HAND THERAPY: THE key TO OPTIMIZING patient outcomes

ASHT 2018
SEPTEMBER 20-23, 2018
Dallas, Texas
HYATT REGENCY DALLAS

FINAL PROGRAM

ASHT AMERICAN SOCIETY OF HAND THERAPISTS
2018.ASHT.ORG
The value of membership in ASHT really adds up:

- 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.
- A $235 discount on the Annual Meeting.
- Online bookstore discounts up to $366.
- Discounts on online ASHT Career Center postings (10% savings).
- Complimentary listing in the Find a Therapist public membership directory.
- Discounts on the continuing education Webinar Series ($180 savings).
- Free CE credit each month by participating in the Journal Club ($420 value).

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, and now offers membership to 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
- Discounts on publications and products

**PRACTICE MANAGEMENT**
- Best practice standards for domain of hand therapy
- Legislative Action Center
- Resources for your hand 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

**REFERRALS**
- Find a Hand Therapist online public directory
- Find a Clinic online public directory

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

**CAREERS**
- Enhanced career center for posting & searching jobs
WELCOME LETTER FROM
ASHT ANNUAL MEETING
COMMITTEE CHAIR

DEAR COLLEAGUES,

On behalf of the 2018 ASHT Annual Meeting Committee, I am proud to welcome you to the 41st Annual Meeting at the Hyatt Regency in Dallas, Texas. The theme of this year’s meeting is “Hand Therapy: The Key to Optimizing Patient Outcomes,” and you will see this theme intertwined throughout the program. Demonstrating the value of hand therapy is essential as the future of healthcare is moving toward value-based reimbursement.

The meeting begins on Thursday with four Pre-Conference Institutes that have been designed as hands-on, clinical skills workshops. The opening plenary session includes two keynote presentations: “The Unforgiving Elbow,” given by Bernard Morrey, MD, and “The Role of Ligaments in Wrist Stabilization,” given by Marc Garcia-Elias, MD, the ASHT Presidential Invited Lecturer. The evening will conclude with the grand opening of the exhibit hall, including a reception and American Hand Therapy Foundation Silent Auction.

The programming for the remaining three days includes a variety of one-hour and two-hour instructional courses. Speakers range from those who have helped to create the foundation of hand therapy practice to those who are just beginning to impact the future, from highly researched conditions and interventions to the newest techniques to complement our rehabilitative repertoires. Your educational choices will be paired with thought-provoking scientific sessions, keynote lectures and panels. Elizabeth Hagert, MD, PhD, is the ASHT International Invited Lecturer, and Andrew Lee, MD, the AAHS Invited Presidential Lecturer. ASHT is also fortunate to have Don Lalonde, MD, FRCSC, Honorary Member and 2018 Annual Meeting Committee member, provide a flexor tendon update with Lisa Flewelling, MSc, OT, demonstrating the interprofessional collaboration needed to optimize patient care. Each keynote presentation by a surgeon will be immediately followed by a panel of therapists discussing patient cases relevant to the topic to further address the value of hand therapy in patient outcomes.

One unique feature in the program is that we are ending the program Saturday with a plenary session focused on peripheral nerve injury. This knowledgeable panel includes Elizabeth Hagert, MD, PhD, Susan Straika, PT, DPT, MS, ACHE, Lorna Kahn, PT, CHT, and Amy Moore, MD. Programming will end Sunday with two-hour instructional courses on popular topics that were worth repeating. AHTF, the ASHT partner for advancing the research mission of hand therapy, is sponsoring two events in which participants may earn CEUs, including a grant-writing workshop and AHTF’s annual fundraising reception with keynote speaker. There will also be time for fun! After the success of the 40th Celebration at last year’s Annual Meeting, ASHT leaders decided to continue the nighttime social event for attendees. This will be a ticketed event that will allow you to celebrate and network with hand therapy colleagues and friends.

On behalf of ASHT and the 2018 Annual Meeting Committee, I look forward to having you join us for an outstanding program to update and expand your clinical practice.

SINCERELY,

Jane Fedorczyk, PT, PhD, CHT
2018 ASHT Annual Meeting Committee Chair
MISSION
To build and support the community for professionals dedicated to the excellence of hand therapy.

VISION
To be the recognized leader in advancing the science and practice of hand 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 profession of hand therapy.

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
2016-2017 Gary Solomon, MBA, MS, OTR/L, CHT
2016 Barbara Winthrop, MA, OTR/L, CVE, CHT, FAOTA
2015 Jane Fedorczyk, PT, PhD, CHT
2014 Maureen Hardy, MS, PT, CHT
2013 Sue Mchilchovitz, PT, PhD, CHT
2012 Dorothy A. Aaron, MA, OTR/L, CHT, FAOTA
2011 Jerry Coverdale, OTR/L, CHT
2010 Peggy Boneau, OTR, CHT
2009 Jay 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, 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 Laster, 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
1979 Bonnie Olivett, OTR, CHT

ASHT STAFF
Gene S. Terry, CAE
Executive Director

Jessica Ercolino
Associate Executive Director

Luci Patalano
Director of Education and Research

Monica Barnaby
Membership Coordinator

Anthony Celenza, CMP
Director of Meetings

ASHT BOARD OF DIRECTORS
Kristin Valdes, OTD, OTR, CHT
President

Linda Klein, OTR, CHT
President-Elect

Mo Herman, MA, OTR/L, CHT
Vice President

Rachel Pigott, MPH, OTR/L, CHT
Secretary/Treasurer

Diane Coker, DPT, CHT
Secretary/Treasurer-Elect

Gary Solomon, MBA, MS, OTR/L, CHT
Immediate Past President

Kimberly G Kraft, PT, DPT, CHT
Education Division Director

Lesley Khan-Farooqi, OTD, OTR/L, CHT, CLT-UE
Practice Division Director

Aviva Wolff, EdD, OTR, CHT
Research Division Director

Marsha Lawrence, PT, DPT, CHT
Board Member-At-Large

Karol Spraggs-Young, OTD, OTR/L, CHT
Board Member-At-Large

Jane Fedorczyk, PT, PhD, CHT
Annual Meeting Committee Chair
Tampa, FL

Tambra Marik, OTR, OTR/L, CHT
Annual Meeting Committee Vice Chair
Gig Harbor, WA

Kristin Valdes, OTR, CHT
Board Liaison
Bradenton, FL

Mia Erickson, PT, CHT, EdD
Committee Member
Glendale, AZ

Ann Lucado, PhD, PT, CHT
Committee Member
Atlanta, GA

Nancy Naughton, OTD, OTR/L, CHT
Committee Member
Olyphant, PA

Donald Lalonde, MD, FRCSC
Committee Member
Saint John, NB, Canada

Dianna Lunsford, OTD, M.Ed., OTR/L, CHT
Committee Member
Ruskin, FL

Karen Roeming, OT, MA, CHT
Committee Member
Colleyville, TX

Victoria Converse
Associate Meeting Manager

Taylor Check
Meeting Coordinator

Porter Rice
Manager of Industry Relations

ASHT
1120 Route 73, Suite 200
Mt. Laurel, NJ 08054
www.asht.org
**LIFETIME FELLOWSHIP**

Lifelong Fellowship status is an honor awarded to individuals in recognition of career-long contributions to the Society and the field of hand rehabilitation. Lifelong ASHT Fellows are honored for their long-term Society membership participation, exemplary leadership, and documented achievements in the field. The nomination is open to ASHT members active for a minimum of 25 years. Eligible nominees must have made notable contributions to the profession through leadership, demonstrating influence and achievements, having shown frequent and sustained efforts to advance the field of hand therapy over a period of at least several years preceding and up to the time of nomination for this honor.

**Award Winners**

Joy MacDermid, PT, PhD
Kenneth R. Flowers, PT, CHT (retired)
Sharon Flinn, PhD, OTR/L, CHT
Donna Breger Stanton, OTR/L, OTR/L, CHT, FAOTA
Judith A. Bell-Krotoski, OTR, FAOTA, CHT
Nancy Cannon, OTR, CHT
Margaret S. Carter, OTR, CHT
Gloria Delvoe, OTR
Roslyn B. Evans, OTR/L, CHT

**HONORARY MEMBERSHIP AWARD**

The Honorary Membership Award recognizes individuals other than certified hand therapists who have made significant contributions to the ASHT and to the specialty of hand 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 therapy. The nomination is open to professionals who are not certified hand therapists (CHTs) and/or those not eligible to be members of the Society.

**ASHT Honorary Members**

Don Lainonde, 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
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

**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 therapy, which may include undererved areas nationally and/or internationally.

The nomination is open to all active, charter, lifetime, associate and affiliate members of ASHT in good standing for a minimum of five consecutive years including the year of nomination.

**Paul Brand Award Recipients**

2017 Melissa C. Thurlow, MBA, OTR/L, CHT
2015 Ginny Gibson, OTR/L, OTR/L, CHT
2014 Rebecca Neiduski, PhD, OTR/L, 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 Dent Aaron, MA, OTR, CHT, FAOTA
2003 Shirkan Chinchalkar, BScOT, OTR, CHT
2002 Judith A. Bell-Krotoski, OTR, FAOTA, CHT

**NATHALIE BARR LECTURESHIP AWARD**

The Nathalie Barr Lectureship is among ASHT’s highest honors, recognizing and honoring a member of the American Society of Hand Therapists who has made significant original contributions to hand rehabilitation in one of the following ways:

- Development or refinement of professional theory, clinical methods and/or techniques used in hand therapy
- Outstanding research with outcomes evidence to support hand therapy treatment
- Contributions to hand therapy development as a profession and to ASHT
- Contributions to the specialty of hand rehabilitation and/or healthcare not related to ASHT, specifically the candidate’s contributions to public service and/or awareness of hand therapy

The nominee must have shared this information through publications and speaking presentations. The nomination is open to all active ASHT members who have been members 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**

2018 Jamie Fedorczyk, PT, PhD, CHT
2017 Terri Sirven, OTR/L, CHT
2016 Rebecca Neiduski, PhD, OTR/L, CHT
2015 Caroline Steinek-Jansen, PT, PhD, CHT
2014 Karen Pettengill, MS, OTR/L, CHT
2012 Paul Lalonde, MD, FRCSC
2010 Maureen Hardy, MS, PT, CHT
2009 Karen H.P. Lauckhart, MA, PT, CHT
2008 Susan Michlovitz, PT, PhD, CHT
2007 Donna Breger Stanton, OTR/L, OTR/L, CHT, FAOTA
2006 Patrick Taylor, PT, CHT
2005 Joy MacDermid, BScPT, PhD
2004 Jim King, MD, OTR
2003 Janet Waylett-Rendall, OTR, CHT
2002 Lynnelee Fullenwider, OTR/L, 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 rehabilitation, which have subsequently changed hand 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. If the award is to be given, the recipient will be notified two months in advance of the Annual Meeting at which the award will be announced. 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 therapy.

**MacDermid Lifetime Scientific Award in Hand Therapy Recipients**

2013 Joy MacDermid, PT, PhD

**JOURNAL OF HAND THERAPY FIRST TIME WRITER’S AWARD**

This award recognizes a first-time writer’s contribution to evidence that supports the hand therapy profession.

**Journal of Hand Therapy First-Time Writer’s Award Recipients**

2014 Hilda H. Lo, MD
2013 Benketh, PhD, CHT
2012 J. Martin Walsh, OTR/L, CHT
2011 Robert J. Duran, MD
2010 Lea C. McFarlin, OTR/L, CHT
2009 Robert J. Duran, MD
2008 Mary C. Kasch, OTR, CVE, CHT
2007 A. Bell-Krotoski, OTR, FAOTA, CHT
2006 Patricia Taylor, PT, CHT
2005 Annika C. Hult, PT
2004 Annika C. Hult, PT
2003 A. Bell-Krotoski, OTR, FAOTA, CHT
2002 Lynnelee Fullenwider, OTR/L, CHT

**ASHT 41ST ANNUAL MEETING**

6
## Schedule-at-a-Glance

<table>
<thead>
<tr>
<th>Thursday, September 20</th>
<th>Friday, September 21</th>
<th>Saturday, September 22</th>
<th>Sunday, September 23</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6:30</strong></td>
<td><strong>6:30 AM - 6:30 PM</strong></td>
<td><strong>6:30 AM - 6:30 PM</strong></td>
<td><strong>7:30 AM - 12:00 PM</strong></td>
</tr>
<tr>
<td><strong>7:00</strong></td>
<td><strong>Breakfast</strong></td>
<td><strong>Breakfast Symposium</strong></td>
<td><strong>Concurrent Session VI</strong></td>
</tr>
<tr>
<td><strong>7:15</strong></td>
<td><strong>Endo Pharmaceuticals: Cumberland JKL</strong></td>
<td><strong>North Coast Medical: Cumberland JKL</strong></td>
<td><strong>7:30 AM - 9:30 AM</strong></td>
</tr>
<tr>
<td><strong>7:30</strong></td>
<td></td>
<td><strong>Concurrent Session I</strong></td>
<td></td>
</tr>
<tr>
<td><strong>7:45</strong></td>
<td></td>
<td><strong>7:30 AM - 8:30 AM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>8:00</strong></td>
<td></td>
<td><strong>Concurrent Session II</strong></td>
<td></td>
</tr>
<tr>
<td><strong>8:15</strong></td>
<td></td>
<td><strong>8:30 AM - 9:30 AM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>8:30</strong></td>
<td></td>
<td><strong>Break</strong></td>
<td><strong>Break</strong></td>
</tr>
<tr>
<td><strong>8:45</strong></td>
<td></td>
<td><strong>9:30 AM - 10:00 AM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>9:00</strong></td>
<td></td>
<td><strong>Plenary Session II</strong></td>
<td><strong>Plenary Session IV</strong></td>
</tr>
<tr>
<td><strong>9:15</strong></td>
<td></td>
<td><strong>Reaching a Tipping Point: WALANT and True Active Movement for Flexor Tendon Management</strong></td>
<td><strong>7:00 AM - 10:00 AM</strong></td>
</tr>
<tr>
<td><strong>9:30</strong></td>
<td></td>
<td><strong>7:00 AM - 9:00 AM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>9:45</strong></td>
<td></td>
<td><strong>Scientific Session</strong></td>
<td><strong>Plenary Session V</strong></td>
</tr>
<tr>
<td><strong>10:00</strong></td>
<td></td>
<td><strong>11:00 AM - 12:00 PM</strong></td>
<td><strong>Annual Business Meeting &amp; Emerging Issues, Incoming Presidential Address</strong></td>
</tr>
<tr>
<td><strong>10:15</strong></td>
<td></td>
<td><strong>Break</strong></td>
<td><strong>Lunch &amp; Poster Sessions: Committee Meetings</strong></td>
</tr>
<tr>
<td><strong>10:30</strong></td>
<td></td>
<td><strong>12:00 PM - 1:30 PM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>10:45</strong></td>
<td></td>
<td><strong>Pre-Conference Institutes</strong></td>
<td><strong>Plenary Session VI</strong></td>
</tr>
<tr>
<td><strong>11:00</strong></td>
<td></td>
<td><strong>12:00 PM - 4:00 PM</strong></td>
<td><strong>AHTF Presidential Invited Lecture</strong></td>
</tr>
<tr>
<td><strong>11:15</strong></td>
<td></td>
<td><strong>Break</strong></td>
<td><strong>Transplant Therapy Panel</strong></td>
</tr>
<tr>
<td><strong>11:30</strong></td>
<td></td>
<td><strong>4:00 PM - 5:00 PM</strong></td>
<td><strong>3:30 PM - 4:30 PM</strong></td>
</tr>
<tr>
<td><strong>11:45</strong></td>
<td></td>
<td><strong>Plenary Session III</strong></td>
<td><strong>Break</strong></td>
</tr>
<tr>
<td><strong>12:00</strong></td>
<td></td>
<td><strong>2018 Presidential Address, Practice Division, Collaborative Research: Demonstrating the Value of Hand Therapy</strong></td>
<td><strong>4:00 PM - 5:00 PM</strong></td>
</tr>
<tr>
<td><strong>12:15</strong></td>
<td></td>
<td><strong>1:30 PM - 3:00 PM</strong></td>
<td><strong>Plenary Session VII</strong></td>
</tr>
<tr>
<td><strong>12:30</strong></td>
<td></td>
<td><strong>Scientific Session II</strong></td>
<td><strong>Nathalie Barr Lecture</strong></td>
</tr>
<tr>
<td><strong>12:45</strong></td>
<td></td>
<td><strong>3:00 PM - 4:00 PM</strong></td>
<td><strong>4:00 PM - 5:00 PM</strong></td>
</tr>
<tr>
<td><strong>1:00</strong></td>
<td></td>
<td><strong>Break</strong></td>
<td><strong>Plenary Session VIII</strong></td>
</tr>
<tr>
<td><strong>1:15</strong></td>
<td></td>
<td><strong>4:00 PM - 4:30 PM</strong></td>
<td><strong>Nerve Injury Panel</strong></td>
</tr>
<tr>
<td><strong>1:30</strong></td>
<td></td>
<td><strong>Break</strong></td>
<td><strong>5:00 PM - 6:30 PM</strong></td>
</tr>
<tr>
<td><strong>1:45</strong></td>
<td></td>
<td><strong>4:30 PM - 5:00 PM</strong></td>
<td><strong>AHTF Scholar Lecture</strong></td>
</tr>
<tr>
<td><strong>2:00</strong></td>
<td></td>
<td><strong>Scientific Session</strong></td>
<td><strong>6:30 PM - 7:30 PM</strong></td>
</tr>
<tr>
<td><strong>2:15</strong></td>
<td></td>
<td><strong>Break</strong></td>
<td><strong>ASHT Social Event</strong></td>
</tr>
<tr>
<td><strong>2:30</strong></td>
<td></td>
<td><strong>6:30 PM - 7:30 PM</strong></td>
<td><strong>7:00 PM - 10:00 PM</strong></td>
</tr>
<tr>
<td><strong>2:45</strong></td>
<td></td>
<td><strong>Plenary Session IV</strong></td>
<td><strong>Endo Pharmaceuticals: Cumberland JKL</strong></td>
</tr>
<tr>
<td><strong>3:00</strong></td>
<td></td>
<td><strong>International Invited Guest Lecture</strong></td>
<td><strong>7:30 AM - 8:30 AM</strong></td>
</tr>
<tr>
<td><strong>3:15</strong></td>
<td></td>
<td><strong>Proprioception for the Upper Limb</strong></td>
<td></td>
</tr>
<tr>
<td><strong>3:30</strong></td>
<td></td>
<td><strong>10:00 AM - 11:15 AM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>3:45</strong></td>
<td></td>
<td><strong>Concurrent Session V</strong></td>
<td></td>
</tr>
<tr>
<td><strong>4:00</strong></td>
<td></td>
<td><strong>8:30 AM - 9:30 AM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>4:15</strong></td>
<td></td>
<td><strong>Break</strong></td>
<td></td>
</tr>
<tr>
<td><strong>4:30</strong></td>
<td></td>
<td><strong>9:30 AM - 10:00 AM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>4:45</strong></td>
<td></td>
<td><strong>Plenary Session V</strong></td>
<td><strong>Plenary Session VIII</strong></td>
</tr>
<tr>
<td><strong>5:00</strong></td>
<td></td>
<td><strong>Annual Business Meeting &amp; Emerging Issues, Incoming Presidential Address</strong></td>
<td><strong>7:00 AM - 10:00 AM</strong></td>
</tr>
<tr>
<td><strong>5:15</strong></td>
<td></td>
<td><strong>11:15 AM - 12:30 PM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>5:30</strong></td>
<td></td>
<td><strong>Plenary Session VI</strong></td>
<td><strong>Concurrent Session VII</strong></td>
</tr>
<tr>
<td><strong>5:45</strong></td>
<td></td>
<td><strong>AAHS Presidential Invited Lecture</strong></td>
<td><strong>10:00 AM - 12:00 PM</strong></td>
</tr>
<tr>
<td><strong>6:00</strong></td>
<td></td>
<td><strong>Transplant Therapy Panel</strong></td>
<td></td>
</tr>
<tr>
<td><strong>6:15</strong></td>
<td></td>
<td><strong>2:30 PM - 3:30 PM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>6:30</strong></td>
<td></td>
<td><strong>Break</strong></td>
<td></td>
</tr>
<tr>
<td><strong>6:45</strong></td>
<td></td>
<td><strong>3:30 PM - 4:30 PM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>7:00</strong></td>
<td></td>
<td><strong>Scientific Session II</strong></td>
<td></td>
</tr>
<tr>
<td><strong>7:15</strong></td>
<td></td>
<td><strong>3:00 PM - 4:00 PM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>7:30</strong></td>
<td></td>
<td><strong>Break</strong></td>
<td></td>
</tr>
<tr>
<td><strong>8:00</strong></td>
<td></td>
<td><strong>4:00 PM - 5:00 PM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>8:30</strong></td>
<td></td>
<td><strong>Plenary Session VII</strong></td>
<td></td>
</tr>
<tr>
<td><strong>9:00</strong></td>
<td></td>
<td><strong>Nathalie Barr Lecture</strong></td>
<td></td>
</tr>
<tr>
<td><strong>9:30</strong></td>
<td></td>
<td><strong>4:00 PM - 5:00 PM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>9:45</strong></td>
<td></td>
<td><strong>Break</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>4:30 PM - 5:00 PM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>10:00</strong></td>
<td></td>
<td><strong>Plenary Session VIII</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Nerve Injury Panel</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>5:00 PM - 6:30 PM</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** All times are in Eastern Standard Time (EST). Programs and times are subject to change. Please refer to the official conference schedule for up-to-date information.
GENERAL information

