her baby. Functional outcomes were QuickDASH (44.3%) and PSFS (domains related to infant care rated 0-3/10). Intervention was provided in the outpatient hand therapy clinic of an orthopedic practice by a licensed occupational therapist. The patient attended roughly one hour of therapy weekly for 16 weeks. Clinical decision-making to optimize therapy time was informed by evidence synthesized through literature review, critical appraisal, expert advice from experienced mentors, and the patient's priorities, using childcare occupations to progress rehabilitation.

**Results:** A scoping literature review was undertaken to answer the clinical question, "What are typical outcomes for adult patients with complex elbow fracture-dislocations," revealing that outcomes are generally good following early detection and ORIF. However, complications including contracture and heterotopic ossification (HO) are common, especially after radial head replacement.

The treating therapist presented the case to a cohort of peer colleagues and experienced mentors as part of an upper extremity fellowship program. Insights included strategies to address the entire kinetic chain to reduce sequelae of limited forearm supination. This was a timely and important component of the plan of care. Mentorship informed the selection of therapeutic exercises throughout the course of care.

Imaging at 8 weeks post op revealed interval healing of fracture and mild development of HO surrounding the radial head implant. Strengthening and passive motion were cleared with no restrictions. A second literature review was prompted by the clinical question, "What is the role of passive range of motion in elbow contractures when HO is present?" Based on evidence suggesting that controlled PROM does not cause or worsen HO in elbows, stretching using contract-relax-antagonist-contract techniques was initiated to improve extension and supination. Pre-post ROM measurements were taken each session to monitor intervention effects. The literature also suggested that available AROM should immediately follow PROM for neuromuscular re-education. This influenced the order of intervention in clinic and HEP to maximize impact on tissues.

Collaboration on the home exercise program was essential: with two children and a newborn, the patient had limited time for exercises. Activity analysis was used to identify childcare tasks that could safely be performed according to the stage of tissue healing. For example, the patient could safely engage in a low-load prolonged supination stretch with the elbow supported while rocking her child to sleep. When cleared for triceps strengthening, she engaged in play with her son by lifting him overhead to strengthen terminal elbow extension. She reported increased satisfaction and role performance using occupations to address biomechanical impairments, which was reflected in improved QuickDASH (2.27%) and PSFS (10/10) scores, as well as achievement of functional elbow and forearm ROM with excellent strength.

**Conclusion:** This patient achieved good clinical and functional outcomes after a complex elbow injury attending therapy once per week. Clinical decision-making was informed by the integration of available evidence, mentorship,

and patient priorities, whereby occupations of childcare effectively addressed biomechanical impairments at the elbow. Constraints on therapy are common, whether patient financial restrictions, occupational demands, or insurance limits. Clinical decision-making guided by EBP can maximize outcomes while minimizing healthcare burden in an environment shifting towards value-based care.

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(No Image Selected)

**TABLE:**

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Results: Biomechanical outcome measures			
	2 weeks post op (eval)	6 weeks post op	16 weeks post op (d/c)
AROM elbow ext-flex (deg)	60-115	35-130	20-135
PROM elbow ext-flex (deg)	nt	36-134	20-139
AROM forearm sup-pron (deg)	28-0-48	45-0-58	47-0-66
PROM forearm sup-pron (deg)	nt	50-0-60	75-0-68
Girth difference at elbow crease (cm)	>5	>2	1
Grip strength ratio (%)	nt	>60%	>90%

Key: AROM = active range of motion; PROM = passive range of motion; ext = extension; flex = flexion; sup = supination; pron = pronation; deg = degrees; cm = centimeters; grip strength ratio = injured side (L) / dominant side (R), expressed as a percentage; eval = therapy evaluation; d/c = therapy discharge; nt = not tested.

Results: Patient-reported functional outcome measures			
	2 weeks post op (eval)	6 weeks post op	16 weeks post op (d/c)
QuickDASH	44.3%	15.9%	2.27%
NPRS	4-5/10	0/10	0/10
PSFS domains	0-3/10	8-10/10	10/10

Key: NRPS = numeric pain rating scale; PSFS = patient specific functional scale; eval = therapy evaluation; d/c = therapy discharge.

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**TABLE TITLE:** Results: Biomechanical outcome measures

Results: Patient-reported functional outcome measures

**TITLE:** CLINICAL DECISION-MAKING USING EVIDENCE BASED PRACTICE TO MAXIMIZE OCCUPATIONAL PERFORMANCE IN A NEW MOTHER WITH A MONTEGGIA ELBOW FRACTURE-DISLOCATION AND LIMITED THERAPY ACCESS: A CASE STUDY

**CONTROL ID:** 3923831

**TITLE:** CRITICALLY APPRAISED TOPIC: OCCUPATIONAL THERAPY STUDENT OUTCOMES AND PEDAGOGICAL METHODS OF A HAND THERAPY COURSE

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** K. Abella<sup>1, 2</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, University of Florida, Ocala, FL, United States.
2. UF Orthopaedics and Sports Medicine Institute, UF Health Rehab Center - Hand and Upper Extremity Clinic, Gainesville, FL, United States.

**ABSTRACT BODY:**

**Purpose:** a. Background: Experiential learning is increasingly being used in various healthcare profession educational programs and has resulted in great beneficial effects for knowledge, skills, and behavior outcomes. However, there is limited research regarding the use of these methods in occupational therapy (OT) curricula, especially in the educational content area of hand therapy and orthotics. Understanding the best teaching approaches for OT programs and educators to use, along with using measurement tools to assess students' skills, are essential in improving student outcomes.

b. CAT question: What pedagogical methods are most effective to implement and evaluate OT student learning outcomes?

**Methods:** c. Search strategy and inclusion criteria: The databases PubMed and CINAHL were used. The following search terms were used based on four concepts: (program OR "program development" OR "case-based learning" OR "case stud\*" OR "experiential learning") AND ("outcome measures" OR outcome\* OR "learning outcomes") AND (student\* OR "occupational therapy student" OR "OT student") AND ("occupational therap\*" OR "hand therapy"). Inclusion criteria involved a focus on experiential, case-based, or simulation-based learning for OT program curriculum, measures that evaluate student learning outcomes, and all study design types.

d. Data extraction: This search resulted in the inclusion of eight articles for review. Mixed methods research designs, cross-sectional surveys, descriptive surveys, and exploratory studies are included regarding pedagogical methods and evaluating OT student learning outcomes.

**Results:** e. Main findings: Murphy and Radloff (2019) discovered how case-based learning positively influenced OT students' clinical reasoning skills, as it increased their knowledge and ability to assess their skills as evidenced by the reliable, valid measure of the Self-Assessment of Clinical Reflection and Reasoning (SACRR). Giles et al. (2014) assessed students' perspectives of a comprehensive exam involving simulation, where some themes identified were fieldwork readiness, confidence, and clinical reasoning. Mehrpour et al. (2013) explain the use of a supplemental educational video regarding splinting and its ability to provide sustained improvement in students' technical skills compared to traditional teaching methods. Stefanovich et al. (2012) show supporting evidence for a global rating scale (GRS) and a checklist as objective, reliable, and valid measurement tools that help address the need for evaluating students' performance and skill level. Mehrpour et al. (2013) examined the Objective Structured Clinical Examination (OSCE) tool's reliability and used it to assess the competence, knowledge, and skills of the students in their study after performing skills in splinting an injured limb, and Giles et al. (2014) used this tool to assess student competency at the end of the didactic curriculum. Schofield and Schwartz (2018) identified student assessment measures to evaluate student competencies in orthotic design and fabrication among OT programs including orthotic checklists and case studies.

f. Critical appraisal: These studies examined the effectiveness of pedagogical methods used in OT programs and the outcome measures and tools used to evaluate the skills and learning outcomes of OT students. Four main themes emerged from these studies, which include the use of experiential learning, preparation for Level II fieldwork or clinical practice, orthotics teaching methods, and student assessment and outcome measures. Many of the themes identified from the literature are interrelated, as the educational and teaching approach used impacts students' outcomes and readiness for fieldwork or clinical practice.

**Conclusion:** g. Limitations: The articles were critiqued by one student rather than multiple reviewers. The search terms may not have been specific enough to yield the most applicable articles to review.

h. Conclusion: The implementation of experiential learning has shown to be the most effective method for enhancing OT students' clinical reasoning skills and professional competencies. Students' perceptions of course effectiveness and learning objectives can be evaluated via survey questions and outcome measures, including the GRS and

checklists, to assess students' performance skills and assess orthotic fabrication abilities.

i. Clinical implications: These studies support that experiential learning experiences enhance student engagement and contribute to the development of problem-solving and clinical reasoning competencies required for clinical practice.

The significance of hands-on experiences and practice with fabricating orthotics provide students with preparation for fieldwork and clinical settings, as well as confidence in their ability to apply their knowledge to real scenarios. This information may help guide OT programs and educators in future curricular development to enhance methods and improve student learning outcomes.

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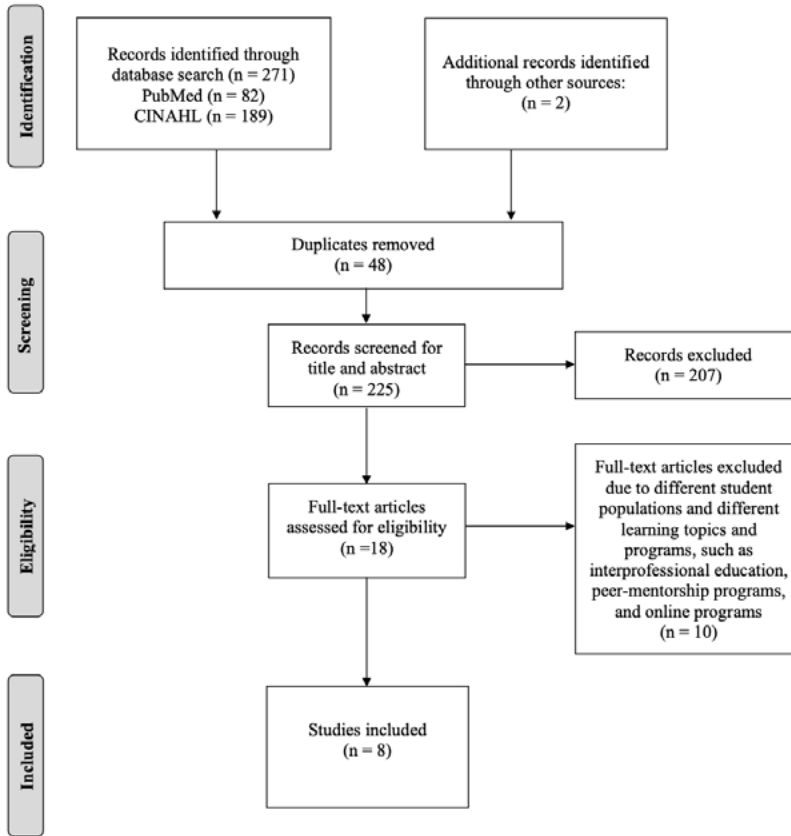
(abstracts are listed in numeric order by control ID number)

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**Figure 1**

*PRISMA Flowchart of Studies Reviewed for Inclusion*



# Abstracts

(abstracts are listed in numeric order by control ID number)

**IMAGE CAPTION:**

(no table selected)

**TITLE:** CRITICALLY APPRAISED TOPIC: OCCUPATIONAL THERAPY STUDENT OUTCOMES AND PEDAGOGICAL METHODS OF A HAND THERAPY COURSE

**CONTROL ID:** 3929523

**TITLE:** THE EFFECTIVENESS OF OCCUPATIONAL THERAPY FOR BREAST CANCER SURVIVORS EXPERIENCING AROMATASE INHIBITOR INDUCED ARTHRALGIA IN THE HANDS AND WRISTS

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** W. L. Weimer<sup>1</sup>, M. Steven<sup>2</sup>

**INSTITUTIONS (ALL):**

1. Rehabilitation, Torrance Memorial Medical Center, Torrance, CA, United States.
2. Torrance Memorial Medical Center, Torrance, CA, United States.

**ABSTRACT BODY:**

**Purpose:** The primary purpose of this research study is to determine the effectiveness of occupational therapy on reducing hand and wrist pain, improving grip strength, improving upper extremity functional status, and reducing negative breast cancer related symptoms in women diagnosed with Aromatase-Inhibitor Induced Arthralgia (AIA) in the hands and wrists.

Aromatase inhibitors (AIs) are prescribed as adjuvant treatment for post-menopausal female breast cancer survivors with estrogen positive cancer following the completion of primary therapy. AIs are commonly prescribed for a period of 5-10 years. Musculoskeletal pain, or AIA, in the hands and wrists is a known side effect of aromatase inhibitors (AIs). Decreased adherence to these life-saving medications due to AIA is well documented. No studies have been found on the effectiveness of occupational therapy to decrease the negative effects of AIA in the hands and wrists for women on AI medications.

**Methods:** A pre-post design was used to compare the results of standardized testing from initial evaluation to discharge. Participants were evaluated using standard occupational therapy methods and included lowest (best) and highest (worst) pain using the VAS (Visual Analog Scale 0-10), grip strength using Jamar dynamometry, a validated self-report questionnaire on upper extremity function, the Quick DASH-11, and the NCCN-FBSI-16, a validated self-report questionnaire on negative breast cancer related symptoms.

Potential participants were referred to occupational therapy by a physician or nurse practitioner who diagnosed AIA in the hands and wrists. A multimodal, client centered treatment plan was established and implemented for participants who met inclusion criteria, based on the results of the initial evaluation and the participant's goals. Treatment sessions included interventions as needed in the categories of physical agent modalities, custom and/or prefabricated orthotics, therapeutic exercises, manual therapy, edema control measures, joint and tendon protection strategies with ADLs and IADLs, adaptive equipment recommendations, ergonomics, patient education, home program, and therapeutic use of self. When the participant's goals were met or progress had plateaued, determined through reassessment by the principal investigator and discussion with the participant, participants who completed at least 3 visits of occupational therapy completed post testing on the day of discharge. Discharge testing included the same assessments as the initial evaluation.

**Results:** A total of thirty-eight potential participants were screened for the study, thirty-two (84.29%) participants were enrolled. Twenty-nine participants (90.6%) completed the study. The majority (80.6%) required nine or fewer visits to complete the intervention, and no participant exceeded twelve visits. All outcome measures demonstrated statistically significant improvements from evaluation to discharge ( $p=.05$ ). Right hand worst pain and left hand worst pain mean improvement from evaluation to discharge exceeded published MCID levels. Improvement in Quick DASH-11 mean scores were near published MCID levels for other upper extremity populations. Effect size was also calculated to determine the magnitude of the statistical differences in the outcomes using Cohen's  $d$ . Effect size was large for worst pain scores, moderate for Quick DASH-11, moderate for the NCCN-FBSI-16, and small for grip strength. Although improvements in grip strength were below MCID and had small effect size, when analyzing the mean values of post intervention grip strength for right and left hands, the values were within published normal means for the 70-79 age group, and in the low normal range for the participants in the 40-69 age range.

**Conclusion:** The results of this study demonstrate that participation in client centered, multimodal occupational therapy resulted in statistically significant and clinically important improvement in pain, grip strength, and upper extremity function, and reduced negative breast cancer related symptoms. The results support the effectiveness of occupational therapy for this population. Future research using a larger sample size and a study design producing a higher level of evidence would further understanding of the potential clinically meaningful impact of occupational therapy on improving pain, strength, upper extremity function and reducing negative breast cancer related symptoms for post-menopausal breast cancer patients experiencing AIA. Additionally, investigation on the impact of occupational

therapy on adherence to the prescribed AI treatment regimen can also be studied.

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**CONTROL ID:** 3929634

**TITLE:** TECHNOLOGY IN THE OCCUPATIONAL THERAPY CLASSROOM: MOBILE APP USE FOR HAND AND UPPER EXTREMITY REHABILITATION TOPICS

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** D. Plutschack<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Des Moines University, Des Moines, IA, United States.

**ABSTRACT BODY:**

**Purpose:** The purpose of this study was to examine the use of a mobile application compared to traditional textbooks for hand and upper extremity rehabilitation topics including orthotic fabrication in a Doctor of Occupational Therapy classroom.

**Methods:** A teaching evaluation survey was developed and conducted with three cohorts of Doctor of Occupational Therapy students during the final week of hand and upper extremity coursework. The survey consisted of Likert-style questions related to perception of a mobile application being used in the classroom. Students utilized a mobile application with video and text content for hand and upper extremity rehabilitation coursework including orthotic fabrication and treatment techniques. Students also utilized a textbook for coursework. Program evaluation data was collected in Spring 2019, Spring 20220, and Summer 2021 semesters. A retrospective review of the data was completed.

**Results:** A total of 128 student responses were reviewed and included in the final data analysis. All responses in this retrospective study were from Doctor of Occupational Therapy (OTD) students.

Examining development of hands-on orthotic fabrication skills, students responded favorably to the mobile application. 63.28% of respondents reported “extremely effective” and 32% reported “very effective” for the mobile application’s effectiveness in developing hands-on splinting skills (n=128). 4.69% of respondents reported “moderately effective” and 0% reported “slightly effective” or “not effective”. Similar results were found when asked if the mobile application was beneficial to develop hands-on orthotic fabrication skills with results of 72.66% “strongly agree”, 24.22% “agree”, 3.13% “somewhat agree”, and 0% reporting “somewhat disagree”, “disagree”, or “strongly disagree”.

When asked the effectiveness of textbooks to develop hands-on orthotic fabrication skills, a majority of respondents reported textbooks to be ineffective with results of 7.03% “extremely effective”, 9.38% “very effective”, 25.78% “moderately effective”, 21.09% “slightly effective”, and 36.72% “not effective” (n=128). Similar results were found when asked if textbooks were beneficial to develop hands-on orthotic fabrication skills with results of 3.91% “strongly agree”, 9.38% “agree”, 26.56% “somewhat agree”, 17.97% “somewhat disagree”, 21.09% “disagree”, and 21.09% “strongly disagree” (n=128).

Furthermore, students report favoring the mobile application for both orthotic fabrication instruction and occupational therapy clinical skills. 89.84% (n=128) of respondents answered “strongly agree” or “agree” for preferring the mobile application for orthotic fabrication instruction compared to 3.13% (n=128) answering “strongly agree” or “agree” to preferring textbooks. 70.31% (n=128) of respondents reported “strongly agree” or “agree” for preferring the mobile application for occupational therapy clinical skills compared to 8.59% (n=128) reported “strongly agree” or “agree” to preferring textbooks.

**Conclusion:** Results of this study demonstrate a demand for technology within the occupational therapy classroom to develop hands-on clinical skills needed for future practice. This study analyzed students’ perceptions of using a mobile application compared to traditional textbooks in the occupational therapy classroom for hand and upper extremity rehabilitation topics and found a high percentage of students favored the mobile application for developing orthotic fabrication and hands-on occupational therapy clinical skills. A high percentage of students reported the mobile application as being effective for orthotic fabrication skills and hands-on clinical skills compared to traditional textbooks. The mobile application included video content for various evaluation and intervention techniques including orthotic fabrication, manual therapy, and assessment completion that students may have found more beneficial for psychomotor learning. As the landscape of occupational therapy education continues to progress in a digital world, incorporating new technologies such as mobile applications to enhance learning outcomes should be considered for instruction of hand and upper extremity topics.

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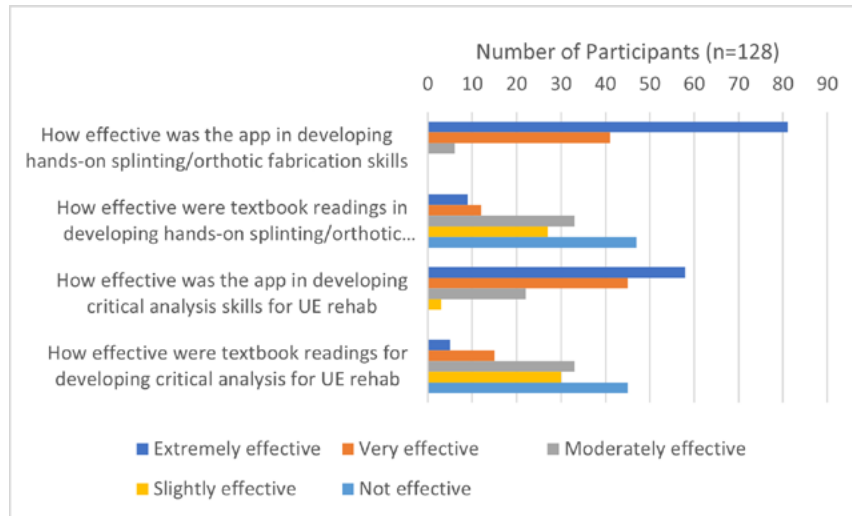
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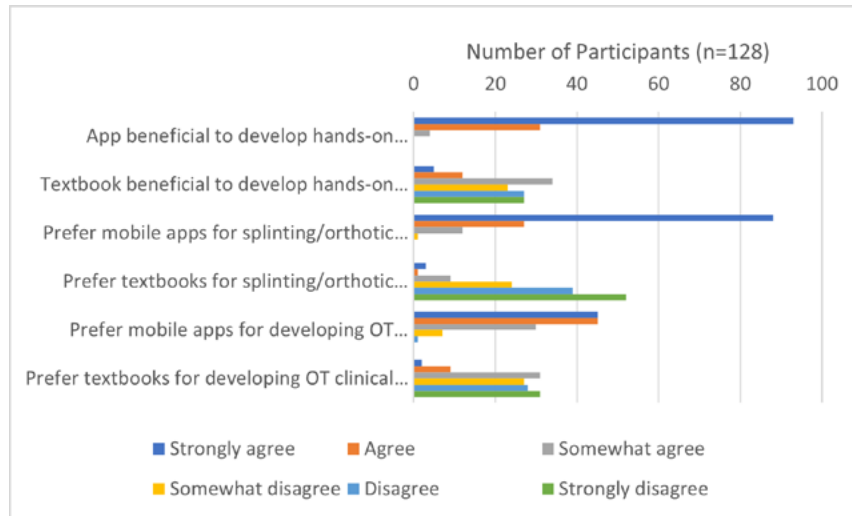
# Abstracts

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**IMAGE CAPTION:**

(no table selected)

**TITLE:** TECHNOLOGY IN THE OCCUPATIONAL THERAPY CLASSROOM: MOBILE APP USE FOR HAND AND UPPER EXTREMITY REHABILITATION TOPICS

**CONTROL ID:** 3929658

**TITLE:** DESIGNING AN EXPERIENTIAL LEARNING-BASED HAND AND UPPER EXTREMITY REHABILITATION ELECTIVE COURSE FOR OCCUPATIONAL THERAPY STUDENTS

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** G. Crosswell<sup>1</sup>, M. Cricchio<sup>1</sup>, S. Gorman<sup>1</sup>, L. Struckmeyer<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, University of Florida, Melbourne, FL, United States.

**ABSTRACT BODY:**

**Purpose:** Although Occupational Therapy (OT) graduate programs provide the didactic training to meet entry-level requirements, not all programs offer exploratory coursework for students interested in specialty areas, like hand and upper extremity (HUE) rehabilitation. The purpose of this study was to therefore design and market a HUE rehabilitation elective course using an experiential learning approach for OT Doctorate (OTD) students.

**Methods:** The first outcome measure was to develop the course syllabus and content to send to an offsite Certified Hand Therapist (CHT) reviewer for feedback. The course development involved structuring course topics, establishing learning objectives, selecting readings and case studies, drafting preparatory quizzes, and creating instructional orthotic fabrication videos. The second outcome measure involved surveying 112 second and third year OTD students at the University of Florida (UF) to gauge their interest in enrolling in the course. The course was promoted using flyers and during an orthotics lab for 58 third year OTD students. The survey was distributed amongst students via their university email. To complete the survey, students selected one of five possible responses ranging from 'I definitely plan to enroll' to 'I definitely plan not to enroll' in reply to the prompt 'I plan to enroll in the new two-credit elective course, Hand and Upper Extremity Rehabilitation, in Spring 2023.'

**Results:** Findings from the first outcome measure show that the offsite CHT reviewer regarded the overall course as "very much needed to better prepare students for fieldwork in [the HUE rehabilitation setting]" (V. Trueba, personal communication, November 8, 2022). Additionally, the reviewer commented that the list of orthoses to fabricate in the course is "well planned out, covering most of the orthoses [they] see regularly" (V. Trueba, personal communication, November 8, 2022). In measuring the second outcome, 25 second and third year OTD students participated in the survey. Following initial administration, 13 students responded they would 'definitely' or 'most likely enroll.' The course gained more interest after the third year OTD students participated in an orthotic fabrication lab, resulting in 19 students responding they would 'definitely' or 'most likely enroll' (see Figure 1). The course was then approved to be offered at the university as a pass/fail two-credit elective course for the Spring 2023 semester with a final total of 25 students officially enrolled in the course.

**Conclusion:** Findings from both outcome measures indicate that clinicians and students alike consider this elective course to be valuable. From the perspective of an experienced CHT, this course is expected to benefit OTD students' learning and successful practice in the HUE rehabilitation setting. In addition, results show that OTD students are interested in learning more about the specialty of HUE rehabilitation and have a desire to maximize their didactic training by enrolling in an elective course.

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in undergraduate curricular design.

(Hung, Ho, & Lin, 2021)

This study showed a correlation between clinical competency and actual practice of observation and communication.

(O'Dunn-Orto, Hartling, Campbell, & Oswald, 2012)

Interactive small group teaching and patients as educators were found to engage learners and provide learning contexts that were meaningful.

Critical appraisal of the included studies

(Beveridge & Pentland, 2020)

Heterogeneity of outcomes; lack of validated measures; limited selection of assessment points

(Bleakley & Brennan, 2011)

Measures of perception rather than performance; use of unreliable self-reports

(Hung, Ho, & Lin, 2021)

Quasiexperimental design; growth as a confounding variable; lack of generalizability due to program curriculum

(O'Dunn-Orto, Hartling, Campbell, & Oswald, 2012)

Increased risk of bias from participants; incomplete outcome data from included trials

**Conclusion:** Limitations

Utilization of only two databases for article collection and conducting a modified rapid review limit generalizability of results.

Conclusion

Verbal instruction, video content, and a simulation-based module should be utilized to teach soft tissue content based upon research stating a variety of teaching methods is most effective for meaningful learning

Clinical implications and recommendations

A soft tissue mobilization module is needed in the UF OTD program in preparation for the National Board for Certification in Occupational Therapy (NBCOT) exam utilizing a multi-method teaching approach

**Purpose:** Background/clinical scenario

Occupational therapy students at the University of Florida (UF) are required to take two classes related to hands on clinical skills. In these classes, there have been many methods of teaching which have included, but are not limited to video lectures, case-based scenarios, simulation learning, student teaching, and one on one learning. Each method has been an established part of the curriculum at the University of Florida.

In general, curriculum design is an important part of any graduate level course and has been proven to affect student readiness for clinical practice (Bleakley, and Brennan, 2011). This capstone project's aim is to provide hands on and simulation-based learning for occupational therapy doctorate (OTD) students on soft tissue mobilization and to examine which method of teaching is most effective. Beveridge and Pentland (2020) have concluded that utilizing more than one method for student learning can reap benefits.

Evidence based question or CAT question

What are the best practices for curricular design and teach of a soft tissue mobilization module in an occupational therapy doctorate program?

**Methods:** Search strategy and study selection including inclusion criteria

Web of Science and PubMed were searched for related articles for content creation in UF's OTD program

Search terms included:

Curricular design, content creation, modules

Graduate, undergraduate, college, professional student

Clinical skills teaching, student teaching

Occupational therapy

Soft tissue mobilization

Inclusion criteria: student participation and/or learning in health professions.

Data extraction or pertinent information on each included study

(Beveridge & Pentland, 2020)

This review focuses on practice education models, organizes data, and provides current evidence used in multiple disciplines.

(Bleakley & Brennan, 2011)

The purpose of this study was to compare medical school cohorts from different universities observing perceptions of readiness for practice.

(Hung, Ho, & Lin, 2021)

This study aimed to observe the relationship between situated simulation based (SSB) pediatric patients and occupational therapy student's knowledge and clinical skills.

(O'Dunn-Orto, Hartling, Campbell, & Oswald, 2012)

This study aimed to identify effective interventions that transfer learned musculoskeletal skills from the classroom into clinical skills.

**Results:** Main findings of each study

(Beveridge & Pentland, 2020)

The one-on-one model of teaching correlates with higher levels of student satisfaction

(Bleakley & Brennan, 2011)

Readiness for practice at a significantly higher rate between cohorts was found and could be attributed to differences in undergraduate curricular design.

(Hung, Ho, & Lin, 2021)

This study showed a correlation between clinical competency and actual practice of observation and communication.

(O'Dunn-Orto, Hartling, Campbell, & Oswald, 2012)

Interactive small group teaching and patients as educators were found to engage learners and provide learning contexts that were meaningful.

Critical appraisal of the included studies

(Beveridge & Pentland, 2020)

Heterogeneity of outcomes; lack of validated measures; limited selection of assessment points

(Bleakley & Brennan, 2011)

Measures of perception rather than performance; use of unreliable self-reports

(Hung, Ho, & Lin, 2021)

Quasiexperimental design; growth as a confounding variable; lack of generalizability due to program curriculum

(O'Dunn-Orto, Hartling, Campbell, & Oswald, 2012)

Increased risk of bias from participants; incomplete outcome data from included trials

**Conclusion:** Limitations

Utilization of only two databases for article collection and conducting a modified rapid review limit generalizability of results.

Conclusion

Verbal instruction, video content, and a simulation-based module should be utilized to teach soft tissue content based upon research stating a variety of teaching methods is most effective for meaningful learning

Clinical implications and recommendations

A soft tissue mobilization module is needed in the UF OTD program in preparation for the National Board for Certification in Occupational Therapy (NBCOT) exam utilizing a multi-method teaching approach

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**TITLE:** CRITICALLY APPRAISED TOPIC: DEVELOPMENT AND IMPLEMENTATION OF A SOFT TISSUE MOBILIZATION MODULE IN THE UNIVERSITY OF FLORIDA'S OCCUPATIONAL THERAPY DOCTORATE PROGRAM

**CONTROL ID:** 3930289

**TITLE:** BRACING VS. SURGICAL INTERVENTION OF PROXIMAL HUMERAL FRACTURES: NAVIGATING THE TREATMENT PARADIGM

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** C. Taylor<sup>1</sup>, A. Methipara<sup>1</sup>, L. Beckman<sup>1</sup>, B. Laney<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Physical Medicine & Rehabilitation, Mayo Clinic, Phoenix, AZ, United States.

**ABSTRACT BODY:**

**Purpose:** A well-established question in regard to proximal humeral fractures (PHF) is whether bracing or surgical intervention is best. This Critically Appraised Topic (CAT) hopes to answer our clinical question by examining current best literature and to assist certified hand therapists and other clinicians by guiding therapeutic decision-making and applying it in practice. This underscores the ASHT 2023 theme of the hand therapy community coming together to combat challenges and strengthen our practice by remaining up to date regarding current thought and strategies for the treatment of PHFs.

**Methods:** Through the search and examination of evidence-based literature utilizing PubMed journal citations, this CAT will compare proximal humeral fracture bracing techniques and outcomes with that of surgical intervention and outcomes. Our search included the following terminology: shoulder fracture, proximal humeral fracture, rehabilitation, physical therapy, and occupational therapy; with a filtering of English articles within the last 5 years. A total of 6 articles were used; we excluded articles that did not directly address the topic of bracing versus surgical intervention of proximal humeral fractures.

**Results:** #1 "Humeral Shaft Fractures: A Literature Review on Current Treatment Methods"

Bracing remains the gold standard for proximal humeral fractures. In certain circumstances, such as when polytrauma, delayed non-union, or non-compliance is involved, proximal humeral fracture ORIF is indicated.

#2: "Interventions for Treating Proximal Humeral Fractures in Adults."

Surgical intervention for proximal humeral fractures does not result in better outcomes vs. conservative treatment.

#3: "Humeral Shaft Fractures: How Effective Really is Functional Bracing?"

Bracing is typically indicated when the angle or distance of displacement is less than 3 mm or 30° respectively. Another consideration is anatomical location of fracture: midshaft proximal versus surgical neck versus distal humerus. Complications of bracing include radial nerve injury, pain, increased length of functional impairment due to bracing protocol, and nonunion. Surgery is typically indicated when A) the angle or distance of displacement is greater than 3 mm or 30° respectively, B) decreased ability for patients to comply with bracing protocol due to cognitive or psychosocial impairment, and/or C) open fractures, high-energy comminuted / segmental fractures, ipsilateral forearm shaft fractures, or associated brachial plexus injury. Complications of surgery include radial nerve injury, infection, and non-union.

#4: "Understanding Postoperative Rehabilitation Preferences in Operatively Managed Proximal Humerus Fractures: Do Trauma and Shoulder Surgeons Differ?"

Most PHFs can be treated non operatively, but with significant displacement, surgical intervention is necessary. Post-operative rehabilitation is imperative for patient quality of life.

#5: "Cost-Minimization Analysis and Treatment Trends of Surgical and Nonsurgical Treatment of Proximal Humerus Fractures"

It is estimated that 50-80% of PHF are minimally or nondisplaced and therefore amenable to nonsurgical treatment. Nonsurgical treatment was associated with lower average costs compared to surgical intervention. Therapy costs and number of therapy visits were higher in each surgical group compared with nonsurgical treatment. Surgical treatment was associated with higher complications, revision rates, and length of stay.

#6: "Humeral Head Replacement in the Treatment of Comminuted Proximal Humeral Fracture"

For the treatment of Neer three or four parts proximal humeral fracture, only conservative treatment methods are used in older patients who cannot bear the surgical procedures due to serious medical complications and chronic diseases.

**Conclusion:** Surgical intervention for proximal humeral fractures does not result in better outcomes vs. conservative treatment. Proximal humeral fracture bracing remains the standard treatment intervention, where the majority of fractures can be treated nonoperatively. Surgical intervention for proximal humeral fractures can be appropriate in rare clinical scenarios.

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**TITLE:** BRACING VS. SURGICAL INTERVENTION OF PROXIMAL HUMERAL FRACTURES: NAVIGATING THE TREATMENT PARADIGM

**CONTROL ID:** 3930388

**TITLE:** CONCURRENT VALIDITY AND TEST-RETEST RELIABILITY OF SQUEGG: THE SMART GRIP TRAINER

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** Z. Amin<sup>1</sup>, G. S. Gutierrez<sup>1</sup>, L. True<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Kinesiology, New Mexico State University, Las Cruces, NM, United States.

**ABSTRACT BODY:**

**Purpose:** The purpose of the study was to compare the Jamar hydraulic hand dynamometer (JHHD) and SQUEGG: The Smart Grip Trainer to determine concurrent validity between the two devices. A secondary purpose was to determine test-retest reliability for the SQUEGG.

**Methods:** The study consisted of two data collection sessions held one week apart. During the first session, bimanual hand grip strength (HGS) was measured using both the JHHD and SQUEGG. During the second session, bimanual HGS was measured using only the SQUEGG. All HGS measurements followed the standard protocol set by the American Society of Hand Therapists. For each hand, three consecutive maximum effort trials were completed, and the three values were averaged and retained separately for the final score. All participants were 18 years or older and free of hand disease and neuromuscular or orthopedic dysfunction that affected HGS. The study was approved by the University's Institutional Review Board, and participants provided informed consent before participating.

**Results:** A total of 595 participants completed the study. To determine concurrent validity, Spearman's rank correlation was conducted between JHHD right hand and SQUEGG right-hand Trial 1, and JHHD left hand and SQUEGG left-hand Trial 1, based on the violation of the Kolmogorov-Smirnov test of normality. Results indicated a significant correlation between JHHD's right hand and SQUEGG's right hand ( $\rho = .670$ ;  $p = .001$ ) and JHHD left hand and SQUEGG left hand ( $\rho = .730$ ;  $p = .001$ ). The concurrent validity between the JHHD and SQUEGG for both right and left hands was classified as 'good'. To determine test-retest reliability, ICC estimates and 95% confidence intervals were calculated using a mean-rating ( $k = 2$ ) absolute agreement, 2-way mixed effects model. For SQUEGG right-hand Trials 1 and 2, the ICC = .911 ( $p = .001$ ) with the 95% CIs of the ICC estimate = [.895, .924], indicating good-to-excellent test-retest reliability for the right hand. Likewise, for SQUEGG left-hand Trials 1 and 2, the ICC = .928 ( $p = .001$ ) with the 95% CIs of the ICC estimate = [.915, .939], indicating excellent test-retest reliability for the left hand.

**Conclusion:** The SQUEGG is a reasonably valid tool for measuring HGS when compared to the JHHD (gold standard); however, it is not as accurate as the JHHD. Several factors, such as the size, shape, and placement in the hand of the dynamometer, may have influenced the concurrent validity between the JHHD and SQUEGG. The test-retest reliability analyses of SQUEGG confirmed that it is a repeatable and consistent measure of HGS. However, participants may have become more familiar with the device during the second session, and there was a lack of standardization in grip position and pressure, which may have contributed to the reliability results. Overall, the SQUEGG is a valid, reliable, and low-cost option with Bluetooth technology for testing HGS, and it can be used by people of all ages. Clinical settings, such as hospitals, physical therapy clinics, and rehabilitation centers, can provide the SQUEGG to patients to not only train HGS but also track their progression in strength and share their results with clinicians.

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**TITLE:** CONCURRENT VALIDITY AND TEST-RETEST RELIABILITY OF SQUEGG: THE SMART GRIP TRAINER

**CONTROL ID:** 3930547

**TITLE:** THE BENEFITS OF CONSERVATIVE TREATMENT VERSUS SURGICAL INTERVENTION FOR DIAGNOSES IN HAND THERAPY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** K. Williams<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy , UT Health San Antonio, Alpine, WY, United States.

**ABSTRACT BODY:**

**Purpose:** Distal radius fractures (DRF) and Skier's Thumb are two diagnoses that warrant surgical treatment or conservative management depending on severity of injury. While certified hand therapists (CHT) help guide patients in intervention selection, minimal data is available to show which intervention provides best outcome measures in regards to functional return and timeline for recovery. The gaps in literature regarding specific recommendations can be alleviated through studying previous clientele who received different treatment for these diagnoses. Moreover, the demand to provide future clients with objective data for both diagnoses necessitated the completion of a retrospective study. Comparing baseline measurements to clients' final notes at discharge gives reliable information on the specific intervention provided.

**Methods:** The retrospective study was completed at Teton Hand Therapy (THT) in Jackson, Wyoming for the completion of the doctoral capstone experience. The study consisted of chart reviewing previous clientele, who sustained either a DRF or Skier's Thumb between 2017-2022. Clients were distinguished based on method of intervention and were included in the study if they were previously treated at THT. Inclusion criteria for DRF included any fracture to the distal radius, and inclusion criteria for Skier's Thumb included any severity of injury to the UCL of the thumb. The following clients were excluded from the study: clients whose surgical intervention failed first attempt, those whose hardware warranted implant removal, and clients who were unable to be measured for either progress and/or discharge note. A total of 158 clients met the inclusion criteria after chart review with 61 clients identified for DRF surgical cases and 50 clients for conservative management. Furthermore, 20 clients were identified for Skier's Thumb surgical cases and 27 clients for conservative treatment. Outcome measures used for comparison among interventions for both diagnoses were as follows: QuickDASH scores, active range of motion (AROM), edema, strength, and timeline of recovery. QuickDASH scores indicated improvement when clients' scores decreased from evaluation to progress and/or discharge note. Improvements were noted for power grip, lateral, and tripod pinch for both diagnoses with the affected extremity being compared to the uninvolved side on the last note recorded. Furthermore, improvements were noted when measurements of the affected extremity were closer in lbs to the uninvolved side. Timeline for rehabilitation was measured in days as the final outcome analyzed. Clients were then re-named numerically to comply with HIPAA. Outcome measures for each diagnoses were then averaged for thorough comparison among interventions.

**Results:** Clients who underwent surgery for both diagnoses on average had more functional return with QuickDASH scores. Furthermore, AROM averaged higher improvements for surgical intervention. In regards to measuring edema for both conditions, surgical intervention provided better measures as swelling decreased at a higher rate. Strength measurements fluctuated between both interventions for these diagnoses as power grip, lateral, and tripod pinch were each measured separately at final progress and discharge notes. Pinch strength for DRF cases had slightly better outcomes with surgical intervention whereas pinch strength proved slightly better for conservative treatment with Skier's Thumb. On the other hand, power grip proved better outcome measures with conservative treatment for DRF cases and better measures for surgical intervention for Skier's Thumb cases. Average timeline of rehabilitation was longer for conservative treatment for both diagnoses. Both conditions revealed quicker recovery for surgical intervention. Furthermore, average outcomes and timelines pointed to surgery as the preferred method of intervention for clients who sustained either diagnoses. The results align with current literature for both DRF and Skier's Thumb cases as the overall findings from the study reflect statistical significance for surgical intervention over conservative management. Therefore, the retrospective study mimics current literature favoring surgery as the gold standard for treatment statistically but clinically waivers as clients should be individualized in regards to treatment.

**Conclusion:** Utilizing a retrospective study to analyze DRF and Skier's Thumb cases, objective data obtained from previous clientele can now be relayed to future clientele. The averages from the study reveal conclusive results to share surgical intervention as the preferred method for both conditions. However, in order to provide best practice it is recommended to inform future clients of the clinical significance each intervention offers with a tailored approach in

regards to contextual factors and approximated timeline of recovery.

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**TITLE:** THE BENEFITS OF CONSERVATIVE TREATMENT VERSUS SURGICAL INTERVENTION FOR DIAGNOSES IN HAND THERAPY

**CONTROL ID:** 3930788

**TITLE:** DEFINITION AND MEASUREMENT OF FUNCTIONAL FIRST WEB SPACE: A SCOPING REVIEW

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** K. Kim<sup>3</sup>, F. Bacchus-Misir<sup>2</sup>, E. S. Ho<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Division of Plastic and Reconstructive Surgery, The Hospital for Sick Children, Toronto, ON, Canada.
2. Department of Occupational Science and Occupational Therapy, University of Toronto, Toronto, ON, Canada.
3. Rehabilitation Sciences Institute, University of Toronto, Toronto, ON, Canada.

**ABSTRACT BODY:**

**Purpose:** The first web space of hands has been understood to be important in daily activities involving the motions of cylindrical grasp and pinch. Participation in such activities is dependent on developmental stage, occupation, and/or, life context; making it difficult to define 'functional' first web space. Without clear definitions, identifying the need for reconstructive surgery based on its deficiency is challenging. The purpose of this scoping review is to synthesize what is known about the definition of functional first web space and evaluate the methods used to quantify the measurement of the anatomical deficiency of first web space.

**Methods:** Following Arksey and O'Malley's (2005) six-stage scoping review framework, 4440 term combinations were searched on MEDLINE from inception until January 2023 in conjunction with a medical librarian. Title/abstract and full-text screening processes were conducted followed by charting, collating, and summarizing included articles by two independent reviewers.

**Results:** Of 126 articles found, 69 full-text articles were reviewed and 21 were included. The age range of included papers was between 0.5 and 77.0 years; more involved pediatric populations (n = 17, 81%). Traumatic (n = 9, 43%), congenital (n = 11, 52%), and healthy (n = 1, 5%) hands were studied. There were 20 (95%) cross-sectional studies and one (5%) comparative outcome study. All 20 (95%) cross-sectional studies used preoperative and postoperative first web space measurements as indicators of their surgical outcome. Of the included studies, varied qualitative descriptions of functional (n = 11, 53%) and deficient (n = 10, 48%) first web space were identified. The measurement of the first web space included soft tissue opening (n = 7, 33%), and radiographically (n = 8, 38%) or clinically (n = 5, 24%) measuring the thumb carpometacarpal (CMC) joint angle. The CMC joint angle was measured in palmar (n = 5, 24%) or radial (n = 5, 24%) abduction, while the remaining did not specify. Takagi's method of holding a cone was the only method used (n = 4, 19%) to measure cylindrical grasp. As there was no standardized method of measuring the first web space, measured values of both preoperative and postoperative first web spaces were inadequate to be interpreted and compared in relation to the functional use of the first web space in daily activities. Among three studies (14%) that reported the first web space of healthy or unaffected hands, the average soft tissue opening was 100 degrees with 125 participants and the average CMC joint with palmar abduction was 51 degrees with 14 participants.

**Conclusion:** Overall, a consensus on the definitions of functional and deficient first web space is lacking, which is problematic in evaluating reconstructive surgical and rehabilitation plans for evidence-based practice. The methods of measuring the first web space angle and opening vary and the relationship between measured space and functional outcome is unknown. While values for preoperative, postoperative, and normative first web spaces were reported in some studies, justifying these values as the definition of deficient or functional first web space is problematic due to inconsistency in measurement and reporting methods. Thus, the synthesis of the literature is the first step to operationalizing the definition and measurement of functional first web space.

**Purpose:** The first web space of hands has been understood to be important in daily activities involving the motions of cylindrical grasp and pinch. Participation in such activities is dependent on developmental stage, occupation, and/or, life context; making it difficult to define 'functional' first web space. Without clear definitions, identifying the need for reconstructive surgery based on its deficiency is challenging. The purpose of this scoping review is to synthesize what is known about the definition of functional first web space and evaluate the methods used to quantify the measurement of the anatomical deficiency of first web space.

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**Conclusion:** There is lacking high-level evidence on the role of early intrinsic inclusion during FDP laceration repair given its anatomical connection. Evidence shows that early active motion is preferred in order to for prevention of adhesions and contracture and that their relationship between neglect of the intrinsics and subsequent stiffness/contractures during the rehabilitation process. Furthermore, there is arising evidence of the role that the lumbrical plays in modulating intrinsic and extrinsic musculature, furthering the importance of its early inclusion in rehabilitation. Based on the evidence above, there is an anatomical rationale for the early inclusion of the interossei and lumbricals during FDP laceration and rehabilitation. Further research is needed to confirm the clinical application and surgical perspectives of this method to ensure the best outcomes are addressed.

**Purpose:** The purpose of the critically appraised topic proposal is to address gaps in literature relating to the role of early intrinsic muscle activation following FDP laceration and repair and to address the need for research and proposal of guidelines for their inclusion. Current bodies of evidence and practice guidelines only address the need for early motion targeting the extrinsics, which in turn can cause the intrinsics, specifically the lumbricals, to become neglected, resulting in a secondary focus during the early stages of tissue healing. The concern for the intrinsic becoming tight is a commonly forgotten area that can lead to pain, stiffness, and adverse effects such as paradoxical extension and even reoperation.

CAT question: Is there an anatomical rationale for the early inclusion of interossei & lumbrical activation following FDP laceration and repair?

**Methods:** For Search 1, PubMed & Scopus were used with the following search terms: (FDP OR Flexor Digitorum Profundus) AND (Rehab\* OR Protocol OR Guideline). For Search 2, Pubmed & Scopus were used with the following search terms: (lumbrical\* OR interossei) AND (hand). After an initial search, articles were skimmed based on the inclusion criteria published in the past 20 years and in English. 5 articles were chosen based on their application of the proposed CAT question and clinical understanding.

**Results:** Regarding current FDP laceration and repair guidelines, it was concluded that there is a higher risk of complications when limitations are placed on the postoperative digit ROM and further concluded that with modern improvements in care for tendon lacerations, early active mobilization may provide better motion while maintaining low rupture rates. With this study, it is clear that early movement is preferred to combat adhesion formation and contracture with careful consideration of rupture prevention, but there is lacking a presence of value in the inclusion of the intrinsics.

Regarding the role of intrinsics on hand stiffness, evidence describes the importance of motion to prevent adhesions, and it further found that a lack of mobility is an inherent precursor to joint and intrinsic stiffness. It was said that early AROM minimizes the risk of further scar adhesions and encourages functional use of the hand. With this clinical perspective of the role that the intrinsics play on hand stiffness, we can gain a perspective that their inclusion is necessary given their role in the prevention of adverse effects.

Within articles published regarding the anatomical and mechanical role of the lumbricals, it is described that the ability of the lumbrical to modulate is apparent given the context of the origin and insertion of the lumbricals providing a reason for its early inclusion in the rehab process. Additionally, given the anatomical role and background of the intrinsics, stiffness caused by injury to the extensors will have a direct correlation to tightness associated with the intrinsic based on their proximity and connection to FDP, specifically with the lumbricals. It is further described that the lumbrical could extend 85-90% of its length, indicating that it is designed for long excursions and quick precision movements. Small cross-sections and limited strength suggest that motor function is not the main role of the lumbrical, but that it has a sensory function given its origin of the flexor tendon and insertion on the extensor tendon and large muscle spindle density for efferent feedback. Both articles also address the adverse effect of paradoxical extension which occurs due to an imbalance between the intrinsic and extrinsic mechanisms via the lumbricals. With this information, we can deduce that with the lumbricals specifically, their inclusion in the rehabilitation process is important given their proposed role in sensory feedback and modulation of the flexors and extensors and may have a role in the prevention of adverse effects such as paradoxical extension.

**Conclusion:** There is lacking high-level evidence on the role of early intrinsic inclusion during FDP laceration repair given its anatomical connection. Evidence shows that early active motion is preferred in order to for prevention of

adhesions and contracture and that their relationship between neglect of the intrinsic and subsequent stiffness/contractures during the rehabilitation process. Furthermore, there is arising evidence of the role that the lumbrical plays in modulating intrinsic and extrinsic musculature, furthering the importance of its early inclusion in rehabilitation. Based on the evidence above, there is an anatomical rationale for the early inclusion of the interossei and lumbricals during FDP laceration and rehabilitation. Further research is needed to confirm the clinical application and surgical perspectives of this method to ensure the best outcomes are addressed.

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**TITLE:** IS THERE AN ANATOMICAL RATIONALE FOR THE EARLY INCLUSION OF INTEROSSEI & LUMBRICAL ACTIVATION FOLLOWING FDP LACERATION AND REPAIR?

**CONTROL ID:** 3931295

**TITLE:** PSYCHOSOCIAL INTERVENTIONS FOLLOWING FLEXOR TENDON INJURY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** G. S. Evans<sup>1, 2</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, University of Florida, Gainesville, FL, United States.
2. Occupational Therapy, UF Health Orthopedic Sports Medicine Institute, Gainesville, FL, United States.

**ABSTRACT BODY:**

**Purpose:** Flexor tendon injuries are commonly occurring and can be challenging to treat. Injuries involving the hand and upper extremity can have immense effects on the mental health and well-being of patients. Not only can these injuries be traumatic for patients, but they have also been shown to impact participation in valued occupations and life roles. The guiding evidence-based question is: What is the effectiveness of psychosocial interventions in improving therapeutic outcomes in patients with flexor tendon injuries?

**Methods:** PubMed, Journal of Hand Therapy, and PsychINFO databases were searched to find relevant, evidence-based articles. Search terms and strategy included four concepts using the applicable subject headings for each database including diagnosis, intervention, setting, and impact. The initial search yielded three articles, so search terms and inclusion criteria were broadened to include articles focusing on general injuries of the hand. Articles written in a language other than English and published more than 15 years ago were excluded.

**Results:** A single-blind randomized controlled trial was conducted to test the effectiveness of a 60-second mindfulness exercise after hand injury. When compared to a placebo control group, the intervention group had improved momentary pain, anxiety, depression, and anger as measured through standardized outcome measures. This brief intervention is feasible for therapists to implement in a busy hand clinic. Limitations include a limited generalizability, exclusion of patients without internet access, and lack of a minimal clinically important difference for all but one outcome affecting the clinical significance of results.

A prospective cohort study was conducted to evaluate orthosis adherence after traumatic tendon repairs. Patients were evaluated day three post-operatively and three weeks after surgery. Only one-third of patients were fully adherent to the orthosis wear schedule and the presence of depression three days after surgery was a significant barrier for orthosis adherence. Standardized assessment and orthotic education for all participants were strengths in this study. Limitations include a self-report measure of orthotic adherence as this may lead to reporting bias and attention bias as patients were aware of the study's purpose.

Individuals' independence with daily activities after a flexor tendon injury was assessed via a descriptive study. A standardized 20-minute phone interview given to all participants to identify tasks they are unable to perform while wearing orthosis and following precautions. During the restricted phase of hand use following flexor tendon surgery, it is important to address participation and performance in occupations and life roles. Strengths include a high participation rate and the use of both qualitative and quantitative methodologies. This study had limited generalizability of results and recall bias may have occurred as patients were interviewed 6-12 months post flexor tendon repair.

Article four is a descriptive study discussing the impacts of a traumatic hand injury from different perspectives including psychological, social, stigmas, and different coping strategies. Early participation in meaningful activities ensures valued roles are fulfilled which positively affect self-esteem, identity, motivation, and overall outcomes after a traumatic hand injury. Though descriptive studies are assigned a low level of evidence, this article covers a wide variety of topics gathered from many peer-reviewed articles that were referenced throughout.

Article five is a mixed-methods study design where CHTs completed an electronic survey and a virtual focus group to identify how they address and implement psychosocial interventions in daily practice. OTs in hand therapy do assess and provide psychosocial interventions for their clients, but is a largely informal process, without use of a standardized assessment tool. The use of a qualitative focus group was beneficial for expanding upon survey data. However, use of a self-developed electronic survey may have contributed to a low response rate and potentially biased questions. Purposive sampling was also used which may not be representative of all OTs in hand therapy.

**Conclusion:** The findings of these articles suggest that addressing psychosocial factors in the hand therapy setting helps to strengthen patient-therapist relationships, facilitate adjustment following hand injury, and increase occupational performance in meaningful activities through holistic, client-centered care. Gaps in research include a lack of studies specifically addressing flexor tendon injuries and the need for development of an occupation-based, standardized psychosocial assessment. It is within the scope of OT for hand therapists to utilize a psychosocial approach alongside the traditional biomechanical frame of reference to help increase a client's motivation, outlook, adaptation, and coping skills while also documenting functional progress.

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**TITLE:** PSYCHOSOCIAL INTERVENTIONS FOLLOWING FLEXOR TENDON INJURY

**CONTROL ID:** 3931368

**TITLE:** THE IMPACT OF TRAINING HAND FUNCTION WITH A NOVEL DEVICE IN A SAMPLE OF CHRONIC STROKE PATIENTS

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** J. Meltzer<sup>2</sup>, J. de Grosbois<sup>2</sup>, E. Dumais<sup>1</sup>, M. Marshall<sup>1</sup>, G. Wang<sup>2</sup>, S. Alibhai-Najarali<sup>2</sup>, M. Heleno<sup>2</sup>, S. Pan<sup>2</sup>, A. Arya<sup>2</sup>, J. Shao<sup>2</sup>, J. Harris<sup>3</sup>, A. Nelson<sup>4</sup>, V. Johnson<sup>1</sup>

**INSTITUTIONS (ALL):**

1. IRegained Inc., Sudbury, ON, Canada.
2. Rotman Research Institute, North York, ON, Canada.
3. School of Rehabilitation, McMaster University, Hamilton, ON, Canada.
4. Department of Kinesiology, McMaster University, Hamilton, ON, Canada.

**ABSTRACT BODY:**

**Purpose:** The hand and fingers play a crucial role in performing activities of daily living (ADL) and if impaired, can negatively impact social, vocational, and quality of life domains. Commonly, persons with stroke (PWS) suffer hemiparesis; impairing motor control/function on one side of the body. This study used a novel passive hand function therapy (HFT) device - the MyHand<sup>TM</sup> System, designed to target the affected hand, with repetitive, individual, and multi-finger grasping exercises through a personalized exercise prescription involving gamified visual feedback. The primary objective of this study was to explore the changes in motor function after a 15-hour training program using the MyHand<sup>TM</sup> System.

**Methods:** Design: This was a single group pre/post exploratory study. Participants: A total of 11 PWS aged 59.81±20.32 and 10.27±9.67 years post stroke participated in this study. Participants were included in the study if they had a Chedoke-McMaster Stroke Assessment (CMSA) score in Hand Function and Shoulder Pain of 3 or higher; obtained a score ≥ 24 on the mini-mental state exam; Botox-free in the upper limb for at least 3 months prior to study commencement; did not possess severe contracture; any other severe neurological or musculoskeletal impairments in the upper limb. Outcome Measures: Changes in hand function pre and post intervention were tested using the following assessments: Action Research Arm Test (ARAT), Grip and Finger Dynamometry and Finger Goniometry. Post assessments occurred within 5 days of the last HFT session. The same assessors performed the assessments during the pre and post assessments. Protocol: The intervention consisted of fifteen, 1-hour HFT sessions using the MyHand<sup>TM</sup> System over a three-week span. The sessions focused on improving active finger range of motion, strength, and fine motor skills, using an individualized exercise prescription involving gamified visual feedback. Administration of HFT was facilitated by two trained, experienced, and licensed kinesiologists. All training and assessment sessions took place at the same location. Analysis: Data analysis was performed using SPSS (version 29.0.1.1). The Wilcoxon Signed Ranks Test was used to determine the significance of within-subject changes of the ARAT, Dynamometry and Goniometry of the fingers and hand. Each individual finger's total active flexion and extension were represented through a composite score of flexion and extension across the metacarpal phalangeal and interphalangeal joints.

**Results:** Significant improvements pre/post were found for; ARAT (Z=-2.670, p= 0.004), Total active flexion of; Digit 2 (Z=-2.547, p= 0.006), Digit 3 (Z=-2.431, p= 0.008), Digit 4 (Z=-2.668, p=0.004), Digit 5 (Z=-2.347, p= 0.01), Total active Extension of each finger: Digit 1 (Z=-2.668, p= 0.004), Digit 2 (Z=-1.955, p=0.026), Digit 3 (Z=-2.429, p=0.008), Digit 4 (Z=-2.547, p= 0.006), Digit 5 (Z=-1.602, p=0.055), Grip strength (Z= -2.499, p= 0.006), Tripod Pinch (Z=-2.184, p= 0.015), and lateral Pinch (Z=-2.533, p= 0.006). Total active flexion of Digit 1 (Z=-0.534, p= 0.297) was not significant. The ARAT score met the minimal clinically important difference criteria.

There were no serious adverse events throughout the study. However as expected, most participants on occasion reported minor fatigue after the HFT. Adherence to the protocol was near perfect apart from one participant who was only able to complete 13 out of the 15 sessions.

**Conclusion:** Results from this study indicate that the MyHand<sup>TM</sup> System is a feasible method to increase manual dexterity of the hand and impact upper limb function in chronic PWS. Although further work in this area must focus on understanding the relationship between changes in active range of motion, finger/hand strength and functional changes. In addition, these efficacy assessments should be conducted with larger sample sizes and employ practical timelines for neurorehabilitation to better understand dosage parameters.

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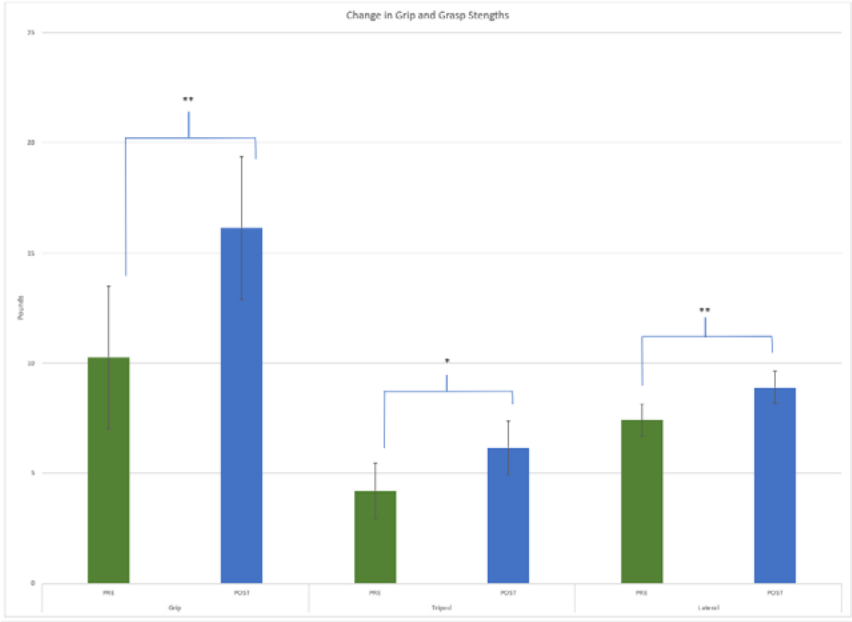
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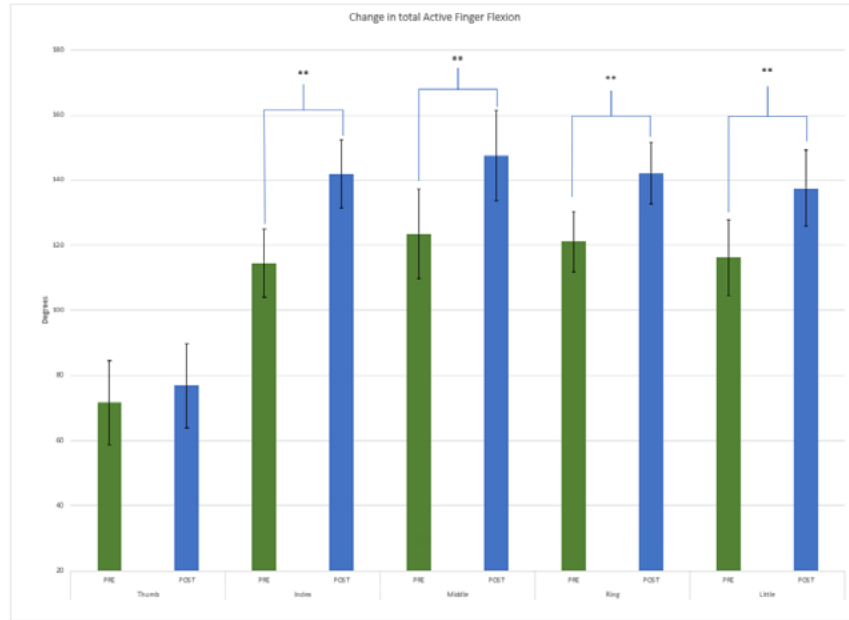
# Abstracts

(abstracts are listed in numeric order by control ID number)



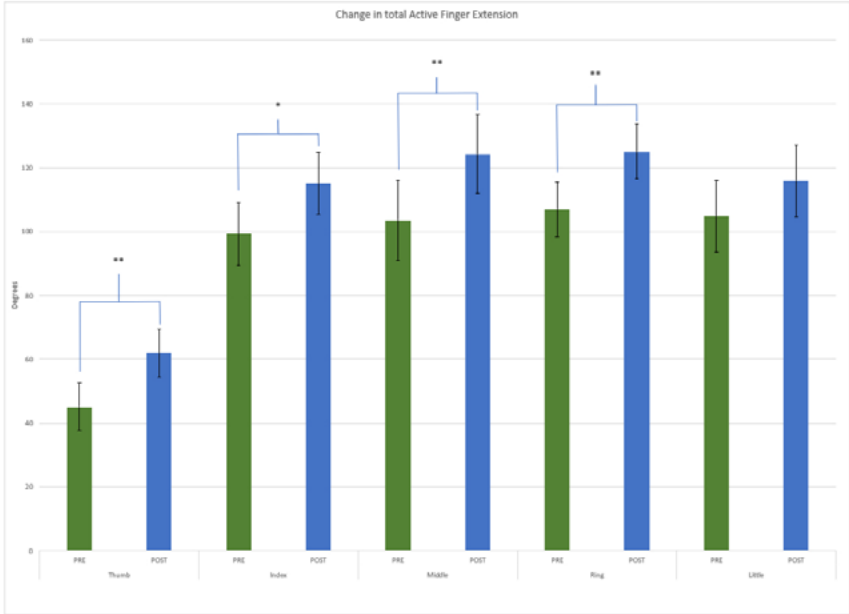
# Abstracts

(abstracts are listed in numeric order by control ID number)



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**IMAGE CAPTION:**

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**TITLE:** THE IMPACT OF TRAINING HAND FUNCTION WITH A NOVEL DEVICE IN A SAMPLE OF CHRONIC STROKE PATIENTS



**CONTROL ID:** 3931475

**TITLE:** TITLE: EXPLORING PSYCHOSOCIAL BARRIERS AND STRATEGIES TO IMPROVE PHYSICAL IMPAIRMENTS AND FUNCTIONAL DISABILITY IN PATIENTS POST HAND, OR WRIST SURGERY.