REGISTRATION HOURS:
Location: Landmark Foyer
Thursday, September 20 ............................... 8:00 AM – 7:00 PM
Friday, September 21 .................................. 6:30 AM – 6:00 PM
Saturday, September 22 ............................. 6:30 AM – 6:00 PM
Sunday, September 23 ................................ 7:00 AM – 12:00 PM

ANNUAL MEETING SCIENTIFIC SESSIONS
Thursday, September 20
Pre-Conference Institutes (separate registration fee) ...................................................... 12:00 PM – 4:00 PM
Annual Meeting .............................................................................................................. 5:00 PM – 7:30 PM
Exhibitor Welcome Reception ....................................................................................... 7:30 PM – 9:30 PM
Friday, September 21
Annual Meeting .............................................................................................................. 7:30 AM – 6:30 PM
Saturday, September 22
Annual Meeting .............................................................................................................. 7:30 AM – 6:30 PM
Sunday, September 23
Annual Meeting .............................................................................................................. 7:30 AM – 12:00 PM

SPEAKER READY ROOM HOURS:
Location: Trinity A
All presentations must be loaded onto the network computer system. Please be sure to check in at least 2 hours before your presentation.
Thursday, September 20 ........................................ 9:00 AM – 7:00 PM
Friday, September 21 ........................................ 6:30 AM – 6:00 PM
Saturday, September 22 ...................................... 6:30 AM – 6:00 PM
Sunday, September 23 ........................................ 7:00 AM – 11:00 AM

EXHIBIT HOURS:
Location: Marsalis Hall
Thursday, September 20
Exhibitor Reception & AHTF Silent Auction ................................................................. 7:30 PM – 9:30 PM
Open Hours .................................................................................................................... 9:30 AM – 4:30 PM
Lunch ............................................................................................................................. 12:00 PM – 1:30 PM
Saturday, September 22
Open Hours .................................................................................................................... 9:30 AM – 2:30 PM
Lunch ............................................................................................................................. 12:30 PM – 2:30 PM

POSTER PRESENTATIONS:
Posters will be presented in the Exhibit Hall. Poster presenters must find their poster number and place their poster on the assigned board. Poster setup and dismantle time for all poster presenters:
Setup: Thursday, September 20 ........................................ 1:00 PM – 5:00 PM
Poster Session I: Friday, September 21 ................................................................. 12:00 PM – 1:30 PM
Poster Session II: Saturday, September 22 ......................................................... 12:30 PM – 2:30 PM
Dismantle: Saturday, September 22 ................................................................. 2:30 PM

SOCIAL EVENTS
Thursday, September 20
Welcome Reception in the Exhibit Hall .......................................................... 7:30 PM – 9:30 PM
Marsalis Hall
Friday, September 21
First-Time Attendee/New Member Networking ........................................... 6:30 AM – 7:30 AM
Cumberland EF

Saturday, September 22
ASHT Social Event ........................................................................................................... 7:00 PM – 10:00 PM
Marsalis Hall A

OVERVIEW
The American Society of Hand Therapists (ASHT) is proud to present its 41st Annual Meeting. The 2018 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 therapy. The program includes topics such as:
• Novel scientific research in platform and poster sessions
• Hand therapy practice considerations – reimbursement, legislation, regulation and advocacy
• Clinical topics covering relevant anatomy, surgery and updated rehabilitation strategies

BADGES & TICKETS
You must have your name badge for entrance into all ASHT functions. Be sure to bring with you any tickets you may have received in your registration packet for admittance to ticketed sessions and to receive a boxed lunch.

CERTIFICATE OF ATTENDANCE
Certificates of attendance are available at the registration desk for any registered attendee requiring this documentation.

ADA
ASHT will use its best efforts to provide reasonable accommodations for attendees with disabilities. The society cannot ensure the availability of appropriate accommodations without prior notification. Please visit the registration desk for assistance.

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

EXHIBITS AND POSTERS
Educational and informational exhibits will be available for viewing during the ASHT Annual Meeting and representatives will be on hand to answer questions. Please visit the posters and exhibits, as they are an integral part of the meeting.

MOBILE APP
ASHT will be offering a meeting app to all registered attendees. The app will help you plan your conference program, especially on site, and can be used on your smartphone, and/or tablet, with Apple and Android platforms.

DISCLAIMER
The views expressed and materials presented in the course of any activity sponsored by the American Society of Hand Therapists represent the personal views of the individual participants and do not necessarily represent the opinion of the American Society of Hand Therapists. The society assumes no responsibility for such views or materials and hereby expressly disclaims any and all warranties, expressed or implied, for the content of any society-sponsored presentation.

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

This continuing education activity offers a maximum of 26.5 continuing education hours, or 26.5 CEUs. This total includes the Pre-Conference Institutes (maximum of 4 CE hours), the AHF Scholar Lecture (maximum of 5 CE hours) and the Annual Meeting program (maximum of 22 CE hours).

LEARNER OBJECTIVES

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

- Select and refine hand and upper limb treatment plans based on evidence, research and instruction
- Distinguish and value new strategies and clinical ideas to improve patient outcomes
- 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

OCCUPATIONAL THERAPISTS

ASHT 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.

The New Mexico Physical Therapy Board accepts AOTA approved continuing education courses.

PHYSICAL THERAPISTS

ProCert, operated by the Federation of State Boards of Physical Therapy (FSBPT), has awarded certification in the amount of 21 Continuing Competence Units (CCU) to this activity. CCUs are a unit of relative value of an activity based on its evaluation against a rigorous and comprehensive set of standards representing the quality of an activity.

The CCU determination is a valuing applying many factors including, but not limited to, duration of the activity. No conclusion should be drawn that CCUs correlate to time (i.e. contact hours). Activities certified by the FSBPT are accepted by the following jurisdictions:

- Alaska
- Hawaii
- Missouri
- South Carolina
- Arizona
- Idaho
- Montana
- South Dakota
- Arkansas
- Illinois
- Nebraska
- Tennessee
- California
- Indiana
- North Carolina
- Utah
- Colorado
- Kansas
- North Dakota
- Vermont
- Delaware
- Kentucky
- Oregon
- Virginia
- District of Columbia
- Michigan
- Pennsylvania
- Wisconsin
- Minnesota
- Puerto Rico
- Wyoming
- Georgia
- Mississippi
- Rhode Island

The following PT Boards accept courses provided by other state PT boards*:

- Alabama
- Maine
- New Mexico
- Washington
- Connecticut
- Massachusetts
- Ohio
- Iowa
- New Hampshire
- Oklahoma

*Disclaimer: The American Society of Hand Therapy provides this list for your convenience. At the time of listing, the following state boards accept courses by virtue of approval by other organizations. It is the responsibility of the participant registering for a course to check with their state board to confirm rules and regulations regarding acceptance of contact hours for live and online courses.

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

This activity has been approved by the Florida Physical Therapy Association for 26.5 continuing education credits (Course Approval Number: CE18-661750)

This activity has been approved by the Texas Board of Physical Therapy Examiners for 26.5 continuing competence units for PTs and PTAs (Course Approval Number: 64778TX)

An application has been submitted to the New Jersey State Board of Physical Therapy. Determination of credit is pending and will be updated upon notification.

Should you use the ASHT Annual Meeting in your state PT re-certification process, ASHT will reimburse up to $100** of the cost of the application process. Please send ASHT a copy of your state PT Continuing Education application to receive this reimbursement. Please contact ASHT at 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.

CERTIFIED HAND THERAPISTS

Certified Hand Therapists may submit hours for this program to HTCC. To enter the professional development hours you have earned for the ASHT Annual Meeting:

2. On the HTCC homepage, under the Recognized Specialist in Hand Therapy banner (upper right corner), click CHTs Login Here.
3. 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.
4. 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”.
5. Enter your Professional Development hours onto the form and then scroll to bottom of page and click “Submit” to capture your information.
6. 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. If you have any questions, please contact HTCC at info@htcc.org.

ATHLETIC TRAINERS

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

OBTAINING CEUS

On Tuesday, September 25, attendees will receive a link to create their CE transcript. Attendees will also be able to provide feedback to speakers on the sessions they attended. They will have up to one year to complete the CE transcript. Questions can be directed to vconverse@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
4. 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.

ONLINE EVALUATION & CE CERTIFICATE SITE

Complete your evaluation and certificate paperwork all in one site!

STEP 1: KEEP TRACK

Be sure to keep a record of the sessions you attend.

STEP 2: SAVE YOUR BADGE NUMBER

Your badge number will be your user ID for the online evaluation site.

STEP 3: GO ONLINE TO 2018.asht.org

Beginning Tuesday, September 25, you may enter your information into the ASHT 41st Annual Meeting Online Evaluation & Certificate Site.

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 concurrently. Categories not eligible are: Non-medical, Exhibitor and Exhibits. Attendees registering on site may have delayed access to the online evaluation system.
**SHARE THE GLOVES**

Join us again this year in a community outreach program by bringing new gloves to donate to a local charity. This year, ASHT is proud to partner with GRACE, a Grapevine, Texas-based nonprofit relief agency that provides food, clothing, financial assistance and other vital necessities to people who are struggling with a limited income or recent emergency. GRACE will accept any and all types of gloves (winter gloves, wheelchair gloves, kids and adult sizes.) We thank you for your contribution to our Share the gLOVEs initiative once again in Dallas!

---

## SCHEDULE OF DIVISION, COMMITTEE AND LUNCHEON EVENTS

The following meetings are open to ASHT members interested in potentially joining a division or committee:

<table>
<thead>
<tr>
<th>DAY</th>
<th>EVENT</th>
<th>TIME</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thursday, September 20</td>
<td>Welcome Reception</td>
<td>7:30 PM – 9:30 PM</td>
<td>Marsalis Hall</td>
</tr>
<tr>
<td>Friday, September 21</td>
<td>First Time/New Member Networking Breakfast</td>
<td>6:30 AM – 7:30 AM</td>
<td>Cumberland EF</td>
</tr>
<tr>
<td>Friday, September 21</td>
<td>International Attendee Luncheon: Personal Reflections on Clinical and Educational Development Abroad Presented by Don Lalonde, MD and Shrilant Chinchalker, OTR, CHT</td>
<td>12:00 PM – 1:30 PM</td>
<td>Cumberland F</td>
</tr>
<tr>
<td>Friday, September 21</td>
<td>Practice Division Meeting</td>
<td>12:00 PM – 1:30 PM</td>
<td>Cumberland I</td>
</tr>
<tr>
<td>Friday, September 21</td>
<td>Technology &amp; Communication Committee Meeting</td>
<td>12:00 PM – 1:30 PM</td>
<td>Cumberland E</td>
</tr>
<tr>
<td>Friday, September 21</td>
<td>Research Division Meeting</td>
<td>12:00 PM – 1:30 PM</td>
<td>Cumberland G</td>
</tr>
<tr>
<td>Saturday, September 22</td>
<td>Education Division Meeting</td>
<td>12:30 PM – 2:30 PM</td>
<td>Cumberland E</td>
</tr>
<tr>
<td>Saturday, September 22</td>
<td>Preparing for the CHT Exam – Presented by HTCC</td>
<td>12:30 PM – 2:30 PM</td>
<td>Cumberland I</td>
</tr>
</tbody>
</table>

## SPONSORED EVENTS

The following events are open to all ASHT Annual Meeting attendees:

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT</th>
<th>PROGRAM TIME</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday, September 21</td>
<td>Dupuytren's Contracture: A Clinical Review Presented by Endo Pharmaceuticals</td>
<td>6:00 AM – 7:30 AM</td>
<td>Cumberland JKL</td>
</tr>
<tr>
<td>Friday, September 21</td>
<td>Prosthetic Options and Therapy Interventions for Individuals with Partial Hand Limb Loss Presented by Hanger Clinic</td>
<td>12:15 PM – 12:45 PM</td>
<td>Cumberland J</td>
</tr>
<tr>
<td>Friday, September 21</td>
<td>Introduction to the MyoPro Presented by Myomo, Inc.</td>
<td>12:30 PM – 1:00 PM</td>
<td>Cumberland K</td>
</tr>
<tr>
<td>Friday, September 21</td>
<td>Functional Finger Prostheses: Population, Impact, Outcomes Presented by Naked Prosthetics</td>
<td>12:45 PM – 1:15 PM</td>
<td>Cumberland L</td>
</tr>
<tr>
<td>Saturday, September 22</td>
<td>Biomechanics of the Wrist and Carpal Instabilities Presented by North Coast Medical</td>
<td>6:00 AM – 7:30 AM</td>
<td>Cumberland JKL</td>
</tr>
<tr>
<td>Saturday, September 22</td>
<td>Tips and Tricks for the Push® MetaGrip® Presented by BraceLab / HandLab</td>
<td>12:45 PM – 1:15 PM</td>
<td>Cumberland F</td>
</tr>
<tr>
<td>Saturday, September 22</td>
<td>Hands-On-Application of Ulnar Booster and BullsEye Presented by North Coast Medical</td>
<td>1:00 PM – 2:00 PM</td>
<td>Cumberland JKL</td>
</tr>
</tbody>
</table>

## TICKETED EVENTS

The following events are open to all ASHT Annual Meeting attendees who have pre-purchased a ticket (these events are capped, and on-site registration is not guaranteed):

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT</th>
<th>PROGRAM TIME</th>
<th>TICKET PRICE</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday, September 21</td>
<td>AHTF Happy Hour with a Scholar</td>
<td>6:30 PM – 7:30 PM</td>
<td>$35</td>
<td>Cumberland JKL</td>
</tr>
<tr>
<td>Saturday, September 22</td>
<td>ASHT Social Event</td>
<td>7:00 PM – 10:00 PM</td>
<td>$40</td>
<td>Marsalis Hall A</td>
</tr>
</tbody>
</table>
**WI-FI information**

ASHT is happy to provide Wi-Fi in all the meeting space at the Hyatt Regency. To login to the Wi-Fi on-site, please use the following information:

**NETWORK:** HYATT-MEETINGS  
**PASSWORD:** ASHT2018

---

**2018 resource center**

To access available handouts throughout the conference, please use the following link:  
https://2018.asht.org/resource-center

Upon loading the page, you will be prompted to insert a password. The password for the Resource Center is:  
**ASHT2018**

*Please note handouts are available only for presenters who provided them to ASHT Staff prior to arriving on-site. The Resource Center will be available for up to 1 year post-conference.*
Recent evidence is supporting the need to move from Nerve Mobilization and Tension concepts to Neurodynamics. This is not simply a nomenclature change, it represents a shift from previous thought processes to more informed clinical reasoning. This course is designed to take the clinician through the basic sciences of understanding peripheral nerve system (PNS) movement and physiology (“Neurodynamics”) utilizing in vivo techniques not previous available. This understanding will establish the clinical reasoning shift in the Examination, Evaluation and Treatment Interventions of those patients presenting with PNS mechanical and physiological changes that play a role in Neurogenic and Neuropathic Pain. The term mobilization connotes a thought process of tension. The purpose of this conference is to assist the clinician in assimilation of these changes through multiple media of lecture, video and hands on laboratory to experience first hand altering their clinical reasoning process in the management of our patients experiencing symptoms related to their nervous system. This requires the clinician to surrender the provocation techniques of old and gain an appreciation of neurodynamic principles. The intent is to provide the evidence for the therapist to consider a safer approach to the management of patients experiencing Neurogenic of Neuropathic Symptoms.