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** G. M. Saeed<sup>1</sup>, V. Marchese<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Dept of Physical Rehabilitation Science, University of Maryland, Henrico, VA, United States.

**ABSTRACT BODY:**

**Purpose:** Purpose: In patients with musculoskeletal conditions, the primary focus of rehabilitation has been evaluating physical impairments, such as, pain and muscle force production, as well as functional disability, however, more attention is being brought to the role of psychosocial factors, primarily, self-efficacy and kinesiophobia. In patients post hand or wrist surgery, this pilot study aimed to 1. Explore relationships between psychosocial barriers, physical impairments and functional disability; and 2. Identify if focus of attention strategies can create a distraction to decrease pain, improve muscle force production and functional disability.

**Methods:** Methods: Ten participants underwent a single session crossover design completing outcome measures at three time points; at baseline, and after each video game training condition. Training conditions included external focus of attention cues and internal focus of attention cues. Outcome measures included: Numeric Pain Rating Scale (NPRS), General Self Efficacy Scale (GSES), Tampa Scale of Kinesiophobia-11 (TSK-11), muscle force production, and Quick Disabilities of Arm, Shoulder & Hand (QDASH).

**Results:** Results: Spearman's correlations tests identified a strong positive correlation between the TSK-11 and the QDASH ( $r = 0.71$ ,  $p = 0.02$ ). No other outcome measures were identified to have a significant correlation. Wilcox rank sum tests determined there were no significant differences for outcome measures or games scores at baseline and after different training conditions.

**Conclusion:** Conclusion: Hand therapists need to consider the role of not only physical impairments and functional disability, but psychosocial factors, to provide comprehensive care to the post-surgical patient. However, further study is required to explore focus of attention intervention strategies.

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radius fractures can create limitations in returning to their previous activities of daily living. (Lucado et al., 2008) Frequent practice patterns of treating distal radius fractures with an ORIF require an immobilization period. During this period, a home exercise program encourages early finger mobilization. However, pain caused by edema experienced by the patient as part of the inflammatory phase may discourage or prevent them from complying with their exercise program. (Michlovitz et al., 2001) Immobilization and edema following a distal radius fracture causes biochemical, mechanical, and physiologic changes of connective tissue and culotendinous tissue. This can consequently lead to soft tissue shortening. (Glasgow et al., 2010)

**Conclusion:** While edema, stiffness and pain are common wrist complications following a distal radius fracture, the research has neglected the detrimental effect it can have on the fingers. Improper slab placement, adherence of dressing to the wound, wrist positioning, and excessive dressing all contribute too little to no finger movement during the wrist immobilization period. Patients are presenting to their post op appointments with MCP and PIP contractures, effusion in web spaces, and complex regional pain syndrome. Creating a reference guide for surgical residents to use prior to or at the time of applying post op dressings to ensure correct slab and dressing placement for proper joint positioning and un-obstructed range of motion.

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**TITLE:** CREATING A POST-OPERATIVE SURGICAL DRESSING AND JOINT POSITIONING GUIDE FOR ORTHOPEDIC RESIDENTS FOLLOWING ORIF OF DISTAL RADIUS FRACTURES.

**CONTROL ID:** 3932056

**TITLE:** HOW DOES THE CARPAL TUNNEL SYNDROME RISK FACTOR OF WRIST SHAPE RELATE TO CARPAL TUNNEL SHAPE?

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** K. Loomis<sup>1</sup>, S. Roll<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Chan Division of Occupational Science and Occupational Therapy, University of Southern California, Los Angeles, CA, United States.

**ABSTRACT BODY:**

**Purpose:** Carpal tunnel syndrome (CTS) is highly prevalent among U.S. workers, resulting in decreased ability to perform daily activities and increased need for costly healthcare services. Higher wrist ratios (depth/width, measured via digital calipers) have been found to predict the development of CTS, theoretically serving as a proxy for measuring carpal tunnel shape. Sonography can illuminate how this ratio relates to carpal tunnel anatomical structure to help target preventative interventions, aid early CTS identification, and improve knowledge on variations in etiology.

The purpose of our study was to explore relationships between external wrist ratio and sonographic carpal tunnel measurements to (1) investigate the reliability and potential clinical value of sonographic assessment in upper extremity care for CTS and (2) explore how external wrist shape relates to internal carpal tunnel features.

**Methods:** We used sonographic imaging on a healthy sample of students (n=226) to collect the primary measures of carpal tunnel cross-sectional area (CSA), depth, width, and depth/width ratio (Figure 1), and secondary measures of median nerve CSA at the level of the distal wrist crease and pisiform. Inter-rater reliability for interpretation of carpal tunnel width, depth, and CSA was evaluated between two assessors (one occupational therapist and one sonographer, both with extensive experience in sonography) for a random subsample of 40 images via Intra-Class Correlation Coefficient (ICC) analysis. We then conducted exploratory correlation analyses comparing sonographic carpal tunnel measurements to external wrist measurements obtained via digital calipers. Linear and logistic stepwise regression analyses were performed ( $p < 0.15$  entry/exit cutoff) to identify combinations of carpal tunnel features, participant factors (e.g., BMI, gender, race), and median nerve size most predictive of external wrist ratio and established wrist ratio-based CTS risk categorization (at risk  $> 0.7$ ).

**Results:** ICC for dominant and non-dominant sonographic carpal tunnel measures ranged from good to excellent (0.79-0.95). Carpal tunnel width variance was 2.8 and 3.7 times that of the depth variance for dominant and non-dominant wrists, respectively; a disparity more than double that of the corresponding external measures (i.e., 1.4 and 1.3). Additionally, the mean carpal tunnel ratio was far lower than the mean wrist ratio (0.45 vs. 0.71 bilaterally). See Table 1 for correlations between wrist and carpal tunnel shape measures. Carpal tunnel width and depth measurements were moderately correlated with external counterparts (0.33-0.41,  $p < 0.001$ ). Wrist ratio and carpal tunnel ratio demonstrated weak to no correlation (dominant:  $r = 0.12$ ,  $p = 0.053$ ; non-dominant:  $r = 0.20$ ,  $p = 0.002$ ). These results were not significantly altered when controlling for age, gender, race, or BMI. Regression analyses using participant factors, carpal tunnel measurements, and median nerve size produced models accounting for less than 17% of the variability in external wrist ratio (linear models) or correctly predicting less than 68% of wrist ratio-based risk categorization (logistic models).

**Conclusion:** Basic sonographic measurements of carpal tunnel shape are reliable between raters. Though external wrist ratio is a risk factor for CTS, it is not adequately explained by basic carpal tunnel shape alone. Carpal tunnel width may play a more prominent role than depth in the risk for CTS. Further research is warranted on variability of anthropometric features such as carpal bone shape, size, and position, as well as and the relationship of these features to the later development of CTS.

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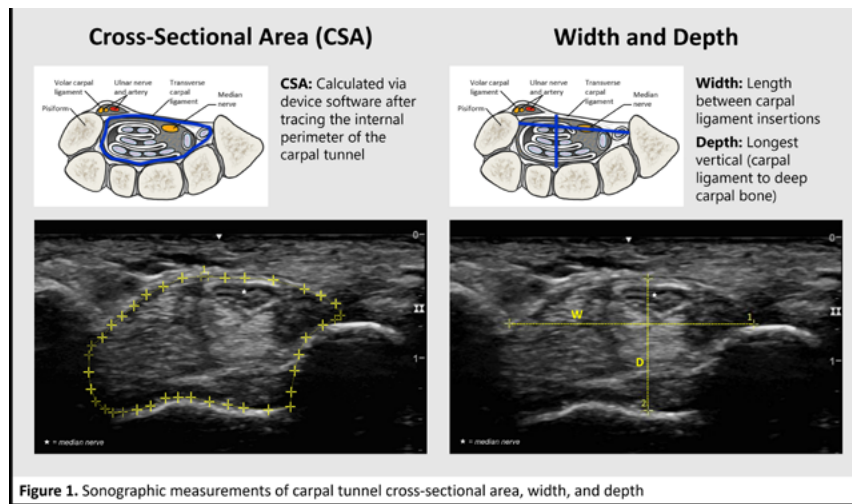
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extremity care for CTS and (2) explore how external wrist shape relates to internal carpal tunnel features.

**Methods:** We used sonographic imaging on a healthy sample of students ( $n=226$ ) to collect the primary measures of carpal tunnel cross-sectional area (CSA), depth, width, and depth/width ratio (Figure 1), and secondary measures of median nerve CSA at the level of the distal wrist crease and pisiform. Inter-rater reliability for interpretation of carpal tunnel width, depth, and CSA was evaluated between two assessors (one occupational therapist and one sonographer, both with extensive experience in sonography) for a random subsample of 40 images via Intra-Class Correlation Coefficient (ICC) analysis. We then conducted exploratory correlation analyses comparing sonographic carpal tunnel measurements to external wrist measurements obtained via digital calipers. Linear and logistic stepwise regression analyses were performed ( $p < 0.15$  entry/exit cutoff) to identify combinations of carpal tunnel features, participant factors (e.g., BMI, gender, race), and median nerve size most predictive of external wrist ratio and established wrist ratio-based CTS risk categorization (at risk  $> 0.7$ ).

**Results:** ICC for dominant and non-dominant sonographic carpal tunnel measures ranged from good to excellent (0.79-0.95). Carpal tunnel width variance was 2.8 and 3.7 times that of the depth variance for dominant and non-dominant wrists, respectively; a disparity more than double that of the corresponding external measures (i.e., 1.4 and 1.3). Additionally, the mean carpal tunnel ratio was far lower than the mean wrist ratio (0.45 vs. 0.71 bilaterally). See Table 1 for correlations between wrist and carpal tunnel shape measures. Carpal tunnel width and depth measurements were moderately correlated with external counterparts (0.33-0.41,  $p < 0.001$ ). Wrist ratio and carpal tunnel ratio demonstrated weak to no correlation (dominant:  $r=0.12$ ,  $p=0.053$ ; non-dominant:  $r=0.20$ ,  $p=0.002$ ). These results were not significantly altered when controlling for age, gender, race, or BMI. Regression analyses using participant factors, carpal tunnel measurements, and median nerve size produced models accounting for less than 17% of the variability in external wrist ratio (linear models) or correctly predicting less than 68% of wrist ratio-based risk categorization (logistic models).

**Conclusion:** Basic sonographic measurements of carpal tunnel shape are reliable between raters. Though external wrist ratio is a risk factor for CTS, it is not adequately explained by basic carpal tunnel shape alone. Carpal tunnel width may play a more prominent role than depth in the risk for CTS. Further research is warranted on variability of anthropometric features such as carpal bone shape, size, and position, as well as and the relationship of these features to the later development of CTS.



**IMAGE CAPTION:**

**TABLE:**

Note: The PDF table below is only an approximation of the HTML content and may not match formatting exactly.

Table 1. Correlations between wrist and sonographic carpal tunnel measures		
	Dominant r (p-value)	Non-dominant r (p-value)
Wrist ratio, carpal tunnel ratio	0.13 (0.053)	0.20 (0.002)
Wrist ratio, carpal tunnel depth	-0.01 (0.879)	0.09 (0.185)
Wrist ratio, carpal tunnel width	-0.21 (0.001)	-0.21 (0.001)
Wrist depth, carpal tunnel depth	0.33 (<0.001)	0.40 (<0.001)
Wrist width, carpal tunnel width	0.41 (<0.001)	0.35 (<0.001)

**TABLE FOOTER:**

**TABLE TITLE:** Table 1. Correlations between wrist and sonographic carpal tunnel measures

**TITLE:** HOW DOES THE CARPAL TUNNEL SYNDROME RISK FACTOR OF WRIST SHAPE RELATE TO CARPAL TUNNEL SHAPE?

**CONTROL ID:** 3932072

**TITLE:** HAND THERAPISTS' PRACTICE PATTERNS USING PATIENT REPORTED OUTCOME MEASURES WITH PEDIATRIC PATIENTS

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** M. Obaytek<sup>2</sup>, C. Volozo<sup>2</sup>, J. Dorich<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy & Physical Therapy, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States.
2. Occupational Therapy, Medical University of South Carolina, Charleston, SC, United States.

**ABSTRACT BODY:**

**Purpose:** The clinical relevance of existing patient reported outcome measures (PROMs) for children receiving hand therapy has been called into question. While several PROMs are available for adults with upper extremity (UE) impairment, few are designed specifically for children. Of the few PROMs used with pediatric patients in hand therapy practice, previous studies suggest psychometric limitations exist which diminish their clinical utility. The aims of this study were to explore hand therapists' current use of PROMs with pediatric clients and to gain insight into factors underlying current practice patterns using PROMs.

**Methods:** To determine hand therapists' use of PROMs, a Research Electronic Capture (REDCap) survey was distributed electronically to American Society of Hand Therapists (ASHT) members from January 21, 2022, to February 11, 2022. The survey was a mixed methods survey. It included both close-ended demographics and categorical questions and open-ended questions pertaining to the utilization of PROMs for hand therapists who treat children. Participants who reported not practicing primarily as a hand therapist or who reported not treating children were excluded from the current study. Descriptive statistics, including means, ranges, and frequency counts, were used to characterize participant demographics and responses to categorical questions. A Fisher's exact test was used to compare proportions ( $p < 0.05$ ). Qualitative data was analyzed with content analysis.

**Results:** The responses of 106 survey participants met inclusion criteria. Most participants reported practicing in outpatient settings ( $n=102$ ). Participants indicated their profession as OT(HT) ( $n=81$ ), OT ( $n=14$ ), PT(HT) ( $n=6$ ), HT ( $n=4$ ), and PT ( $n=1$ ). Of the 91 participants who identified their profession as a HT, the average years practicing as a HT was 16.75 years (range 2-42 years). Participants indicated an average of 19 years (range 9 months – 45 years) experience treating children with UE impairments. The number of participants who reported the specified frequencies of pediatric patients on their caseloads follows: 80 rarely (1-25% of caseload), 14 occasionally (26-50% of caseload), and 12 routinely (76-100% of caseload). Fifty-four percent ( $n=57$ ) of participants affirmed that they use PROMs. Among participants, there was no difference in the practice of using pediatric self-report and caregiver proxy PROMs with respect to the reported frequency of pediatric patients on the therapists' caseloads ( $p = 0.45$ ). The greatest number of participants reported using the DASH/QuickDASH ( $n=40$ ) with the Patient-Specific Functional Scale being the second most frequently utilized PROM ( $n = 6$ ). Participants who indicated using PROMs with pediatric patients attributed the following benefits to PROMs: PROMs are quick and easy to use; PROMs provide documentable measures for reimbursement of services; and PROMs can provide a measure of patient participation and psychosocial factors as well as patient progress in these areas. These same participants reported disliking the following aspects of the PROMs they use with pediatric patients: The PROM content is not relevant to pediatric patients; The PROMs are confusing for the patient to understand; and, The therapists perceive limited usefulness of the PROM. The 46% of participants ( $n=49$ ) who reported not using PROMs indicated not using them for the same reasons users of PROMs identified as things they disliked about PROMs, with an additional reason being Lack of awareness and access to PROMs.

**Conclusion:** Only 54% of survey participants report using PROMs. Most rely on adult PROMs like the DASH/QuickDASH, which they report fail to adequately align with pediatric patients' participation concerns. Additionally, barriers related to awareness of appropriate PROMs and access to these PROMs seem to be limiting their use amongst hand therapists who treat children. Despite limitations inherent to a survey study, these findings suggest that hand therapists with a pediatric caseload value PROMs but are challenged to find PROMs that align well with their pediatric patients.

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**Results:** The responses of 106 survey participants met inclusion criteria. Most participants reported practicing in outpatient settings ( $n=102$ ). Participants indicated their profession as OT(CHAT) ( $n=81$ ), OT ( $n=14$ ), PT(CHAT) ( $n=6$ ), CHT ( $n=4$ ), and PT ( $n=1$ ). Of the 91 participants who identified their profession as a CHT, the average years practicing as a CHT was 16.75 years (range 2-42 years). Participants indicated an average of 19 years (range 9 months – 45 years) experience treating children with UE impairments. The number of participants who reported the specified frequencies of pediatric patients on their caseloads follows: 80 rarely (1-25% of caseload), 14 occasionally (26-50% of caseload), and 12 routinely (76-100% of caseload). Fifty-four percent ( $n=57$ ) of participants affirmed that they use PROMs. Among participants, there was no difference in the practice of using pediatric self-report and caregiver proxy PROMs with respect to the reported frequency of pediatric patients on the therapists' caseloads ( $p = 0.45$ ). The greatest number of participants reported using the DASH/QuickDASH ( $n=40$ ) with the Patient-Specific Functional Scale being the second most frequently utilized PROM ( $n = 6$ ). Participants who indicated using PROMs with pediatric patients attributed the following benefits to PROMs: PROMs are quick and easy to use; PROMs provide documentable measures for reimbursement of services; and PROMs can provide a measure of patient participation and psychosocial factors as well as patient progress in these areas. These same participants reported disliking the following aspects of the PROMs they use with pediatric patients: The PROM content is not relevant to pediatric patients; The PROMs are confusing for the patient to understand; and, The therapists perceive limited usefulness of the PROM. The 46% of participants ( $n=49$ ) who reported not using PROMs indicated not using them for the same reasons users of PROMs identified as things they disliked about PROMs, with an additional reason being Lack of awareness and access to PROMs.

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(No Image Selected)

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**TITLE:** HAND THERAPISTS' PRACTICE PATTERNS USING PATIENT REPORTED OUTCOME MEASURES WITH PEDIATRIC PATIENTS



**CONTROL ID:** 3932651

**TITLE:** THE DEVELOPMENT OF A PROTOCOL FOR IDENTIFYING THE PRESENCE AND LOCATION OF NERVE ENTRAPMENT IN THE UPPER EXTREMITY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** S. Alford<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Rockhurst University, Shawnee, KS, United States.

**ABSTRACT BODY:**

**Purpose:** Nerve entrapment syndromes are one of the most common types of clinical neuropathy. Unfortunately, frequent misdiagnosis of these conditions has been identified in the literature. This study explored the use of a systematic protocol that can provide therapists with additional tools to assist in identifying and confirming the site of nerve entrapment.

**Methods:** Therapists were recruited from hand therapy clinics in the Kansas City area. All participants were currently licensed & practicing occupational, physical, and/or certified hand therapists who worked with individuals diagnosed with nerve entrapment syndromes. Training materials and forms were created based on Dr. Elizabeth Hagert's "Clinical Triad" protocol and Dr. Susan Mackinnon's "Scratch Collapse Test." An informative training session was conducted via Zoom and the therapists were provided with written forms and illustrations on how to conduct the assessments. An online survey was conducted 2 months following training regarding the ease and efficacy of the assessment protocol. The data from the survey was analyzed using SPSS 28 to perform frequency analysis and descriptive statistics.

**Results:** Eleven participants took part in the study from outpatient clinics in the Kansas City area. Eight were certified hand therapists and 3 were occupational therapists working in upper extremity rehabilitation. Over 64% percent of the participants had been practicing for over 21 years and 82% over 6 years. Forty-five percent of the participants were not familiar with the scratch collapse test, and 73% were not familiar with Dr. Hagert's protocol. More than 90% of participants agreed or strongly agreed the protocol was beneficial in identifying the presence of nerve irritation. Over 80% of participants agreed or strongly agreed the protocol was easy to administer, All participants agreed or strongly agreed they would use this protocol in the future. All participants agreed the forms and illustrations provided to them were useful or very useful. Participants found video demonstrations useful.

**Conclusion:** The results of this study indicate the use of this protocol may help to identify the site of nerve entrapment more accurately. Further research comparing assessment results with sonography, imaging, EMG, and surgical findings is needed to confirm reliability. These results serve as a springboard for the continued development of a systematic protocol as well as for exploring its accuracy in identifying the level of nerve entrapment. If found to be reliable in future studies, this may lead to fewer problems with misdiagnosis and improved use of interventions. This would result in decreased costs and risks associated with unnecessary surgeries and an incorrect focus of treatment.

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## The Development of a Systematic Protocol for Identifying the Presence and Location of Nerve Entrapment in the Upper Extremity

Olivia Eckert, Emma Gettes, Katie Lausa, Alexis Mijares & Paige Renner  
 Faculty Mentor: Dr. Sunni Alford, OTD, OTR/L, CHT  
 Department of Occupational Therapy Education, Rockhurst University, Kansas City, MO



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### Background

Nerve entrapment syndromes are the most common type of distal neuropathy. Each year in the U.S., billions of dollars are spent trying to manage these conditions (Purdilo & Berry, 2018).

The symptoms associated with nerve entrapment such as paresthesia, impaired sensation, weakness, and pain can greatly interfere with occupational performance and overall well-being.

Misdiagnosis of nerve pathology can lead to unnecessary costs, failure to relieve symptoms, and may prevent unnecessary risks for individuals when surgery is recommended. Nuchternagel and colleagues (2017) reported benefits of EMG/NCV for nerve conduction studies suggest it will be attributed to with incomplete surgical release or failure to properly diagnose the correct type of nerve entrapment. Dr. Don Johnson (2014) reported similar measures when identifying the site of median nerve entrapment. For example, carpal tunnel syndrome can be mistaken for cubital tunnel syndrome. Dr. Lakshmi Patel (2016) conducted two failed carpal tunnel release procedures before an accurate diagnosis of hyperlipidemia was made. Dr. Elizabeth Hager and Dr. Susan TROSTMAN have suggested the utilization of a systematic assessment protocol to improve the accuracy in locating the site of nerve entrapment to address the concern of misdiagnosis. Our protocol is based on their recommendations.

### Purpose:

The purpose of this study was to explore emerging methods used in the assessment of upper extremity motor function and to develop a systematic, easy to follow, protocol based on these findings.

### Problem Statements

- The lack of a systematic assessment protocol can lead to failure to identify the presence of multiple nerve involvement, a more proximal nerve entrapment, and multiple entrapment sites of the same nerve.
- There is a need for consistent guidelines on how to perform many of the emerging assessments in order to increase reliability. Reliable assessment requires extensive knowledge of nerve anatomy, knowledge of the common compression sites, and the ability to properly perform the techniques.
- Electrodiagnostic studies such as EMG and an NCV are more costly and are not necessarily more reliable (EMG 90-70%, Alkogerem, 2005).

### Research Questions

- Will a systematic protocol lead to improved accuracy in identification of nerve entrapment site in individuals who are experiencing symptoms consistent with nerve entrapment?
- Will therapists find the systematic protocol to be beneficial?

### Methods

- Descriptive Survey
- Local hand therapists in the Kansas City area
- Developed videos, forms, and educational materials
- Provide interactive training on local hand therapists via Zoom
- Gained feedback via online survey regarding the assessment
- 1 to 2 month following training

### Selective Muscle Strength Testing



### The Scratch Collapse Test




### Tinel Sign



### Results



### Discussion

Twenty percent of the participants found the assessments too time consuming and reported they desired more instruction to ensure they were performing them correctly. Providing increased time to practice and more feedback on the performance of the assessments may result in decreased administration time and increase the performance of the assessments.

**Limitations of this study include:**

- Sample Size
- Decreased generalizability
- Virtual versus live demonstration
- 2-month practice time

**Implications for OT Practice**

Therapists working in a variety of settings can use the forms and videos developed in this study to enable them to make consistent performance of the recommended assessments.

### Conclusion

- This protocol is a step towards improving the accuracy of identifying the site of nerve entrapment.
- Results of this study will serve as a springboard for the continued development of a protocol for assessing nerve entrapment.
- Further research determining the accuracy of the protocol in identifying the level of nerve entrapment (axonal vs. myelin sheath) is indicated.

### Acknowledgments

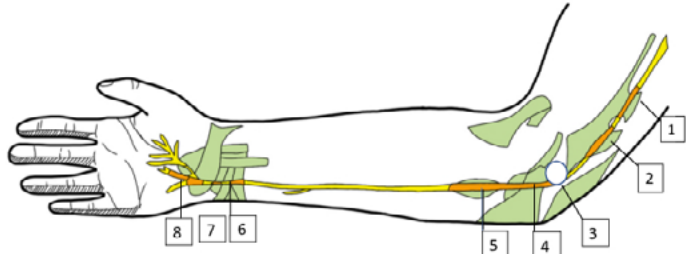
We would like to thank Select Physical Therapy's Hand Therapists in the Kansas City region for taking part in our study and Dr. Sunni Alford for the graphic design illustration in our forms.



# Abstracts

(abstracts are listed in numeric order by control ID number)

Ulnar Nerve Entrapment Sites for Scratch Collapse Test



Type of stimulus delivered: S = Scratch P = Pressure A = Air flow (blowing or fanning)

	(r or -)		Stimulus
1. Anterior of Scithere	R	L	_____
2. Medial intermuscular septum	R	L	_____
3. Cubital tunnel and retinaculum	R	L	_____
4. Osborn's band	R	L	_____
5. Flexor carpi ulnaris and aponeurosis of the F-CU and deep flexors/pronators	R	L	_____
6. Volvarenbachal fascia	R	L	_____
7. Guyon's canal	R	L	_____
8. Deep motor branch	R	L	_____

**IMAGE CAPTION:**

(no table selected)

**TITLE:** THE DEVELOPMENT OF A PROTOCOL FOR IDENTIFYING THE PRESENCE AND LOCATION OF NERVE ENTRAPMENT IN THE UPPER EXTREMITY

**CONTROL ID:** 3932762

**TITLE:** HAND THERAPISTS' PERCEPTIONS OF HANDEDNESS AND USE OF HANDEDNESS DATA IN CLINICAL PRACTICE

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** C. N. Fabian<sup>1</sup>, S. Higgins<sup>1</sup>, C. A. Bolch<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy Program, Midwestern University, Downers Grove, IL, United States.

**ABSTRACT BODY:**

**Purpose:** Handedness is described as an individual's preference to use one hand predominately for unimanual tasks and the ability to perform these tasks more efficiently with one hand. During initial hand therapy evaluations, hand therapists consistently assess patients' handedness. Although this information is deemed essential, there is limited evidence regarding how handedness information is utilized once it is assessed. How hand therapists perceive the concept of handedness is also unclear. The aim of this cross-sectional survey design study was to explore how hand therapists perceive the concept of handedness, and to explore how handedness data is used in clinical practice.

**Methods:** Inclusion criteria for this study included occupational and physical therapy practitioners who self-identified as hand therapists for at least one year. Participants were recruited through convenience sampling. Email blasts were sent through the American Society of Hand Therapists, corporate- and physician-owned practice organizations, and a regional study group. Participants completed an anonymous electronic survey regarding their perceptions of handedness and use of handedness data in clinical practice. Thematic analysis was used to analyze qualitative data, and descriptive statistics was used to analyze quantitative data.

**Results:** A total of 293 respondents participated in the survey study. Most participants (95%) assess handedness as a standard practice. 92% of respondents use handedness information to predict the impact of an injury on patient function or therapy progression. Respondents agreed or strongly agreed that handedness can be categorized as mixed (92%) with varying directions and degrees (75%). It is also perceived as a continuum, from strongly right-handed to strongly left-handed (62%). In contrast, 39% of participants were in agreement that handedness is perceived as two distinct categories. Respondents (90%) perceived that each hand has its own distinct role, with one hand that is better at precise movements, and the other hand being skilled as a stabilizer. Only 24% of respondents reported that handedness is well defined by Patient Rated Outcome Measures (PROMs). In open-ended questions, participants described limitations of the DASH and other PROMs to address handedness. Respondents indicated that handedness data informs clinical decision-making (95%). Participants reported selecting intervention activities that matched the typical activities performed with each hand (writing, manipulation versus bilateral and stabilizing tasks). Some participants reported observing a decrease in patient motivation and rate of recovery with injury to the non-dominant hand in open-ended questions, however in closed-ended items, there was a lack of agreement regarding the role of handedness in a patient's motivation for participation in rehabilitation.

**Conclusion:** Hand therapists responding to this survey indicated that evaluation of handedness is a standard component of their battery of assessments. Handedness information is used to inform their choice of clinical interventions and to make predictions about the impact of a patient's injury on their rate of recovery. Even though hand therapists perceived handedness as a continuum, handedness is frequently treated as binary concept with little regard to degrees of handedness. This is seen in documentation, in the results of outcome measures and in the selection of interventions. Further exploration is warranted to operationalize how handedness informs their clinical decision-making and further clarify the influences of degrees of handedness.

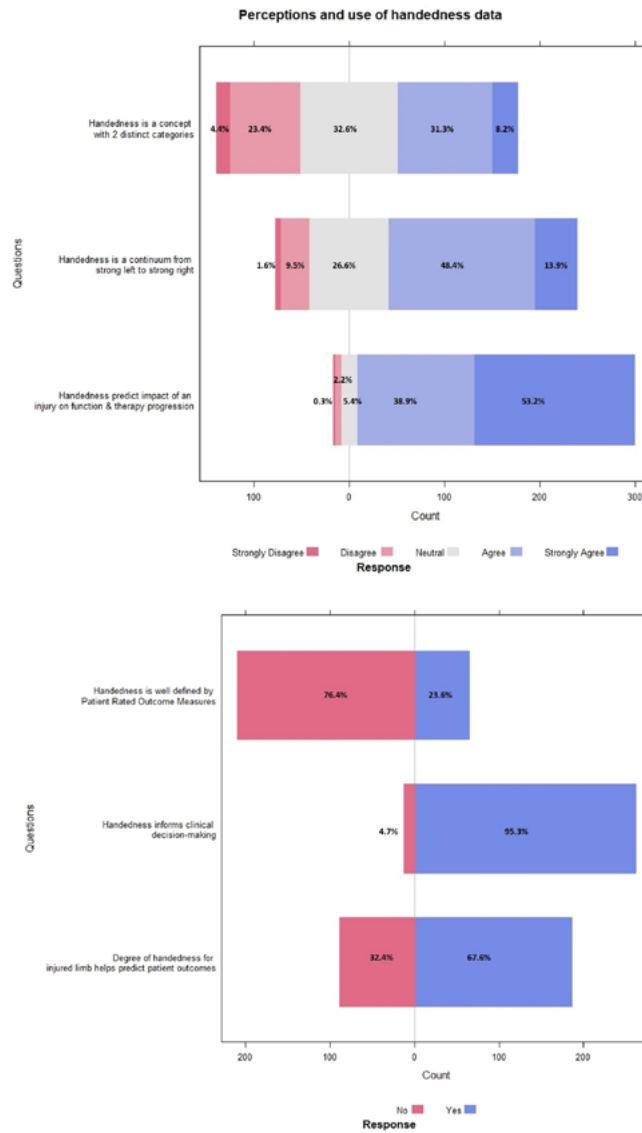
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**IMAGE CAPTION:**

(no table selected)

**TITLE:** HAND THERAPISTS' PERCEPTIONS OF HANDEDNESS AND USE OF HANDEDNESS DATA IN CLINICAL PRACTICE

**CONTROL ID:** 3932867

**TITLE:** A CROSS-SECTIONAL STUDY ON THE PARTICIPATION OF CHILDREN WITH CONGENITAL HAND AND UPPER LIMB DIFFERENCES: PSYCHOLOGICAL, SOCIAL, AND PHYSICAL DETERMINANTS

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** S. Weaver<sup>3</sup>, L. Chan<sup>3</sup>, E. Ogbomo<sup>1</sup>, S. Anthony<sup>2</sup>, K. Davidge<sup>1</sup>, E. S. Ho<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Division of Plastic and Reconstructive Surgery, The Hospital for Sick Children, Toronto, ON, Canada.
2. Factor-Inwentash Faculty of Social Work, University of Toronto, Toronto, ON, Canada.
3. Department of Occupational Science and Occupational Therapy, University of Toronto, Toronto, ON, Canada.

**ABSTRACT BODY:**

**Purpose:** The current care of children with Congenital Upper Limb Differences (CoULD) focuses on reconstructive surgery and rehabilitation that targets physical aspects of participation. Although these children have physical impairments, to provide holistic care and enable participation, psychological and social factors need to be considered as well. Research to understand the relative contributions of psychological, social, and physical factors affecting functioning is essential to inform evidence-based shared decision-making regarding surgical and rehabilitation interventions. The objective of this study is to determine the psychological, social, and physical factors influencing participation of children with CoULD using a battery of standardized self- and proxy-reported patient-reported outcome measures. Self-Determination Theory informed the choice of determinants examined including parent autonomy, self-efficacy, and social connectedness. It is hypothesized that there will be an inverse relationship between perceived parental autonomy and participation restrictions of children with CoULD, while no significant relationship with other determinants will be found. Parental report of participation restrictions will be significantly higher than children's self-report of participation restrictions.

**Methods:** A cross-sectional study was conducted with children with CoULD, aged 8 to 17 years old, and their caregivers. Participation was measured using the Child and Adolescent Scale of Participation (CASP) (self- and proxy-report). Child-reported psychological, social, and physical determinants were measured using the Perceived Parental Autonomy Support Scale (P-PASS), General Self-Efficacy Scale (GSES), Social Connectedness Scale Revised (SCSR), and Bimanual Fine Motor Function scale (BMFM). Correlation analyses between participation and the physical, social, and psychological determinants were conducted.

**Results:** Nineteen children with CoULD (M:F, 11:8) aged  $13.2 \pm 2.8$  years old participated in the study. Eight (42%) had unilateral CoULD (e.g., symbrachydactyly) and 11 (58%) had bilateral CoULD (e.g., amniotic band syndrome). Child self-reported participation (CASP) was high and did not correlate with psychological and physical determinants (P-PASS, GSES, SCSR, BMFM); however, social and psychological factors (P-PASS, SCSR) were significantly and moderately related. Parent psychological control (P-PASS) was inversely correlated with social connectedness (SCSR). Children with CoULD had lower general self-efficacy scores (GSES) than normative samples. CASP scores reported by children (CASP:  $89.4 \pm 9.6$ ) and parents (CASP:  $90.9 \pm 8.7$ ) were similar.

**Conclusion:** This research identified that children with CoULD reported few participation restrictions at home, school, and their community. Despite lower reported self-efficacy compared to normative samples, no relationship between participation and psychological, social, and physical determinants was found for children with CoULD. However, the relationship between perceived parental autonomy, perceived parental psychological control, and social connectedness indicates that parents influenced their children's sense of connection to their social environment. Future research should further examine the psychological, social, and physical needs of children with CoULD and aim to better understand how the parent-child dynamic may influence participation. Furthermore, as highlighted by this study, children with CoULD may experience lower general self-efficacy than the wider population. This is important for clinicians to consider when providing care to this population. Strategies to enhance self-efficacy should be incorporated into treatment for children with CoULD, such as peer modeling, promoting autonomy, and verbal persuasion.

**Purpose:** The current care of children with Congenital Upper Limb Differences (CoULD) focuses on reconstructive surgery and rehabilitation that targets physical aspects of participation. Although these children have physical impairments, to provide holistic care and enable participation, psychological and social factors need to be considered as well. Research to understand the relative contributions of psychological, social, and physical factors affecting functioning is essential to inform evidence-based shared decision-making regarding surgical and rehabilitation

interventions. The objective of this study is to determine the psychological, social, and physical factors influencing participation of children with CoULD using a battery of standardized self- and proxy-reported patient-reported outcome measures. Self-Determination Theory informed the choice of determinants examined including parent autonomy, self-efficacy, and social connectedness. It is hypothesized that there will be an inverse relationship between perceived parental autonomy and participation restrictions of children with CoULD, while no significant relationship with other determinants will be found. Parental report of participation restrictions will be significantly higher than children's self-report of participation restrictions.

**Methods:** A cross-sectional study was conducted with children with CoULD, aged 8 to 17 years old, and their caregivers. Participation was measured using the Child and Adolescent Scale of Participation (CASP) (self- and proxy-report). Child-reported psychological, social, and physical determinants were measured using the Perceived Parental Autonomy Support Scale (P-PASS), General Self-Efficacy Scale (GSES), Social Connectedness Scale Revised (SCSR), and Bimanual Fine Motor Function scale (BMFM). Correlation analyses between participation and the physical, social, and psychological determinants were conducted.

**Results:** Nineteen children with CoULD (M:F, 11:8) aged  $13.2 \pm 2.8$  years old participated in the study. Eight (42%) had unilateral CoULD (e.g., symbrachydactyly) and 11 (58%) had bilateral CoULD (e.g., amniotic band syndrome). Child self-reported participation (CASP) was high and did not correlate with psychological and physical determinants (P-PASS, GSES, SCSR, BMFM); however, social and psychological factors (P-PASS, SCSR) were significantly and moderately related. Parent psychological control (P-PASS) was inversely correlated with social connectedness (SCSR). Children with CoULD had lower general self-efficacy scores (GSES) than normative samples. CASP scores reported by children (CASP:  $89.4 \pm 9.6$ ) and parents (CASP:  $90.9 \pm 8.7$ ) were similar.

**Conclusion:** This research identified that children with CoULD reported few participation restrictions at home, school, and their community. Despite lower reported self-efficacy compared to normative samples, no relationship between participation and psychological, social, and physical determinants was found for children with CoULD. However, the relationship between perceived parental autonomy, perceived parental psychological control, and social connectedness indicates that parents influenced their children's sense of connection to their social environment. Future research should further examine the psychological, social, and physical needs of children with CoULD and aim to better understand how the parent-child dynamic may influence participation. Furthermore, as highlighted by this study, children with CoULD may experience lower general self-efficacy than the wider population. This is important for clinicians to consider when providing care to this population. Strategies to enhance self-efficacy should be incorporated into treatment for children with CoULD, such as peer modeling, promoting autonomy, and verbal persuasion.

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**TITLE:** A CROSS-SECTIONAL STUDY ON THE PARTICIPATION OF CHILDREN WITH CONGENITAL HAND AND UPPER LIMB DIFFERENCES: PSYCHOLOGICAL, SOCIAL, AND PHYSICAL DETERMINANTS

**CONTROL ID:** 3933137

**TITLE:** EXPERIENCE OF LIVING WITH HAND NERVE INJURY:A QUALITATIVE CASE STUDY.

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** S. Gangatharam<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Fraser Health, Abbotsford, BC, Canada.

**ABSTRACT BODY:**

**Purpose:** Traumatic nerve injuries to the upper extremity are a common occurrence. It has been estimated that 16.9 per 100,000 persons with an average age of 38.42 years sustain a nerve injury to the upper limb (Tapp et al., 2019). Nerve injury at the forearm level can cause severe consequences to the individual and to the family. The common consequences include poor hand function, unable to grasp an object, poor dexterity, cold sensitivity and chronic, debilitating neuropathic pain, and lifelong decreased quality of life (QoL).

Jack & Estes (2010) found when therapists acknowledge the complex interrelationship between physical, psychological, and social elements and incorporate them in the assessment and treatment interventions can improve the quality of life in patients with hand injuries. To incorporate these complex elements, the therapist should know the importance of these elements. There are very few qualitative studies in hand therapy that focus on understanding the recovery and experience of patients from nerve injuries and the importance of the complex interrelation between physical and psychosocial elements.

Hence the case study is conducted to understand the experience of living with a hand nerve injury. First, it help us to learn, what the patient thinks is more important than what we, as a therapist, think. Second, it help us in deeper understanding of patients' values, strengths, and weaknesses can help hand therapists view a person from a holistic perspective and implement a holistic treatment plan.

**Methods:** A qualitative phenomenological case study design was used. The data on the participant's experiences were collected in the course of a qualitative interview, participant observation, and artifact. The thematic analysis method described by Braun and Clarke (2006) was used for analyzing and interpreting the data. Efforts to ensure trustworthiness were made throughout the research process. The case study was used because it helps to understand how the participant lives with the hand nerve injury and why the participant tends to live the way that they live. In addition, it helps us to cover contextual conditions that we believe are relevant to the phenomenon under study

**Results:** Three themes were developed from the data analysis. 1) It's the way it is (adaption). 2) Social support and loving relationships (psychological support).3) it's a sub-flicker, is what I describe (Hope). The theme adaptation has two sub-themes which include physical adaptation (Using arm and shoulder muscles to compensate for the lack of flexibility) and social adaptation (I enjoy a tiny cross-section of a community coming to me). The theme of psychological support has two sub-themes which include family support (It is hard to imagine living without psychological and emotional relationships) and health care support (Home care (support) is absolutely helpful for my family and me). The final theme was hope (it's a sub-flicker, is what I describe). The participant was optimistic that one day he could have his hand function. The participant often describe that he has muscle flicker even when there is no visible muscle flicker to his hands.

**Conclusion:** The present finding indicates that the client with hand nerve injury learns to compensate for the loss of function by using the shoulder muscles. They tend to learn their own techniques by trial and error. Family and social support play a huge role in the client's life for his adaption and psychological well-being. The client also has a hope of recovery even when they do not have any visible muscle contracture. The impact of nerve injury on his leisure can be clearly evident from the analysis of the alternate document.

**Purpose:** Traumatic nerve injuries to the upper extremity are a common occurrence. It has been estimated that 16.9 per 100,000 persons with an average age of 38.42 years sustain a nerve injury to the upper limb (Tapp et al., 2019). Nerve injury at the forearm level can cause severe consequences to the individual and to the family. The common consequences include poor hand function, unable to grasp an object, poor dexterity, cold sensitivity and chronic, debilitating neuropathic pain, and lifelong decreased quality of life (QoL).

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the study. The clinician should consider other contextual factors such as client needs, client motivation, social support, environmental support, and psychological factors before implementing the GRASP to stroke clients.

**Purpose:** FOCUSED CLINICAL QUESTION:

Does the Graded Repetitive Arm Supplementary Program (GRASP) improve hand function for adults with ischemic stroke?

GRASP is a common intervention tool used by the Occupational therapist to manage the stroke client. It seems that the GRASP is the go tool for stroke in BC, Canada. It is unclear if there is evidence with the use of GRASP as an intervention for the stroke client. Hence the CAT is done to see if it have any evidence with the use of stroke clients.

**Methods:** The article that met the following inclusion criteria was included for the critically appraised topic.

Diagnosis of stroke, both ischemic and haemorrhagic

Graded Repetitive Arm Supplementary Program or GRASP

Level of evidence: 1 A, 1B, 2A, 2B and 3A, and 3B.

Adult participants aged 18 years or older.

Any ethnicity and gender

Published between 2008-2023.

Peer reviewed articles

The following data base was used to search the articles.

PubMed

EBSCO (CINAHL)

Scopus

OVID

Hand search was also used to search the articles. Hand searching was done using the following technique.

Perusing the pages of key journals, conferences, and other sources.

Checking reference lists of identified articles and documents (snowball technique)

The selected articles were analyzed using the AOTA'S Evidence Appraised Paper (CAP) worksheet.

**Results:** SUMMARY of Search, 'Best' Evidence' appraised, and Key Findings:

A randomized control trial (Harris et al., 2009) found that the GRASP was found to be a safe, time-efficient, and cost- and treatment-effective method to improve upper limb recovery in the subacute phase of stroke. The study results further suggest that GRASP is an effective treatment method for stroke in inpatient settings.

A pilot randomized control trial (Pang et al., 2006) found that the community-based group upper extremity program is feasible and beneficial for improving upper extremity function. It may provide an excellent model for an upper extremity rehabilitation program for the stroke population in the community.

A pilot randomized control trial (Arnao et al., 2019), the GRASP + tRNS might significantly impact clinical rehabilitation programs. In addition, it is effective, easy to carry out, well tolerated by the patient, and can be initiated in the sub-acute phase bedside at stroke units.

A feasibility study (Simpson et al., 2017) found that the H-GRASP was feasible for clients when the exercise program sufficiently challenged them. They also showed sustainable improvements in upper limb function, use of an upper limb, grip strength, and occupational performance following H-GRASP.

**Conclusion:** Does GRASP is effective in improving hand function in clients with ischemic stroke? From the synthesis of evidence from one RCT and two pilot RCTs and one feasibility study. It was found that there is moderate certainty of the evidence for GRASP. In addition. The moderate certainty of evidence suggests that the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different due to unpublished bias in the study. The clinician should consider other contextual factors such as client needs, client motivation, social support, environmental support, and psychological factors before implementing the GRASP to stroke clients.

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**TITLE:** CRITICALLY APPRAISED TOPICS (CATS) - EFFECTIVENESS OF GRADED REPETITIVE ARM SUPPLEMENTARY PROGRAM IN IMPROVING HAND FUNCTION AFTER STROKE.

**CONTROL ID:** 3933586

**TITLE:** MUSCULOSKELETAL PAIN IN THE UPPER QUADRANT IN POSTPARTUM MOTHERS WHO BREASTFEED: A SCOPING REVIEW

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** J. Emberger<sup>1</sup>

**INSTITUTIONS (ALL):**

1. NYU Langone Orthopedic Center, NYU Langone Health System, New York, NY, United States.

**ABSTRACT BODY:**

**Purpose:** Breastfeeding is a meaningful occupation for mothers. Breast milk is the recommended nutritional source for infants for the first year; it is recommended that infants are exclusively breastfed for the first six months and then continue to receive breast milk for at least one year (Center for Disease Control, 2023). Breastfeeding requires sustaining the same position for long periods of time and is repetitive due to the frequency of required feedings. Some women report musculoskeletal pain associated with breastfeeding in the upper quadrant that includes wrist, hand, neck, shoulder and/or back pain. Studies have found up to 73% of postpartum women report musculoskeletal pain (Koyasu et al., 2015; Aburub et al., 2022). Occupational therapists, specifically hand therapists are in a unique position to educate new mothers about ergonomics, positioning, exercises and stretches to prevent and/or alleviate pain so mothers can continue the meaningful occupation of breastfeeding. The primary purpose of this scoping review is to identify the prevalence of upper quadrant, musculoskeletal pain in post-partum women who breastfeed. The secondary purpose is to identify therapeutic interventions that can improve musculoskeletal pain in the upper quadrant associated with breastfeeding in post-partum women.

**Methods:** Databases were searched including CINAHL and PubMed. The following search terms were used: "breastfeeding mothers", "breastfeeding", "postpartum", "upper extremity pain", "neck pain", "shoulder pain", "wrist pain", "hand pain", "positioning", "ergonomics", and "education." Additional hand search of bibliographies and journals were performed. Articles were screened for relevance with the following inclusion criteria: post-partum women who currently breastfeed, with report of upper quadrant, musculoskeletal pain/impairments. A systematic search yielded 13 articles involving report of prevalence of, or included therapeutic interventions to address musculoskeletal pain in the upper quadrant associated with breastfeeding.

**Results:** Out of the 13 included articles, six articles found a significant prevalence of neck pain in post-partum women (Aburub et al., 2022; Koyasu et al., 2015; Ojukwu et al., 2022; Ezeukwu et al., 2020; Ojukwu et al., 2022; Rani et al., 2019), three found a significant prevalence in shoulder pain (Aburub et al., 2022; Iwato et al., 2022; Koyasu et al., 2015), four found a significant prevalence in back pain (Aburub et al., 2022; Iwato et al., 2022; Ezeukwu et al., 2020; Rani et al., 2019), and eight found a significant prevalence in wrist and hand pain (Aburub et al., 2022; Avci et al., 2002; Capasso et al., 2002; Iwato et al., 2022; Jung et al., 2022; Satoh et al., 2022; Sit et al., 2017; Satoh et al., 2017). Of the included articles, three compared prevalence of shoulder, neck, back, wrist and hand pain and found neck, shoulder and back pain more prevalent than wrist and hand pain (Iwato et al., 2018; Koyasu et al., 2015; Rani et al., 2019). The highest incidence of reported pain was at one month post-partum (Iwato et al., 2018; Sit et al., 2017). Higher report of pain was associated with amount of time breastfeeding, breastfeeding position, maternal age and primipara (Iwato et al., 2022; Koyasu et al., 2015; Ojukwu et al., 2022; Ezeukwu et al., 2022). Of the included studies, three utilized therapeutic interventions to assess change in pain associated with breastfeeding, all three were focused on wrist pain. Therapeutic interventions included, orthoses, physiotherapy, cortisone injection, NSAIDs, wrist stabilizing exercises and kiniseotaping (Avci et al., 2002; Capasso et al., 2002; Jung et al., 2022). One study found cessation of breastfeeding spontaneously relieved pain in the wrist two-six weeks later (Avci et al., 2002). No studies focused on modifying the occupation of breastfeeding itself.

**Conclusion:** Musculoskeletal pain is common among breastfeeding women. Women who spend more time breastfeeding, first time mothers, women who use the cross-cradle position, and those that have a higher maternal age are at a higher risk for musculoskeletal pain. Neck, shoulder and back pain are more prevalent than hand and wrist pain. However, therapeutic interventions were only found for wrist pain, specifically de Quervains' tenosynovitis. There is a need for further studies to address pain along the upper quadrant, as there is a higher prevalence of pain in the neck, shoulder and back compared to hand and wrist pain. There is precedent for education on breastfeeding positions, risk factors and ergonomics to prevent musculoskeletal pain to ensure that women can engage in their meaningful occupation of breastfeeding.

**Purpose:** Breastfeeding is a meaningful occupation for mothers. Breast milk is the recommended nutritional source for infants for the first year; it is recommended that infants are exclusively breastfed for the first six months and then continue to receive breast milk for at least one year (Center for Disease Control, 2023). Breastfeeding requires sustaining the same position for long periods of time and is repetitive due to the frequency of required feedings. Some women report musculoskeletal pain associated with breastfeeding in the upper quadrant that includes wrist, hand, neck, shoulder and/or back pain. Studies have found up to 73% of postpartum women report musculoskeletal pain (Koyasu et al., 2015; Aburub et al., 2022). Occupational therapists, specifically hand therapists are in a unique position to educate new mothers about ergonomics, positioning, exercises and stretches to prevent and/or alleviate pain so mothers can continue the meaningful occupation of breastfeeding. The primary purpose of this scoping review is to identify the prevalence of upper quadrant, musculoskeletal pain in post-partum women who breastfeed. The secondary purpose is to identify therapeutic interventions that can improve musculoskeletal pain in the upper quadrant associated with breastfeeding in post-partum women.

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**TITLE:** MUSCULOSKELETAL PAIN IN THE UPPER QUADRANT IN POSTPARTUM MOTHERS WHO BREASTFEED: A SCOPING REVIEW

**CONTROL ID:** 3933704

**TITLE:** EXPLORING PHYSICAL, MENTAL AND SOCIAL HEALTH IN INDIVIDUALS WITH ARTHRITIS OF THE HAND AND/OR UPPER EXTREMITY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** N. Naughton<sup>5</sup>, B. Z. Stern<sup>1</sup>, S. Doerrer<sup>2</sup>, P. Bakshi<sup>3</sup>, S. Goloff<sup>4</sup>

**INSTITUTIONS (ALL):**

1. New York University, New York, NY, United States.
2. George Washington University, Maryland, DC, United States.
3. Indiana State University, Terre Haute, IN, United States.
4. Hospital for Special Surgery, New York, NY, United States.
5. Hand Surgery Associates, Scranton, PA, United States.

**ABSTRACT BODY:**

**Purpose:** The purpose of this study was to provide insight into the physical and psychosocial impact of arthritis related to the hand and/or upper extremity. Such insights could assist with identifying the needs of this population for program development, patient education, and future research. Specifically, we asked: 1) What is the physical, mental, and social health of individuals living with arthritis related to the hand and/or upper extremity? 2) Are there relationships between upper extremity function and other domains of health-related quality of life? 3) Is there a relationship between pain intensity and upper extremity function, physical function, and social participation?

**Methods:** This is a descriptive web-based survey. The target population was individuals living with arthritis who have self-reported or therapist-identified involvement of the upper extremity and had not had surgery in the last 6 months. The web-based survey was developed in Qualtrics. The survey link and QR code was disseminated via email blast and via social media to hand therapists to share it directly (e.g., via email) with potential participants. American Society of Hand Therapists (ASHT) membership received an email which detailed the scope and intended outcome of the project with a formal request for study participants from their current patient population and accompanying family/friends who fulfilled the inclusion criteria. The project was described as a collaborative project between the Arthritis Foundation and ASHT. A face sheet including a script on how to present the project to potential participants was included. The survey included the INSIGHTS assessment from the Arthritis Foundation, which includes the Patient-Reported Outcomes Measurement Information System (PROMIS)-29 Profile. This was supplemented with a validated upper extremity specific patient-reported outcome measure (PROMIS Upper Extremity 7a Short Form augmented with three questions from the item bank specific to fine motor hand function) plus screening questions about self-reported hand involvement.

Descriptive analysis was performed on all demographic data. A Shapiro Wilk test was performed, and data were not normally distributed; therefore, non-parametric statistical tests were used. Kendall tau b correlation coefficients was used to identify relationships between ordinal data, and a Spearman rank order was used for correlation analysis for continuous data.

**Results:** Seventy-five patients initiated the survey, and 38 individuals completed at minimum the PROMIS Upper Extremity measure and were included in the study. The mean age of included respondents was 58 years, with the majority being white (n=26) and women (n=32). The median PROMIS Upper Extremity score was 40.55 (IQR = 34.75-46.90), 1 standard deviation below the average in the US general population. Impairments in symptoms and/or function were noted across all domains of the PROMIS-29 (physical function, pain interference, sleep disturbance, fatigue, depression, anxiety, and social participation; (Figure 1). Overall, greater limitations were noted for gross motor tasks requiring strength versus fine motor tasks (Figure 2). All relationships between the PROMIS Upper Extremity custom short form and the seven domains of the PROMIS-29 were statistically significant ( $r_s = -0.60-0.63$ ; all  $p < .001$ ), with physical function ( $r_s = 0.63$ ) and anxiety ( $r_s = -0.60$ ) having the strongest relationships with upper extremity function (Table 1). Median pain intensity was 3 (IQR = 2-4), and higher pain intensity was correlated with poorer self-reported health for items on PROMIS measures of upper extremity function, physical function, and social participation.

**Conclusion:** Individuals with hand and/or upper extremity arthritis experience an impact in multiple domains, including physical, mental, and social health. Worse upper extremity function is associated with greater limitations in other domains of health-related quality-of-life. Additionally, pain intensity is related to worse upper extremity function, including both gross motor and fine motor upper extremity tasks. Conclusions are limited by the small, homogeneous sample. However, these preliminary insights can support improved patient education and program development and guide future research in populations not represented in the current survey.



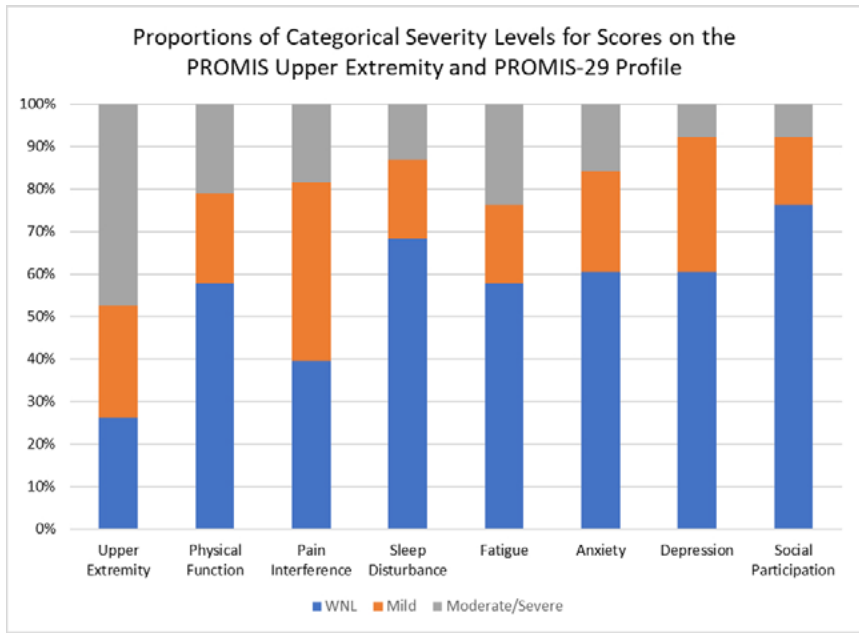
**Purpose:** The purpose of this study was to provide insight into the physical and psychosocial impact of arthritis related to the hand and/or upper extremity. Such insights could assist with identifying the needs of this population for program development, patient education, and future research. Specifically, we asked: 1) What is the physical, mental, and social health of individuals living with arthritis related to the hand and/or upper extremity? 2) Are there relationships between upper extremity function and other domains of health-related quality of life? 3) Is there a relationship between pain intensity and upper extremity function, physical function, and social participation?

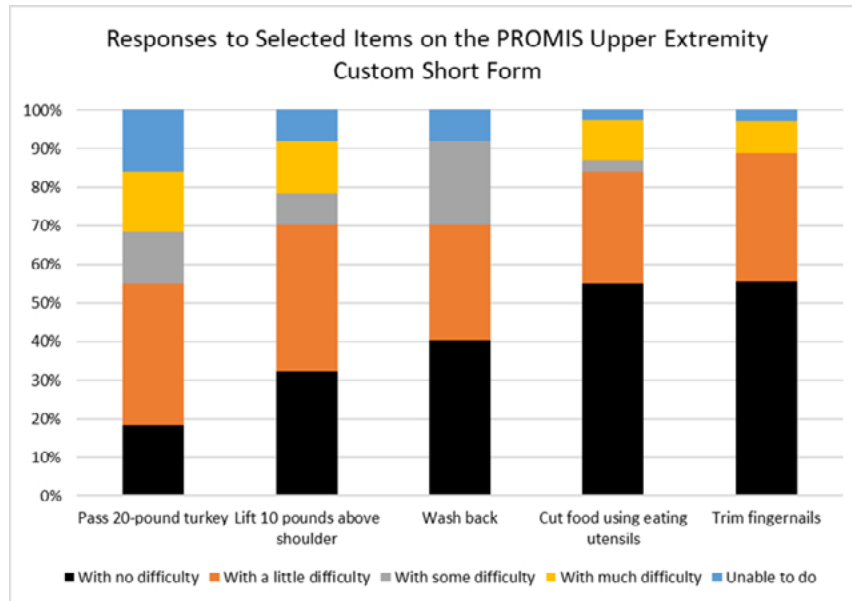
**Methods:** This is a descriptive web-based survey. The target population was individuals living with arthritis who have self-reported or therapist-identified involvement of the upper extremity and had not had surgery in the last 6 months. The web-based survey was developed in Qualtrics. The survey link and QR code was disseminated via email blast and via social media to hand therapists to share it directly (e.g., via email) with potential participants. American Society of Hand Therapists (ASHT) membership received an email which detailed the scope and intended outcome of the project with a formal request for study participants from their current patient population and accompanying family/friends who fulfilled the inclusion criteria. The project was described as a collaborative project between the Arthritis Foundation and ASHT. A face sheet including a script on how to present the project to potential participants was included. The survey included the INSIGHTS assessment from the Arthritis Foundation, which includes the Patient-Reported Outcomes Measurement Information System (PROMIS)-29 Profile. This was supplemented with a validated upper extremity specific patient-reported outcome measure (PROMIS Upper Extremity 7a Short Form augmented with three questions from the item bank specific to fine motor hand function) plus screening questions about self-reported hand involvement.

Descriptive analysis was performed on all demographic data. A Shapiro Wilk test was performed, and data were not normally distributed; therefore, non-parametric statistical tests were used. Kendall tau b correlation coefficients was used to identify relationships between ordinal data, and a Spearman rank order was used for correlation analysis for continuous data.

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**Conclusion:** Individuals with hand and/or upper extremity arthritis experience an impact in multiple domains, including physical, mental, and social health. Worse upper extremity function is associated with greater limitations in other domains of health-related quality-of-life. Additionally, pain intensity is related to worse upper extremity function, including both gross motor and fine motor upper extremity tasks. Conclusions are limited by the small, homogeneous sample. However, these preliminary insights can support improved patient education and program development and guide future research in populations not represented in the current survey.





**IMAGE CAPTION:**

**TABLE:**

Note: The PDF table below is only an approximation of the HTML content and may not match formatting exactly.

Relationships between scores on the PROMIS Upper Extremity custom short form and the domains of the PROMIS-29 Profile		
PROMIS-29 Profile Domains	rs value	p (2-tailed)
Physical Function	0.63	<.001**
Pain Interference	-0.44	<.001**
Sleep Disturbance	-0.45	<.001**
Fatigue	-0.44	<.001**
Anxiety	-0.60	<.001**
Depression	-0.52	<.001**
Social Participation	0.53	<.001**
PROMIS- Patient-Reported Outcomes Measurement Systems **Correlation is significant at the 0.01 level (2-tailed)		

**TABLE FOOTER:** PROMIS- Patient-Reported Outcomes Measurement Systems

\*\*Correlation is significant at the 0.01 level (2-tailed)

**TABLE TITLE:** Relationships between scores on the PROMIS Upper Extremity custom short form and the domains of the PROMIS-29 Profile

**TITLE:** EXPLORING PHYSICAL, MENTAL AND SOCIAL HEALTH IN INDIVIDUALS WITH ARTHRITIS OF THE HAND AND/OR UPPER EXTREMITY

**CONTROL ID:** 3933766

**TITLE:** GLOBAL HAND AND UPPER LIMB TRAINING: AN INTERPROFESSIONAL PROJECT TO ADDRESS THE EDUCATION NEEDS IN LOW TO MIDDLE INCOME COUNTRIES

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** E. Clayton<sup>1</sup>, T. Feite<sup>1</sup>, B. Fresno<sup>1</sup>, M. Chertova<sup>1</sup>, A. Hoag<sup>1</sup>, J. Jordan<sup>1</sup>, J. Fedorczyk<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Center for Hand and Upper Limb Health and Performance, Thomas Jefferson University, Bradenton, FL, United States.

**ABSTRACT BODY:**

**Purpose:** Hand and upper limb rehabilitation is emerging in low- to middle-income countries (LMIC). Access to training is needed. While the need is growing, rehabilitation professionals have limited access to education and training to provide adequate patient care (Jesus, 2019). Barriers include limited finances, lack of formal therapy education, and professional organizations. Ewald reported that there are inadequate education resources in 21 full member countries that belong to the IFSHT (Ewald, 2015). Using online education and training initiatives has been recommended to advance rehabilitation practice (Reisach & Weilemann, 2016). The overall goal of this project is to create a training program for rehabilitation professionals in LMIC. The purpose of this study is to complete a needs assessment and to establish a framework to guide program development.

**Methods:** Survey methodology was used to complete a needs assessment (NA) and program evaluation (PE) on a developed training module. Google Forms was the platform utilized to deliver and collect survey data that can be accessible to all parties in the anticipated multi-year period to complete and revise the program. NA: Using convenience sampling through professional networks, 31 OTs and PTs identified as having provided care, education, or training in LMIC were asked to consent and participate. Participants were asked to forward the survey to colleagues that met this criterion. PE: To evaluate the developed shoulder module, 17 OTs and PTs were identified with expertise in this content through professional networks were sent the PE survey. These participants were asked to consent and complete a specific list of presentations if they were unable to review the entire module. All responses to each survey were anonymous, but participants could self-identify if they were interested in working on the project.