Essential to the therapist’s management of the injured wrist is a thorough grasp of wrist anatomy and biomechanics; an awareness of the myriad of problems and conditions that can occur as well as their signs and symptoms; a systematic wrist examination correlating the findings with the mechanism of injury or onset leading to a differential diagnosis; and an understanding of current concepts in management. This program will include a detailed review of wrist anatomy, biomechanics and pathomechanics; a hands-on lab detailing palpation and provocative testing of the wrist; and a discussion of selected wrist problems and their management with implications for therapy and orthotic intervention. Conditions to be discussed include scapho-lunate dissociation; palmar midcarpal instability; TFCC and ulnar wrist conditions; and distal radius fractures.

The propensity for post-traumatic elbow stiffness is high. Hand therapy professionals are challenged to optimize motion while maintaining stability of the elbow. This presentation will review the pathogenesis of elbow stiffness and make recommendations for both operative and non-operative interventions to optimize patient outcomes following traumatic elbow injuries.

Hands on Orthotics – Orthoses to Facilitate Wrist Stability

Presented by ASHT Education Division

Hannah Gift, OTR/L, CHT
Stephanie Strouse, OTR/L, CHT
Kimberly Kraft, PT, DPT, CHT

The ASHT education division presents a Hands on Orthotics course supporting information about wrist stability presented in the conference. Orthoses will include a midcarpal instability orthosis, a dart throwers arthrosis, and an orthosis to improve DRUJ stability.

Finger Orthoses: Relative Motion and More

Noelle Austin, MS, PT, CHT
Kimberly Goldbie Staines, OTR, CHT
Donald Lalone, MD, FRSC

This session will introduce the concept of clinical evaluation for motor imbalance including intrinsic weakness, boutonniere deformity, swan neck deformity and mallet deformity. The use of the Relative Motion Theory as described by Dr. Wendall Merritt and Dr. Julianne Howell OTR CHT will be presented with the rationale for use with various clinical indications. Orthotics fabrication lab will focus on clinical decision making and hands-on demonstration/fabrication of the relative motion orthoses. Additionally, clinical options for finger orthoses will be demonstrated/fabricated to manage other intrinsic motor imbalance diagnoses.
The Role of Ligaments in Wrist Stabilization
Landmark BC
Marc Garcia-Elias, MD

Ligaments are not static cable-like collections of fibers holding bones together but complex bone binding structures containing sensors aimed at detecting changes in bone position and transmitting that information to the sensorimotor system for control of joint stability. Ligaments exhibit different kinetic behaviors depending upon the direction and point of application of the forces being applied. The so-called “Helical Anti-Pronation Ligaments” (HAPL’s) are mostly active when the wrist is axially loaded, whereas the “Helical Anti-Supination Ligaments” (HASL’s) are more prone to constrain intracarpal supination torques. This novel way of interpreting carpal kinetics helps developing new strategies to treat carpal instability.

Hand Therapy Considerations for Wrist Instability
Landmark BC
Marc Garcia-Elias, MD
Aviva Wolff, EdD, OTR, CHT
Emily Altman, PT, DPT, CHT, OCS, CLT

Over the past two decades both hand surgeons and hand therapists have a better understanding of wrist biomechanics especially carpal kinetics. This panel will present updated recommendations regarding hand therapy interventions for various wrist instability conditions presented in case format. Therapists will also learn how to screen for wrist instability in patient cases where the wrist instability is not the primary referring diagnosis. These updated principles provide an opportunity to enhance communication between the surgeon and therapist to improve patient outcomes.
Demystifying Boutonniere and Pseudo-Boutonniere Deformities
Shrikant Chinchalkar, OTR, CHT

Boutonniere or pseudo boutonniere deformity is the term used to describe flexion of the proximal interphalangeal (PIP) joint and hyperextension of the distal interphalangeal (DIP) joint. It can result from pathology due to trauma, disease, process or iatrogenic causes (i.e. post-surgical) at the PIP, DIP, or metacarpal-phalangeal (MCP) joints, resulting in increased tension on the flexor system and flexion at the PIP joint. This will subsequently produce hyperextension at the DIP joint. This results in the displacement of the conjoined lateral bands volar to the midline axis at the PIP joint, resulting into a boutonniere deformity. Boutonniere deformities are classified into three categories based on underlying etiology: extrinsic, associated with increased flexor tendon force at the PIP joint; intrinsic, due to reinforced action of the intrinsic muscle acting at the PIP joint; or articular, linked to changes in the PIP joint instability. Boutonniere deformities can be identified as correctable or fixed deformities, the latter potentially requiring surgical correction. The purpose of this instructional course is to assist participants in identifying early signs of boutonniere deformities, designing rehabilitation strategies to prevent fixed deformities, and explore post-operative therapeutic management.

Beyond Exercises: Functional Dexterity Assessments and Purposeful Activity
Pam Schindeler, OTR/L, CHT
Marsha Lawrence, PT, DPT, CHT

Human movement requires integration of the musculoskeletal, sensorimotor and cortical systems to accomplish a functional task. Dysfunction in any system will reduce task performance proficiency. Dexterity is defined as skill and ease in performing tasks, especially with the hands.1 Synonyms include efficiency, delicacy, proficiency and finesse. As clinicians, we recognize dexterity or the lack of dexterity, but how do we measure it, document it and improve it following musculoskeletal or neurological injuries? This presentation will explore dexterity assessments of function and how they can be used to measure intervention outcomes. Integrative therapeutic activities beyond rate exercises will be demonstrated in order to address dexterity deficits and expand the clinicians’ toolbox.

9:30 AM – 10:00 AM
Marsalis Hall

INSTRUCTIONAL CONCURRENT SESSION II

Getting a Grasp on Practice: ASHT Practice Division Update
Lesley Khan-Farooqi, OTD, OTR/L, CHT
Mary Lynn Jacobs, MS, OTR/L, CHT
Marje Keengel, OTR/L, CHT
Ekta Pathare, OTR, MBA, CHT

This short course will provide an update from the Practice Division. A committee report and current updates from the Practice Management, Advocacy, and Federal and State Regulations Committees will be provided. Topics will include an update on current legislation, updates on CPT and L-code billing procedures, a review of commonly asked FAQs on the e-community, and pertinent regulatory and state updates.

10:00 AM – 11:00 AM
Landmark BC

Relative Motion Splinting: Your New Cornerstone Therapy Tool
Donald Lalonde, MD, FRSCC
Lisa Flewelling, MSc, OT

This session will explore new indications for relative motion splinting (RMS) for treating: 1) various hand pain problems, 2) boutonniere deformity, 3) PIP extensor lag and 4) improving post-surgical/medical management of Dupuytrens contracture. RMS is changing hand therapy practice and is now widely used in extensor tendon management. There is emerging evidence that relative motion splinting after surgery or injury decreases therapy treatment time, reduces stiffness and decreases time lost to work for clients with other hand problems.

Boutonniere Deformities
Shrikant Chinchalkar, OTR, CHT

The Scratch Collapse Test: A New Tool for Your Peripheral Nerve Exam
Lorna Kahn, PT, CHT

The SCT is a sensory stimulus test that has demonstrated its utility in the evaluation of patients with complex peripheral nerve injuries. The course will introduce the test, describe its performance with a variety of patients will be shared and a lab period will be included.

REACHING A TIPPING POINT: WALANT AND TRUE ACTIVE MOVEMENT FOR FLEXOR TENDON MANAGEMENT
Donald Lalonde, MD, FRSCC
Lisa Flewelling, MSc, OT

This session is a clinical discussion on therapist management of flexor tendon repair using true active movement (as opposed to passive finger flexion such as in full fist place and hold or Kleinert rubber band). The presentation will include an explanation of why we have moved away from passive flexion to true active movement in our finger flexion, as therapists in many other countries such as the UK and Australia have. Attendees can also anticipate video evidence as to why this protocol is effective. We also explain the safety of this technique. At the Saint John Regional Hospital true active movement of flexor tendons is the treatment of choice in combination with Wide Awake Local Anesthesia No Tourniquet (WALANT) hand surgery.

Pediatric Congenital Hand Differences “Treating the Whole Child”
Amy Lake, OTR, CHT
Scott Oishi, MD
Justine Hamilton, OTR

Speakers will discuss various congenital hand differences including but not limited to symbrachydactyly, syndactyly, polydactyly, radial and ulnar dysplasia, amniotic band syndrome, camptodactyly, and amnolyplasia.

Breaking the Exhibit Hall

9:30 AM – 10:00 AM
Marsalis Hall

10:00 AM – 11:00 AM
Landmark BC

Reaching a Tipping Point: WALANT and True Active Movement for Flexor Tendon Management
Donald Lalonde, MD, FRSCC
Lisa Flewelling, MSc, OT

This session is a clinical discussion on therapist management of flexor tendon repair using true active movement (as opposed to passive finger flexion such as in full fist place and hold or Kleinert rubber band). The presentation will include an explanation of why we have moved away from passive flexion to true active movement in our finger flexion, as therapists in many other countries such as the UK and Australia have. Attendees can also anticipate video evidence as to why this protocol is effective. We also explain the safety of this technique. At the Saint John Regional Hospital true active movement of flexor tendons is the treatment of choice in combination with Wide Awake Local Anesthesia No Tourniquet (WALANT) hand surgery.
11:00 AM – 12:00 PM
Landmark BC

**SCIENTIFIC SESSION I**

12:00 PM – 1:30 PM
Marsalis Hall

**LUNCH, POSTER PRESENTATIONS AND COMMITTEE/DIVISION MEETINGS**

12:00 PM – 1:30 PM
Cumberland F

**INTERNATIONAL ATTENDEE LUNCHEON**

Personal Reflections on Clinical and Educational Development Abroad
Shrikant Chinchalkar, OTR, CH Donald Lalande, MD, FRCS

12:15 PM – 12:45 PM
Cumberland J

**HANDS-ON DEMONSTRATIONS**

Prosthetic Options and Therapy Interventions for Individuals with Partial Hand Limb Loss
Presented by Hanger Clinic
Bambi Lombardi, OTR/L
Patrick McGahey, LCPPO
Chris Lake, L/CPO, FAAOP(D)

The number of options for individuals with partial hand loss has increased in the past decade. This 30 minute presentation provides participants treating patients with partial hand loss a detailed overview of the prosthetic options available to them. The focus will be on identifying the advantages and features of these options, identifying which patients will most benefit from these devices and understanding the importance of pre-prosthetic interventions and prosthetic training to achieve the best possible outcome.

12:30 PM – 1:00 PM
Cumberland K

Introduction to the MyoPro
Presented by Myomo, Inc.
Lauren Wengerd, MS, OTR/L

Myomo® develops MyoPro®, a powered upper limb orthosis designed to restore function to the weakened or paralyzed arms and hands of patients suffering from stroke, brachial plexus injury, cerebral palsy, or other neuromuscular disease or injury. Sensing EMG signals through non-invasive sensors on the arm, it can restore the ability to perform activities of daily living.

12:45 PM - 1:15 PM
Cumberland L

Functional Finger Prostheses: Population, Impact, Outcomes
Presented by Naked Prosthetics
Bob Thompson, CEO

Traumatic finger loss is one of the most prevalent amputations in the United States, and historically the least served by prosthetic technology. Many of these injuries occur in the workplace in manual labor jobs, and more than half of these amputees are unable to continue in their previous vocations. There are many technical challenges to replacing a finger that have prevented a functional solution for decades. Recent technological advances have made it possible for the first time for O&P professionals to provide a robust functional replacement to individuals facing finger loss.

1:30 PM – 3:00 PM
Landmark BC

**PLENARY SESSION 3**

**2018 Presidential Address: The Unique Value of Hand Therapy and Professional Organization Membership**
Kris Valdes, OTD, OTR, CHT

The science that supports the unique value of hand therapy will be presented. Organization membership has changed over the years based upon the perceived value of membership in the professional organization. Survey results regarding membership organization of certified hand therapists will be discussed.

**Amplifying Hand Therapy’s Voice on Capitol Hill and Beyond**
Tim Casey
This session seeks to provide insight into the role advocacy has in shaping policy and ultimately your practice. ASHT members will also learn strategies for engaging Congress and amplifying your profession’s voice.

**Collaborative Research: Demonstrating the Value of Hand Therapy**
Mia Erickson, PT, EdD, CHT, ATC
Ann Lucado, PT, PhD, CHT
Corey McGee, PhD, MS, OTR/L, CHT
Joy Macdermid, PT, PhD

This panel will present their ideas and recommendations for conducting clinical research to demonstrate that hand therapy improves patient outcomes. The recommendations will span from publishable case studies to collaboration between clinics and academic institutions. The panel will address resources to further the clinician’s understanding of how they can contribute to the many research endeavors needed in hand therapy.

3:00 PM – 4:00 PM
Landmark BC

**SCIENTIFIC SESSION II**

4:00 PM – 4:30 PM
Marsalis Hall

**BREAK IN THE EXHIBIT HALL**

4:30 PM – 6:30 PM
Landmark D

**INSTRUCTIONAL CONCURRENT SESSION III**

**Illuminating the Nuances of Carpal Tunnel Syndrome: Advanced Concepts in Prevention and Rehabilitation for the Experienced Therapist**
Shawn Roll, PhD, OTR/L, RMSKS, FAOTA
Sandy Takata, OTD, OTR/L

Carpal tunnel syndrome: a simple, easy-to-treat diagnosis, right? This course will reveal why it may not be as straightforward as you may think. Using a combination of case examples, research data, published evidence, and live demonstrations this advanced course will look beyond the surface with sonographic imaging to provide the experienced therapist with a...
Clinical dynamometry provides quantitative data on a continuous scale to more precisely diagnose and document neuromuscular impairments. In addition, isometric dynamometric measurements of the upper extremity should be used as the basis for performing a clinical fatigue test and therapeutic exercises dosing. Client engagement in the rehabilitation process is key to successful outcomes, attendance, satisfaction, and adherence to the plan of care. Using dynamometry to provide objective feedback to the client is a means of quantifying progress. Even small progress can be measured and serves as a motivator. As clients become more savvy consumers of healthcare and choices of therapy providers abound, clients are seeking individualized metrics and tracking. At this time, use of hand-held dynamometry sets a practitioner apart from the crowd.

**Writing Grants and Securing Funding: A Grant Writer's Workshop**

Presented by American Hand Therapy Foundation

Mia Erickson, PT, EdD, CHT, ATC
Caroline Stegink-Jansen, PT, PhD, CHT

This course will help both clinicians and academicians who are interested in getting started in funded research projects. The speakers will provide an overview of opportunities available from the American Hand Therapy Foundation and discuss the requirements for each. Participants will have an opportunity to hear from experienced grant writers in how to construct a proposal that includes relevant information required during the review process. Speakers will discuss constructing a budget that is consistent with the grant description. The application for the Evelyn Mackin Travel Award for educating others in the area of hand therapy will also be discussed.

**Traditional and Creative Ideas for Marketing/Branding Hand Therapy**

Heidi Hermann Wright, DHS, MBA, OTR, CHT
Stacy Hite, CHT, DPT, MS, PT
Stacy Baker, MOT, OTR/L, CHT

The course will offer education on the fundamentals of marketing. Strategies for attracting and retaining referral sources will be reviewed. Attendees will receive traditional and creative ideas to place in their toolbox for marketing to physicians, PA's, NP's and the general public. They will also gain a greater understanding of how they can impact "branding" the specialty of hand therapy (HT).

**Pediatric Hand Traumas/Injuries – “The Perfect Storm”**

Amy Lake, OTR, CHT
Justine Hamilton, OTR
Scott Oishi, MD

Therapists will discuss age appropriate therapeutic strategies including splinting, home exercise programs, ADL strategies/equipment, and importance of psychosocial wellbeing of children born with a hand difference. Therapists will share child friendly toys/activities to encourage increased ROM, strength, FMC, and function. Physician will discuss timing and appropriateness of hand surgery for children born with congenital hand differences.

**Application of Objective Strength Measurements for Individualized Client Metrics**

Becky Alwood, MHS, OTR
Frank Aerts, PT, DSc, OCS, CMP, CMPT, CMET, CCVT

In today's healthcare environment it is imperative to demonstrate efficacy of treatment interventions to clients, providers, and third party payers. While current therapist practice is dominated by subjective manual muscle testing, dynamometry is objective and sensitive in demonstrating subtle strength differences. Clinical dynamometry provides quantitative evidence, research data, and live imaging will show that there are numerous ways in which the nerve becomes entrapped across different individuals. Implications for the use of imaging to empower patients through education and visualization of the cause of their symptoms will be discussed. Participants will engage in conversation regarding how differentiating causes of entrapment within each client using imaging could inform the development of individualized preventive/therapeutic interventions and/or work practices that reduce the occurrence of entrapment to promote wellness and recovery.

**Landmark A**

**Landmark B**

**Landmark C**

Enjoy this interactive happy hour session with the 2018 Editor-in-Chief of the Journal of Hand Therapy, Dr. Joy MacDermid. Attendees will have the opportunity to network with scholars and colleagues as the world renowned Dr. MacDermid will lead a discussion highlighting the current trends in the science of hand therapy research. Your $35 contribution to attend this event will support the American Hand Therapy Foundation's Research Grants.

**American Hand Therapy Happy Hour with a Scholar**

Is Hand Therapy Maintaining Its Standing as a Discipline by Tending Its Scientific Foundations?

Joy MacDermid, PT, PhD

This interactive happy hour session will focus on trends in the science of hand therapy research. The application for the Evelyn Mackin Travel Award for educating others in the area of hand therapy will also be discussed.
Carpal instability is defined as dislocation either static or dynamic with a loss of contact between the distal carpal row and proximal carpal row in relation to the radioulnar joint. Common symptoms reported by patients include pain, sudden loss of motion control, and at times clunking associated with pain and weakness. Untimely identification and inadequate management of carpal instabilities will cause abnormal intercarpal and radiocarpal loads, ultimately leading to degeneration at the articular surfaces. In order to understand carpal instability, an understanding of the anatomy of the wrist joint and the kinematics of the carpal bones is imperative.
rationale for post-operative rehabilitation will be discussed including the no-tension approach to management following surgery and the role of orthotic intervention after contracture release. A rehabilitation protocol designed for the severe PIPJ contracture following collagenase injection will be presented along with both short term and long term outcomes.

Landmark D

Hand Therapy Research: We Got This!
Corey McGee, PhD, MS, OTR/L, CHT

This session will explore how hand therapy practitioners can pragmatically support clinical research (i.e., in a manner that will not interfere with productivity demands) and how to connect to local researchers to support them in doing such. In this session, we will explore: the importance of conveying the unique value of hand therapy through research outcomes, how to frame a research question and work with hand therapy researchers to answer it, things to consider when delivering and measuring the impact of hand therapy interventions, and examples of different ways we are doing this locally. Practicing hand therapists can help contribute to our science and help to make known the impact and the unique value of our profession! Hand therapy researchers have the tools to help make this happen! We got this!

Landmark C

Talk to The Hand Provider: Inter-Provider Communication Strategies for Maximizing Patient Outcomes
Lynn Festa, OTR, CHT, CDWF
Michael Nancollas, MD

There are multiple modes of communication used in today's healthcare environment, yet communication among providers has devolved, resulting in substandard outcomes and less satisfied patients. Despite the evidence that the odds of patient adherence are 2 times higher with effective communication, the demands of healthcare have made it more challenging for inter-provider collaboration. This instructional course will focus on evidence-based strategies designed to improve interpersonal communication between the hand therapist and the referring provider. Best practices and communication strategies and recommendations that result in improved patient outcomes, increased referrals, and overall satisfaction for both the patient and the clinician will be reviewed. The course is for therapists of all levels.

9:30 AM – 10:00 AM
Marsalis Hall

BREAK IN THE EXHIBIT HALL

10:00 AM – 11:15 AM
Landmark BC

Propiroceptive and Neuromuscular Stability – It Is Not Just About The Wrist!
This session brought to you in part by funding from the American Hand Therapy Foundation
Elisabet Hagert, MD, PhD

This keynote lecture will provide an update on the role of proprioception and neuromuscular activity on joint stability by reviewing current basic science research on mechanoreceptors and ligaments of the shoulder, elbow, wrist, and thumb. The presenter will discuss the implications of this research on the demands of joint function as well as the implications for rehabilitation.

Proprioceptive Reeducation for the Hand and Upper Limb
Moderated by: Elisabet Hagert, MD, PhD
Christos Karagiannopoulos, MPT, PhD, ATC, CHT
Virginia O’Brien, OTD, OTR/L, CHT
Emily Altman, PT, DPT, CHT, OCS, CLT

Using a case study approach, this panel will provide recommendations for the examination and treatment to restore dynamic stability and function to the elbow, wrist, and thumb. The presenters will emphasize examination techniques that can be used to determine the outcomes of the rehabilitation strategies used for proprioceptive and neuromuscular retraining.

PLENARY SESSION 5

11:15 AM – 12:30 PM
Landmark BC

ASHT 2018 Business Meeting & Emerging Issues

Landmark BC

Incoming Presidential Address: A Shared Vision
Linda Klein, OTR, CHT

This lecture will facilitate the participants’ ability to identify, expand and share their professional vision for best patient outcomes beyond daily experiences as a therapist. The lecture will identify methods to share one’s vision such as mentoring, organizational volunteerism and awareness and involvement in legislative issues that affect our profession.

LUNCH, POSTER PRESENTATIONS AND, COMMITTEE/DIVISION MEETINGS

12:30 PM – 2:30 PM
Cumberland I

PREPARING FOR THE CHT EXAM
Presented by HTCC

This session will cover the history of hand therapy certification, scope of practice and practice analysis. The certification exam blueprint and item writing process will be reviewed as well as eligibility requirements. Test preparation strategies, study groups and resources will also be covered. A panel of newly certified hand therapists will present their strategies for test preparation and be available to answer questions.

HANDS-ON DEMONSTRATIONS

1:00PM – 2:00 PM
Cumberland JKL

Hands-On Application of Ulnar Booster and Bull’sEye
Presented by North Coast Medical

Shrikant J. Chinchalkar, OTR, CHT

The wrist is an intricate joint with complex motion and function and is comprised of several articulations. These articulations are formed by various anatomical structures with varying degrees of curvatures and congruencies supported...
by the ligamentous elements, controlled by musculotendinous units, and based on precise proprioceptive input from various ligaments. The meticulous normal functioning of the hand is dictated by the stability and mobility of the carpus, allowing the hand to grasp objects in a variety of wrist positions. This presentation discusses the altered wrist kinematics as well as hands-on application of Comfort Cool Ulnar Booster and the Bullseye Wrist Support for wrist instabilities.

12:45 PM – 1:15 PM
Tips and Tricks for the Push® MetaGrip®
Presented by BraceLab
Karol Young, OTD, OTR/L, CHT
Judy C. Colditz, OT/L, CHT, FAOTA

Bring your boxed lunch to Cumberland Room F, to join BraceLab for “Tips and Tricks for the Push® MetaGrip®” on Saturday, September 22 from 12:45 - 1:15 PM. Karol Young and Judy Colditz will answer questions about the sizing, fitting, care, adaptation and patient appropriateness for the MetaGrip® orthosis for thumb CMC osteoarthritis. Receive a copy of our White Paper which explains how such a small brace can be so effective in stabilizing the first metacarpal without immobilizing it! Learn what patients, therapists and researchers are saying about the MetaGrip’s effectiveness. See you there!

2:30 PM – 3:30 PM
PLENARY SESSION 6
AAHS Presidential Invited Lecture: How Hand and Arm Transplantation Can Transform Amputee Lives
W.P. Andrew Lee, MD

It has been nearly two decades since the first hand transplant was done in the United States in 1999. This presentation will provide an update on hand and arm transplantation for patients who have suffered a hand or arm amputation or extreme loss of function due to injury or illness. Much knowledge and clinical wisdom has been gained by the surgeons and therapists that have pioneered this important work to improve the quality of life and participation for the patients that these reconstructive procedures.

Landmark BC

My Work with Patients with Hand or Arm Transplants Has Made Me a Better Hand Therapist
Gayle Severance, MS, OTR/L, CHT
Amy Vissing, MHS, OTR/L, CHT

This lecture presents information on the treatment of patients with of hand / upper extremity (UE) transplantation. The lecture will highlight components of working with a unique and small patient population translates to the general practice of hand therapy.

3:30 PM – 4:00 PM
BREAK

Landmark Foyer

PLENARY SESSION 8
Optimizing Outcomes in Patients with Peripheral Nerve Injury
Susan Stralka, PT, DPT, MS
Elisabet Hagert, MD, PhD
Lorna Kahn, PT, CHT
Amy Moore, MD

This interprofessional panel presentation will address current concepts in the management of peripheral nerve injuries, especially entrapment neuropathies. Topics will include a surgeon’s perspective on clinical diagnosis of nerve entrapment, and differentiation of peripheral versus central nervous system signs and symptoms from a therapist’s perspective. A more recent trend in hand surgery is the increased use of nerve transfers to restore function following long-term entrapment neuropathy or trauma. A hand surgeon-therapist team will present the concepts of nerve transfer surgery and the post-operative neuromuscular reeducation that is critical to successful patient outcome.
Landmark C

7:30 AM – 9:30 AM

INSTRUCTIONAL CONCURRENT SESSION VI

Assessment and Rehabilitation Methods of Wrist Sensorimotor Impairment

Christos Karagiannopoulos, MPT, PhD, ATC, CHT

Proper wrist function depends on an intact sensorimotor (SM) control system. The wrist SM control system encompasses complex neural pathways that are necessary to regulate normal wrist active range of motion and neuromuscular stability for daily upper extremity function. This session intends to review the SM control system organization and neuroanatomical pathways relative to the wrist joint. The active wrist joint position sense (JPS) test, which is considered a clinically meaningful assessment method for wrist SM control impairment, will be discussed. The currently known psychometric properties (i.e., reliability, responsiveness) of this emerging test will be presented. Great emphasis will be directed to rehabilitation strategies towards restoring wrist joint conscious and unconscious proprioceptive senses following various types of wrist trauma (e.g., carpal instabilities, wrist fractures) based on currently best available evidence. The relationship between pain and SM control deficit following wrist trauma will be discussed. Select cases will be utilized to allow attending hand therapists develop a clinical competency on treating patients with distinct wrist proprioceptive impairments that require the implementation and proper progression of specific SM rehabilitation strategies (e.g., pain control techniques, open- versus closed-chain active ROM methods, dant throwing motion, and neuromuscular re-training for dynamic joint stability).

Landmark A

9:30 AM – 10:00 AM

Break

Landmark C

10:00 AM – 12:00 PM

INSTRUCTIONAL CONCURRENT SESSION VII

Assessment and Rehabilitation Methods of Wrist Sensorimotor Impairment

Christos Karagiannopoulos, MPT, PhD, ATC, CHT

Proper wrist function depends on an intact sensorimotor (SM) control system. The wrist SM control system encompasses complex neural pathways that are necessary to regulate normal wrist active range of motion and neuromuscular stability for daily upper extremity function. This session intends to review the SM control system organization and neuroanatomical pathways relative to the wrist joint. The active wrist joint position sense (JPS) test, which is considered a clinically meaningful assessment method for wrist SM control impairment, will be discussed. The currently known psychometric properties (i.e., reliability, responsiveness) of this emerging test will be presented. Great emphasis will be directed to rehabilitation strategies towards restoring wrist joint conscious and unconscious proprioceptive senses following various types of wrist trauma (e.g., carpal instabilities, wrist fractures) based on currently best available evidence. The relationship between pain and SM control deficit following wrist trauma will be discussed. Select cases will be utilized to allow attending hand therapists develop a clinical competency on treating patients with distinct wrist proprioceptive impairments.
Treat the Pain and The Cause of the Pain! Integrating New Concepts in Hand Therapy – Taping, IASTM and Cupping
Alison Taylor, BA, OTR/L, CHT, CKTI

Learn some new concepts to treat patients without pain, correct chronic and acute conditions and improve outcomes. This a fast and exciting course with multiple lab opportunities to tape and treat the upper limb. You will learn effective assessments and applications for treating tendinitis and pain, and how to assess the body from the concept of muscle imbalance. Tendonitis is a large proportion of our treatment population but sometimes we can only get it 75% better. This course is an advanced concept course focusing on looking at the body from a perspective of muscle imbalance and alignment. We can effectively treat tendinitis and pain conditions including finger, wrist, thumb and elbow by looking at the body in a different way. What muscles are under-functioning and what are over-functioning? The course will include current manual joint mobilization for the elbow, wrist and fingers as well as IASTM and Cupping. Learn how to tape the finger to eliminate pain with ROM, correct dequervains, treat tennis elbow and remove wrist pain with weight-bearing. Video evidence, as well as current research, will support the course content.

Orthosis Fabrication with Neoprene
MaryLynn Jacobs, MS, OTR/L, CHT
Sabrina Cassella, MS, OTR/L, CHT

Expand your options when making orthoses by adding the use of Neoprene material to your tool box. Neoprene can be used to immobilize, protect, align, support and/or mobilize a body part. Creative and strategic strapping allows versatility and comfort to most custom orthoses. No sewing machine, irons or seam tape necessary.

Dynamic Stability of the Painful Thumb: Evidence Informed Intervention
Virginia O’Brien, OTD, OTR/L, CHT

Thumb pain and instability due to injury or pathology impacts participation in daily living. Optimal therapeutic outcomes are achieved by thorough evaluation and innovative interventions. This course will guide the participant through an understanding of the unique anatomy of the thumb, including the proprioceptive contributions of the ligaments and muscles which forms the basis to comprehend and apply a dynamic stability conservative management program. This program will discuss the use of the stability exercises for postoperative thumb intervention. Participants will learn to administer individualized evaluation and evidence-informed interventions including manual techniques, neuromuscular re-education, orthotic intervention and patient education to achieve a pain-free, stable and functional thumb.
3-POINT PRODUCTS
BOOTH: 205/206/207
www.3pointproducts.com
3-Point Products, a proud sponsor of ASHT, specializes in upper extremity orthoses designed for clinical use. Our effective, easy-to-fit splints and braces help treat mallet finger, trigger finger, thumb arthritis, tennis elbow and more. Visit us at booth #205 to check out our new products.

ADVANCED ARM DYNAMICS
BOOTH: 304
www.armdynamics.com
Advanced Arm Dynamics is focused on a singular goal: comprehensive upper extremity prosthetic rehabilitation. While general prosthetic clinics see one or two upper extremity patients a year, we see hundreds. Our specialized, comprehensive, and multidisciplinary approach ensures that patients receive the best possible care in a welcoming and supportive environment.

ALLARD USA, INC.
BOOTH: 417
www.allardusa.com
Stop by and fabricate a splint using our isocyanate free splinting and casting materials. Check out Allard’s Smart Orthotic Treatment Resting Hand Orthosis. Low profile and lightweight, the aluminum core provides good biomechanical positioning of the hand. Your patients will love the easy-to-apply smooth cover.

AMERICAN ASSOCIATION FOR HAND SURGERY
BOOTH: 314
www.handsurgery.org
The American Society for Surgery of the Hand was founded in 1946 to facilitate the exchange of information related to problems of the hand. It is the oldest and largest medical specialty society in the United States devoted to the care of the hand.

AMERICAN HAND THERAPY FOUNDATION (AHTF)
BOOTH: 414
www.ahtf.org
The American Hand Therapy Foundation (AHTF) is a not-for-profit 501(c)(3) organization that promotes education and funds evidence-based research for treatment and prevention of diseases and injuries of the upper extremity and hand. For over 25 years, AHTF has been the only world-wide organization dedicated exclusively to upper extremity rehabilitation research.

AMGF, INC. GLOBAL PROSTHETIC DEVELOPMENT
BOOTH: 315
www.ambgf-prosthetics.com
Our commitment is to use our 30 plus years of knowledge and expertise to restore a normal appearance to a mutilated limb, either through the use of an aesthetic prosthesis with passive function or by aesthetically covering a functional prosthesis.

ANATOMI METRIX
BOOTH: 103
www.manu3lab.com
Anatomi Metrix develops devices and software tools for hand therapists. We introduce a methodology to measure and monitor the evolution of the edema, and a digital tool to streamline the patient-visit process and to generate high quality outputs such as assessment and treatment reports, insurance claims, purchase orders, and more.

ATI PHYSICAL THERAPY
BOOTH: 312
www.atipt.com
As the fastest-growing physical therapy provider in the country, ATI Physical Therapy provides a variety of physical therapy services. No matter what, we strive to offer exceptional care, trusted expertise and remarkable outcomes customized to each patient.

AXOGEN
BOOTH: 115
www.axogeninc.com
AxoGen (NASDAQ: AXGN) is a global leader in developing and marketing innovative surgical solutions for peripheral nerve injuries. AxoGen’s portfolio of regenerative medicine products is available in the United States, Canada and several other countries and includes Avance® Nerve Graft, AxoGuard® Nerve Connector, AxoGuard® Nerve Protector, Avive ™ Soft Tissue Membrane, AcroVal™ Neurosensory and Motor Testing System, and AxoTouch™ Two-Point Discriminator.

BRACELAB / HANDLAB
BOOTH: 101
www.bracelab.com
At BraceLab, we provide patients and medical professionals in the US with premium quality Push* orthoses that offer optimal support and comfort while maximizing functionality, so that patients can get back to doing what they love, as quickly as possible. HandLab provides high quality hand therapy education in several formats.
BULLSEYE BRACE, INC.