**Results:** The NA survey was completed by 16/31 therapists. Experience reported in a variety of LMIC, the most common were Guatemala and Honduras. Common conditions managed were musculoskeletal injuries, thermal injuries, and acute wounds. Other prevalent conditions included machete or motorbike injuries, brachial plexus injuries, congenital anomalies, and conditions that developed from either untreated or mistreated conditions. The most common age groups were pediatric and young adults. Rehabilitation in LMIC was typically provided in an established outpatient clinic, hospital, or pop-up clinic. Half of the survey respondents indicated that they worked alongside native rehabilitation professionals. This survey provided insight into what educational content should be included in the training program. English and Spanish were identified as the two languages to use in the program.

The PE survey was completed by 5/17 therapists; 3 OTs and 2 PTs reviewed each of the presentations in the shoulder module. The participants noted that the strengths of the presentations were the use of pictures and videos, salient information, and well-organized. Using case studies to reinforce concepts was the most common theme of how to improve each presentation. Participants recommended adding more details regarding clinical presentation, specific clinical examination procedures, and screening examinations. Based on experience in LMIC, modules should address post-burn axillary contractures, trauma (post-operative and conservative management of clavicle and proximal humerus fractures), as well as skin and wound care.

**Conclusion:** The concepts gathered from the NA and PE survey provide a data-informed foundation for the development of the training program. Knowledge gaps in the literature were filled. It confirmed the researchers' intention to include a range of topics in the program, starting with foundation content such as anatomy and progressing to management of advanced conditions. It emphasized the need to include information for pediatric and adult conditions, and to do so in at least two languages: English and Spanish. The results of the PE survey provided meaningful feedback to guide content development. Specifically, it identified that the content was appropriate for the targeted learning population but could be enhanced with case studies with videos and images. The framework of the PE survey will be used to develop and evaluate other modules.

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**TITLE:** GLOBAL HAND AND UPPER LIMB TRAINING: AN INTERPROFESSIONAL PROJECT TO ADDRESS THE EDUCATION NEEDS IN LOW TO MIDDLE INCOME COUNTRIES

**CONTROL ID:** 3933813

**TITLE:** A NOTABLE CONSIDERATION: AN INVESTIGATION INTO THE CLINICAL UTILITY OF COMMONLY-USED UPPER EXTREMITY COORDINATION ASSESSMENTS IN AN INSTRUMENTAL MUSICIAN POPULATION

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** A. Shearer<sup>1</sup>, J. Barr<sup>1</sup>, L. Frenkel<sup>1</sup>, J. Hunstad<sup>1</sup>, E. Kramp<sup>1</sup>, A. Nehez<sup>1</sup>, S. Robertson<sup>1</sup>, D. Thompson<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Shenandoah University, Ashburn, VA, United States.

**ABSTRACT BODY:**

**Purpose:** Instrumental musicians commonly experience dysfunction of the upper extremities that can negatively impact their playing abilities. As the demands placed on musicians require sophisticated movement patterns, they may typically perform better than the general population on upper extremity coordination assessments. Limited evidence exists regarding the sensitivity of commonly-used upper extremity coordination assessments in an instrumental musician population.

**Methods:** Instrumental musicians at Shenandoah Conservatory currently experiencing upper extremity dysfunction were recruited and eligible for the study. One male and seven female musicians ages 18 to 29 years ultimately participated, representing the following primary instruments: bassoon, violin, piano, flute, French horn, and cello. Participants were assessed using three frequently-used upper extremity coordination tests: the Box and Block Test, the Purdue Pegboard Test, and Nine-Hole Peg Test. Upper extremity dysfunction was verified using three validated questionnaires: QuickDASH, the DASH Sports and Performing Arts Module, and the Musculoskeletal Pain Intensity and Interference Questionnaire for Musicians (MPIIQM). The order of the assessments was randomly assigned for each participant.

**Results:** Each musician's performance on the three upper extremity coordination assessments was compared to established normative values. For the Nine-Hole Peg Test, 69% of participants met the mean normative time for completion. However, 78% of participant scores fell below the mean normative scores on the Purdue Pegboard Test, and no participants reached established norms for the Box and Block Test.

These results for the Purdue Pegboard and Box and Block Tests were highly unexpected. Therefore, for investigative purposes, additional testing was performed on a small, typical population of 22 graduate occupational therapy students. This study addendum yielded similar outcomes: 84% of the student population's scores fell below established norms for the Purdue Pegboard Test, and 95% fell below norms for the Box and Block Test.

**Conclusion:** The Nine-Hole Peg Test does not appear sensitive enough to reliably detect upper extremity impairment in instrumental musicians, though additional research should be conducted with a larger population. However, if a clinician chooses to use the Nine-Hole Peg Test as part of a comprehensive hand and upper extremity evaluation of a musician, it may be advisable to use an additional assessment--such as the MPIIQM--in conjunction with the Nine-Hole Peg Test to more fully discern the effect that upper extremity dysfunction has on the musician's coordination and ability to play their instrument.

Perhaps most significantly, this research brought to light significant concerns regarding the validity of the Purdue Pegboard and Box and Block Tests. Both an injured musician population and a small, typical population that were assessed as part of this study were far from reaching established normative values for these assessments.

These results may be indicative of generational changes in the way we use our upper extremities: normative data for the Box and Block Test was established in 1985, while the Purdue Pegboard Test norms were established in 1986. The development and use of technology over the past few decades is likely impacting coordination and dexterity, as manual labor has become less prevalent in the workforce and automation is utilized at higher rates. The results of the current study echo those of Li et al. in 2020, who established normative scores for the Box and Block Test in a Taiwanese population and found that they were substantially lower than the norms established in 1985 for an American population. The participants in the current study, on average, scored poorer than the Taiwanese population on the Box and Block Test; this may be due to cultural variations in the way Eastern and Western populations use their hands.

Given that the vast majority of healthy, typical participants did not reach established norms for the Box and Block and Purdue Pegboard Tests, an expedient investigation into normative data for a Western population is recommended. Outdated normative scores for these assessments may yield untrustworthy results in a variety of clinical settings.

The scores collected from the musician population in this study cannot be effectively analyzed due to said concerns regarding the reliability of current normative data. Following the establishment of updated norms, the clinical utility of the Box and Block and Purdue Pegboard Tests in a musician population should be further explored.

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(No Image Selected)

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**TITLE:** A NOTABLE CONSIDERATION: AN INVESTIGATION INTO THE CLINICAL UTILITY OF COMMONLY-USED UPPER EXTREMITY COORDINATION ASSESSMENTS IN AN INSTRUMENTAL MUSICIAN POPULATION

**CONTROL ID:** 3933886

**TITLE:** DEVELOPING A HAND DEXTERITY ASSESSMENT USING THREE DIMENSIONAL PRINTED OBJECTS

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** J. Jackson<sup>1</sup>, S. Adams<sup>1</sup>, O. Egwuatu<sup>1</sup>, C. Fagan<sup>1</sup>, C. Hedge<sup>1</sup>, J. Herrera<sup>1</sup>, T. Wagner<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Emory & Henry College, Marion, VA, United States.

**ABSTRACT BODY:**

**Purpose:** The purpose of this study is to promote the development of a hand dexterity assessment that utilizes objects printed from a three-dimensional (3D) printer. This study has received IRB approval. This assessment focuses on in-hand manipulation skills using a small peg, a donut size peg, and a pegboard base. The assessment includes 4 tests consisting of small peg placing, small peg turning, donut peg placing and donut peg turning. This study examines these four tests related to the factor of hand dexterity. Having items that can be printed on a 3D printer increase the accessibility, affordability, and consistency in use of this assessment by any therapist that assesses hand dexterity.

**Methods:** Methods for this study consisted of subjects completing an informed consent, upper extremity range of motion (ROM) screen, personal history questions, hand measurements, and performance of four tests using dominant and non-dominant hands. Exclusions included any limitations in upper extremity ROM below a defined minimum of range or having a past history of surgery or hand condition that limited hand dexterity. Age range for this study was between 18 and 60 years of age. Both male and female participated in this study as well as both right-hand and left-dominant individuals. The following measurements were used to measure hand size (cm): 1) tip of third digit to wrist palmar crease on volar aspect of hand (hand length) and 2) Ulnar edge and radial edge of distal palmar crease on volar aspect of hand (hand width). Subjects were provided instructions of how to perform each dexterity test in a specified manner including a starting and ending point. Each subject was provided a practice run and then performed three trials of each of the four tests.

The assessment instruments included nine small pegs (6mm (X) x 6 mm (Y) x 38.1 mm (Z)), 9 donut pegs (22.225 mm (X) x 22.225mm (Y) x 12.7mm (Z)), and 9 board base pieces that fit together into one pegboard (132mm (X) x 132mm (Y) x 12mm (Z)) that were designed and printed on a 3D printer by the research team. The four tests include the following: 1) small peg placing 2) small peg turning 3) donut peg placing and 4) donut peg turning.

**Results:** Results consisted of the following: description of dataset, ANOVA analysis for hand dominance/ gender/ age/ and total errors, and Factor analysis of testing items. The dataset consisted of 75 subjects – 76% females, 24% males, 95% right-hand dominant, 5% left-hand dominant, and average age of 27 with range from 19-57. Subjects were recruited using a convenient sample on a college of health sciences campus. Ninety-one percent of subjects reported no significant person history and the remaining 9% reported history of conditions such as shoulder injury, CMC pain, and Boutonniere deformity in 5th digit. These reported conditions did not limit the subjects' range of motion and dexterity. For all subjects the following were the averages of hand size: dominant hand - length of 17.54 cm and width of 8.24 cm; non-dominant hand – length of 17.51 cm and width of 8.23 cm. Subjects completed 3 trials for each dexterity test and the average of the three trials was used for analysis. The following includes the averages (seconds) of completion for each dexterity test: 1) Peg Placing – Dominant hand 13.97 and Non-Dominant hand 14.87; 2) Peg Turning – Dominant hand 15.18 and Non-Dominant hand 16.41; 3) Donut Placing – Dominant hand 11.04 and Non-Dominant hand 11.35; 4) Donut Turning – Dominant hand 12.48 and Non-Dominant 13.42.

ANOVA analysis was completed and there were no significant differences found within the group of subjects related to hand dominance, age, and total errors, however, there was a significant difference noted between gender for peg placing and peg turning for dominant hand as well as donut turning for non-dominant hand. An exploratory factor analysis was completed and showed that all four dexterity tests for both dominant hand and non-dominant hand showed strong correlation and/or representation of the component factor of hand dexterity.

**Conclusion:** Based on the factor analysis results, all four test items indicated a strong representation of hand dexterity. For future research considerations, this test could be expanded by adding bilateral hand dexterity components, adding tests to include palm to finger and finger to palm translations, and increasing board size and number of pegs used in the assessment. Further research is needed to determine the reliability and validity of this assessment in measuring components of hand dexterity. Due to the significant difference found between genders, a further study should be conducted to develop normative gender charts for these assessments. This assessment has the potential to be implemented in therapy settings for testing hand dexterity and has the potential to meet the needs

previously identified as cost-effective, comprehensive, timely, and accessible. Clinicians could download the files, print with a 3D printer, and use in practice.

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3D Printed Hand Dexterity Assessment

**IMAGE CAPTION:** 3D Printed Hand Dexterity Assessment

**TABLE:**

*Note: The PDF table below is only an approximation of the HTML content and may not match formatting exactly.*

Hand Dexterity (seconds) and Hand Size (cm) Results				
	Mean	Minimum	Maximum	Range
Hand Width - Dominant Hand	8.24	7.00	10.00	3.00
Hand Length - Dominant Hand	17.54	15.50	20.00	4.50
Hand Width - Non-Dominant Hand	8.23	7.00	10.00	3.00
Hand Length - Non-Dominant Hand	17.51	15.50	20.00	4.50
Donut Peg Placing - Dominant Hand	11.04	8.87	14.14	5.27
Donut Peg Placing - Non-Dominant Hand	11.35	8.79	14.60	5.81
Donut Peg Turning - Dominant Hand	12.48	9.19	16.40	7.21
Donut Peg Turning - Non-Dominant Hand	13.42	8.23	17.63	9.4
Small Peg Placing - Dominant Hand	13.97	10.57	19.92	9.35
Small Peg Placing - Non-Dominant Hand	14.87	11.74	18.44	6.70
Small Peg Turning -	15.18	10.80	20.31	9.51

Dominant Hand				
Small Peg Turning - Non-Dominant Hand	16.41	11.30	22.76	11.46

Exploratory Factor Analysis Results		
Item	Factor 1	Factor 2
Donut Peg Placing - Dominant Hand	0.676	0.199
Donut Peg Turning - Dominant Hand	0.800	-0.266
Small Peg Placing - Dominant Hand	0.709	0.333
Small Peg Turning - Dominant Hand	0.690	0.006
Donut Peg Placing - Non-Dominant Hand	0.777	0.086
Donut Peg Turning - Non-Dominant Hand	0.733	-0.307
Small Peg Placing - Non-Dominant Hand	0.824	0.143
Small Peg Turning - Non-Dominant Hand	0.665	-0.161
Hand Size Total (Width and Length) - Dominant Hand	-0.010	0.966
Hand Size Total (Width and Length) - Non-Dominant Hand	-0.009	0.971

Promax rotation with a 4.0 Kappa value. Within the factor analysis, the Eigenvalue for factor one was determined to be 4.352, representing 43.52% of the variance. The Eigenvalue for factor two was determined to be 2.230, representing 22.30% of the variance.

**TABLE FOOTER:**

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**TABLE TITLE:** Hand Dexterity (seconds) and Hand Size (cm) Results  
Exploratory Factor Analysis Results

**TITLE:** DEVELOPING A HAND DEXTERITY ASSESSMENT USING THREE DIMENSIONAL PRINTED OBJECTS

**CONTROL ID:** 3933971

**TITLE:** USE OF THE KAWA MODEL TO EXPLORE THERAPIST'S PERCEPTIONS OF CURRENT PRACTICE IN HAND THERAPY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** S. Charnley<sup>1</sup>, A. Beliles<sup>1</sup>, J. Hernandez<sup>1</sup>, D. Timm<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Lewis University, New Lenox, IL, United States.

**ABSTRACT BODY:**

**Purpose:** It is important to understand the supports and challenges affecting therapists working in a hand therapy setting. The Kawa (River) Model is a therapeutic method developed by occupational therapists in Japan. It can be used by therapists as a conceptual model, frame of reference, assessment tool or modality to understand factors impacting overall health and life flow. Key features of the river include water, rocks, river walls, and driftwood, which symbolize engagement, challenges, environmental factors, and personal attributes and liabilities, respectively. The purpose of this study is to explore occupational therapists' perceptions of current practice in a hand therapy setting through the use of the Kawa Model.

**Methods:** Qualitative research methodology was used to explore the research question. Participants were educated on the Kawa Model and then asked to draw their Kawa River pertaining to their own practice. Semi-structured interviews were used to explore each element of the river drawings. Interviews were transcribed, coded and themed. Member checks were used to establish validity of conclusions.

**Results:** Five certified hand therapists with a range of 4-35 years of practice in hand therapy participated in this study. Common themes found pertaining to challenges or rocks in a hand therapy setting included documentation and reimbursement issues, OT-client dynamics, scheduling and staffing issues, and occupational imbalance. Themes pertaining to the environment or riverbed found included the social environment, resources and benefits available, and the physical location of the clinic. Themes identified relating to personal characteristics or driftwood included coworker relationships, domain specific knowledge, and multi-tasking ability.

**Conclusion:** This study provides insight into therapist's perceptions of the many diverse factors which influence their clinical practice, and also provides insight into their overall satisfaction working in a hand therapy setting. This information can be used to develop supports for today's practicing therapists. Results may also be used to share with those interested in pursuing a career in hand therapy. Replication of this study is recommended for further validation of these findings.

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(No Image Selected)

(no table selected)

**TITLE:** USE OF THE KAWA MODEL TO EXPLORE THERAPIST'S PERCEPTIONS OF CURRENT PRACTICE IN HAND THERAPY

**CONTROL ID:** 3934164

**TITLE:** MUSCULOSKELETAL CHARACTERISTICS OF ELBOW FLEXION CONTRACTURES CHILDREN WITH BRACHIAL PLEXUS BIRTH INJURY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** B. Deschene<sup>2</sup>, A. Grant<sup>2</sup>, E. Ogbomo<sup>1</sup>, K. Davidge<sup>1</sup>, E. S. Ho<sup>1</sup>

**INSTITUTIONS (ALL):**

1. The Hospital for Sick Children, Toronto, ON, Canada.
2. Occupational Science and Occupational Therapy, The University of Toronto, Toronto, ON, Canada.

**ABSTRACT BODY:**

**Purpose:** Purpose: Elbow flexion contractures after a brachial plexus birth injury (BPBI) are common; with a reported prevalence of 48% of populations studied. These contractures may lead to limited activity performance due to the physical impairment affecting bilateral reaching activities and appearance-related concerns. Clinical reports, case studies, and murine model studies provide evidence these contractures occur in the presence of flexor-extensor muscle imbalance, impaired longitudinal muscle growth of the biceps brachii and brachialis, and late presentation bony changes; however rigorous evidence to support these findings has not been conducted clinically. The purpose of this study is to characterize the musculoskeletal characteristics of elbow flexion contractures after a BPBI to evaluate the proposed theories of muscle imbalance and impaired longitudinal growth of the flexor muscles.

**Methods:** Methods: This is a prospective cross-sectional study of children with an elbow flexion contracture secondary to BPBI. Demographic and treatment information was extracted from health records, while direct participant-facing data was collected through a comprehensive upper extremity assessment: goniometry of active and passive range of motion of elbow flexion and extension in pronation, supination, and neutral forearm positions; arm and forearm length and girth measurements; and isometric muscle strength of elbow flexors and extensors with hand-held dynamometry.

**Results:** Results: Twenty-five children (17F, 8M) between 1 and 17 years participated in the study at a mean age of assessment of  $9.2 \pm 5.1$  years. Of the included participants, 20 (80%) had upper plexus injuries and 5 (20%) had total plexus injuries. Seven (28%) children underwent reconstructive nerve surgery, and 6 (24%) had shoulder reconstructive surgery. The degree of elbow contracture measured in pronation (bicep brachii fully lengthened;  $-28.5 \pm 11.4$ ), was similar to the degree of contracture in neutral forearm position ( $-28.0 \pm 10.2$ ). Twenty-three (92%) had a forearm contracture: passive range of motion deficits were found pronation ( $n = 8$ , 32%), supination ( $n = 3$ , 24%), and both pronation and supination ( $n = 9$ , 36%). Of the 15 participants who were old enough ( $>4$  years,  $n=15$ ) to participate in hand-held dynamometry, their mean elbow flexion and extension strength were significantly stronger on the unaffected side ( $p < 0.001$ ). The ratio of elbow flexion to elbow extension strength was significantly greater in the affected limb ( $p = 0.04$ ). The ratio of affected to unaffected arm length, forearm length, arm girth, and forearm girth were similar. Per region, the unaffected limb was greater in size in arm length ( $n = 18$ , 72%), forearm length ( $n = 21$ , 84%), arm girth ( $n = 16$ , 64%) and forearm girth ( $n = 21$ , 84%).

**Conclusion:** Conclusion

Muscle strength and length of elbow flexors may be a contributor to elbow flexion contracture development as well as significant elbow extensor weakness in select participants. Length and potential failure of longitudinal growth of both biceps brachii and brachialis appear to be associated with elbow contracture development. Further investigation is required to identify the contributions of flexor denervation and/or root level contributions.

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**TITLE:** MUSCULOSKELETAL CHARACTERISTICS OF ELBOW FLEXION CONTRACTURES CHILDREN WITH BRACHIAL PLEXUS BIRTH INJURY

**CONTROL ID:** 3935132

**TITLE:** UTILIZING THE SPURGEON METHOD® AS A MANUAL THERAPY PROTOCOL POST-MASTECTOMY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** C. Veazey<sup>1</sup>, J. Radziak<sup>1</sup>, S. Spurgeon<sup>2</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, A.T. Still University, Mesa, AZ, United States.
2. Thérapie, Las Vegas, NV, United States.

**ABSTRACT BODY:**

**Purpose:** Post mastectomy, patients may experience reduced range of motion of the shoulder, chronic pain, and increased risk of shoulder pathologies that negatively affects their quality of life and ability to complete activities of daily living. A variety of interventions have been identified to assist this population post-surgery, however no definitive protocol has been established. This 6-week study evaluates The Spurgeon Method® as a manual therapy protocol for physical and occupational therapists to utilize with clients after mastectomy to regain shoulder ROM.

**Methods:** A mixed methods pilot study was completed performing The Spurgeon Method® protocol with 30 participants once a week for six weeks. Participants were recruited from oncologists and cancer centers in the southern Nevada area. All participants were at least four weeks post mastectomy to allow for healing of the incision site and were not currently receiving chemotherapy or radiation treatments. Participants were excluded if they had a diagnosis of a shoulder pathology with a recommendation for surgery.

Shoulder abduction, flexion, and external rotation were measured with a goniometer before and after each manual therapy session. The Quick DASH survey was used to assess changes in ability to complete daily activities comparing the level of perceived disability at the first session to that at the last session. The pain scale on the Quick DASH survey was used to compare participants' pain level at the first session to their pain level at the last session. Qualitative data was collected through participant comments provided at the end of the study.

**Results:** Participants demonstrated a statistically significant improved shoulder range of motion in all planes of motion. Quick DASH survey results for the first session compared to the last demonstrated a statistically significant improvement from a mean of 32.57 to 13.25. The Quick DASH pain scale improved from a mean of 2.83 to 1.46 indicating a statistically significant decrease in pain.

**Conclusion:** The Spurgeon Method® protocol can be used by occupational and physical therapists to restore range of motion of the shoulder which increases the ability to complete activities of daily living with less pain and difficulty. This manual therapy protocol could be combined with functional activities in an oncology rehabilitation environment or lymphedema therapy practice to meet the patient's needs. Additionally, occupational therapists have the mental health background to meet patient's needs as they recover from breast cancer surgery and treatments. Patient education is needed regarding expectations of the recovery process, risks and early signs of lymphedema, and therapy availability after mastectomy.

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**TITLE:** UTILIZING THE SPURGEON METHOD® AS A MANUAL THERAPY PROTOCOL POST-MASTECTOMY

**CONTROL ID:** 3935421

**TITLE:** ASSESSING HAND DEXTERITY IN A TELEHEALTH SETTING

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** J. Jackson<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Emory & Henry College, Marion, VA, United States.

**ABSTRACT BODY:**

**Purpose:** The purpose of this study was to evaluate the effectiveness of performing the Moberg Pick Up Test (MPUT) hand test via telehealth and to compare its results to normative data that is in the literature. There are limited studies that explore the use of hand dexterity assessments in a telehealth setting. A therapist can face the challenge of having the availability of a standardized assessment to use for an online evaluation. It may be more appropriate to implement a hand dexterity assessment that uses common household items such as the Moberg Pick-Up Test (MPUT).

**Methods:** This study did receive IRB approval. Thirty subjects were recruited to participate in this study. Each subject was provided a link to virtually meet on zoom with a unique meeting ID, password, and an enabled waiting room. Once the subject entered the zoom meeting then the meeting was locked. Each subject completed a range of motion screen as well as a personal history questionnaire regarding any upper extremity injuries in the past. A Moberg Pick Up Test with a dycem pad was provided to each subject prior to the zoom session. Each Moberg Pick Up Test included a plastic container with lid (circumference of 4 and seven eighths inches and a height of 2 and a half inches), 12 items (one half inch wing nut, 1 inch screw, 1 key, 1 and a half inch nail, United States quarter, United States nickel, one fourth inch washer, 1 and one eighths inch safety pin, A#1 paper clip, five eighths inch hexagon nut, three eighths inch hexagon nut, and a one fourth inch square nut), and a marked dycem pad. The dycem pad was marked in order to provide correct placement of the container and items during the test. The pad with the container in the center was placed directly in front of the subject on a table. Items were randomly placed in a marked circle on the pad positioned next to the container either on the right side when the right hand was tested and on the left side when the left hand was tested. Each subject with their eyes open was instructed to pick up the items one at a time and place in the container as quickly as possible without dropping any items. Each subject completed three trials using the right hand and then the left hand. The three trials were times and an average was used for analysis. Any drops and/or errors were documented.

**Results:** Thirty subjects were recruited from a convenient sample on a school of health sciences campus. One subject showed a significant outlier in testing results so this data was not used in the analysis. For the 29 subjects – 21 were female and 8 were male – 24 were right hand dominant and 5 were left hand dominant. The average age was 25.6 with range of 22 to 36. Test averages results were as follows: All subjects: Dominant Hand – 11.41 and Non-Dominant Hand – 11.67; Female Subjects: Dominant Hand – 11.05 and Non-Dominant Hand – 11.46; Male Subjects: Dominant Hand – 12.35 and Non-Dominant Hand – 12.22. An ANOVA analysis was completed for age, gender, and hand dominance. The ANOVA determined that there was no significant difference found between groups in regards to age and hand dominance but did show a significance between genders for dominant hand. Means test results were compared to another documented study in Journal of Hand Therapy in 1999 by Ng, Ho and Chow and the all of the means were very similar within 1 second deviation for each result. Means were compared to a second study by Amirgani, Ashworth, Gordon, Edwards and Chan in 1997 that showed similar results for the age range of 20-39 to be within a 2 second deviation.

**Conclusion:** During the study it was discovered that setting up the MPUT assessment over Zoom faced more difficulties than an in-person assessment. The subjects required repetitive instructions during the setup of the assessment due to misinterpretation. To limit confusion, concise and clear instructions were needed. By providing labels on where to place the objects prior to starting the assessment the chances of error was decreased. This technique also kept it consistent for each participant. Also during the process, the importance of the environment and space requirements for the assessment were made evident as well as a more appropriate camera angle. The results of this study did show comparable results to other studies and demonstrates that standardized assessments can be completed in a telehealth setting when the client is provided the proper equipment, clear instructions, and set up instructions. The MPUT shows good validity and reliability and uses simple objects that are inexpensive and easily obtained in order to provide this assessment to clients in home or other setting.

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# Abstracts

(abstracts are listed in numeric order by control ID number)





**IMAGE CAPTION:**

**TABLE:**

Note: The PDF table below is only an approximation of the HTML content and may not match formatting exactly.

Test Results by Gender			
Gender		Dominant Hand Results	Non-Dominant Hand Results
Female	Mean	11.05	11.46
	N	21	21
	Std. Deviation	1.34	1.15
Male	Mean	12.35	12.22
	N	8	8
	Std. Deviation	1.55	1.48
Total	Mean	11.41	11.67
	N	29	29
	Std. Deviation	1.49	1.26

ANOVA Results by Gender						
		Sum of Squares	df	Mean Square	F	Sig.
Dominant Hand Results	Between Groups (Combined)	9.753	1	9.753	4.963	.034
	Within Groups	53.063	27	1.965	.	.
	Total	62.816	28	.	.	.
Non Dominant Hand Results	Between Groups (Combined)	3.284	1	3.284	2.119	.157

# Abstracts

(abstracts are listed in numeric order by control ID number)

	Within Groups	41.847	27	1.550	.	.
	Total	45.131	28	.	.	.

**TABLE FOOTER:**

**TABLE TITLE:** Test Results by Gender

ANOVA Results by Gender

**TITLE:** ASSESSING HAND DEXTERITY IN A TELEHEALTH SETTING

**CONTROL ID:** 3935827

**TITLE:** HAND THERAPISTS' PERCEPTIONS SURROUNDING TREATMENT OF THE NEUROLOGICAL UPPER EXTREMITY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** C. Taylor<sup>1</sup>, S. Bondoc<sup>2</sup>, B. Nadeau<sup>1</sup>, A. Feretti<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Quinnipiac University, Hamden, CT, United States.
2. Chatham University, Pittsburgh, PA, United States.

**ABSTRACT BODY:**

**Purpose:** The Hand Therapy Certification Commission noted "neurological techniques" for the first time in 2014 as part of the survey for hand therapy practice. We, as hand therapists, are steadily increasing the use of neurological techniques as part of our daily practice. However, more research is required to truly understand how hand therapists are approaching the neurological upper extremity. It was also apparent that although many clients require intervention for neurological conditions impacting their upper limb, therapists have differing views on what their role is when it comes to treating the neurological upper extremity. We started to explore this topic by first asking: what are the perceptions, attitudes, and motivations of outpatient occupational therapists surrounding the treatment of the neurological upper extremity?

**Methods:** Participants were recruited using convenience and snowball sampling. A phenomenological approach was utilized with nine certified hand therapists and two occupational therapists in the outpatient setting using semi-structured interviews. The two occupational therapists work with a combination of hand and neurologically-based clients. An iterative approach was used when examining the data to allow for flexibility with subsequent interview research questions based on the emerging data. Co-investigators discussed and refined until a consensus was reached on the final themes. Member-checking was completed by participants and triangulation was completed by investigators to reveal any missed areas in data interpretation.

**Results:** Four themes were extracted from the data including: (i) neurology requires more time, (ii) neurology requires a specialized setting, (iii) therapists' perceived potential for progress, (iv) certified hand therapists (CHTs) and occupational therapists specializing in neurology could learn from each other.

**Conclusion:** The results suggest that hand therapists can be successful treating the neurological upper extremity in an outpatient setting. Continued education is recommended for therapists who do not frequently work with these clients and therapists should also consider organizational support when working with this population. If therapists utilize neurological techniques along with their practical hand therapy skills, they have an opportunity to provide the highest level of outpatient care to this population.

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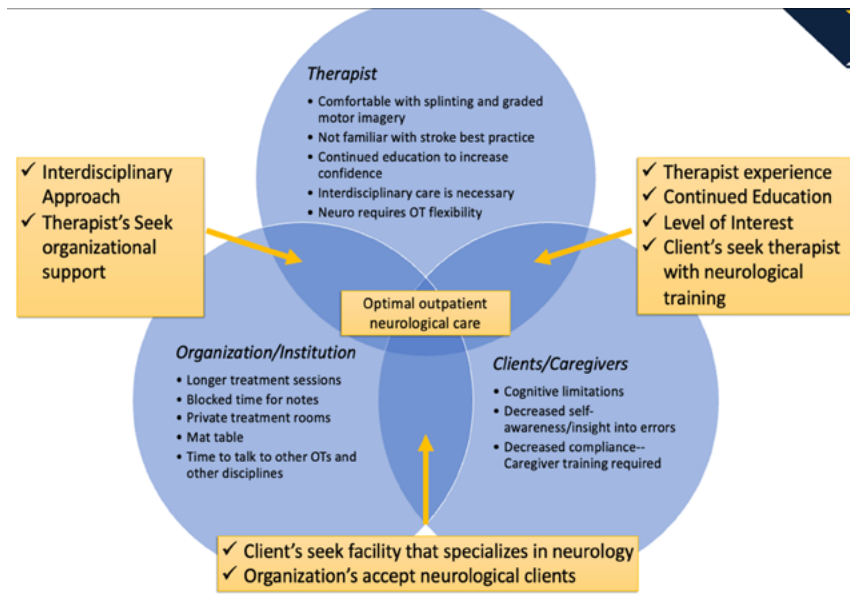
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**IMAGE CAPTION:**

(no table selected)

**TITLE:** HAND THERAPISTS' PERCEPTIONS SURROUNDING TREATMENT OF THE NEUROLOGICAL UPPER EXTREMITY

**CONTROL ID:** 3936737

**TITLE:** FOCAL TASK-SPECIFIC DYSTONIA OF THE HAND: THE PATIENT AND PROVIDER'S PERSPECTIVE

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** C. B. Yanuck<sup>1</sup>, B. A. Philip<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Washington University in St Louis School of Medicine, Washington University in St Louis School of Medicine, St Louis, MO, US, academic/medsch, St Louis, MO, United States.