BOOTH: 317  
www.BullseyeBrace.com

Bullseye Brace (BullseyeBrace.com) designs, makes and sells orthopedic bracing and support products. The Bullseye Wrist Band provides therapeutic treatment of ulnar-sided wrist pain, including TFCC injuries and other distal radioulnar joint injuries, through controlled compression and stabilization. The product’s unique silicone ring allows effective compression without creating a ‘tourniquet effect.’

CEDARON MEDICAL

BOOTH: 406  
www.cedaron.com

Since Cedaron’s founding with a NASA grant in 1990, the company vision statement includes our passion to create cutting edge software solutions and to deliver these technologies with best in class customer support. Our Connect™ EMR for Rehab provides complete documentation that helps our Rehab customers streamline documentation and stay compliant. Cedaron's Rehab EMR is the only of its kind developed in partnership with the APTA, AOTA, and ASHT.

DYNATOMY

BOOTH: 105  
www.dynamotyproducts.com

Dynatomy manufactures innovative, premium-quality upper extremity products, including VariGrip Therapy-patented adjustable tension for each finger, patent-pending VariGrip UNO thumb/finger exerciser with adjustable tension for flexion/extension. All products are ergonomically designed, and based specifically on hand therapist and patient feedback. Co-brand/custom logo program available for therapists to promote their brand.

ELSEVIER

BOOTH: 214  
www.elsevier.com

Elsevier specializes in bringing you the latest in hand rehabilitation books and online resources... keeping you up-to-date. Please ask about our free shipping!

ENDO PHARMACEUTICALS

BOOTH: 215  
www.endo.com

Endo Pharmaceuticals Inc., headquartered in Malvern, PA, develops and markets high-value, quality branded pharmaceutical products. Endo Pharmaceuticals’ specialty portfolio includes products for urology, men’s health, orthopedics, and endocrinology, with product development underway in medical aesthetics. Endo Pharmaceuticals is an operating company of Endo International plc. Learn more at www.endopharma.com

EXPLORING HAND THERAPY

BOOTH: 109  
www.handtherapy.com

Exploring Hand Therapy (EHT) is a leader in Hand Therapy continuing education providing over 125 movie and/or digital book courses which can be viewed on any device 24/7. EHT helps thousands of therapist prepare for the Certified Hand Therapy Exam with its course and Famous Purple Book. EHT also provides CHTs with affordable and appropriate level hand therapy HTCC accepted courses. EHT has acquired a jewelry line and has lots of amazing NEW products/books for you to see at our booth. Stop by for an AWESOME giveaway!

FABRICATION ENTERPRISES INC

BOOTH: 311/313  
www.FabEnt.com

Fabrication Enterprises Inc is a manufacturer, importer, and master distributor of products for physical therapy, occupational therapy, chiropractic, athletic training, home care, and more. Founded in 1974, FEI’s products are sold to hospitals, clinics, fitness centers, professionals, etc. by a network of dealers. For more information, visit www.FabEnt.com or email sales@fab-ent.com.

GEORGIA HAND AND UPPER EXTREMITY SPECIAL INTEREST GROUP (GHUESIG)

BOOTH: 204  
www.ghuesig.com

For 25 years, Georgia Hand and Upper Extremity Group (GHUESIG) has provided educational and networking opportunities for therapists and other providers to enhance their practice of rehabilitation of the hand, wrist, elbow, and shoulder. Members include over 150 occupational therapists, physical therapists, and occupational and physical therapy assistants throughout the country.

GRASTON TECHNIQUE LLC

BOOTH: 114  
www.grastontechnique.com

Graston Technique® is an advanced method of soft tissue treatment technology: the protocol includes use of stainless steel instruments that provide trainers/clinicians with a mechanical advantage in detecting/treating/resolving chronic and acute connective soft tissue dysfunctions.

HAND REHABILITATION FOUNDATION

BOOTH: 412  
www.handfoundation.org

Hand Rehabilitation Foundation (non-profit) supports education & research for physicians & therapists treating hand disorders and conditions. Each year we sponsor an annual symposium known worldwide as The Philadelphia Meeting, which brings together a faculty of international hand surgeons and CHTs to teach and demonstrate advances in hand rehabilitation.

HAND THERAPY CERTIFICATION COMMISSION (HTCC)

BOOTH: 303  
www.htcc.org

The Hand Therapy Certification Commission, Inc. (HTCC), is a not-for-profit corporation established in 1989 for the purpose of sponsoring a voluntary credentialing program. Our mission is to support a high level of competence in hand therapy practice and to advance the specialty through a formal credentialing process.
HANGER CLINIC

BOOTH: 211/213
www.hangerclinic.com

Hanger Clinic is the United States’ leading provider of prosthetics and orthotics. We help amputees and individuals with musculoskeletal challenges improve their quality of life and regain their self-confidence. With over 800 Clinics nationwide, Hanger is by far the largest and most experienced orthotic and prosthetic provider in the nation.

HEARTFELT HANDS

BOOTH: 416
www.heartfelthands.biz

Anyone can take a picture! But why take a two dimensional photograph, when you can have a three dimensional sculpture in your own home or office. Life Casting is an artistic process whereby hands of all ages can be sculpturally cast in a matter of moments, using a gelatin-like molding material. Safe, non-toxic and clean, the finished project provides you with a solid, stone-like sculpture that captures every detail, including fingerprints!

JOINT ACTIVE SYSTEMS, INC.

BOOTH: 210
www.jointactivesystems.com

New from JAS! Now offering the complete line of EMPI Advance® Dynamic ROM devices for joint rehabilitation. These quality devices complement our JAS® SPS and JAS® Dynamic product offerings, allowing JAS to be your true ROM specialists. Choose JAS for cost effective and proven ROM outcomes.

JOINT JACK COMPANY

BOOTH: 113
www.jointjackcompany.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. Ask about our 20% show discount.

KINETEC USA INC.

BOOTH: 110
www.kinetecinternational.com

Kinetec® is a leading manufacturer of Continuous Passive Motion (CPM) and motor-assisted devices such as the Kinevia used in Rehabilitation, Orthopedic and Neuro fields. Kinetec® also is a renowned supplier for Manosplint® thermoplastic splinting material, rehabilitation equipment, therapy consumables, and hot/cold therapy solutions worldwide.

LAFAYETTE INSTRUMENT

BOOTH: 407
www.lafayetteinstrument.com

For more than seven decades, professionals in rehabilitation, temporary staffing, human resources, occupational medicine, and other professions 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.

LANTZ MEDICAL

BOOTH: 401
www.lantzmedical.com

Lantz Medical is passionate about the design and development of technologically advanced products that meet the specific needs of our customers. Lantz Medical has addressed the need for innovation in the upper extremity rehabilitation marketplace with our Vector1 Hand Rehabilitation System and Stat-A-Dyne devices which combine both static progressive and dynamic stretch in one device.

MOTRACK THERAPY

BOOTH: 302
www.motracktherapy.com

MoTrack Therapy™ tracks the patient’s hand during at-home therapy, integrating the exercises in fun games. Our app provides live-corrective feedback to ensure the patient is doing their exercises correctly, and reports quantitative and objective analysis of rehabilitation progression to the physical therapist, including range of motion data.

MYOMO INC.

BOOTH: 112
www.myomo.com

Myomo® develops MyoPro®, a powered upper limb orthosis designed to restore function to the weakened or paralyzed arms of patients suffering from stroke, brachial plexus injury or other neuromuscular disease or injury. Sensing EMG signals through non-invasive sensors on the arm, it can restore the ability to perform activities of daily living.

NAKED PROSTHETICS

BOOTH: 301
www.npdevices.com

Naked Prosthetics makes fully custom functional prosthetic fingers for people with amputations distal to the MCP joint. The prostheses are designed with strength in mind, to restore length, dexterity and grip so that amputees can get back to work and play in any environment.
NEOFECT USA, INC.

BOOTH: 212  
www.neofect.com/en/

The RAPAEL Smart Glove is a rehabilitative device that monitors hand movements through playing game-like exercises. It is designed to promote brain re-learning for active hand movement and function. Patients practice goal-oriented and task-specific motor skills with increased repetition while being stimulated in an environment conducive to hand rehabilitation.

ORTHZONE, INC.

BOOTH: 316  
www.orthzone.com

Orthzone is the exclusive North American supplier of Thermoskin braces. Thermoskin’s expanded orthopedic brace line features a number of new wrist and hand products. New products include One Size Fits Most thumb splint and wrist braces. Also see our clinically proven Thermoskin Arthritis Gloves.

NORTH COAST MEDICAL

BOOTH: 100/102/104  
www.ncmedical.com

For over 40 years, North Coast Medical has maintained an outstanding reputation in the global rehabilitation market. We are more than just a distributor and manufacturer of products, equipment & supplies. North Coast is a strategic supply chain partner, providing innovative opportunities for our customers and business partners. Now a second-generation family business, we continue to invest in our future while steadfastly adhering to strong ethics and integrity. We invite you to browse our website and discover what is more than expected at North Coast.

NSD SPINNER

BOOTH: 116  
www.NSDSpinner.com

NSD POWER US is dedicated in performance innovations. Since 2011, it has introduced NSD Spinner, the gyroscopic exerciser for hand, wrist and forearm in the U.S. So far it has helped many ATHLETES, TRAINERS, and RSI SUFFERERS. In the process, NSD raised the bar of durability and functionality, and its inventions now serve the industries of Health, Fitness, and Sports.

OPTP

BOOTH: 411  
www.optp.com

OPTP (Orthopedic Physical Therapy Products) is a leading provider of physical therapy and fitness products. Our numerous hand therapy resources include the new Handii™ Hands exercisers, Small Health Balls™ for soft tissue release and companion exercise book, Small Ball Rolling for Happy, Healthy Hands by Angela Kneale, OTD, MA, OTR/L.

ORFIT INDUSTRIES AMERICA

BOOTH: 200/202  
www.orfit.com

Orfit Industries is a world leader and innovator in the manufacture of thermoplastic materials for orthotic fabrication. Our materials are available in an unmatched number of types, thicknesses and perforation styles. We are dedicated to developing and producing new and creative materials that enhance your orthoses and help your patients.

PERFORMANCE HEALTH

BOOTH: 201/203  
www.performancehealth.com

Performance Health is the leading manufacturer and distributor of rehabilitation, assistive, and splinting products. Performance Health is focused on enabling people to feel good, perform better and live great. Our Performance Health product assortment is among the industry’s largest, bringing occupational therapists and physical therapists the most comprehensive range of products, brand names and services.

OSSUR

BOOTH: 310  
www.touchbionics.com

At Touch Bionics by Ossur, we develop upper limb prosthetic technologies that are designed to help achieve positive outcomes for people with upper limb deficiencies. We welcome you to visit booth 310 and learn more about our i-limb™ and i-digits™ technology. For more information, please visit our website www.touchbionics.com

PILLET HAND PROSTHESES, LTD.

BOOTH: 106  
www.pillet.com

Pillet passive function aesthetic prostheses are a major component of comprehensive professional and social rehabilitation programs for amputees. The prostheses, custom designed in silicone, provide an aspect of normality to a disfigured limb while serving an important functional role.

REHAB INNOVATIONS (UE RANGER)

BOOTH: 400  
www.ueranger.com

An assistance that just so happens to support sustainable healing. The UE Ranger provides meaningful passive through active assisted therapeutic influences for both orthopedic and neurological based upper extremity rehab. Research supported and evidenced based therapeutic influences. The UE Ranger offers advancements in care with resultant superior outcomes and resultant increased revenues.
RESTORATIVE CARE OF AMERICA INC. (RCAI)

BOOTH: 217
www.rcai.com

More than thirty-five years of innovation, industry leadership, and superior quality have made Restorative Care of America, Incorporated one of the world’s leading manufacturers of restorative care products. RCAI prefabricated orthoses are handcrafted and made at the RCAI manufacturing facility in St. Petersburg, Florida. Developed under the guidance of certified orthotists and tested in leading teaching hospitals, RCAI products address the effects of immobility and neurological conditions associated with traumatic injuries and chronic disease, including joint contracture and pressure sores.

SELECT MEDICAL

BOOTH: 300
www.selectmedical.com/careers/hand-therapy-training

Physiotherapy, NovaCare, Select PT and SSM are part of the Select Medical Outpatient Division, a nationally prominent, locally driven provider of outpatient physical rehabilitation. Our team includes 300 hand therapists in approximately 1,600 centers nationwide. We are an industry leader in hand therapy, physical therapy, sports medicine and work health.

SILVER RING SPLINT COMPANY

BOOTH: 111
www.silverringsplint.com

The Silver Ring Splint Company manufactures custom-fit finger splints for individuals needing an aesthetic, cost effective, permanent splint. Silverfling™ splints are available in sterling silver and 14kt gold. With our EZ-Sizer measuring system it has never been easier to get a splint. Come see us at Booth #111.

THERABATH PROFESSIONAL PARAFFIN PRODUCTS

BOOTH: 307
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!

UNIVERSITY OF ST. AUGUSTINE FOR HEALTH SCIENCES

BOOTH: 305
www.usa.edu

Founded in 1979, USAHS is one of the nation’s leading universities offering graduate health sciences degrees, primarily in occupational therapy, physical therapy, and nursing. USAHS educates students at its state-of-the-art campuses in California, Florida, Texas, and through its online programs. For more information visit: www.usa.edu or call (800) 241-1027.

VQ ORTHOCARE

BOOTH: 403
www.vqorthocare.com

VQ OrthoCare’s Patient-Centered business model is differentiated by non-invasive, non-pharmacological, and proprietary smart-technology products for bone, joint, and soft tissue diagnoses. With one of the highest Customer Satisfaction Patient Survey ratings in the healthcare industry, some of our brand names include: BioniCare®, SurgiStim4™, OrthoStim4™, Catalyst-Elite™, Catalyst-Propel™, OActive®, Avid™ IF, Eclipse® Cervical Collar, Ascent LSO and Sky LSO Spinal Bracing.

WEBEXERCISES, INC.

BOOTH: 306
www.webexercises.com

WebExercises’ mission is to complement in office treatment allowing patients to be more successful with their active care programs. With online and mobile tools, patients can continue to exercise under the guidance of their healthcare professional when not in the office. The program consists of 3000+ exercises and 60 pre-programmed protocols.

WHITEHALL MANUFACTURING

BOOTH: 410
www.whitehallmfg.com

Whitehall Manufacturing began making hydrotherapy whirlpools in 1946. Since then, through the acquisition of companies like Thermo-Electric and Ferno-Ille, we have expanded our line of rehabilitation products to include the broadest line of hydrotherapy whirlpools in the industry as well as dry and moist heat therapy, cold therapy, paraffin therapy and splint pans.

WOLTER KLUWER

BOOTH: 117
www.wolterskluwer.com/health

On display at our Wolters Kluwer booth will be our most recent and most popular hand books and journals including the new book by Eltorai “Orthopaedic Hand Trauma.”

ZERO GRAVITY SKIN

BOOTH: 216
www.zerogravityskin.com

Zero Gravity is a wholesale company for LED medical devices that are FDA approved and based on NASA science.
REHABILITATION FOR PARTIAL SCAPHOLUNATE LIGAMENT INJURY: CASE STUDY
G. G. Sousa1, F. A. Barboza1, M. Macedo2
1Northeastern University, 2MOVE Physical Therapy, Integrare Physical Therapy

Purpose The purpose of this paper is to describe an approach to the treatment of the partial scapholunate ligament injury through selective strengthening of scapholunate-friendly muscles.

Methods A 44-year-old man injured his left wrist after landing in an extended wrist position while participating in a bicycle race. The patient was taken to the emergency department, where radiographs were taken and interpreted as normal. He was given a provisional diagnosis of a “wrist sprain” and instructed to use a wrist splint and take nonsteroidal anti-inflammatory drugs for 15 days. Thirty days after the injury, the patient was still unable to resume sports participation due to pain, so he self-referred to physical therapy. The physical therapist then assessed the patient’s radiographs and noted a scapholunate diastasis and rotary subluxation of the scaphoid (Figure 1A). Physical examination revealed exquisite tenderness over the scapholunate interval and a positive Watson’s test. Wrist active range of motion was limited in all directions due to pain. Given the concern for a ruptured scapholunate ligament, the physical therapist ordered MRI, which confirmed the presence of partial tear of the scapholunate ligament (Figure 1B). The patient was referred to a hand surgeon, who recommended conservative management, which included selective strengthening of scapholunate-friendly muscles (Extensor carpi radialis longus, Abductor pollicis longus, Flexor carpi radialis and Flexor carpi ulnaris) as proposed by Esplugas.

Results After completing six weeks of neuromuscular training, new radiographs were ordered. Surprisingly, the scapholunate diastasis was no longer present (Figure 2). The patient gradually returned to cycling training at 2 weeks post physical therapy discharge. At the 3-month follow-up, the individual had returned to full activity, including participating in long-distance cycling competition, without pain or symptoms of wrist instability.

Conclusion No strong conclusion can be reached from the results of a single case study, although it does suggest that selective strengthening of scapholunate-friendly muscles may help to restore the normal carpal alignment. In this case report, six weeks of selective strengthening was able to reestablish the scapholunate kinematics. The case report results support the need for further research on the effectiveness of the selective strengthening of scapholunate-friendly muscles in individuals with partial tear of the scapholunate ligament.

FIGURE 1. (A) Posterior-to-anterior radiograph of the left wrist demonstrating scapholunate diastasis also known as Terry-Thomas sign and rotary subluxation of the scaphoid also known as Ring sign; and (B) partial tear of the scapholunate interosseous ligament seen on a coronal T1-weighted MRI.