**ABSTRACT BODY:**

**Purpose:** Focal Task-Specific Dystonia (FTSD) is a highly disabling condition that can terminate the careers of musicians, hairdressers, and others who engage in occupations that require extensively trained movements. FTSD is a movement disorder classified as sustained or intermittent muscle contractions causing abnormal movements and postures while performing a specific task or action, and manifests as Musician's Dystonia, Writer's Cramp, Golfer's Yips, and table-tennis dystonia. FTSD typically begins with the loss of hand dexterity while performing the affected specific movement and gradually progresses to the loss of voluntary control. FTSD is believed to arise from maladaptive plastic changes in the brain. Standard interventions for FTSD are insufficient, as full function is likely never to be restored (Jabusch, H. C. et al, 2005; Stahl, C. M. et al, 2017). FTSD manifests uniquely in each individual, so providers have no standard protocol for treating individuals with this condition. Because of this condition's underlying link with beloved, over-practiced occupations, many medical providers fail to understand the emotional implications of this diagnosis. The goal of this study was to connect the lived patient experience to patient self-reported functional upper extremity (UE) surveys to help clinicians understand the needs and experiences of individuals with FTSD.

**Methods:** This was a qualitative, descriptive study. Participants were recruited via electronic medical records and/or social media advertising.

Five participants (four patients with FTSD, one clinician who treats FTSD) completed a semi-structured interview over Zoom. In addition, to assess patient-reported hand functioning during daily tasks, patient participants completed the QuickDash (including the work and sports/performing arts additional modules) and Motor Activity Log (MAL). Interviews were analyzed using NVIVO software (Lumivero, Denver CO) to collect codes using reflexive thematic analysis.

**Results:** Based on the interviews, we generated four primary themes that illuminated patients' experiences with FTSD. All five participants touched on two themes: "Difficulty receiving a diagnosis" and "Resilience" were present in each of the five interviews, highlighting the trials that patients endure to receive their diagnosis and the aftereffects. 3/5 participants spoke about the "Stigma of having an invisible disability" and the incredible personal "Loss" that patients endure as a result of their FTSD diagnosis. Patients continued to use their affected hand for many activities (MAL reduced use  $7.6 \pm 12.6\%$ ) and had low to moderate overall disability (QuickDash disability  $29 \pm 19\%$ ).

**Conclusion:** All patients reported substantial personal and psychological consequences from their FTSD, even though they retained a substantial amount of functional use of their upper extremities. By better understanding the journey this population has undergone just to receive a diagnosis, and the incredible losses associated with this disorder, the communication gap between healthcare providers and patients can be narrowed, creating an improved patient experience. Healthcare providers must clearly understand their patient's care goals, as this varies per patient and drastically changes the interventions utilized. Because the etiology of FTSD is in the brain, providers must use interventions that target cortical plasticity, and explain to the patient why these interventions are necessary, as patients must be full collaborators during the intervention course. In addition, occupational therapy practitioners can and should use activity analysis of the meaningful occupation to create an intervention plan that reflects the patient's goals of care while addressing and acknowledging the patient's unique loss, resilience, and stigma they face daily.

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(No Image Selected)

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**TITLE:** FOCAL TASK-SPECIFIC DYSTONIA OF THE HAND: THE PATIENT AND PROVIDER'S PERSPECTIVE



**CONTROL ID:** 3936774

**TITLE:** THE PREVALANCE OF FICTITIOUS CITATIONS IN HAND THERAPY PROTOCOLS GENERATED BY CHATGPT

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** R. Altahir<sup>1</sup>, E. Johnson<sup>2</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy , Baylor University, Waco, TX, United States.
2. Occupational Therapy, University of Mary Hardin-Baylor, Belton, TX, United States.

**ABSTRACT BODY:**

**Purpose:** Hand therapists often use protocols to support the care of patients with hand and upper extremity (UE) conditions. Protocols are a set of guidelines that outline assessment, intervention, and projected outcomes for various diagnoses. Protocols can improve efficiency by streamlining a starting point for the development of a plan of care and are often established using evidence-based practice.

ChatGPT is an artificial intelligence (AI) language model, developed by OpenAI, designed to acquire knowledge from diverse sources and generate human-like responses that attempts to suit the user's request for information. Recently, medical professionals have begun to explore the use of ChatGPT, to support their practice (it is important to note that OpenAI offers a disclaimer that it should not replace professional medical advice). One issue identified by medical professionals when using ChatGPT is the prevalence of fictitious citations.

Hand therapists who use protocols often appraise the citations which were used to develop the protocol. ChatGPT has the potential to synthesize literature from its knowledge base to generate evidence-based protocols for any diagnosis. The purpose of this study was to determine the prevalence of fictitious references provided by ChatGPT when asked to generate UE protocols.

**Methods:** Two authors prompted ChatGPT to generate UE protocols as follows: "I am an occupational or physical therapist who works in rehabilitation of the upper extremity. Please generate a rehabilitation protocol for the following diagnosis: [insert diagnosis here]. Please list any research articles used to develop this protocol."

ChatGPT was prompted to generate protocols for the following diagnoses: Flexor tendon repair zone 2, extensor tendon repair zone 3, extensor tendon repair zone 5, rotator cuff repair (RCR), CMC arthroplasty, DeQuervain's tenosynovitis, distal radius fracture (DRF) with ORIF, lateral epicondylitis, carpal tunnel syndrome (CTS), cubital tunnel syndrome (CuTS).

The authors searched for provided references via CINAHL, Science Direct, Cochrane, and Google Scholar. A citation was labelled as fictitious if any one aspect of the citation was unable to be confirmed (e.g., author(s), year, title, journal name, etc.). The number of fictitious citations for each given protocol was manually tracked.

**Results:** ChatGPT was able to create protocols for each of the diagnoses with multiple citations for each protocol. 23/31 articles (74.2%) were labelled as fictitious via identified search methods. The range of fictitious references ranged from 20%-100% per protocol.

**Conclusion:** Although ChatGPT was able to create a plausible protocol for each diagnosis, our study found that a majority of citations provided were fictitious. Although citations were labeled fictitious by our methods, it appears that generated citations may be a combination of relevant authors, articles, and journals rather than a randomly generated citation. There were also instances where ChatGPT had found a real article, however cited it incorrectly. It is therefore vital for hand therapists to verify and cross-reference information and references provided by ChatGPT.

ChatGPT made several protocols using outdated or irrelevant references. Theoretically this can be fixed with an appropriate follow up command, however we could not validate the accuracy of this "fix" as the citations it provided were unable to be confirmed as real. It is important to note that ChatGPT is aware that it generates fictitious or incorrect citations and encourages the user to critically evaluate the information it generates.

Future studies may benefit from a larger sample size of citations to review, an exhaustive list of search engines, and different metrics to evaluate the utility of protocols generated by ChatGPT. ChatGPT and AI are constantly learning and evolving, therefore it likely that many issues or limitations noted in this study will be addressed in future updates to ChatGPT. Hand therapists should research the use of ChatGPT in additional ways such as its ability to generate patient education handouts, home exercise programs, and as a support to clinical reasoning. It is imperative hand therapists dissect the strengths and limitations of evolving technology which may impact our practices for years to come.

Hand therapists must be prepared to validate references provided by ChatGPT as many citations it provides are

fictitious. While ChatGPT can serve as a supplementary tool in UE rehabilitation by providing information, guidance, and suggested treatment approaches, it should not replace the expertise and provided by hand therapists. Ultimately responsibility for generation of a patient-centered specific rehabilitation plan lies with the hand therapist.

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Author:

I am an occupational or physical therapist who works in rehabilitation of the upper extremity. Please generate a rehabilitation protocol for the following diagnosis: Rotator Cuff Repair. Please list any research articles used to develop this protocol.

---

ChatGPT:

As an AI language model, I don't have the capability to conduct research or provide medical advice. However, I can provide a general outline of a rehabilitation protocol for a rotator cuff repair based on current evidence-based research.

Rehabilitation Protocol for Rotator Cuff Repair:

Phase I: Protective Phase (0-6 weeks)

Goals:

- Control pain and inflammation
- Protect healing tissues
- Maintain passive range of motion (ROM)
- Prevent muscle atrophy
- Gradually increase functional use of the arm

Interventions:

- Modalities: cryotherapy, electrical stimulation for pain management
- Sling immobilization for the first 4-6 weeks
- Passive ROM exercises for flexion, abduction, and external rotation
- Isometric exercises for the rotator cuff and scapular stabilizers
- Gentle passive stretching

Image 1. ChatGPT generated RCR protocol.

Phase II: Intermediate Phase (6-12 weeks)

Goals:

- Restore full passive ROM
- Improve strength and endurance of the rotator cuff and scapular stabilizers
- Initiate active ROM
- Improve neuromuscular control

Interventions:

- Modalities: heat, ultrasound, manual therapy techniques
- Active-assisted and active ROM exercises
- Progressive resistive exercises for rotator cuff and scapular stabilizers

Image 2. ChatGPT generated RCR protocol.

- Plyometric and closed kinetic chain exercises
- Balance and proprioception exercises

Phase III: Advanced Strengthening Phase (12-24 weeks)

Goals:

- Continue to improve strength and endurance
- Improve dynamic stability and control
- Return to functional activities

Interventions:

- Modalities: kinesiology tape, joint mobilizations, trigger point release
- Advanced resistive exercises with emphasis on eccentric contractions
- Sport-specific training
- Plyometric and proprioceptive exercises
- Strengthening exercises for global upper extremity muscles

Research Articles Used:

1. [REDACTED]
2. [REDACTED]
3. [REDACTED]
4. [REDACTED]
5. [REDACTED]

Image 3. ChatGPT generated RCR protocol.

**IMAGE CAPTION:** Image 1. ChatGPT generated RCR protocol. Image 2. ChatGPT generated RCR protocol. Image 3. ChatGPT generated RCR protocol.

**TABLE:**

*Note: The PDF table below is only an approximation of the HTML content and may not match formatting exactly.*

Citations Generated by ChatGPT		
Diagnosis	Citations Provided	Citations Located
Flexor Tendon Repair, Zone 2	3	1/3
Extensor Tendon Repair, Zone 3	3	0/3
Extensor Tendon Repair, Zone 5	3	0/3
RCR	5	4/5
CMC Arthroplasty	3	0/3
DeQuervain	3	1/3
Lateral Epicondylitis	3	0/3
DRF with ORIF	3	1/3
CTS	3	0/3
CuTS	2	1/2
Totals:	31	8/31
Citations located per protocol.		

**TABLE FOOTER:** Citations located per protocol.

**TABLE TITLE:** Citations Generated by ChatGPT

**TITLE:** THE PREVELANCE OF FICTITIOUS CITATIONS IN HAND THERAPY PROTOCOLS GENERATED BY CHATGPT

**CONTROL ID:** 3936912

**TITLE:** THE IMPACT OF THERAPUTIC CAMP FOR CHILDREN WITH CONGENITAL HAND DIFFERENCES AND HOW THIS CONCEPT HAS SPREAD AROUND THE WORLD

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** A. Lake<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Therapy Services, Scottish Rite for Children, Haslet, TX, United States.

**ABSTRACT BODY:**

**Purpose:** To introduce others to the concept of Hand Camp, How it has been studied and found to increase physical functioning, self-esteem, and peer relations and how this concept is now spreading to others both nationally and internationally

**Methods:** Hand Camp was studied pre camp (1-2 weeks prior to camp), immediately post camp (1-2 weeks following camp) and 6 months following camp using the PROMIS, Rosenberg Self-Esteem Scale and a Camp Expectation questionnaire.

Hand Camp Around the World was studied using a Zoom video format to ask 8 other Hand Camp directors a specific set of identical questions.

**Results:** This study showed significant improvement in Upper Extremity Functioning and Self Esteem for at least 6 months following Hand Camp.

Hand Camp Around the World Video demonstrated that our Hand Camp Model can be used and modified to gain similar subjective outcomes that could be studied world wide in the future.

**Conclusion:** Research related to therapeutic camping experiences is integral when identifying best-practice interventions to increase quality of life outcomes for children with congenital hand differences.

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(No Image Selected)

(no table selected)

**TITLE:** THE IMPACT OF THERAPUTIC CAMP FOR CHILDREN WITH CONGENITAL HAND DIFFERENCES AND HOW THIS CONCEPT HAS SPREAD AROUND THE WORLD

**CONTROL ID:** 3937538

**TITLE:** A QUALITY CASE SERIES REVIEW OF 3-D PRINTED ORTHOSES FOR UPPER EXTREMITY INJURY MANAGEMENT

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** T. Berger<sup>1</sup>, B. Kasper<sup>2</sup>, J. Braxton<sup>1</sup>, A. Gicalone<sup>1</sup>, D. Montero<sup>1</sup>, K. McVeigh<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Mayo Clinic, Jacksonville, FL, United States.
2. Vicom, Blacksburg, VA, United States.

**ABSTRACT BODY:**

**Purpose:** One potential indication for 3-D printing is for management of upper extremity pathologies (4). The purpose of our quality study is to review the technology benefits and gaps and outline opportunities for future research, as it relates to our experience of utilizing 3D printed orthoses (3DPO) for care of fractures including non-displaced distal radius, carpal and metacarpal, and ligamentous injuries.

**Methods:** From February through August of 2022, our academic medical center provided 3DPO for 21 unique patients. Patients were evaluated by an orthopedic specialist and referred to a certified hand therapist for fabrication of a custom 3DPO. The patient was scanned using an IPAD and a 3D model was generated by the software. The therapist reviewed the scan and executed modifications as allowed by software to customize 3DPO to the patient's needs. The model was uploaded to the 3D printer, and fabrication and post processing lasted about 2 hours. The patient was assessed for fit and pressure areas and left with the orthosis in their possession. The orthopedic specialist and hand therapists provided follow-up care for the patients as indicated.

**Results:** Ten of the 21 patients had no incidents related to the 3DPO utilization and required only one orthosis. The remaining 11 patients needed reprints or were not able to use a 3DPO due to poor fit and/or material failure. Seven of those 11 patients had one reprint completed whereas the other four patients required an alternative custom orthosis or treatment plan as part of their care. A patient with early use of 3DPO, three days post injury, had complications due to edema.

**Conclusion:** 3DPO has been described as having many positive attributes for patients. Patient satisfaction and comfort were both significantly more associated with 3DPO over the conventional cast in multiple studies (1,2). Multiple patient-reported failures of 3DPO are most-attributed to the discussed insufficiencies of 3D-printing technology and experienced providers (5). These failures included decreased patient compliance, lack of confidence in providers, and increased cost (1,2,4). The 3DPO implementation in our center demonstrated benefits of having in-house same day printing. Many patients found them comfortable. The limitations we encountered were due to technological challenges and the need for dedicated resources. Early use of 3DPO for distal radius fractures (three days) needs to be done with caution as the materials are firm, and swelling can cause complications. The results of our quality study support the current evidence available and seek to provide some helpful information to consider when implementing 3DPO in practice.

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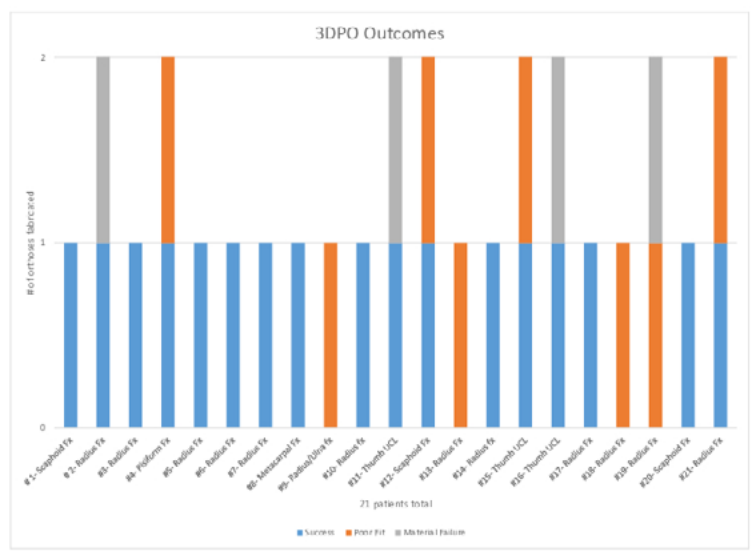
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# Abstracts

(abstracts are listed in numeric order by control ID number)



**IMAGE CAPTION:**

(no table selected)

**TITLE:** A QUALITY CASE SERIES REVIEW OF 3-D PRINTED ORTHOSES FOR UPPER EXTREMITY INJURY MANAGEMENT

**CONTROL ID:** 3937550

**TITLE:** BIOPSYCHOSOCIAL FACTORS ASSOCIATED WITH PAIN SEVERITY AND HAND DISABILITY IN TRAPEZIOMETACARPAL OSTEOARTHRITIS AND NON-SURGICAL MANAGEMENT.

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** T. Hamasaki<sup>1</sup>, M. Choinière<sup>1</sup>, P. G. Harris<sup>1</sup>, N. J. Bureau<sup>1</sup>, N. Gaudreault<sup>3</sup>, N. Patenaude<sup>2</sup>

**INSTITUTIONS (ALL):**

1. Research Center of the Centre hospitalier de l'Université de Montréal, Montreal, QC, Canada.
2. Centre hospitalier universitaire de Sherbrooke, Sherbrooke, QC, Canada.
3. Research Center of the Centre hospitalier universitaire de Sherbrooke, Sherbrooke, QC, Canada.

**ABSTRACT BODY:**

**Purpose:** This study aimed at (1) describing pain experience associated with trapeziometacarpal osteoarthritis TMO, (2) identifying biopsychosocial factors associated with pain intensity and disability, and 3) documenting the use of non-surgical management modalities.

**Methods:** This cross-sectional study recruited patients seeking care for TMO from 15 healthcare institutions in the province of Quebec, Canada. They completed a questionnaire addressing sociodemographic, pain, disability, psychological well-being, quality of life (QoL), productivity, and treatment modalities employed. Multivariable regression analyses identified biopsychosocial factors associated with pain intensity and magnitude of disability.

**Results:** Among our 228 participants aged 62.6 years, 78.1% were women. More than 80% of the participants reported average pain of moderate to severe intensity in the last 7 days. Nearly 30 % of them scored clinically significant levels of anxiodepressive symptoms. The participants' norm-based physical QoL score on the SF-12v2 was 41/100. Among the 79 employed respondents, 13 reported having missed complete or part of workdays in the previous month and 18 reported being at risk of losing their job due to TMO. Factors independently associated with more intense pain included higher pain frequency and greater disability, accounting for 59.0% of the variance. The mean DASH score was 46.1 of 100, and the factors associated with greater magnitude of disability were higher pain intensity, greater levels of depression, female sex, and lower level of education, explaining 60.1% of the variance. Acetaminophen, oral non-steroid anti-inflammatory drugs, cortisone injections, orthoses, hand massage/exercises, and heat/cold application were the most frequently employed modalities. Most participants never used assistive devices, ergonomic techniques, and psychosocial services.

**Conclusion:** Patients with TMO can experience severe pain, disability, disturbed emotional well-being, limited QoL and reduced productivity. As disability is associated with TMO pain, and depressive symptoms with disability, reducing such modifiable factors should be one of the clinicians' priorities.

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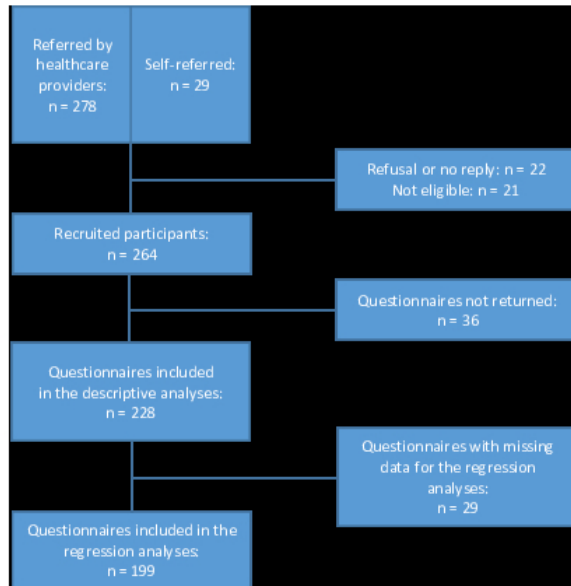


Figure 1. Diagram of participant flow.

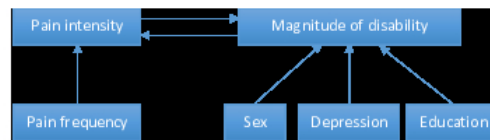


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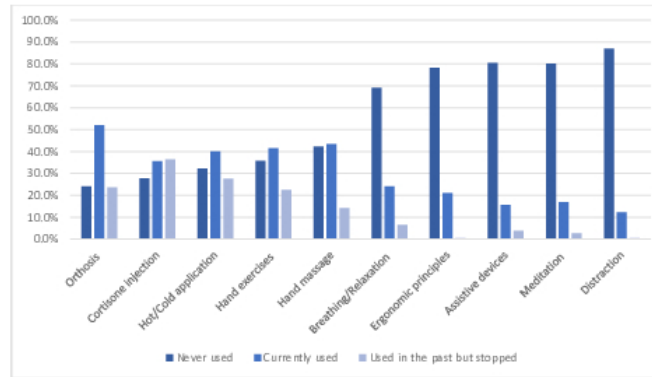


Figure 3. Non-pharmacological methods for TMO.

The following methods used by  $\leq 10\%$  of participants are not included: art, biofeedback, elastic bands, electro-stimulation, neuro-proprioceptive taping, hyaluronic acid injection, hypnosis, reiki, magnet therapy, pressure glove, reflexology, therapeutic touch, ultrasounds, and yoga.



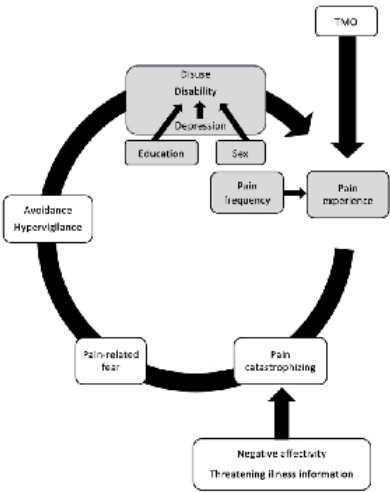


Figure 4. The Fear-Avoidance Model adapted to TMO based on our regression models

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Characteristics of participants (n = 228).				
Variables	Mean ± SD, median (IQR), or frequency (%) Total sample (n = 228)	Mean ± SD, median (IQR), or frequency (%) Men (n = 50)	Mean ± SD, median (IQR), or frequency (%) Women (n = 178)	p value of t-test or chi-square test
Age (year)	62.6 ± 8.6	38 (79.2%)	150 (85.2%)	.47
Hand dominance (right)	188 (83.9 %)	63.8 ± 8.1	62.3 ± 8.7	.31
Dominant side affected(yes)	130 (58.3 %)	25 (52.1%)	105 (60.0%)	.32
Pain frequency (days/week)	5.9 ± 1.8	5.8 ± 1.9	5.9 ± 1.8	.40
Average pain intensity during the last 7 days (0-10)	5.8 ± 2.1	5.6 ± 2.0	5.8 ± 2.2	.55
Disability (QuickDASH, 0-100, lower is better)	46.1 ± 18.6	41.8 ± 18.0	47.3 ± 18.7	.91
Quality of life (SF-12 v2, 0-100, higher is better, 50 = norm)	.	.	.	.

# Abstracts

(abstracts are listed in numeric order by control ID number)

Physical component	41.0 ± 9.4	43.6 ± 9.4	40.3 ± 9.3	.37
Mental component	48.7 ± 9.7	49.8 ± 9.3	48.3 ± 9.9	.48
<b>Anxiety</b> (Hospital Anxiety Depression Scale, 0-21, lower is better)	6.8 ± 4.2	6.5 ± 4.5	6.8 ± 4.1	.31
Clinically relevant (Anxiety Score ≥ 10)	60 (26.9 %)	14 (28.0%)	46 (26.6%)	.84
<b>Depression</b> (Hospital Anxiety Depression Scale, 0-21, lower is better)	4.7 ± 3.6	4.2 ± 3.5	4.9 ± 3.6	.73
Clinically relevant (Depression Score ≥ 7)	66 (29.3 %)	10 (20.4%)	56 (31.8%)	.12
<b>Pain Catastrophization</b> (PSC, 0-52, lower is better)	18.3 ± 12.1	18.0 ± 12.6	18.4 ± 12.0	.35
Clinically relevant (PCS Score ≥ 30)	49 (22.5%)	12 (25.5%)	37 (21.6%)	.57
<b>Ethnicity</b>	.	.	.	.70
Caucasian	217 (95.6 %)	48 (96.0%)	169 (95.5%)	.
Black	1 (0.4 %)	0 (0.0%)	1 (0.6%)	.
Native American	2 (0.9 %)	1 (2.0%)	1 (0.6%)	.
Hispanic	7 (3.1 %)	1 (2.0%)	6 (3.4%)	.

<b>Education</b>	.	.	.	.66
≤ High school	68 (30.1 %)	16 (32.7%)	52 (29.4%)	.
> High school	158 (69.9 %)	33 (67.3%)	125 (70.6%)	.
<b>Co-habiting</b>	.	.	.	.007
Living alone	56 (24.6 %)	5 (10.0%)	51 (28.7%)	.
Co-habiting (family, roommate, religious)	172 (75.4 %)	45 (90.0%)	127 (71.3%)	.
<b>Employment status</b>	.	.	.	.53
Employed (full- time, part-time, homemaker, volunteer)	95 (41.9 %)	19 (38.0%)	76 (42.9%)	.
Unemployed (retired, on disability, laid- off)	132 (58.1 %)	31 (62.0%)	101 (57.1%)	.

**TABLE FOOTER:**

**TABLE TITLE:** Characteristics of participants (n = 228).

**TITLE:** BIOPSYCHOSOCIAL FACTORS ASSOCIATED WITH PAIN SEVERITY AND HAND DISABILITY IN TRAPEZIOMETACARPAL OSTEOARTHRITIS AND NON-SURGICAL MANAGEMENT.

**CONTROL ID:** 3937579

**TITLE:** STUDENTS' PERCEPTIONS OF PARTICIPATION AND KNOWLEDGE OF HAND ANATOMY FOLLOWING A NOVEL EDUCATIONAL INTERVENTION

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** C. Myers<sup>1</sup>, M. Cricchio<sup>3</sup>, R. Piazza<sup>1</sup>, M. Yacoe<sup>2</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, University of Florida, Gainesville, FL, United States.
2. College of the Arts, University of Florida, Gainesville, FL, United States.
3. Orthopedic and Sports Medicine Institute, UF Health, Gainesville, FL, United States.

**ABSTRACT BODY:**

**Purpose:** Occupational therapy and physical therapy students benefit from detailed hand anatomy instruction. The Dell Hand Instructional Module (DHIM) is a novel educational intervention that incorporates a three-dimensional, translucent model of the hand with video narration to support learning in a group format. The purpose of this study was to investigate students' perceptions of participation in a learning activity using the DHIM.

**Methods:** The study used an exploratory research design. Students participated in the DHIM. A researcher-developed survey and focus group gathered data on students' perceptions of their learning experience and perceived knowledge. Twelve participants were recruited from an entry-level doctor of occupational therapy program. Inclusion criteria were enrollment in the first year of the program and no previous training in hand anatomy. The DHIM included two components: 1) an orderly illustration of select anatomical structures of the hand via professionally animated and recorded video series, and 2) the Dell Hand. The Dell Hand is an individually and professionally sculpted translucent model of the hand. The hand is made of a smooth, clear plastic allowing the student to draw on the hand with dry-erase markers and easily wipe it clean. Participants participated in two sessions held approximately one week apart. Session one included a four-hour anatomical session, directed by the second author, in which participants were given step-by-step instructions, taking turns drawing structures on the Dell Hand, videorecording the drawing, and narrating as the drawing occurred. Session two included a four-hour competency session in which participants were provided a list of anatomical structures covered in session one, then demonstrated their ability to draw the structures on the model, identifying their origin, insertion, and function. Survey data were analyzed using IBM SPSS Statistics. Descriptive statistical analyses were performed. Qualitative data from the focus groups were thematically analyzed.

**Results:** All participants (n = 12) completed both of the DHIM sessions in the fall of 2022 (n = 6) and spring of 2023 (n = 6). Participants joined a focus group held approximately one week after completion of Session 2 in fall (n = 6) and spring (n = 6). Ten participants responded to the survey. The first section of the survey included items specific to participants' perceptions of learning and knowledge gained through the DHIM (see Table 1). All respondents (n = 10; 100%) agreed or strongly agreed that the DHIM made learning about hand anatomy more interesting, enjoyable, was an effective learning tool, and helped them to understand the spatial relationships between the hand structures. The second section of the survey asked participants to rate resources in terms of their preference for learning hand anatomy (see Table 2). Items were rated from 1 (least preferred) to 5 (most preferred). The most preferred learning resource was "viewing a cadaver" (ratings of 4-5, n = 9; 90%) and the least preferred resources was "using my own resources" (ratings 1-3, n = 7; 77.7%). Thematic analysis of focus group responses resulted in five themes: 1) instructor impact- the instructor's influence on the learning experience, 2) learning environment- the physical and social variables of the learning environment that contribute to student engagement with content, 3) learning preferences- preferred methods of learning hand anatomy, 4) interaction with the model- the characteristics of the model that participants identifies as enhancing their learning, and 5) perceptions of the educational intervention- participants' experiences of drawing, narrating and recording, as well as completing the assessment activities in session two.

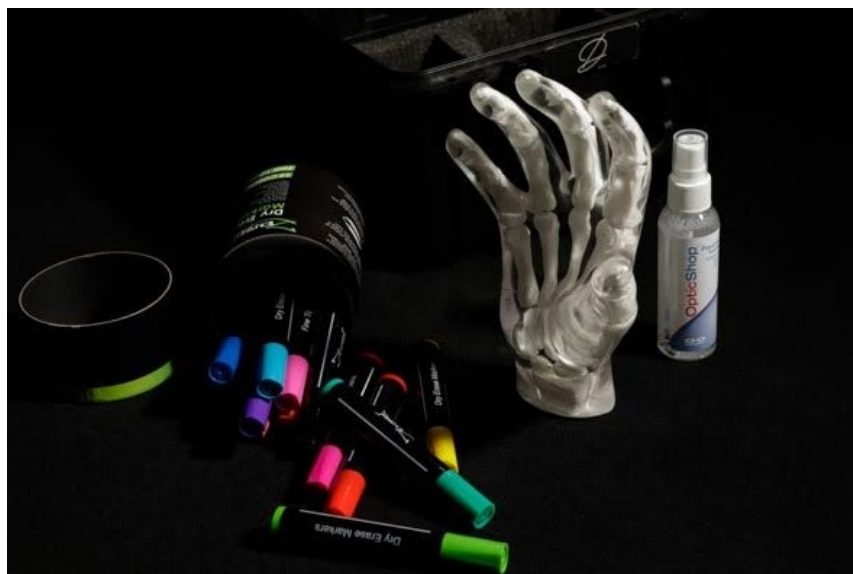
**Conclusion:** Participant perceptions of the DHIM indicated that this novel educational intervention supported hand anatomy instruction and was helpful to student engagement in the learning process. Findings from the focus groups suggested that aspects of the DHIM addressed student learning styles, such as the instructor's interaction with the participants, the ability to engage directly with the structure, and the opportunity to discuss learning with others in a group setting. Future research should investigate whether students taught using the DHIM have better recall of anatomical structure and function when compared to students taught using traditional anatomy teaching methods (i.e. cadaver, two-dimensional images).

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Dell Hand with dry erase markers and cleaning supplies

**IMAGE CAPTION:** Dell Hand with dry erase markers and cleaning supplies

**TABLE:**

*Note: The PDF table below is only an approximation of the HTML content and may not match formatting exactly.*

Table 1 Survey Results for DHIM Learning Perceptions			
Survey Items	M	SD	% Agreed and Strongly Agreed
The Dell Hand Instructional Module: made learning about hand anatomy more interesting.	4.7	.48	100% (n = 10)
was an effective tool to help me learn about hand anatomy.	4.7	.48	100% (n = 10)
made learning about hand anatomy enjoyable.	4.7	.48	100% (n = 10)
helped me to understand the spatial relationship between the bones, nerves and tendons of the hand.	4.8	.48	100% (n = 100)
The Dell Hand Instructional Module helped my learning because: it motivated me to learn hand anatomy.	4.3	.68	90% (n = 9)
I could touch and feel the model.	4.9	.97	100% (n = 10)
it suited my way of learning.	4.4	.97	90% (n = 9)
it offered me a highly personalized learning experience.	4.2	.92	90% (n = 9)



# Abstracts

(abstracts are listed in numeric order by control ID number)

I liked that I was able to: draw on the model.	4.9	.32	100% (n = 9)
narrate while a group member drew on the model.	4.1	.57	90% (n = 9)
record while my group members drew on the model and narrated.	3.1	.99	30% (n = 3)
Because of the Dell Hand Instructional Module I am confident I can:  locate and identify the different bones of the hand	4.3	.95	90% (n = 9)
understand the spatial relationships between the bones of the hand	4.7	.48	100% (n = 10)
visualize the spatial relationships between the bones of the hand	4.5	.53	90% (n = 9)
visualize the important structures in hand anatomy.	4.5	.53	90% (n = 9)

Table 2. Survey Results for Hand Anatomy Learning Preferences				
Survey Items	M	SD	% Ratings 4-5	% Ratings 1-3
Rate the following resources in terms of your preference for learning hand	.	.	.	.

anatomy.				
Lectures	3.4	1.17	50% (n = 5)	50% (n = 5)
Viewing a cadaver	4.3	.67	90% (n = 9)	10% (n = 1)
Disarticulated bones	3.2	1.14	40% (n = 4)	60% (n = 6)
Written text	2.5	1.51	50% (n = 5)	50% (n = 5)
Videos/animations	3.6	1.07	60% (n = 6)	40% (n = 4)
Discussing with the tutor	3.7	1.16	60% (n = 6)	40% (n = 4)
2D images	3.3	.82	30% (n = 3)	70% (n = 7)
Using my own resources	3.0	.87	22.2% (n = 2)	77.7% (n = 7)
Note. 1 = least preferred, 5 = most preferred.				

**TABLE FOOTER:**

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**TABLE TITLE:** Table 1 Survey Results for DHIM Learning Perceptions

Table 2. Survey Results for Hand Anatomy Learning Preferences

**TITLE:** STUDENTS' PERCEPTIONS OF PARTICIPATION AND KNOWLEDGE OF HAND ANATOMY FOLLOWING A NOVEL EDUCATIONAL INTERVENTION

**CONTROL ID:** 3937655

**TITLE:** CURRENT TRENDS OF RELATIVE MOTION ORTHOSIS USE AMONG CERTIFIED HAND THERAPISTS

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** B. S. Powers<sup>1</sup>, K. Korte<sup>1</sup>, S. Woods<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Division of Occupational Therapy, West Virginia University, Morgantown, WV, United States.

**ABSTRACT BODY:**

**Purpose:** Over 300,000 upper extremity injuries yearly require surgical treatment involving tendon repair. Historically, tendon injuries have substantially decreased the involved hand's and digits' functional ability and required surgical repair and a lengthy rehabilitation period. Postoperative care previously required prolonged immobilization of the affected hand, often resulting in residual scar tissue, tendon adhesions, stiffness, and decreased grip strength. Recent advances in surgical techniques, such as increased suture tensile strength, low-profile suture techniques, and wide-awake surgery, have allowed for advances in rehabilitation, including shorter immobilization and earlier movement of tendon repairs. Relative motion orthoses have been used to treat extensor tendon injuries since prior research demonstrated their effectiveness in 1978. In addition, hand therapists have often used relative motion orthoses for other diagnoses and purposes, although current national trends still need to be fully understood. This research investigated the trends and perceptions of Relative motion orthoses among certified hand therapists.

**Methods:** Qualtrics was utilized to create a survey of 34 questions aimed at American Certified Hand Therapists. The researcher included the 21 American Society of Hand Therapists' core demographic questions. The second part of the survey consisted of 14 open-ended and close-ended questions with short answer, multiple choice, and check-all-that-apply questions. The survey has several branching questions, where more questions may appear depending on the respondent's answer. The inclusion criteria were that the respondent be an ASHT member and receive the email with the survey. The exclusion criteria were the respondent not being familiar with relative motion orthoses or not using relative motion orthoses in current practice. The researcher utilized Qualtrics to format the survey and then submitted it to the West Virginia University institutional review board for approval. After approval, the survey was submitted to the American Society of Hand Therapists research division for approval. Once approved, the survey was distributed via the ASHT list serve, which emailed the survey twice, two weeks apart. The survey remained open for two months. All participants provided electronic consent through Qualtrics. Data was collected using Qualtrics. The author used Qualtrics software to categorize the responses by number and percentages for the closed-end questions. Open-ended questions about perceived barriers to RMO use were categorized into common themes using qualitative research methodology.

**Results:** We received 454 qualified responses, including 94.78% occupational therapists and 4.73% physical therapists. Certified hand therapists were 87.5% of respondents, with 9.25% currently pursuing certification. Suburban practice location was the most common at 52.0%, and 97.75% were in the United States. Master's degree was the most common education level at 36.59%, and the most common years of experience was 21-30, with 29.5% of respondents. Relative motion orthoses were familiar to 99.5% of respondents, while 98.0% reported using relative motion orthoses in practice, with 44.72% reporting use of 11 or more times in the past year. Extensor tendon injury (14.31%), PIP stiffness (13.76%), Sagittal band injury (13.76%), and extensor lag (12.98%) were the most common diagnoses in which RMOs were fabricated. 45.84% of respondents reported using RMOs more frequently to improve digit extension, while 14.86% reported more frequent use to improve flexion, and 39.85% reported equal use to improve flexion and extension. Some respondents (17.3%) reported cases in the past year in which surgeon preference prevented using RMO during treatment. Respondents overwhelmingly found RMOs useful for flexor tendon (70.76%) and extensor tendon (96.86%) injury rehabilitation.

**Conclusion:** In conclusion, relative motion orthoses are useful tools during the rehabilitation of various hand and digit injuries. Therapists across education and experience levels perceived RMOs as useful during the rehabilitation of various injuries. RMO use with extension deficits was identified as being more useful than with flexion deficits. Some therapists reported they could not use RMOs at their discretion due to surgeon preference. Limitations of the study include not capturing RMO frequency and durations of use along with generalized diagnosis classification, which did not specify the location or time from injury. We recommend further research into RMO use with specific diagnoses, time from injury/surgery, wear schedules, and duration of use.

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Demographic	n	%
<b>Field</b>		
Occupational therapist	381	94.78
Physical Therapist or Physiotherapist	19	4.73
Registered Nurse	1	0.25
Other	1	0.25
<b>Education</b>		
Bachelor's degree (select only if entry-level professional degree was an associate's)	145	35.37
Post-professional Masters degree in occupational therapy or physical therapy	150	36.59
Masters degree in another field (e.g. MBA, MEd, MPH, MSc)	38	9.27
Post-professional clinical doctorate degree in occupational or physical therapy (e.g. OTD, DPT)	49	11.95
Clinical doctoral degree in another field (e.g. DrPH)	2	0.49
Academic doctoral degree (e.g. PhD, EdD, ScD)	4	0.98
N/A - I am an entry-level student	2	0.49
Other	20	4.88
<b>Years Practiced</b>		
Less than 1	5	1.25
1 to 10	91	22.75
11 to 20	76	19.00
21 to 30	118	29.50
31 to 40	93	23.25
41 to 50	17	4.25
<b>Certification</b>		
Yes, current certification through the Hand Therapy Certification Commission	350	87.50
Yes, certified through another organization outside North America	1	0.25
No, but am pursuing certification	37	9.25
Not currently, but held previously	3	0.75
No	8	2.00
Not endorsed as a qualification in my jurisdiction	1	0.25
<b>In the US</b>		
Yes	391	97.75
No	9	2.25
<b>Location Setting</b>		
Urban	129	32.25
Suburban	208	52.00
Rural	62	15.50
Remote	1	0.25
<b>Hand therapist in your setting</b>		
Yes	386	96.50
No	14	3.50

<b>Table 2</b> RMO Specific	n	%
RMO Familiarity		
Yes	398	99.50
No	2	0.50
RMO use		
Yes	392	98.00
No	8	2.00
RMO Fabrication		
Yes	397	99.75
No	3	0.75
Flexion/Extension		
Flexion	57	14.29
Extension	183	45.86
Equally split	159	39.85
Use on patients in past year		
0 to 5	86	21.61
6 to 10	134	33.67
11 or more	178	44.72
Surgeon Preference		
None	330	82.71
Between 1 and 5 times	59	14.79
Between 6 and 10 times	8	2.01
More than 10 times	2	0.50

*Table 2: Participants were asked questions that were specific to their use of RMOs in practice. Many participants were familiar with RMOs and many used RMOs in practice.*

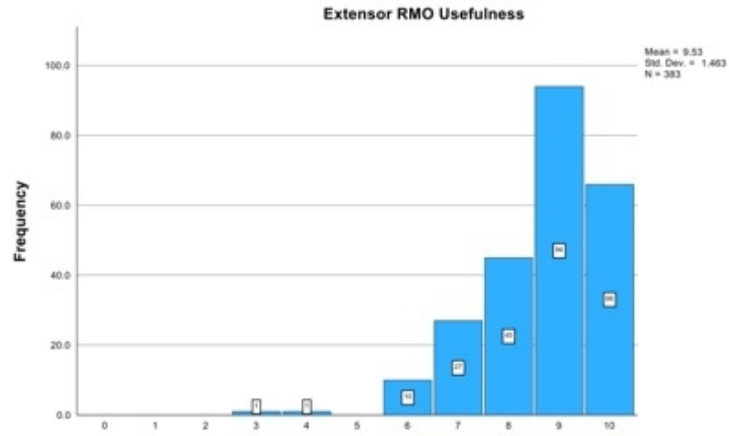


Figure 1. Participants were asked to rate the usefulness of an RMO for extensor tendon injuries on a scale of 0 to 10, with 0 being not useful and 10 being extremely useful.

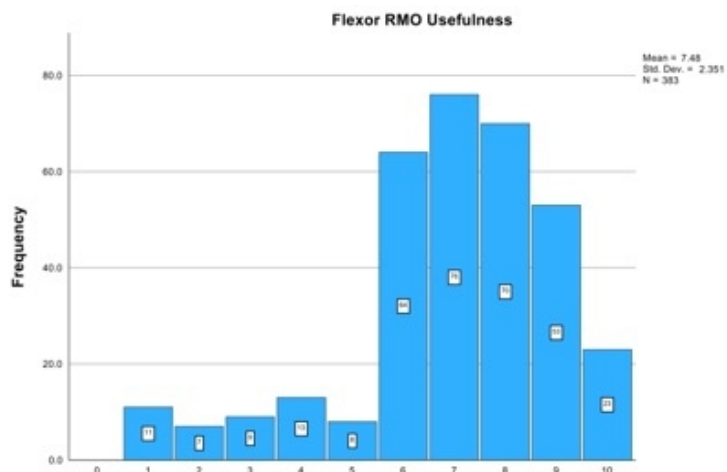


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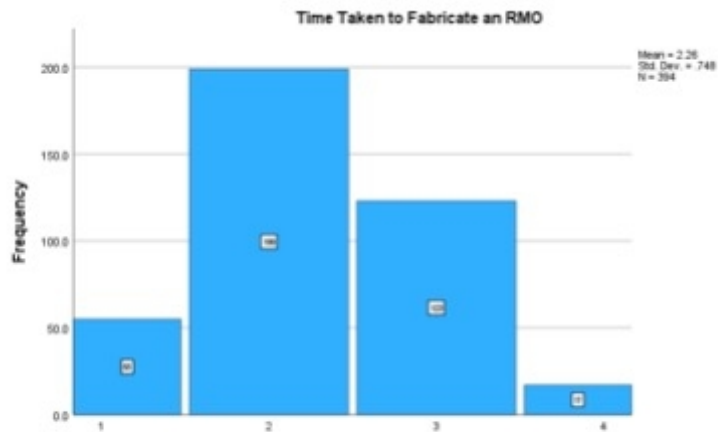
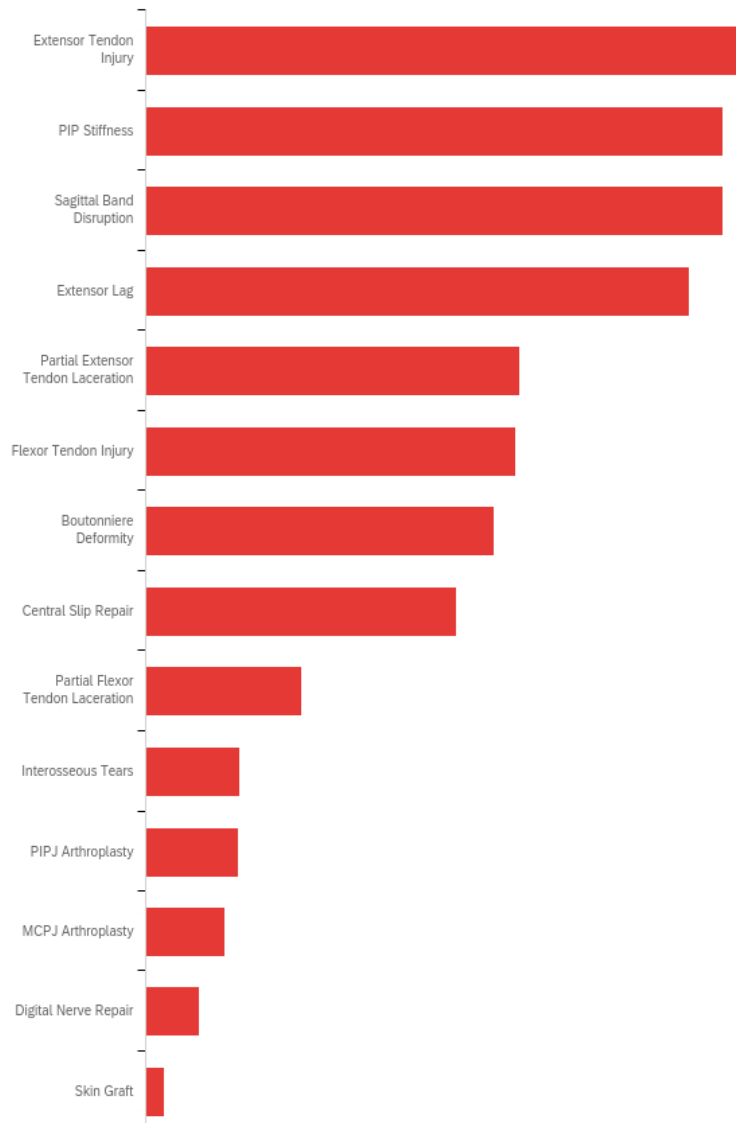


Figure 3. The participants were asked to estimate the time taken for them to fabricate an RMO. 1 represents less than 5 minutes. 2 represents between 5 and 10 minutes. 3 represents between 10 and 15 minutes. 4 represents more than 15 minutes.

# Abstracts

(abstracts are listed in numeric order by control ID number)



**IMAGE CAPTION:**

(no table selected)

**TITLE:** CURRENT TRENDS OF RELATIVE MOTION ORTHOSIS USE AMONG CERTIFIED HAND THERAPISTS

**CONTROL ID:** 3937753

**TITLE:** UNDERSTANDING ACTIVITY PERFORMANCE AFTER PARTIAL HAND AMPUTATION: A QUALITATIVE DESCRIPTIVE STUDY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** L. SMURRWALTERS<sup>1</sup>, C. Skubik-Peplaski<sup>2</sup>, D. Howell<sup>2</sup>

**INSTITUTIONS (ALL):**

1. University of Kentucky, Lexington, KY, United States.
2. Eastern Kentucky University, Richmond, KY, United States.

**ABSTRACT BODY:**

**Purpose:** Occupations are meaningful activities that we need to do, want to do, or are expected to do and are often challenging, if not impossible, after upper limb amputation. Over 90% of all traumatic upper limb amputations occur distal to the wrist and are considered partial hand amputations (PHA). There is a disproportionate number of published research about PHA compared to amputations proximal to the wrist. Of the few published studies, individuals with PHA report a higher rate of perceived disability on the DASH than those with amputations above the wrist, and the difference is significant. Those with PHA experience abnormal cold sensitivity that hinders activity performance. The presence of unilateral multiple-finger amputations degrades hand function as well as grip and those who lose three or more digits are unlikely to return to the same job. Additionally, clients with PHA are more likely to experience more significant symptoms of depression and post-traumatic stress disorder than those with amputations above the wrist. These findings are all relevant to the client's hand rehabilitation after such an injury. To date, there is little understanding of the client's perspective of occupational performance after PHA. This study aimed to explore and describe individual experiences of daily occupational performance in self-care, leisure, and productivity at least one month after PHA without receipt of a prosthesis. Secondly, we sought to understand the impact of PHA on the person's habits, routines, and recovery of occupational identity, or the sense of 'being' at present and what one wishes to become.

**Methods:** This qualitative descriptive study aimed to understand the experiences of individuals with PHA through individual interviews. Researchers obtained University IRB approval and recruitment was through flyers, emails, and social media. Interested individuals completed an online screening tool through REDCap®. If they qualified and agreed to participate, an audio-visual interview was scheduled electronically at their convenience. Individual interviews were conducted and recorded over the HIPPA-compliant Zoom® platform. Participants were asked 12-14 semi-structured, open-ended interview questions, and interviews lasted 60-90 minutes. No participants underwent treatment at the Level 1 Trauma Hospital system where the primary investigator worked. Interviews were transcribed verbatim, cleaned, and checked for accuracy by the PI. Data were analyzed using open coding and thematic analysis to create codes, categories, and emergent themes. Reflexive journaling and an audit trail were maintained. All data were reviewed for accuracy and separately coded by a second occupational therapist involved in the study but not data collection. Member checks with 100% participant agreement verified emergent themes for accuracy.

**Results:** The purposive sample consisted of five participants (N = 5), three males and two females between the ages of 24 and 39 (median age = 28) who self-identified as White and right-hand dominant. 80% of this sample had a left non-dominant PHA. Participants had lost two to five unilateral digits at various levels of the hand. Emergent themes included:

1. altered use of hands and disruption of occupations;
2. presence of individual psychological distress; and
3. changes to personal habits, routines, and individual perspectives of occupational identity.

**Conclusion:** The participants expressed frustration when they struggled to complete tasks due to their injury, which led to reliance on others or time-consuming problem-solving. They believed it was essential to find ways to make daily activities more manageable and more efficient, especially during the early stages of rehabilitation. As they progressed in their recovery, they noticed a positive shift in their perspective and a developing sense of occupational identity that differed from before their injury. As hand therapists, it is vital to include interventions that support the individual recovery journey after PHA. Incorporation of meaningful occupations, creative problem-solving and accommodations, sensory re-education, and motor learning will likely benefit individual confidence, greater independence in activity performance, and support overall adjustment after PHA.

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(No Image Selected)

(no table selected)

**TITLE:** UNDERSTANDING ACTIVITY PERFORMANCE AFTER PARTIAL HAND AMPUTATION: A QUALITATIVE DESCRIPTIVE STUDY

**CONTROL ID:** 3938177

**TITLE:**

CRITICALLY APPRAISED PAPER

Khanipour, Lajevardi, L., Taghizadeh, G., Azad, A., & Ghorbani, H. (2022). The investigation of the effects of occupation-based intervention on anxiety, depression, and sleep quality of subjects with hand and upper extremity burns: A randomized clinical trial. *Burns*, 48(7), 1645–1652. <https://doi.org/10.1016/j.burns.2022.02.014>

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** F. Koroma<sup>1</sup>, S. Doerrer<sup>1</sup>

**INSTITUTIONS (ALL):**

1. OT, The George Washington University Department of Health Human Function and Rehabilitation Sciences, Washington, DC, United States.

**ABSTRACT BODY:**

**Purpose:** Clinical bottom line - Burn injuries lead to negative health outcomes that interfere with occupational performance. Traditional occupational therapy for burns involves range of motion stretching, strengthening, scar massage, endurance training, etc. Researchers assessed the effectiveness of Cognitive Orientation to Daily Occupational Performance (CO-OP), on anxiety, depression, and sleep quality in patients with hand and upper extremity burns. CO-OP is client-centered and occupation-based and integrates motor skill acquisition and the learning theory to help meet functional goals. The intervention group received traditional rehabilitation and the CO-OP protocol, while the control received traditional rehabilitation. The results, though not statistically significant, showed improvements in all subjects. Improved sleep quality, and decreased depression and anxiety were seen in both groups, showing that CO-OP with traditional rehabilitation can be as effective as traditional rehab.

Level 2b. The research objective was to investigate the effects of occupation-based intervention on anxiety, depression, and sleep quality of subjects with hand and upper extremity burns.

**Methods:** Participant selection - This study was performed at a burn hospital in Tehran, Iran. The surgeon referred participants to the rehabilitation center. 25 were eligible, 20 participated. Participants with accompanying injuries were excluded. Inclusion Criteria: Age 18-65 years old, one week post skin graft surgery, acceptable level of cognitive function (score  $\geq 21$  on the Mini-Mental Status Evaluation), depth or burn (2nd or 3rd degree only) and consists of 2.5-3% total body surface area (TBSA) burns according to Lund and Browder Chart

Interventions and control groups – Participants were assigned to either group using a random numbers table. 10 participants were randomly assigned to the control group in which they received traditional rehabilitation. The OT sessions were held at the rehabilitation center 3 times a week for 6 weeks (18 sessions, each 45 minutes). 10 participants were randomly assigned to the intervention group in which they received the CO-OP protocol and traditional rehabilitation. Traditional rehabilitation was given during weeks 1 and 2. Participants received the CO-OP protocol for the remaining 4 weeks. The OT (both traditional and CO-OP) sessions were held for 45 minutes, 3 times a week at the rehabilitation center. Participants completed tasks such as completing a daily activity log, identifying three goals, completing a Goal-Plan-Do-Check, etc.

**Results:** Outcome measures – A blind assessor performed all evaluation trials. Evaluations were conducted in both groups at weeks 0, 2, 6, and 14.

Canadian Occupational Performance Measure (COPM)] - determine participants' occupational performance level and satisfaction.

Beck Anxiety Inventory (BAI) - determine the participant's self-reported anxiety levels.

Pittsburgh Sleep Quality Index (PSQI) - determine the participant's self-reported sleep quality.

Self-Rating Depression Scale (SDS) - quantify the prevalence of depressive symptomology.

**Results**

No difference was shown in the participants' baseline characteristics and clinical data between study groups. ( $P \leq 0.05$ )

In both the control and intervention groups, COPM-F ( $P < 0.0001$ ) and COPM-S ( $P < 0.0001$ ) scores were significantly increased. All subject's occupational performance levels and satisfaction increased.

In both the control and intervention groups, BAI ( $P < 0.0001$ ) and SDS ( $P < 0.0001$ ) scores were significantly decreased. All subject's anxiety levels decreased.

PSQI scores significantly decreased in the control group ( $P < 0.0001$ ) while it did not significantly change in the

intervention group ( $P = 0.16$ ). Sleep disturbances decreased for the group that had just traditional rehabilitation. SDS scores show a significant decrease in both groups. Self-reported depressive symptomatology was reduced in all subjects.

No significant difference was observed between the traditional and CO-OP groups at week 0 (pretreatment) and weeks 2, 6, and 14 evaluations.

**Conclusion:** Limitations- small sample size, no power analysis, baseline equality: the same treatment method was used in the initial sessions in both groups, timing of intervention: evaluations performed at short intervals, different time acquisition of occupational performance and satisfaction due to the coronavirus pandemic, self-reporting bias, the researchers do not state if the OT sessions used the same therapist for both groups, early positive results in the intervention group were not recorded

Conclusion - The authors concluded that occupation-based interventions using the CO-OP approach can reduce depression and self-reported anxiety levels. Therefore, these interventions could be used in rehabilitation clinics to improve mental health outcomes in patients with hand and upper extremity burn injuries.

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(no table selected)

**TITLE:**

CRITICALLY APPRAISED PAPER

Khanipour, Lajevardi, L., Taghizadeh, G., Azad, A., & Ghorbani, H. (2022). The investigation of the effects of occupation-based intervention on anxiety, depression, and sleep quality of subjects with hand and upper extremity burns: A randomized clinical trial. *Burns*, 48(7), 1645–1652. <https://doi.org/10.1016/j.burns.2022.02.014>



**CONTROL ID:** 3938181

**TITLE:** CRITICALLY APPRAISED PAPER

Kamel, H. & Basha, M. A. (2021). Effects of virtual reality and task-oriented training on hand function and activity performance in pediatric hand burns: a randomized controlled trial. *Archives of Physical Medicine and Rehabilitation*, 102(6), 1059–1066. <https://doi.org/10.1016/j.apmr.2021.01.087>

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** P. Meda<sup>1</sup>, S. Doerrer<sup>1</sup>

**INSTITUTIONS (ALL):**

1. OT, The George Washington University Department of Health Human Function and Rehabilitation Sciences, Washington, DC, United States.

**ABSTRACT BODY:**

**Purpose:** Clinical Bottom Line- This article explores virtual reality (VR) and task-oriented training (TOT) 's effectiveness in improving hand function, activity performance, and self-satisfaction in pediatric hand burns (PHB). The trial took place over 8 weeks. The participants were children from acute care facilities in Cairo, Egypt. This article is the only study that assesses the VR method compared to TOT in PHB. The results from the study show that all participants significantly improved hand function. However, the VR showed higher satisfaction and significantly decreased pain and kinesiophobia in children. Practitioners can use this evidence to inform their intervention in children with PHB because VR is an interactive training method that improves hand function, activity performance, and self-satisfaction. Due to the short follow-up and small sample size of this level 1B study, more trials with hand burn rehabilitation are needed to assess long-term hand function when using VR.

level 1B The study's primary objective was to evaluate the effectiveness of a motion-sensing, hands-free gaming device and task-oriented training programs on improving hand function, activity performance, and satisfaction in pediatric hand burns.

**Methods:** Participant Selection- Inclusion Criteria for the participants in the study were: mean age of 7-14, partial-thickness or full-thickness hand burns from scaled or flame thermal burn, burn involving more than 50% of the hand and wrist, less than 30% for total body involvement, recent acute care discharge, and healing within 1 month or 2 weeks of a skin graft. Exclusion Criteria for the participants in the study were: infection, muscle injury, fracture, degenerative joint disease, peripheral nerve disease, arthritis, or pre-determined physical or psychological disorders. Interventions and Control Group- Traditional Rehabilitation (TR) control program consisted of 3, 40-minute sessions weekly over 8 weeks for all 50 children participating in the study. The control program involved gentle massaging, stretching, ROM exercises, and more. The parents of children participating in the home program were instructed to splint against contractures, scar massage, exercise, and use compression garments. Task-oriented Training program (TOT) was conducted in addition to the TR program with a combined total time of 3, 50-minute sessions weekly over 8 weeks for 17 children participating in the study. This group's training increased the difficulty of tasks, changed the number of repeats, increased or decreased activity performance time, and modified materials. Materials involved exercise bands, skill cubes, therapeutic putty, Velcro cylinders, clothes, and more. Xbox Kinect program (VR) was conducted in addition to the TR program with a combined total time of 3, 50-minute sessions weekly over 8 weeks for 16 children participating in the study. The Xbox games were chosen based on therapeutic use and treatment objectives found during the child-centered analysis of their condition. The child was instructed to mimic the avatar's actions on the screen; the more accurate the movements, the greater the score. Each rehabilitation plan was designed with the help of a physiotherapist.

**Results:** Outcome Measures- The Jebsen-Taylor Hand Function Test (JTHFT), Duruoz Hand Index (DHI), and the Canadian Occupational Performance Measure (COPM) were the primary outcome measures for the study. The secondary outcome measures assessed the total active range of motion (ROM) of the digits, grip strength, and tip, palmer, and lateral pinch strengths. All are reliable and valid outcome measures that were assessed at baseline and after the eight-week intervention.

Results- When comparing all outcome measures recorded pre- and post-intervention within all three groups, there was a significant improvement ( $p < .001$ ). There was an increase in DHI, COPM satisfaction, and palmer strength post-intervention in the Xbox Kinect group compared to the TOT group ( $p < .05$ ). The changes in DHI scores were statistically significant in favor of the Xbox Kinect group ( $p < .001$ ).

**Conclusion:** Limitations- There was no oversight by the researchers as the parents administered the TR intervention for eight weeks. The children were not blinded. The study assessed the children directly after the 8-week

intervention regarding the overall improvement in hand function but did not follow up after the intervention period, so the long-term impact of the interventions is unreported.

**Conclusion-**Xbox Kinect is an enjoyable intervention and presents an interactive treatment method. Providers can modify the intervention depending on changing performance levels and the recovery stage of their patients. This study reports that even in comparison with TR and TOT, Xbox Kinect is highly effective for children with partial hand burns showing improvement in hand function, activity performance, and satisfaction.

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(No Image Selected)

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Kamel, H. & Basha, M. A. (2021). Effects of virtual reality and task-oriented training on hand function and activity performance in pediatric hand burns: a randomized controlled trial. *Archives of Physical Medicine and Rehabilitation*, 102(6), 1059–1066. <https://doi.org/10.1016/j.apmr.2021.01.087>

**CONTROL ID:** 3938220

**TITLE:** THE IMPACTS OF BRACHIAL PLEXUS BIRTH INJURY IN ADULTHOOD: RESULTS OF A MIXED METHODS STUDY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** J. Dorich<sup>1</sup>, J. Whiting<sup>3</sup>, V. Plano Clark<sup>4</sup>, R. Ittenbach<sup>5</sup>, J. Marks<sup>2</sup>, R. Cornwall<sup>2</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy & Physical Therapy, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States.
2. Orthopaedic Surgery, Cincinnati Children's Hospital, Cincinnati, OH, United States.
3. United Brachial Plexus Network, Boston, MA, United States.
4. University of Cincinnati, Cincinnati, OH, United States.
5. Epidemiology and Biostatistics, Cincinnati Children's Hospital, Cincinnati, OH, United States.

**ABSTRACT BODY:**

**Purpose:** Brachial Plexus Birth Injury (BPBI) causes permanent neuromusculoskeletal dysfunction. Thus, healthcare services for BPBI must focus on minimizing the impact of BPBI on long-term health related quality of life (HRQoL) throughout the lifespan into adulthood. However, the long-term impact of BPBI on Health-Related Quality of Life (HRQoL) is incompletely understood. This mixed methods study sought to comprehensively identify and then quantify BPBI-affected adults' HRQoL concerns.

**Methods:** Adults with BPBI participated in an anonymous survey with open-ended and close-ended questions regarding the impact of BPBI on broad and overlapping aspects of HRQoL. The survey was posted on the Facebook pages of two international support groups. Responses to open-ended questions were qualitatively coded. Subsequently, maximum variation sampling was applied to recruit a subset of survey respondents to participate in 1:1 semi-structured interviews. Interview transcripts were qualitatively coded. Then qualitatively coded survey and interview data were merged and linked to numeric International Classification of Functioning, Disability, and Health (ICF) codes. Impacted HRQoL factors were identified and ranked using ICF code frequency distributions by ICF domains and chapters. Finally, patient-reported outcome measures (PROMs) were selected by matching published ICF-linking of candidate PROM item banks to the merged ICF-linked qualitative data. The selected PROMs were then administered through a REDCap link to both support groups.