FIGURE 2. Posterior-to-anterior radiograph of the left (A) and right (B) wrist demonstrating normal scapholunate interval after selective strengthening of scapholunate-friendly muscles.

CLIENT EXPERIENCE WITH SMARTPHONE AND PEGBOARD HAND DEXTERITY INTERVENTIONS: A QUALITATIVE STUDY
E. A. Gendernalik, J. Hauser, M. Tipton, K. Valdes
Gannon University

Purpose The purpose of this study was to examine the client’s experience when performing a pegboard assembly and a smartphone application as a therapeutic intervention to improve fine motor coordination. Poor manual dexterity can impact an individual’s capability to complete their work task, leisure activities, self-care, the ability to perform in school with writing tasks, and their social participation. Client experiences can provide useful information to clinicians when providing client-centered care.

Methods The participants were receiving hand therapy services at an outpatient rehabilitation facility. This study was approved by Gannon University’s IRB. The materials used in this study include a 12”x12” plastic pegboard used with 100 tapered one-inch plastic, colored pegs that utilized a three-jaw chuck prehension pattern and a smartphone application called Finch Peeps that used index finger and thumb opposition in a pinching motion to complete. Each participant used both forms of dexterity interventions for one minute, followed by the investigators conducting a semi-structured interview with them. Researchers gathered the participants’ responses to questions regarding their experience, both negative and positive, with both activities. Qualitative responses were themed separately by each co-author to determine themes to enhance the rigor of the theming process, which involved the identification of “meaning units,” grouping the meaning units into sub-themes, and clustering sub-themes into major themes or categories.

Results Forty-five individuals over 18 years old who sustained a hand injury or had a chronic condition that affected the hand/s were included in this cohort study. The age ranged of participants was between eighteen and eighty. The most common diagnoses seen were distal radius fracture (14%), trigger finger (12%), tendon rupture repair (7%), and carpometacarpal osteoarthritis (7%). The participants were asked to address their familiarity with using a smartphone device and the majority of the participants were familiar with the use of a smartphone and reportedly used a smartphone more than five times a day. The participants were asked to record their experiences, both positive and negative, of using the smartphone application and pegboard assembly task.
Three main themes of physicality, mastery, and relevance to daily life were found. The subthemes of physicality and mastery regarding the pegboard included that it was 3-Dimensional, involved manual dexterity, and that the task was simple. While the negative subthemes included that it was antiquated, not challenging, and boring. There were a greater number of positive responses about the smartphone application than the pegboard assembly task. Some of the positive subthemes for the smartphone application include it being interactive, winning, challenging, interesting, engaging, produces a flow, and it is able to be incorporated at home. The negative subthemes about the smartphone application included: not winning, that the varied movements were more difficult and painful, and that it was not tactile. Overall, it was found that participants had a more positive experience with a smartphone application game than a pegboard assembly task as part of their dexterity training.

**Conclusion** The therapist is ultimately the one who decides what therapeutic intervention is the most appropriate for the client’s specific limitations. However, therapists should consider incorporating technology, as it may be perceived as more entertaining, motivating, attractive and familiar to the client, promoting a more positive experience. Smartphone application games may be a worthwhile addition to incorporate into participants’ therapy interventions because they promote positive experiences, client centeredness, and are representative of the hand manipulation skills performed in their daily lives.

**Positive themes regarding the pegboard assembly task**
- Physicality
  - 3-Dimensional
  - Manual dexterity
- Mastery
  - Simple

**Negative themes regarding the pegboard assembly task**
- Physicality
  - Antiquated
  - Difficult to Manipulate/Client
- Mastery
  - Boring
- Relevance to Daily Life
  - Not Relevant for My Occupation

**Positive themes regarding the smartphone dexterity application**
- Physicality
  - Visual Appeal
  - 3-Dimensional
  - Interactive
- Mastery
  - Interesting
  - Challenging
  - Engaging
  - Able to Incorporate as Part of Home Program

**Negative themes regarding the smartphone dexterity application**
- Physicality
  - Not Tactile
- Mastery
  - Not Winning

**INTER-RATER RELIABILITY OF A MEASURE OF THUMB CARPOMETACARPAL JOINT PALMAR ABDUCTION IN ADULTS WITH THUMB CARPOMETACARPAL OSTEOARTHRITIS**


**Background:**
- Thumb carpometacarpal (CMC) OA second most common and most disabling form of hand OA
- Thumb CMC OA often results in a disabling thumb adduction contracture
- Intermetacarpal distance (IMD) method most reliable method of measuring thumb CMC OA in healthy hands yet not studied in clinical population
- Other than goniometry, few published measures of thumb radial abduction

**Purpose and Hypothesis:**
- **Purpose:** to test the reliability of the IMD method in persons with thumb CMC OA
- **Research Question:** What is the inter-rater reliability of IMD method in persons with thumb CMC OA?
Hypothesis: The IMD method will have higher inter-rater reliability in individuals with CMC OA than those with healthy hands

Methods

Design: Retrospective reliability study

Criteria for Inclusion:
- Inclusion criteria: Male or female, radiographically confirmed CMC OA or a positive “grind” test
- Exclusion criteria: Steroidal treatment injections and other comorbid hand conditions

Evaluators (2):
- MS, OTR/L, 7 years of clinical experience, 2 years in a specialty hand setting
- OTD, OTRL/L, CHT, 39 years of clinical experience, 24 years in a specialty hand setting, 20 years as CHT
- Both raters participated in 1 hour of training and 1 hour of practice

Assessment Tools:
- IMD evaluated per use of Ironton™ 6” Digital Fractional Caliper
- Accuracy: +/- 0.01 In.
- Procedures standardized, protocolized, and manualized

Procedures:
- Measurements taken during evaluation portion of initial therapy session
- To control for order effects, 1st measurements of palmar and radial abduction were taken by the evaluating therapist; non-evaluating therapist would then take 2nd measurements within 5 minutes of 1st
- The sequence of measurements (i.e., radial vs. palmar abduction) randomized via a coin flip
- 1 practice trial was given and 1 trial of each measurement was taken by each rater

Marking bony landmarks (Figure 1):
With participant in maximal active palmar abduction, ulnar hand resting on table and wrist and forearm in neutral, primary examiner marks ‘cross-hairs’ on mid-dorsal points on 1st and 2nd metacarpal heads with washable marker. Landmarks first visualized/palpated and markings then added to skin when taut in palmar abduction to prevent migration of markings when taking measurements.

Taking Measurements:
- Palmar Abduction: Participant actively maximally abducts thumb in plane of table with hand and forearm in neutral and resting on the table (Figure 2)
- Radial Abduction: Participant actively maximally abducts thumb in the plane of the table with elbow resting on table, forearm pronated, and hand parallel to table yet not in contact with its surface (Figure 3)

For both measurements:
- 1st rater placed caliper points on marked landmarks and measured distance in millimeters, entered into EMR, closed and zeroed caliper, and removed markings
- 2nd rater repeated measurements and data was entered into separate field in EMR
- 2nd rater blinded to the procedures and ratings of the 1st rater

Statistical Analysis:
- The data were analyzed using IBM SPSS® Version 22
- Descriptive statistics on sample characteristics and IMD values were determined
- Inter-rater reliability was measured using intraclass correlation coefficients (ICC, type 3,2)
- The standard error of measurement (SEM) and minimal detectable change (MDC) were calculated to determine error that can be attributed to the IMD tool and procedures
THE IMPACT OFShoulder Pathology onIndividuals with Distal Radius Fracture
S. Wilson\(^1,2\), J. Reese Walter\(^2\)

\(^1\)WOSM; \(^2\)Nova Southeastern University

Purpose The purpose of this concurrent parallel mixed methods study is to expand the understanding of the impact of shoulder pathology on individuals with distal radius fracture. This will include describing the population that have shoulder pathology, comparing individuals who have shoulder pathology with individuals who do not, and exploring their experiences.

Methods Participants were recruited at 1-2 weeks post DRF. Over 9 weeks, all participants were intermittently assessed for shoulder pathology at each follow-up visit by their hand surgeon. Questionnaires were given initially and at 5-7 weeks. Additionally, at 5-7 weeks QuickDASH, TSK-11, visual analog scale, and compensatory mechanism checklist were given. At the end of the study, data analysis of both strands was performed. Descriptive statistics were used to describe the demographics, patient characteristics, and clinical factors of the population who have shoulder pathology concurrent with a distal radius fracture. An independent samples Mann Whitney U test was used to determine if participants with shoulder pathology have significantly worse function, higher kinesiophobia and pain, and more use of compensatory strategies then patients with no shoulder pathology. Data analysis of the qualitative strand included use of NVivo software. Finally, a mixed methods merged analysis was performed using a side by side comparison to compare results of the quantitative and qualitative strands.

Results Data analysis for the qualitative strand produced 6 themes that emerged from the primary research question. What is the lived experience of having shoulder pathology at the same time as a distal radius fracture? Themes are listed in table.

Quantitative Strand

Of the 45 participants recruited for this study, 16 (36%) of participants presented with shoulder pathology. Of those participants with shoulder pathology, 10 (62.5%) were due to compensation or disuse and 6 (37.5) resulted from the fall. Of those 16, 6 (37.5%) were diagnosed with subacromial impingement, 6 (37.5%) were diagnosed with shoulder pain, and 4 (25%) were diagnosed with shoulder stiffness. Mean age 64.56 years (SD=9.00). Females 15 (93.8%) Males 1 (6.3%). Dominant side was fracture side for 4 participants (25%). Surgery was performed on 12 (75%) of participants and a sling was used by 13 (81%) of participants. 8 (51%) participants reported having osteoporosis and 12 (75%) reported having a able and willing caregiver.

For the 29 participants who did not have shoulder pathology. Mean age 67.76 (SD=16.20). Female 23 (79.3%) Males 6 (20.7%). Dominant side was fracture side for 4 participants (37.9%). Surgery was performed on 14 (48%) of participants and a sling was used by 14 (48%) of participants. 5 (17%) of participants reported having osteoporosis and 15 (52%) reported having a able and willing caregiver.

For the participants with shoulder pathology, there was a positive correlation between pain and QuickDASH scores \( r(14)=.585 \), pain and TSK-11 scores \( r(14)=.621 \), and pain and compensatory strategies used scores \( r(14)=.519 \).

Additionally, there was a positive correlation between QuickDASH scores and TSK-11 scores \( r(14)=.536 \).

A independent samples Mann Whitney U test was performed and median pain scores were significantly different between participants with shoulder pathology and participants without shoulder pathology \( U=136, z=-2.268, p=.023 \). Median compensatory strategy-Avoid activity scores (# used for 5 ADL tasks) were significantly different between participants with shoulder pathology and participants without shoulder pathology \( U=143, z=-2.170, p=.030 \).

Additional quantitative data analysis is being performed at this time.

At this time the mixed methods data analysis is ongoing and should be completed within the next month.

Conclusion Qualitative Strand

No generalizations can be made for the population who has a DRF concurrent with a shoulder pathology based on the findings of this phenomenological research. However, the findings of this study give insight into the lived experience of this population. Similarly, to individuals with a DRF only, individuals with a DRF concurrent with shoulder pathology use multiple compensatory mechanisms. However, individuals with shoulder pathology concurrent with a DRF may use more compensatory mechanisms due to pain or stiffness when moving both the shoulder and wrist joint. The most reported activities that required the use of adaptations or compensatory mechanisms in this study include feeding, grooming, dressing, food preparation, shopping, driving, and sleeping. Kinesiophobia and use of compensatory mechanisms such as using the nonaffected side and avoiding activity may have contributed to some participants developing shoulder pathology after DRF.

Quantitative strand- Due to additional statistical testing being performed at this time, conclusions will be written after all statistics are complete.

Themes, Corresponding Research Questions, and Contributing Codes
31

ASHT 41ST ANNUAL MEETING

OUTCOME ANALYSIS FOR NON-OPERATIVE MANAGEMENT OF THUMB CARPOMETACARPAL OSTEOARTHRITIS: A PILOT STUDY

J. McGaha1, M. Hudson1, C. W. Jansen1, K. Oxford Grice2, S. Blackmore1
1Select Medical, 2University of Texas Medical Branch, 3University of Texas Health Science Center

Purpose Carpometacarpal (CMC) osteoarthritis (OA) of the thumb is reported as the most functionally limiting form of hand arthritis. Hand therapists need to continue to develop therapeutic treatments for this patient population as it is estimated that 25 million adults will report arthritis-attributable activity limitations by 2030. In order to decide on treatment techniques that are appropriate, available, acceptable and affordable, it is important for hand therapists to use outcome measures that not only assess physical progress, but measures that are also in line with a patient-centered plan of care. The purpose of this pilot study is to describe outcomes of a comprehensive treatment program for patients with 1st CMC OA and assess the relative responsiveness of outcome measures covering domains of the World Health Organization (WHO).

Methods This study used a multi-case, case series, repeated measures design. Patients, meeting inclusion criteria, referred for conservative treatment were enrolled on a volunteer basis. IRB approval was obtained from the University of Texas Health Sciences Center. Two OT/CHTs completed the data collections and provided the treatment. Patient reported measures were administered prior to physical measures. After 4-6 treatment visits, all measurements were repeated, and one month after discharge, patient reported measures were administered via phone interview. Evidence based treatments included: education, manual therapy, neuromuscular re-education, orthoses, joint protection, adaptive aids, energy conservation, pain diary, activity log, use of physical agents, and provision of community connections. The WHO’s International Classification for Functioning and Disability model was used to select measures of body function, activities and participation: pain, stiffness, grip and pinch strength, active and passive palmar and radial abduction, Kapandji opposition scale, Colditz tear test, PRHWE, QuickDASH, PSFS and the GROC. Patients kept a program adherence log.

Results Statistical analyses included descriptive and inferential analyses, calculations of effect size, minimal detectable change (MDC) and Pearson Correlations. The level of significance was 0.05. From the 19 subjects (27 affected thumbs), 15 subjects completed 6 visits, 4 completed 4 visits and 2 subjects did not complete follow-up. Fifty percent of adherence logs were recorded. Physically, grip and pinch strength, opposition, active and passive palmar and radial abduction, Kapandji opposition scale and Colditz tear test significantly improved between initial and discharge. All patient centered measures improved between initial and discharge, and remained improved between initial and one month follow up. Patient centered measures effect sizes, ranging from 1.48 (PRWHE) to 1.20 (PSFS), at discharge, and ranging between 1.76 (PSFS) and 1.20 (Quickdashi) at one month follow up, were higher than physical measure effect sizes, ranging from 0.9 (worst pain decrease) to 0.51 (Kapandji scale). At discharge all subjects (19) met the MDC for the PRHWE, 17 for the PSFS, 12 for the QD and 14 for the GROC. At one month follow-up 5 subjects met the MDC for the PRHWE, 15 for the GROC. Good to moderate relationships existed between: Colditz tear test and opposition (r = .71); best pain and tear test (r = .64); pinch strength and stiffness scores (r = .55); GROC scores and opposition (r = .56); best pain scores and active radial abduction (r = .54).

Conclusion This study showed that after 4-6 hand therapy sessions, patients with thumb CMC arthritis improved; tolerating more loading of the CMC joint (tear, pinch strength), increasing mobility (abduction, opposition), decreasing pain and stiffness and improving in all patient reported measures. Based on our findings, we recommend for clinical use: opposition, abduction, pinch strength and the Colditz tear test, and all patient reported outcomes. For the short term, the PRHWE has the most subjects achieving the MDC at discharge, for long term the PSFS with the highest long-term effect size, and the GROC, uniting clinician and patient observations. Limitations were: a convenience sample, and unblinded study design. Future studies may include comparisons to traditional treatments such as injection and orthosis only. Our preliminary outcomes are encouraging for patients with thumb CMC arthritis reported the most functionally limiting form of hand arthritis.
AGE AND GENDER STRATIFIED ADULT MYOMETRIC REFERENCE VALUES OF INTRINSIC HAND STRENGTH

C. W. McGee1, 2, J. Bakker1, V. Bystedt1, K. Duncan1, J. Hinton1, A. Hoehn1, C. Hoenshell1, C. Jasperson1, R. Keyser1, S. McIlrath1, E. McNearney1, H. Sterling1, H. Swan1

1University of Minnesota, 2University of MN

Purpose The purposes of this research project were to:

1) Describe the age and gender stratified normative values of intrinsic hand strength in persons 21 years or older

2) Determine if factors known to predict gross grasp strength also predict isolated measures of intrinsic hand strength

Methods Participants: Male and female adults 21 years or older without CNS conditions affecting upper limbs, known median or ulnar nerve damage, rheumatological or cardiac conditions, deformity of tested digits, pain during testing, and inability to follow standardized procedures were included. Among persons aged 50+, those with hand osteoarthritis and musculoskeletal disorders were included as these are often associated with age.

Methods to Obtain Data:

1) Health and demographic questionnaire (Data include: age, gender, height weight, self-reported conditions of the upper limb)

2) Myometry. Using the RiHM and associated standardized positions (Figure 1), three raters (an experienced CHT and 2 novice therapy raters) tested Index Finger Abduction (First Dorsal Interosseous), Index Finger Metacarpophalangeal Flexion (presumably First Dorsal Interosseous/Lumbrical), Small Finger Abduction (Abductor Digits Minimi), Thumb Metacarpophalangeal Flexion (presumably Flexor Pollicis Brevis), and Thumb Carpometacarpal Palmar Abduction (presumably Abductor Pollicis Brevis). The decision to include novice therapy raters is supported by the findings of McGee et al., (2013).