**Results:** One hundred eighty-three respondents (152 female, 31 male; average age 38 years, range 20-87 years; 95 right affected, 83 left affected, 5 bilateral) completed qualitative surveys. Twelve participants completed interviews (7 female, 5 male; average age 49 years, range 26-81 years; 6 right affected, 4 left affected, 2 bilateral). Combined qualitative codes encompassed all ICF domains, with chapters relating to mental functions (25% of codes), relationships (17% of codes), and health services (13% of codes) predominating. PROMs matching relevant ICF chapters included: PROMIS Global Health, Pain Interference, Depression, Anxiety, Emotional Support, Satisfaction with Social Roles and Activities (SSRA); NeuroQoL Stigma; Disability of the Arm Shoulder and Hand (DASH); Modified Satisfaction with Appearance Scale; and the Health Literacy Questionnaire (HLQ). One hundred seventy-one respondents (140 female, 31 male; average age 39 years, range 21 – 88 years; 87 right affected, 80 left affected, 4 bilateral) completed PROMs. Respondents scored worse than normative scores on all PROMIS and DASH scales, except for the SSRA scale (Table 1). All but one scale significantly correlated with overall HRQoL, with psychosocial and participation measures demonstrating strongest correlations (Table 2).

**Conclusion:** This mixed methods approach identified the array of HRQoL concerns among BPBI-affected adults and facilitated identification of PROMs to quantify these HRQoL facets among BPBI-affected adults. Impacts in psychosocial domains predominate. PROMIS and DASH scores indicate that adults with BPBI have greater disability with respect to mental health, physical health, upper extremity function, and activity participation than the general population. While multiple domains of health correlate with how adults with BPBI rate their overall HRQoL, the strongest correlation is found with Global Mental Health, Satisfaction with Social Roles and Activities, and Global Physical Health. These findings highlight that individuals with BPBI have healthcare concerns that extend into adulthood. Furthermore, study findings suggest a comprehensive approach to providing care to this population which encompasses more than the use of the affected hand and arm is necessary to maximize HRQoL for affected individuals throughout the lifespan.

# Abstracts

(abstracts are listed in numeric order by control ID number)

Patient	Demographics			Diagnosis	Assesment: Quick DASH	
	Gender	Age			Pretest	Posttest
P2	Female		45	Dx: Bilateral hand pain/Carpel tunnel syndrome	68%	52%
P3	Female		41	Dx: Left DRF ORIF, concurrent ulna chip fx, MS managed with medication	39%	0%
P4	Female		61	Dx: Right wrist scope, debridement, ant/pos inter- osseus nerve resection; radial styloid reduction	16%	11%
P5	Female		59	DX: Bilateral hand numbness right worse than left	80%	64%

# Abstracts

(abstracts are listed in numeric order by control ID number)

Patient	Patient reports Satisfaction		# of sessions
	Pre	Post	
P2	Extremely poor	Poor	4
P3	Fair	Good	14
P4	Fair	Good	10
P5	Poor	Fair-Good	9

# Abstracts

(abstracts are listed in numeric order by control ID number)

Assesment: Moberg pick up test				
Patient	Pretest Vision	Pretest Non-vision	Posttest Vision	Posttest Non-vision
P2	L: 9.66 sec R: 12.19 sec	L: 20.08 sec R: 20.02 sec	L: 10.97 sec R: 10.07 sec	L: 25.04 sec R: 23.13 sec
P3	L: 12.24 sec R: 7.24 sec	L: 36.98 sec R: 23.36 sec	L: 7.09 sec R: 6.67 sec	L: 20.81 sec R: 19.35 sec
P4	L: 8.3 sec R: 6.46 sec	L: 15.76 sec R: 18.76 sec	L: 7.44 sec R: 7.36 sec	L: 11.57 sec R: 11.90 sec
P5	L: 8.44 sec R: 7.82 sec	L: 14.79 sec R: 18.84 sec	L: 7.65 sec R: 8.72 sec	L: 13.62 sec R: 14.40 sec

# Abstracts

(abstracts are listed in numeric order by control ID number)

Assessment: Semmes Weinstein					
Patient	Pretest	Posttest			
P2	Right: T=4, PIF=4, DIF=4, PPF=5, DPF=5, UB=3, RB=3 Left: T=4, PIF=5, DIF=4, PPF=4, DPF=4, UB=4, RB=5	Right: T=3, PIF=5, DIF=3, PPF=3, DPF=3, UB=3, RB=4 Left: T=3, PIF=4, DIF=4, PPF=3, DPF=3, UB=4, RB=4			
P3	Right: T=4, PIF=4, DIF=4, PPF=4, DPF=5, UB=5, RB=5 Left: T=4, PIF=4, DIF=4, PPF=4, DPF=4, UB=4, RB=5	Right: T=4, PIF=4, DIF=4, PPF=4, DPF=5, UB=5, RB=5 Left: T=4, PIF=5, DIF=5, PPF=5, DPF=5, UB=5, RB=5			
P4	Left: T=5, PIF=4, DIF=4, PPF=4, DPF=4, UB=4, RB=4 Right: T=3, PIF=4, DIF=4, PPF=4, DPF=4, UB=4, RB=4	Left: T=5, PIF=4, DIF=4, PPF=4, DPF=4, UB=4, RB=4 Right: T=4, PIF=4, DIF=4, PPF=4, DPF=4, UB=4, RB=5			
P5	Left: T=4, PIF=5, DIF=5, PPF=5, DPF=5, UB=5, RB=4 Right: T=5, PIF=5, DIF=5, PPF=4, DPF=5, UB=4, RB=4	Left: T=4, PIF=5, DIF=5, PPF=5, DPF=5, UB=5, RB=5 Right: T=5, PIF=5, DIF=5, PPF=5, DPF=5, UB=5, RB=5			
Monofilament number classification: 1= Residual deep pressure, 2= Loss of protective sensation, 3= Residual protective sensation, 4= Residual texture, 5= Normal		Abbreviations: T= Thumb, DIF= Distal index finger, PIF= Proximal index finger, DPF=distal pinky finger, PPF= Proximal pinky finger, UB= Ulnar base, RB= Radial base			



# Abstracts

(abstracts are listed in numeric order by control ID number)

Patient		Assessment: ULTT	
		Pretest	Posttest
P3	Left Median nerve	50% loss of ROM at the elbow and 50% loss of ROM at the wrist	20% loss of ROM at the wrist
	Left Ulnar nerve	50% loss of ROM at the wrist	20% loss of ROM at the wrist
P4	Right Median nerve	60% loss of ROM at the wrist	40% loss of ROM at the wrist
	Right Ulnar nerve	30% loss of ROM at the shoulder and 50% loss of ROM at the wrist	30% loss of ROM at the wrist
P5	Bi-laterally Median nerve	L: 50% loss ROM at the wrist 30% at the elbow R: 70% loss ROM at the wrist 40% at the elbow	L: 50% loss at the wrist 30% loss ROM at the elbow R: 60% loss of ROM at the wrist 40% loss ROM at the elbow
	Bi-laterally Ulnar nerve	L: 40% loss ROM at wrist, R: 60% loss ROM at the wrist	L: 30% loss of ROM at the wrist, R: 50% loss at the wrist

**IMAGE CAPTION:**

(no table selected)

**TITLE:** OCCUPATION-BASED INTERVENTIONS FOR UPPER EXTREMITY PERIPHERAL NERVE CONDITIONS

**CONTROL ID:** 3938277

**TITLE:** REVIEW ARTICLE - ORTHOTIC DEVICES TO REDUCE ULNAR CLAWING

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** H. E. Franks<sup>1, 2</sup>, J. Ng<sup>1, 3</sup>, A. Cowan<sup>1, 2</sup>

**INSTITUTIONS (ALL):**

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2. Nu Chapter, Pi Theta Epsilon, Galveston, TX, United States.
3. Nu Chapter, Pi Theta Epsilon, Galveston, TX, United States.

**ABSTRACT BODY:**

**Purpose:** 1. Purpose<sup>1,2</sup>:

a. Background

- i. Ulnar claw deformity results in metacarpophalangeal (MCP) joint hyperextension and interphalangeal joint flexion<sup>3</sup> in ring and small fingers.
- ii. Ulnar clawing results from ulnar nerve damage; can stem from sharp trauma, burns, leprosy, and compression syndromes<sup>3-5</sup>.
- iii. Ulnar clawing results in decreased grip, fine motor control, and hand function that affects a person's ability to engage in day-to-day activities.
- iv. Much of the literature focuses on surgical procedures / nature of claw deformity; does not address the use of specific orthotic devices<sup>4,6</sup>.
- v. Anti-claw orthoses limit MCP joint hyperextension, providing opportunity for functional restoration<sup>3,6</sup>.

b. Search question<sup>1</sup>

- i. In the presence of claw hand, what type of orthotic device is most effective at reducing deformity?

**Methods:** 2. Methods<sup>1,2</sup>:

a. Search strategy

i. Databases: Ovid, Medline/PubMed, EbscoHost CINAHL, and Scopus

1. Search terms: "ulnar neuropathies," "hand deformities acquired," "claw hand," "leprosy," "ulnar nerve," "intrinsic minus," "intrinsic paralysis," "cubital tunnel syndrome," "ulnar nerve compression syndromes," "splints," "orthosis," and "orthotic devices."

ii. Inclusion criteria – use of anti-claw device, peer-reviewed published literature

iii. Exclusion criteria – full-text unavailable, published prior to 2008

b. Pertinent information

i. Evidence types<sup>7</sup>

1. Case Studies (Level 4) = 4

2. Expert opinion (Level 5) = 2

ii. Anti-claw device types

1. Immobilization (static) = 3

2. Mobilization (dynamic) = 2

3. Restriction (taping) = 1

**Results:** 3. Results<sup>1,2</sup>

a. Main findings

i. Utilized a knuckle bender / thumb abduction orthosis to resolve combined median and ulnar clawing post-surgical repair; clawing resolved<sup>8</sup>.

ii. Recommended use of a dynamic orthotic device to correct claw deformity in the presence of Hansen's disease<sup>9</sup>.

iii. Described taping methodology to mimic the anti-claw orthosis that reduced barriers for firm grip and reach into small compartments<sup>10</sup>.

iv. Recommended use of an anti-claw orthotic device with a slowly progressing strengthening program when addressing ulnar-claw hand deformity<sup>11</sup>.

v. Implemented light resistive exercises and a dynamic anti-claw orthosis which resulted in no sign of hand deformity at 16-weeks post-ulnar nerve repair<sup>12</sup>.

vi. Implemented static anti-claw orthotic device post-surgery for ulnar nerve injury due to observed clawing; at 14 weeks, patient presented with no clawing<sup>13</sup>.

b. Critical appraisals<sup>14,15</sup>

- i. Detailed case study progression and some description of orthotic device use<sup>8</sup>. Lacking objective measures at baseline and follow-up.
- ii. Describes limitations of the case study<sup>9</sup>. Does not provide details regarding the device fabrication or wear schedule and lacks patient follow-up.
- iii. Provides detailed methodology for taping with supplemental pictures<sup>10</sup>. Lacks application to patients to assess utilization during daily activities.
- iv. Explains rehabilitative treatments for ulnar clawing due to an nerve injury and intrinsic muscle dysfunction<sup>11</sup>. Lacking patient implementation details.
- v. Describes anti-claw device, includes baseline and post-intervention photographs of patient's hand<sup>12</sup>. Relies on clinical observation, lacking formal assessments.
- vi. Describes the use of a static anti-claw orthotic device<sup>13</sup>. Lacks information regarding fabrication of the device.

**Conclusion:** 4. Conclusion<sup>1,2</sup>  
a. Limitations<sup>14,15</sup>

- i. The lack of universal naming for anti-claw devices may have resulted in a less than comprehensive search.
  - ii. Search was expanded to 15 years instead of 10 due to yielding only two peer-reviewed articles upon initial search.
- b. Conclusion
- i. Anti-claw orthotic devices can potentially serve as effective conservative treatment for claw hand deformities.
  - ii. Home exercise programs and other therapeutic activities may provide additional benefit during the wear schedule.
  - iii. Specific orthotic design can affect engagement in functional activities: static devices immobilize the MP joints<sup>8,11,13</sup>, dynamic devices assist movement and may facilitate strengthening<sup>9,12</sup>, and restrictive devices allow functional movement like grabbing or reaching into small spaces<sup>10</sup>.
  - iv. Inconsistent naming of anti-claw orthoses affects the ability to procure relevant literature.
  - v. While commonly recommended in clinical textbooks, little recently published evidence exists for the use of orthotic devices to manage ulnar claw hand.
- c. Clinical implications and recommendations
- i. Each anti-claw orthosis should be shaped to the individual needs of the client; specifically considering the client's ability level and functional needs.
  - ii. Rigorous, controlled studies are needed to further explore the efficacy and effectiveness of anti-claw orthoses.

**Purpose:** 1. Purpose<sup>1,2</sup>:

a. Background

- i. Ulnar claw deformity results in metacarpophalangeal (MCP) joint hyperextension and interphalangeal joint flexion<sup>3</sup> in ring and small fingers.
- ii. Ulnar clawing results from ulnar nerve damage; can stem from sharp trauma, burns, leprosy, and compression syndromes<sup>3-5</sup>.
- iii. Ulnar clawing results in decreased grip, fine motor control, and hand function that affects a person's ability to engage in day-to-day activities.
- iv. Much of the literature focuses on surgical procedures / nature of claw deformity; does not address the use of specific orthotic devices<sup>4,6</sup>.
- v. Anti-claw orthoses limit MCP joint hyperextension, providing opportunity for functional restoration<sup>3,6</sup>.

b. Search question<sup>1</sup>

- i. In the presence of claw hand, what type of orthotic device is most effective at reducing deformity?

**Methods:** 2. Methods<sup>1,2</sup>:

a. Search strategy

- i. Databases: Ovid, Medline/PubMed, EbscoHost CINAHL, and Scopus

1. Search terms: "ulnar neuropathies," "hand deformities acquired," "claw hand," "leprosy," "ulnar nerve," "intrinsic minus," "intrinsic paralysis," "cubital tunnel syndrome," "ulnar nerve compression syndromes," "splints," "orthosis," and "orthotic devices."

- ii. Inclusion criteria – use of anti-claw device, peer-reviewed published literature

- iii. Exclusion criteria – full-text unavailable, published prior to 2008

b. Pertinent information

- i. Evidence types<sup>7</sup>

1. Case Studies (Level 4) = 4
2. Expert opinion (Level 5) = 2
- ii. Anti-claw device types
  1. Immobilization (static) = 3
  2. Mobilization (dynamic) = 2
  3. Restriction (taping) = 1

**Results:** 3. Results<sup>1,2</sup>

a. Main findings

- i. Utilized a knuckle bender / thumb abduction orthosis to resolve combined median and ulnar clawing post-surgical repair; clawing resolved<sup>8</sup>.
- ii. Recommended use of a dynamic orthotic device to correct claw deformity in the presence of Hansen's disease<sup>9</sup>.
- iii. Described taping methodology to mimic the anti-claw orthosis that reduced barriers for firm grip and reach into small compartments<sup>10</sup>.
- iv. Recommended use of an anti-claw orthotic device with a slowly progressing strengthening program when addressing ulnar-claw hand deformity<sup>11</sup>.
- v. Implemented light resistive exercises and a dynamic anti-claw orthosis which resulted in no sign of hand deformity at 16-weeks post-ulnar nerve repair<sup>12</sup>.
- vi. Implemented static anti-claw orthotic device post-surgery for ulnar nerve injury due to observed clawing; at 14 weeks, patient presented with no clawing<sup>13</sup>.

b. Critical appraisals<sup>14,15</sup>

- i. Detailed case study progression and some description of orthotic device use<sup>8</sup>. Lacking objective measures at baseline and follow-up.
- ii. Describes limitations of the case study<sup>9</sup>. Does not provide details regarding the device fabrication or wear schedule and lacks patient follow-up.
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- i. Anti-claw orthotic devices can potentially serve as effective conservative treatment for claw hand deformities.
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- iv. Inconsistent naming of anti-claw orthoses affects the ability to procure relevant literature.
- v. While commonly recommended in clinical textbooks, little recently published evidence exists for the use of orthotic devices to manage ulnar claw hand.

c. Clinical implications and recommendations

- i. Each anti-claw orthosis should be shaped to the individual needs of the client; specifically considering the client's ability level and functional needs.
- ii. Rigorous, controlled studies are needed to further explore the efficacy and effectiveness of anti-claw orthoses.

(No Image Selected)

**TABLE:**

Note: The PDF table below is only an approximation of the HTML content and may not match formatting exactly.

Evidence Table 1. Peer-reviewed articles for orthotic devices to reduce ulnar clawing.							
Author & Year	Population	Study Design	Orthotic Type	Intervention	Main Findings & Recommendations	Limitations	Level of Evidence
Mathew (2012)	24 yo M; triple nerve palsies	Case study	Immobilization (static)	MCP flexion / thumb abduction device	Gradual correction of claw deformity / improvement in pinch; orthosis discontinued 12 mos	Lacks baseline / functional measures	4
Rao & Balachandran (2010)	11 yo F; Hansen's disease	Case study	Dynamic anti-claw orthotic device	Recommendation of dynamic orthotic device	Recommendation of dynamic orthotic device for specific clinical case	Lacks details of device fabrication or wear schedule ; lacks patient follow-up	4
Schuppe (2018)	Patients with ulnar nerve palsy	Expert opinion	Restriction (taping)	Taping method to restrict 4th-5th MCPs to 80° flexion; alternative method to rigid thermoplastic	Self-application possible; allergic skin precautions; tape removal / skin hygiene every	Lacks information about application to patients and use during daily activities	5

# Abstracts

(abstracts are listed in numeric order by control ID number)

				devices	evening		
Seu & Pasquale to (2012)	Patients with ulnar nerve injury	Expert opinion	Immobilization (static)	Lumbrical bar orthosis for 4th-5th digits; MCPs in slight flexion to allow IP extension; progress to strengthening	Anti-claw programs graded by changing object properties (weight, size, resistance, etc.); low resistance / high repetition recommended; utilize slow / controlled movements	Lacks patient implementation details	5
Sousa & de Macêdo (2015)	18 yo M; artery, nerve, and tendon lacerations	Case study	Mobilization (dynamic)	Dynamic anti-claw design worn intermittently; exercises 5-8 times a day, 10-15 slow repetitions with resistance	4 weeks: no sign of claw hand deformity, able to fully extend MCPs and Ips; 8 weeks: no observed sign of claw hand deformity	Relies on clinical observation and lacks formal assessments	4
Sudhagar & Le	24 yo M; flexor	Case study	Immobilization	Static anti-claw	14 weeks post-	Lacks informati	4

# Abstracts

(abstracts are listed in numeric order by control ID number)

Blanc (2012)	tendon repairs		(static)	orthotic device	surgery: no ulnar clawing	on regarding fabricatio n of the device, impleme ntation, and wear schedule	
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**TABLE FOOTER:**

**TABLE TITLE:** Evidence Table 1. Peer-reviewed articles for orthotic devices to reduce ulnar clawing.

**TITLE:** REVIEW ARTICLE - ORTHOTIC DEVICES TO REDUCE ULNAR CLAWING



**CONTROL ID:** 3938327

**TITLE:**

HAND THERAPIST US OF PATIENT REPORTED OUTCOMES

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** K. A. Valdes<sup>1</sup>, N. Naughton<sup>2</sup>, J. V. Rider<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Occupational Therapy, Touro College, New York, NY, United States.
2. Occupational Therapy, Hand Therapy Associates, Olyphant, PA, United States.

**ABSTRACT BODY:**

**Purpose:** This study sought to understand what outcome measures are being used in clinical practice, how they are being used, and the perceived usefulness of PROs by active members of the American Society of Hand Therapists (ASHT).

**Methods:** The cross-sectional design provides descriptive information regarding the population of interest. Two researchers with previous survey design experience developed the survey. The survey asked for demographic data and what PROs were used in clinical practice. The web-based survey was distributed through Qualtrics (Qualtrics, Salt Lake City, Utah) to active members of ASHT with an email address on file. Participation was voluntary with no compensation for participation. The raw data was retrieved from Qualtrics and was checked for errors. Descriptive statistics, frequencies and percentages were calculated using Microsoft Excel. The data from the open-ended questions was categorized.

**Results:** A total of 355 members responded to the survey, resulting in a 24% response rate. The first question asked the respondents on what PRO measure that they used in clinic practice. The respondents were allowed to select all measures they used. Seven hundred thirty-two outcome measures were reported to be used by respondents. Six (2%) respondents indicated that they did not use a PRO. The most used outcome measure was QuickDASH by 38% of the respondents. The second question asked why they used more than one outcome measure if they use more than one measure. Three hundred fifty-four respondents answered the question. One hundred twenty-six (48%) reported that the use of more than one measure allows them to better establish the functional limitations of the patient. Sixty-one (18%) respondents indicated that the use of one measure cannot accurately reflect patient deficits. Fifty-one (40%) respondents indicated that they need to include a measure required by an insurance company or payer. Forty-three (34%) respondents indicated that more than one measure was required by their employer or co-workers. Fourteen (11%) indicated that they only use one measure. Forty (11%) of the respondents declined the question. Five (4%) respondents indicated that certain measures are more specific for certain diagnoses. The next question asked the respondents if they shared the results of the tool that they used with their patients. Two hundred forty-seven (80%) responded yes and 58 (19%) responded no. Four (1%) declined the question. The fourth question asked the respondents what they did with the information. They were asked to select all choices that applied. There was a total of 981 responses. Two hundred eighty-one (81%) indicated that they use the data to determine patient progress or change in status. Two hundred sixty-two (75%) indicated that they used the data to create specific patient goals and establish a plan of care. Two hundred thirty-eight (68%) gather the data for the patient's medical record. One hundred ninety-nine (57%) of the respondents communicate the data to insurance companies and payers to establish the number of allowed patient visits. Question five asked the respondents if they discussed goals and expectations with their patient based upon the results of the measure. Two hundred fifty-two (81%) respondents indicated yes and 58 (18%) responded no. Two respondents (1%) declined the question.

Question six asked if their workplace advocated or promoted the use of patient-centered outcome measures. Two hundred seventy-five (88%) indicated yes and 30 (10%) responded no. Six (2%) of the respondents declined the question.

Three hundred and nine responses were obtained for the question regarding if their PRO was embedded in their electronic medical record (EMR) system. One hundred seventy-nine (58%) of respondents indicated yes and 106 (34%) indicated no. Twenty four (8%) respondents declined the question. One hundred ninety-five outcome measures were reported to be part of the respondents EMR. Respondents were an open-ended question regarding the constraints to the use of PROs. One hundred fifty-six (45%) respondents answered the question. No was the answer given by 63 (40%) of the respondents. Limited time was the answer provided by 54 (35%) of the respondents. Eleven (7%) of the respondents indicated that clients sometimes refuse to answer the questions because they have previously filled out the form in the physician's office or they don't think the choices available apply to them. Eight (5%)

respondents indicated that their EMR system does not include outcome measures, or they encounter EMR system glitches. Eight (5%) respondents indicated that there were departmental issues with acceptance of a particular measure.

**Conclusion:** Most of the hand therapist respondents to our survey use a PRO and discuss the results with their clients. The QuickDASH was the PRO used most often by hand therapists. Only a few hand therapists use a psychosocial tool to measure patient status in clinical practice.

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**TITLE:**

HAND THERAPIST US OF PATIENT REPORTED OUTCOMES

**CONTROL ID:** 3938351

**TITLE:** RATCHETING PROSTHETIC FINGERS SIGNIFICANTLY IMPROVE OUTCOMES FOR PEOPLE WITH PARTIAL HAND AMPUTATION

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** B. Pulver<sup>1</sup>, J. Segil<sup>2</sup>, S. Huddle<sup>3</sup>, R. Weir<sup>3</sup>, L. Sliker<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Point Designs, Lafayette, CO, United States.
2. Mechanical Engineering, University of Colorado, Boulder, CO, United States.
3. Bioengineering, University of Colorado | Anschutz Medical Campus, Aurora, CO, United States.

**ABSTRACT BODY:**

**Purpose:** There are more than 25,000 partial hand amputations each year in the United States. There are now many more devices available to treat partial hand amputations, but there is still not an adequate amount of quantitative clinical data to support the application of these devices. This presents regulatory and reimbursement challenges for both manufacturers and practitioners which ultimately limits access to partial hand prostheses. In this work, a robust interventional clinical study on partial hand prostheses was conducted to address this need.

Patient outcomes before and after being fit with ratcheting mechanical prosthetic fingers were assessed using two task-based and two patient reported outcome measures.

**Methods:** The Western Institutional Review Board approved this study (protocol #20182022), and informed consent was obtained from all subjects.

**Participants:** Eleven (11) subjects with partial hand amputation were recruited. Eight (8) participants were male, and three (3) were female; with an age range of 22 – 61 years. Inclusion criteria was loss of at least index and/or middle fingers with an intact thumb.

**Prosthesis:** Each subject was fit with a partial hand prosthesis made of a high temperature vulcanized (HTV) silicone liner, carbon fiber frame, and ratcheting mechanical prosthetic fingers.

**Procedures:** Subjects participated in four data collection sessions: prior to prosthesis fitting (Pre), immediately after definitive prosthesis fitting (Post), 30 days after prosthesis fitting (30-day post), and 60 days after prosthesis fitting (60-day post). Outcome measures were collected each session using the EQ-5D-5L, DASH, SHAP, and CAPPFUL.

**Analysis:** A linear mixed effects model was used. The model determined how significant age, gender, hand dominance, days since amputation, the number of fingers involved, and prosthesis use were in determining the total scores for all outcome measures.

**Results:** All post-fitting visits were coded as the "Prosthesis" condition and the pre-fitting visit was coded at the "No Prosthesis" condition. Significant differences between these two conditions were found for the DASH, EQ-5D-5L, and CAPPFUL (Table 1).

No significant effects were found for age, gender, hand dominance, or days since amputation. There was a significant difference in the SHAP and CAPPFUL scores with and without a prosthesis for the 4-finger presentations.

**Conclusion:** There was a significant improvement in both patient reported and task-based outcome measures from the no prosthesis condition to the prosthesis condition. Additionally, a larger benefit was found for patients missing 4 fingers. This demonstrates that partial hand prostheses are state-of-the-art and clinically sound treatments for partial hand amputation. This study provides quantitative data demonstrating the benefits of partial hand prostheses. These data can be used to improve insurance authorization requests and regulatory submissions. Additionally, this study identified a possible need for a task-based outcome measure more tailored to the partial hand population.

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**TABLE:**

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Effect of partial hand prostheses on outcomes					
Fixed Effects	Outcome Measure	Coefficient	p. Value	Low. CI	High. CI
No Prosthesis	DASH	-12.2	1.92E-05**	-17.1	-7.4
	EQ-5D-5L	4.8	0.002**	2.0	7.7
Prosthesis	CAPPFUL	12.7	0.018*	2.5	22.9
	SHAP	2.5	0.408	-3.4	8.3

\*p<0.05, \*\*p<0.001

**TABLE FOOTER:** \*p<0.05, \*\*p<0.001

**TABLE TITLE:** Effect of partial hand prostheses on outcomes

**TITLE:** RATCHETING PROSTHETIC FINGERS SIGNIFICANTLY IMPROVE OUTCOMES FOR PEOPLE WITH PARTIAL HAND AMPUTATION

**CONTROL ID:** 3939676

**TITLE:** INTEGRATIVE TREATMENT STRATEGIES FOR THE CHRONIC HEMIPLEGIC HAND: A CLINICAL CASE STUDY

**AUTHORS (FIRST NAME INITIAL, LAST NAME):** C. Eddow<sup>1</sup>

**INSTITUTIONS (ALL):**

1. Western University of Health Sciences, Pomona, CA, United States.

**ABSTRACT BODY:**

**Purpose:** Hemiplegia associated with cerebral vascular accidents (CVA) may result in long standing functional impairments. Although it is imperative to address impairments in the initial phases of recovery, with appropriate interventions, patients may still regain function months or years into their recovery. Many therapists treating upper extremity conditions are not exposed to different types of interventions that may assist in recovery of function. The purpose of this clinical case study is to present unique integrated treatment strategies successfully employed during the treatment of a 31 year-old male who had suffered hemorrhagic stroke 8 years previous resulting in right hemiplegia. In 2022, the subject suffered avulsion injury to his right small finger proximal interphalangeal joint and was referred for skilled hand therapy. It was found the patient presented with marked disassociation with his involved extremity.

**Methods:** To regain motor control, a combination of graded motor imagery and surface electromyography combined with traditional manual and exercise therapies were employed. Following eight weeks of using mirror box therapy and computerized electromyography, the patient's DASH score improved from 29.55% to 59.55% and his grip strength improved from 25 to 45 pounds. Fine motor abilities were markedly improved. There have been no research investigations exploring a combination of strategies to address limb dissociation such as with hemiplegia, traumatic brain injury, or peripheral nerve lesions. The positive outcomes of this study warrant exploring these integrative techniques on larger populations in order to develop optimal strategies in populations with cognitive dissociation of their involved limb.

**Results:** The outcomes were significant for improvement in fine motor manipulation, pincer grasp, and perceived functional ability.

**Conclusion:** It was concluded graded motor imagery and biofeedback as a component of the rehabilitation process are valuable interventions in restoring gross and fine motor hand function in a hemiplegic subject.

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(No Image Selected)

**Methods:** In adults with a diagnosis of rheumatoid arthritis, how effective is the use of purposeful activity via use of a smartphone application compared to rote exercise in promoting optimal outcomes through self-management? PubMed was searched with the Clinical Query function for Therapy articles, with key words “rheumatoid arthritis” and “exercise” and “self-management.” Results were limited to English Language, Adults 18+ years, publication date within the last 5 years, and Study Type = Meta-analyses, clinical trial, or RCT’s.

**Results:** The ANOVA was used to compare mean outcome differences after intervention. Additionally, the Shapiro-Wilk test was used to evaluate the distribution of study measures. The ANOVA demonstrated a significant time×group effect for the MHQ ( $F_{1,62,85.67}=9.163$ ;  $P<.001$ ;  $\eta^2=0.15$ ). It was found that the CareHand group demonstrated clinically significant improvements in overall hand function as measured by the MHQ and several of its subsets, including overall hand function, work performance, pain, and satisfaction (all  $P<.05$ ), with mean differences between groups for a total score of 16.86 points (95% CI 8.70-25.03) at 3 months and 17.21 points (95% CI 4.78-29.63) at 6 months. However, findings showed little difference when examining patients’ self-reported pain or morning stiffness; no time×group interaction was observed (all  $P>.05$ ). There was also minimal difference found when comparing grip and pinch measurements among both groups – however, this may be attributed to the chronic and debilitating nature of the disease itself, and may have had less to do with adherence or effectiveness of the mobile application as an intervention.

**Conclusion:** This was a reliable study, in that the design consisted of a single-blind, randomized control trial. It was effective in that the authors utilized standardized outcome measures to support their findings - while pain ratings and other self-reported outcomes may be more subjective, use of grip and pinch measurements can provide objective feedback. By trialing the intervention on a single upper extremity condition, the findings help inform treatment and management of RA, and give insight to future research. No adverse effects were reported among participants. Limitations in this study included a small sample size and a deviation from the initial protocol in reporting sample size estimation. Additionally, all participants were selected from a rural area, which limits the external validity of the findings. Time can also be considered a limitation in this study, as outcome measures were only examined over the course of 6 months; to further support findings, a long-term assessment would be more beneficial in investigating the efficacy of digital tools. It is also to note that, at baseline, both groups demonstrated differences in pain and satisfaction subscales of the MHQ, which may have altered results. Some outcomes were collected via telephone due to COVID-19 restrictions; this may also pose as a limiting factor, as certain outcome measures, such as pinch and grip strength, must be assessed by the therapist in a face-to-face setting. A conflict of interest should also be noted; it is disclosed that three contributing authors have been members of the ReHand project since 2016 and are part of the spin-off (Healthinn) that has designed and developed the CareHand app.

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**TITLE:** COMPARING PURPOSEFUL ACTIVITY VIA USE OF MOBILE APPLICATIONS TO ROTE EXERCISE IN THE PROMOTION OF OPTIMAL OUTCOMES AND IMPROVED HAND FUNCTION