Analytical Methods (Sequentially according to study purposes):

1) Descriptive statistics, tests of skewness/kurtosis, and Shapiro-Wilk's Test of Normality

2) Backward stepwise mixed effects linear modeling

Results (Sequentially according to study purposes):

1) Data from 629 participants analyzed (Figure 2). All strata met assumptions of normality. Intrinsic hand strength followed a declining trend with age, peaking in the 30s and 40s. Mean strength greatest in thumb MP flexion and least in 5th digit...
ABSTRACTS

**Conclusion Conclusions** (Sequentially according to study purposes):

1) Variance in average strength across muscles is likely due to relative differences in size and function. Intrinsic hand strength declines with age similarly in both genders. According to Portney and Watkins (2015), strata sample sizes are adequately powered.

2) The decision to stratify by age and gender is supported. BMI in males was a significant predictor of intrinsic strength. This finding differs from earlier research on gross hand strength where there was no reported interaction effect between gender and body size on gross grasp strength. Unlike grip dynamometry, hand dominance was not a predictor of intrinsic hand strength. This may be explained by the role of the intrinsic in precision pinch and that many precision activities are bimanual in nature whereas those requiring gross grasp are often performed with the dominant hand.

**Clinical Significance:** This is a first attempt at establishing strength norms for adult intrinsic hand muscles. These norms can be referenced to evaluate and plan medical and rehabilitation interventions for intrinsic weakness. This data may also help to evaluate surgical success of tendon transfers for our clients with nerve palsies and SCI and assist in the emerging designs of multi-articular myoelectric prostheses.

**Limitations:** Twenty participants omitted weight from survey; a multiple imputations analysis was used for missing data. Convenience sampling resulted in a somewhat ethnically/racially homogenous sample. Work history is missing as a predictor. Although standardized to selectively measure isolated intrinsic, other intrinsic/extrinsic could be contributing to some measures.

**Future Research:**
- EMG validation of testing procedures
- Expand normative data to include isolated measures of selected extrinsic muscles
- Case-control studies using normative data as control and clinical populations as comparison groups (e.g., thumb CMC OA)

**Purpose** This study compares the utility and psychometric properties of the Pediatric Outcomes Data Collection Instrument (PODCI) and the Canadian Occupational Performance Measure (COPM) in a pediatric hand therapy population. We hypothesize that the utility of the PODCI is limited by a ceiling effect and that the COPM is more sensitive to changes during treatment.

**Methods** Medical records over a 3 year period were retrospectively reviewed to identify patients 4-18 years of age with simultaneous PODCI and COPM assessments pre-treatment and at discharge after at least 3 weeks of therapy for a variety of upper extremity conditions. Only patients with complete PODCI and COPM scores obtained on the same day pre- and post-treatment were included. Similarly, interim scores were included if complete PODCI and COPM scores were obtained on the same interim day during treatment. The PODCI Upper Extremity Function (PODCI/UE), PODCI Pain and Comfort (PODCI/Pain), COPM Performance (COPM/P) and COPM Satisfaction (COPM/S) scales were assessed separately. The utility and responsiveness of each scale was assessed by comparing scores between visits using Wilcoxon signed rank tests and by calculating standardized response means and effect sizes. Ceiling effects were assessed by comparing the proportion of patients with maximum possible scores on each scale using Fisher exact tests, with a ceiling effect threshold set at 20%. Convergent validity was assessed by correlating scores between the scales. Discriminant validity was determined using one sample t-tests to compare baseline PODCI scores to published normative values and by using unpaired t-tests to compare the baseline COPM and PODCI scores between different clinical categories.

**Results** Seventy-five patients were included, with a mean age of 13 years (range 6-18) and a mean therapy duration of 55 days (range 21-284). Interim scores were available for 25 patients. All scales detected significant improvements across all time points, except PODCI/Pain between interim and post-treatment visits. Standardized response means and effect sizes were higher for both COPM scales than for both PODCI scales across all time points, indicating a greater sensitivity of the COPM to changes over time. All scales demonstrated a ceiling effect at the end of treatment, with a maximum score achieved on one or both PODCI scales by 58 (77%) patients and on one or both COPM scales by 32 (43%) patients (p<0.001). Similarly, both PODCI scales demonstrated a ceiling effect at interim visits, whereas the COPM scales did not. The highest correlations between the PODCI and COPM scales were between PODCI/UE and COPM/P both at baseline (R=0.46) and over time (R=0.42). PODCI/UE and PODCI/Pain scores pretreatment were significantly different than normative values (p<0.001, one-sample t-tests). Neither PODCI nor COPM scales were able to discriminate between conditions affecting the hand only and conditions affecting the proximal/whole limb. Only the PODCI/Pain scale was able to discriminate between acute (<1mo of symptoms) and chronic conditions (worse pain in chronic problems; p<0.001) and between dominant and non-dominant hand involvement (worse pain with dominant hand involvement; p=0.01), possibly because most patients in the chronic category were being treated for activity-related, dominant-sided pain.

**Conclusion** Both the PODCI and COPM can detect improvements from hand therapy treatment. However, the PODCI has a more profound and earlier ceiling effect than the COPM, and the COPM demonstrates consistently higher sensitivity to change over time. Therefore the COPM is more useful for guiding the course of treatment. The limited discriminatory validity of both the PODCI and COPM across different types of pediatric hand and upper extremity conditions warrants caution when using these scales to compare populations or interventions. These data suggest the need for improved patient reported outcome measures for this patient population.

A PSYCHOMETRIC COMPARISON OF PATIENT-REPORTED OUTCOME MEASURES USED IN PEDIATRIC HAND THERAPY

J. M. Dorsch,1,2, R. Cornwall1

1Cincinnati Children’s Hospital, 2University of Cincinnati, Cincinnati Children’s Hospital
**ABSTRACTS**

**SCIENTIFIC SESSION II**

**FRIDAY, SEPTEMBER 21, 2018 | 3:00PM – 4:00PM**

**IMPROVING HAND FUNCTION FOR THUMB-IN-PALM DEFORMITY IN CHILDREN WITH CEREBRAL PALSY: A PILOT STUDY**

J. M. Dorich, K. Harpster

1Cincinnati Children's Hospital, 2University of Cincinnati

**Purpose**

The primary aim of this study was to determine the efficacy of OT intervention alone compared to OT intervention plus thumb support to improve prehension and functional performance in children with cerebral palsy (CP) and thumb-in-palm deformity (TPD). A secondary aim was to determine participant and caregiver satisfaction for soft neoprene thumb splints (NTS) and kinesiology tape (KT) in children with CP and TPD.

**Methods**

This study evaluated the effectiveness of 4 weeks of OT intervention alone (phase 1- no thumb support) compared to 4 weeks of OT intervention with a thumb support (phase 2). The OT intervention, “Functional Dexterity Massed Practice” (FDMP), focused on dexterity skills during functional tasks. The intervention was delivered by an occupational therapist for 45-60 minutes one time per week in the outpatient clinic. Each participant was given a home exercise program (HEP) focused on grasping activities and functional tasks to complete 4 days per week. Each participant completed 4 weeks of OT intervention (phase 1) prior to wearing thumb support (KT or NTS). After phase 1, each participant trialed both thumb supports for one week to determine which was preferred and/or more useful during daily activities. The preferred thumb support was worn during phase 2 of the FDMP protocol. Assessments where completed at 5-time points (see Figure 1 for study design).

The primary outcome measure was the Canadian Occupational Performance Measure (COPM) used to assess changes in performance and satisfaction with patient-derived functional goals. The secondary outcome was the Box and Blocks test used to assess prehension skills both with and without the use of a thumb support. Additionally, after a trial of KT and NTS, our sample showed a preference for the NTS. The change in prehension was measured using the Box and Blocks assessment indicating a small to medium effect size following intervention. More specifically, d=0.33 after phase 1 intervention, d=0.20 after phase 2, and d=0.52 for baseline 1 to follow-up. The mean satisfaction score for the NTS was significantly higher than for KT for both patients (p=0.0031) and parents (p=0.0097). Patients rated the NTS significantly higher than KT in terms of “Ease of putting on/taking off” (p=0.0090), “Comfort of thumb support” (p=0.0240) and Amount of time able to wear” (p=0.0129), and parents rated the NTS significantly higher than KT with respect to “Ease of putting on/taking off” (p=0.0129).

**Conclusion**

The results of this study show preliminary evidence that the Functional Dexterity Massed Practice intervention can improve both functional performance and dexterity both with and without the use of a thumb support. Additionally, after a trial of KT and NTS, our sample showed a preference for the NTS. The data from this pilot study will be used to inform a future randomized trial testing the effects of the FDMP intervention in one group with and one group without a thumb support using a larger sample.

<table>
<thead>
<tr>
<th>Table 1: Effect Size of Outcome Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention</strong></td>
</tr>
<tr>
<td>COPM Performance</td>
</tr>
<tr>
<td>COPM Satisfaction</td>
</tr>
<tr>
<td>Box and Blocks (affected hand)</td>
</tr>
</tbody>
</table>
ACTIVE THUMB-CARPOMETACARPAL ABDUCTION IN ADOLESCENTS AND YOUNG ADULTS: AGE AND GENDER STRATIFIED NORMS

L. Johnson1, C. W. McGee2, J. Skye3, V. O'brien3, A. Kobrin3
1University of Minnesota, 2University of Minnesota, 3Fairview

Purpose: Thumb mobility influences performance in daily activities, recreational, and vocational pursuits. Opening the 1st web space during radial and palmar abduction (RA and PA, respectively) is especially important for function. Therapists work to restore these motions in persons with hand burns, thumb carpometacarpal arthritis, and radial and median nerve injuries. Psychometrically sound instruments with normative values are required to inform and measure response to interventions. Among persons with healthy thumbs, the intermetacarpal distance (IMD) is the most reliable measure of thumb abduction. Age and gender stratified norms, already established in children aged 4-12 years, are needed given that age and gender are known influence hand dimensions. However, norms do not exist for adolescents and young adults. The purposes of this study were to 1) describe the age and gender stratified normative values of IMD in persons aged 13-21 years and 2) determine which personal and behavioral factors predict thumb abduction measures in these youth.

Methods: Design: Descriptive normative design.

Participants: Subjects between the ages of 13 and 21 were recruited via convenience sampling at a state fair and university in the Midwest. Participants were without pain, musculoskeletal or neurological conditions affecting the thumb, hand or wrist, and were able to follow standardized procedures.

Examiners: 4 licensed occupational therapists; trained by CHT with 18 years of experience.

Data Collection:
1) Behavioral and demographic questionnaire
2) Randomized collection of 1 trial of RA and PA IMD measurements.

While in maximal active abduction, examiner marks the middorsal point on the first and second metacarpal heads

Measuring PA (Figure 1)
Participant actively abducts thumb away from second phalange in the plane of the table with wrist in neutral position

Measuring RA (Figure 1)
Participant actively abducts thumb away from second phalange in the plane of the table with palm parallel to the table

Examiner places two caliper points on previously marked points and measures distance in millimeters

Repeat on other hand

Analysis (Sequentially by study purposes):
1) Descriptive statistics
2) Backward stepwise mixed effects linear modeling

Results: 1) Data from 272 participants analyzed. All strata met assumptions of normalcy. Male and female mean IMD values non-significantly different in 13-14 year olds but diverge in older groups. Female IMD values do not appear to change across these ages whereas changes occur within males between the lower 2 age groups. Mean RA/PA values are non-significantly different within male and female groups. See Figure 2 for demographic information and figure 3 for mean values.

2) Significant predictors of IMD of PA and RA were gender, height, weight, hours of daily mobile device use, the observed presence of metacarpophalangeal hyperextension (MPHE), hours of daily musical instrument play (R² = 0.67 and 0.66 respectively). Post-measurement discomfort (via pain NRS), the hand being measured, hand dominance, and age were not predictors. See Figures 5 and 6.

Conclusion: Gender was the strongest predictor of both RA and PA IMD, followed by MPHE, hours a musical instrument is played, height, hours of mobile device use and weight. The discovery of the impact of MPHE on IMD is novel to this study and may be clinically significant. The increase due to time spent playing a musical instrument and decrease due to time spent using a mobile device may also have practice implications.

Age was not a significant predictor, but our sample was inadequately powered in males aged 17-21 and does not include the values of 4-12 year olds. It is anticipated that age will be a predictor with the inclusion of pre-adolescents and additional males.

Future Research: Future study will include increasing the sample size in the male subgroup. Additionally, due to the difference in plateau age seen between males and females, additional data will be collected on children ages 4-12.
BARRIERS AND SOLUTIONS TO FIELDWORK EDUCATION IN HAND THERAPY

N. Short, S. Sample, M. Murphy, B. Austin, J. Glass
Huntington University

Purpose This descriptive study examined barriers for CHT clinicians to accept students for clinical rotations as well as clinicians’ preferences for student preparation prior to completing a rotation in a hand setting.

Methods A survey was developed, peer-reviewed and distributed to the email list serve of the Hand Therapy Certification Commission (HTCC) via Survey Monkey. Aggregate responses were analyzed to identify trends including barriers to student clinical rotations as well as recommendations for students to prepare for hand rotations.

Results A total of 2,080 participants responded to the survey, representing a 37% overall response rate. Common logistical barriers were identified for accepting students such as limited clinical time and space. Many clinicians (32% agree; 8% strongly agree) also felt students lack the clinical knowledge to be successful in a specialty hand setting. Areas of knowledge, skillset, and experience were surveyed for development prior to a clinical rotation in a hand setting. A majority of respondents (74%) reported increased likelihood of accepting a student with the recommended preparation. Novel qualitative responses to improve clinical experiences are presented as well.

Conclusion While some logistical barriers may be difficult to overcome, hand-specific preparation based on clinician recommendations may facilitate student acceptance and success in hand specialty clinical rotations. This information could be used to develop upper extremity content in OT and PT curriculum, establish clinical parameters for accepting students to ensure success, and guide student and clinician preparation to pursue the CHT specialty to develop the next generation of hand therapists.

CASE SERIES OF TREATMENT OF THE Boutonniere Deformity WITH A RELATIVE MOTION ORTHOTIC

S. D. Kutcher
Johns Hopkins

Purpose The purpose of this case series was to evaluate outcomes with the boutonniere deformity using the Relative Motion Orthotic (RMO). Traditional methods with this injury show temporary improvements with PIP flexion contracture eventually returning to a contracted state. Although there is research with the RMO for other hand injuries, there is limited research with this method for the boutonniere.

Methods A case series of 4 patients (3 male/1 female) was completed for a total of a 5 month period. Each patient had a PIP flexion contracture ranging from 28-70 degrees. There was no inclusion or exclusion criteria and these 4 patients had the same treatment. The patients were informed that the protocol would take 4-5 months depending on the extent of the contracture. Phase I involved the patients being fitted with a serial cast made of quick cast to increase extension of the PIP with the MP and DIP free for motion. The cast was changed weekly and measurements taken for 8 weeks or until the patient was close to -15 degrees PIP extension. The patient was instructed to perform ORL stretch in the cast. Phase II included wearing a custom PIP extension orthotic made from 1/16” thermoplast material along with RMO. The patient was instructed not to flex the PIP when taking the orthotic off for hygiene in order to prevent the lateral bands from migrating volarily. Measurements were taken 3-4 weeks later. The final Phase III was to wear the RMO only during the day for the next 4 weeks with the affected finger in 20-30° greater MP flexion relative to adjacent fingers.

Results 3 of 4 patients made significant improvements with ROM of PIP 44%, 75%, and 35%. One patient only maintained 5° improvement possibly due to seeing another therapist performing excessive gripping prior to starting therapy at our clinic. All the patients had increases in extension with serial casting for 2 months. The patients lost the extension after removal of serial casts however maintained overall gains in extension at the 5 month follow up.

Conclusion There is limited research on the RMO with the use of the boutonniere deformity with only one other case series found in the literature using a different protocol. There was long term improvement with these four patients so the use of this orthotic with the boutonniere should continue to be explored with a larger sample size to assess the long term effects. This case series showed improvement with extension even at a 5 month follow up. Patients with IF or SF involved should include all four fingers in the RMO.
**Results** We found that FDS attachment did not make a significant difference in either right or left hand grip strength after accounting for age, sex and dominant hand. Given the similarity between right and left hand, we present the right hand model only. Of the 100 participants, 63% were found to have independent insertion of the right FDS to the fifth digit, 15% with common insertion, and 22% with absent insertion. There was suggestion of collinearity between dominant hand and age so it was removed from the final model. Levene’s test (p = 0.71) and normality checks of residuals confirm that the other assumptions were met. There were no significant differences in grip strength [F(2,95)=0.41, p=0.67] between FDS groups.

**Conclusion** Presence or absence of FDS to the fifth digit did not significantly impact hand grip strength in this sample which contradicts the findings of previous research. This may be due to differences in sample characteristics including size and demographics (e.g. BMI, job classification) that might also be related to grip strength.

---

**THE USE OF THE IPHONE LEVELING APP IN MEASURING WRIST AND FOREARM RANGE OF MOTION**

S. Alford
Rockhurst University

**Purpose**
The measurement of range of motion (ROM) is an important component of physical examination following wrist injury. Traditionally, a goniometer is used to assess joint mobility. An individual receiving therapy is therefore reliant on the measurements obtained by the clinician to provide feedback on progress. The increased use of mobile devices by healthcare professions has transformed clinical practice. Mobile devices have become common place in healthcare settings leading to rapid growth and the development of medical software applications “apps” for these platforms (Ventola, 2014). Smartphones, such as the iPhone, are often equipped with an accelerometer and magnetometer, which, through software applications, can perform various in clinometric functions (Pourahmadi et al., 2016). Although these applications are intended for recreational use, they have been found to be reliable in measuring range of motion in the spine, knee, shoulder and wrist (Matera, Boonyasirikool, Saggini, Pozzi & Pegoli, 2016; Armstrong, Macdermid, Chinchalkar, Stevens, & King, 1998). Unfortunately, several of these applications require the user to purchase third party software to perform these functions. The iPhone Leveling App is a free, standard feature located within the Compass App on all iPhones. The purpose of this study was to explore the ability of the iPhone Leveling Application to reliably measure active range of motion of the wrist and forearm in order to provide a reliable tool and method for an individual to monitor their ROM at home. No previous studies were found using this application to measure range of motion.

**Methods**
Fifty-two (103 wrists) asymptomatic participants associated with Rockhurst University were recruited via convenience sampling through word of mouth, flyers, and email. Forty-four females and 8 males who took part in the study. Participants were at least 18 years old with no acute injuries, pain or pathology of the wrists or forearms. Individuals who experienced an onset of injury between test and retest or who were pregnant were also excluded from the study.

**Instruments:**
A 6 inch, plastic, 180 degree goniometer and an iPhone model 6

**Procedures:**
Measurements of active forearm supination, pronation, wrist flexion (dorsal technique), wrist extension (volar technique), radial and ulnar deviation were obtained using a 6 inch plastic goniometer followed by the iPhone Leveling App. Both right and left upper extremities were assessed. Two examiners measured each range, two times with each device. The measurements were blinded to the examiners and read by a designated recorder. Each participant was then provided a handout with pictures and written instructions. The participant used the same iPhone to repeat the measurement on themselves. Twenty of the participants were randomly selected to return 48 hours later to repeat the self-measurement using the provided handout.

**Results**
An infraclass correlation was performed using SPSS 24 at a 95% confidence interval using a 2 way random analysis at absolute agreement. The results of this study indicated moderate to good reliability between the universal goniometer and the iPhone leveling app when measuring wrist and forearm ROM. In addition, moderate to good reliability was found between the examiner and the participant when measuring ROM using the iPhone. When asked to perform ROM measurements 48 hours later the participants demonstrated moderate to good reliability. Limitations to our study include convenience sampling.
due to the participants being recruited through association with Rockhurst University, decreased generalizability. Other limitations include difficulty reading measurements during flexion and extension due to the phone tilting. Variations in hand anatomy and size such as small hands, carpal bosses and ganglion cysts also affected the reliability of measurements. Substitution patterns were also noted. Ways to reduce these limitations include changing the position of the iPhone during flexion and extension by placing the iPhone in a vertical position to eliminate the impact of the anatomical variances and participant difficulty in reading the instrument, ensuring client understanding of positioning and substitution patterns, and streamlining subject education on using the iPhone leveling application.

Conclusion Following a wrist injury, restoring range of motion to provide the mobility required to participate in daily occupations is an important goal of treatment. With proper instruction, the iPhone Leveling Application can be used by individuals to reliably monitor their own ROM progress at home. Continuation of this study is currently in progress and will be completed by the time of the 2018 conference. Thirty participants are being recruited to take part in the continuation study. A third data collection session via Facetime or Skype has been added and modifications have been made to the measurement technique.

RELIABILITY TESTING OF THE LAFAYETTE DYNAMOMETER AND GRIP STRENGTH NORMS IN THE ELDERLY POPULATION
K. Valdes1, D. A. Corbin1, J. Heater1, R. Pass1
1Gannon University, 2Gannon University

Purpose The purpose of this study was to determine grip strength norms of the older adult population and establish the reliability of the Lafayette Dynamometer. The current evidence has shown grip strength to be a powerful predictor of mortality, overall health, and activities of daily living (ADL) performance. Adult grip strength is often used as a marker for not only muscle strength but also biological vitality since it is sensitive to age-related changes in biological functioning. It is important that the testing tools used to measure grip strength are reliable. Normative data of the elder population has not been studied recently and new normative data is needed.

Methods A cross-sectional study design was used to measure maximum grip forces of the right and left hands using a convenience sample of 105 healthy, community-dwelling elderly adults over 65 years old. An IRB committee approved the study. All subjects signed an informed consent form before grip data was assessed. The exclusion criteria included recent wrist injury, pain levels greater than 7, and recent hand surgery. The sample was stratified into the following age groups: 65–69, 70–74, 75–79, 80–85, 85-90, and 90+ years. Grip-force testing was performed using a new calibrated Lafayette Professional Hand Dynamometer. When collecting grip strength measurements, examiners followed the recommended procedures by the American Society of Hand Therapists (ASHT). The subjects were seated with the shoulder adducted, the elbow extended at 90° and unsupported, the forearm was positioned in a neutral position, and the wrist positioned at 30° of extension. Three trials of both left and right hand were gathered.

Results Men showed greater grip force across all age ranges compared to women. Senior men’s mean scores ranged from 56.94lbs to 99.83lbs, whereas women’s grip strength ranged from 44.77lbs to 58.75lbs. To evaluate the effects of hand dominance, the mean scores of right-handed subjects were compared to left-handed subjects using an independent t-test (p <0.05) level of significance. There were no statistically significant differences between right-and left-handed subjects on the grip strength test. Younger participants tended to show greater grip force than older participants for both genders. A two-way analysis of variance, along with Sheffé comparisons showed the hand strength differences

Grip Strength Means and Standard Deviations

<table>
<thead>
<tr>
<th>Age</th>
<th>Hand</th>
<th>n</th>
<th>Men Mean Strength (lbs)</th>
<th>Men Standard Deviation</th>
<th>n</th>
<th>Women Mean Strength (lbs)</th>
<th>Women Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-69</td>
<td>Right</td>
<td>12</td>
<td>99.83</td>
<td>16.03</td>
<td>4</td>
<td>58.75</td>
<td>12.07</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td></td>
<td>97.39</td>
<td>17.88</td>
<td></td>
<td>56.08</td>
<td>14.34</td>
</tr>
<tr>
<td>70-74</td>
<td>Right</td>
<td>19</td>
<td>85.63</td>
<td>15.03</td>
<td>19</td>
<td>55.32</td>
<td>15.11</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td></td>
<td>83.31</td>
<td>17.66</td>
<td></td>
<td>52.46</td>
<td>14.9</td>
</tr>
<tr>
<td>75-79</td>
<td>Right</td>
<td>7</td>
<td>77.9</td>
<td>8.99</td>
<td>11</td>
<td>46.42</td>
<td>10.6</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td></td>
<td>76.1</td>
<td>5.55</td>
<td></td>
<td>44.33</td>
<td>9</td>
</tr>
<tr>
<td>80-84</td>
<td>Right</td>
<td>7</td>
<td>71.24</td>
<td>9.32</td>
<td>10</td>
<td>47.83</td>
<td>14.04</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td></td>
<td>68.24</td>
<td>8</td>
<td></td>
<td>44.33</td>
<td>10.46</td>
</tr>
<tr>
<td>85-90+</td>
<td>Right</td>
<td>6</td>
<td>56.17</td>
<td>17.26</td>
<td>10</td>
<td>45.67</td>
<td>12.31</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td></td>
<td>56.94</td>
<td>15.9</td>
<td></td>
<td>44.77</td>
<td>9.87</td>
</tr>
</tbody>
</table>
among the male age groups. There was a statistically significant difference between the 65-69-year-old male group and all other male groups. There was also statistically significant difference between the male age groups of 70-75 and 75-79 compared to the 85-90+ year group. A two-way analysis of variance, along with Sheffé comparisons demonstrated no statistically significant strength differences among the female age groups. Male grip strength declined over time and it was found that there was a 42.7% decline in overall grip strength between the age group of 65 to 85+. Women experienced a 21.3% decline between the ages of 65 to 85+. The Lafayette dynamometer was analyzed for reliability and received an excellent coefficient score of .991.

Conclusion Discussion: Previous studies have reported that there is a negative correlation between handgrip strength and age. This finding was confirmed in our present study; we found handgrip strength decreased with increased age. Establishing grip strength norms within the elderly population can facilitate health care practitioners ability to predict the future health and wellness of patients and clinicians can be confident in using the Lafayette Dynamometer to collect valid grip strength measurements. Norms need to be updated on a regular basis due to ever-changing demands of lifestyle on grip strength.

TEACHING ORTHOTIC DESIGN AND FABRICATION CONTENT IN OCCUPATIONAL THERAPY CURRICULA: FACULTY PERSPECTIVES
D. A. Schwartz1, K. A. Schofield2
1Orfit Industries America, 2Midwestern University

Purpose An orthosis is defined as a custom-made or prefabricated device applied to a body segment and used to support, align, prevent or correct deformity, improve function, and/or restrict movement following injury, disease, or surgical intervention. The American Commission on Occupational Therapy Education (ACOTE) states that OT programs must “provide design, fabrication, application, fitting, and training in orthotic devices used to enhance occupational performance and participation” and “train in the use of prosthetic devices, based on scientific principles of kinesiology, biomechanics, and physics”. (p. 25) Orthotic fabrication is often referred to as both an “art” and “science”; it is regarded as a highly specialized and complex task that involves application of specific psychomotor skills, along with critical thinking and clinical reasoning abilities. The breadth and depth of orthotic content within a given occupational therapy program depends in part on the curricular design, availability and experience of qualified faculty, time devoted to this content, and availability of equipment and other resources. Traditional teaching methods include classroom and laboratory based activities such as lectures, textbook readings, and in-class practice with supervision. This study explores how occupational therapy programs address the necessary content of orthotic fabrication to meet the ACOTE standards and help their students achieve competency. Specifically, the study examines the current pedagogical approaches used to teach orthotic design and fabrication, the types and number of orthoses students commonly fabricate, the time devoted to this content, and potential changes that faculty deem important for future student learning. Perspectives from faculty members provide critical insight into how this skill is taught, what resources are used, and what orthotic content areas are deemed important to include.

Methods This study used a cross-sectional survey research design. A web based survey (Survey Monkey®, Palo Alto, CA) was distributed to occupational therapy education programs in the US. The survey consisted of 23 questions. Six questions collected data on orthotic course design (traditional face to face, hybrid, or 100% online format), whether the orthotic content was offered as a separate course, or combined with other related content, and time allotted to orthotic content (hours assigned per semester or quarter of study). Three questions examined faculty teaching orthotic content (years of experience, full time, part time, or adjunct faculty, and whether the instructor was a CHT). Twelve questions were designed to collect descriptive data: the number and type(s) of orthoses made by students, teaching resources used, assessment methods and use of evidence for orthosis effectiveness in practice.

Results A total of 480 surveys were distributed and 97 participants completed the survey. Overall response rate was 25%. Over half taught in an OTA program (54.64%, n = 53), 36% (n = 35) in an entry level master’s degree program, and 4% (n = 4) in an entry level doctoral degree program. The majority of participants...
teaching orthotic content were full time faculty (71.6%, n = 68), and half were CHTs.

Pedagogical approaches included faculty demonstration, hands on practice, power point lectures, assigned readings, and watching instructional video(s) prior to and during class. Forty-seven percent (n = 45) utilized digital videos, while 53% did not (n = 51). For the participants who used videos (n = 45), 63% (n = 29) accessed those available on YouTube, 35% (n = 16) made videos themselves or used those made by other faculty, and 13% (n = 6) utilized videos that were included with the textbook. Participants reported the resting hand, wrist immobilization, and short opponens orthoses as the most common orthoses taught.

Themes that emerged from the qualitative data included the following: Skillful orthotic fabrication is highly valued in the OT profession. Hands-on fabrication is helpful in student learning. Custom orthotic fabrication is important to include in OT curriculum along with some instruction on prefabricated orthoses. Students feel prepared and proud of their orthotic fabrication skills in fieldwork. Students feel more time devoted to orthotic design and fabrication in their education is needed/valuable.

Conclusion The importance and significance of sharing teaching experiences, expertise, and opinions on orthotic design and fabrication will enhance emerging occupational therapy curricula. This information can impact future practice and education of occupational therapy professionals and occupational therapy educators, practicing therapists, and society at large. Educators must strive to improve and refine curricular content to ensure that graduating practitioners have the knowledge, hands on skills and clinical reasoning skills necessary to meet the orthotic needs of their future clients.

Time Devoted to Orthotic Content

<table>
<thead>
<tr>
<th>Time Devoted to Orthotic Content</th>
<th>OT Degree/Program</th>
<th>Basic instruction</th>
<th>Faculty lecture</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>40+ hours per semester</td>
<td>1-53%</td>
<td>1-53%</td>
<td>1-53%</td>
<td></td>
</tr>
<tr>
<td>20-39 hours per semester</td>
<td>1-53%</td>
<td>1-53%</td>
<td>1-53%</td>
<td></td>
</tr>
<tr>
<td>10+ hours per semester</td>
<td>1-53%</td>
<td>1-53%</td>
<td>1-53%</td>
<td></td>
</tr>
<tr>
<td>1-9 hours per semester</td>
<td>1-53%</td>
<td>1-53%</td>
<td>1-53%</td>
<td></td>
</tr>
<tr>
<td>less than 1 hour per semester</td>
<td>1-53%</td>
<td>1-53%</td>
<td>1-53%</td>
<td></td>
</tr>
</tbody>
</table>

Conclusion The importance and significance of sharing teaching experiences, expertise, and opinions on orthotic design and fabrication will enhance emerging occupational therapy curricula.

Student Assessment Measures

Motivational Interviewing in the Self-management of Musculoskeletal Conditions in Outpatient Rehabilitation: A Scoping Review for Hand Therapists
B. Connors, P. LaStayo
University of Utah

Purpose The current health care system including hand therapy clinics should better facilitate patients taking a more active role in the day-to-day self-management of their health. Motivational interviewing (MI) is a method hand therapists could employ to facilitate patient self-management. This scoping review will expose hand therapists to the current use of MI and to synthesize the available evidence for MI by healthcare professionals in the promotion of self-management behaviors in patients seeking various treatments for musculoskeletal conditions. The secondary objective of this scoping review is to describe work in which PTs and OTs deliver MI as part of their concurrent treatments (e.g. hand therapy) for patients with musculoskeletal conditions who would benefit from behavior change.

Methods This first step in examination of MI for hand therapists will allow researchers to determine the current support for MI within the musculoskeletal population, to determine where further intervention development and testing needs to occur and to potentially inform the field about the adequacy of MI training. In addition, scoping studies provide a means for summarizing and disseminating findings to hand therapists and decision makers who may lack time or resources to undertake such work themselves. The method of analysis for this paper is based on the scoping review framework developed by Arksey and O'Malley and refined further by the Joanna Briggs Institute. A systematic search of the literature was conducted, extracting data on the scope and nature of the evidence for MI in the self-management of musculoskeletal conditions in outpatient rehabilitation.

Results The literature search was conducted in June 2017 and initially yielded 2268 non-duplicate references. After screening, 27 published papers, 10 ongoing studies and 2 conference abstracts were included in this scoping review. Three of the published papers were design or concept studies without published outcomes as of June 2017. All of the studies were published in the twelve years preceding June 2017, with 19 of the articles published in the most recent five years.

MI can be a useful intervention for behavior change for a wide range of conditions and is becoming increasingly common in clinical practice. MI as an intervention to facilitate patient engagement in musculoskeletal health was initiated more than 20 years after MI was initially described in 1983. Despite the original call to consider MI in a hand/upper extremity therapy context by Flinn in 2011, little guidance for MI use has been disseminated for the hand therapist.

MI use with conditions other than musculoskeletal (e.g. fibromyalgia, multiple sclerosis etc.) have garnered more research related to the effectiveness of MI for behavior change. Unfortunately, there is a dearth of literature in PTs or OTs leading MI, despite MI beginning to be integrated into entry-level professional rehabilitation education and its dissemination in national professional conferences and rehabilitation literature. In the five studies in which PTs and OTs provided MI along with concurrent physical therapy and/or occupational therapy treatment, all found statistically significant results in favor of MI.

The main limitation of most articles included in this scoping review was the failure to isolate MI which makes it impossible to determine if MI, the concurrent treatment (e.g. physical therapy, educational videos etc.) or the combination
of therapy approaches (CBT, lifestyle approaches etc.) were responsible for the desired behavior change. Only one study isolated the effect of MI, the delivery method was inconsistent between studies (e.g. individual vs. group-based, in-person vs. by telephone), and MI training for the professionals varied (e.g. half-day training for health educators, 3-hour training for veterans etc.). Outcomes also differed (e.g. workshop attendance, change in patient willingness, pain etc.) which makes comparative analysis of the studies’ effectiveness challenging.

**Conclusion** The findings of this review suggest that MI for self-management of musculoskeletal conditions may feasibly be delivered by PTs and OTs and studies suggest that MI is a promising approach to improve self-management. Therefore, hand therapists should be able to implement this approach with the individuals they serve. However, we cannot definitively determine how to provide MI to this population and for what problems given the variability in delivery modes, type of MI application, poorly defined therapy and training and use of multiple outcome measures in the published studies. While there was a limited number of studies in which PT or OT delivered MI concurrently with physical therapy and occupational therapy interventions for the musculoskeletal problems, the evidence suggests that such individuals can successfully provide this intervention. Additional research with these professionals providing MI is needed to fully evaluate the effectiveness of this approach.

**PREDICTING RESPONSIVENESS TO A DYNAMIC STABILITY PROGRAM FOR THUMB CMC PAIN: PHASE 1**

*C. W. McGee1, 2, J. Skye3, A. Brause1, A. Costello1, B. McPhail1, M. Schlieman1, V. O’Brien1*

1University of Minnesota, 2University of MN, 3Fairview, 4Fairview

**Background:**
- Osteoarthritis (OA) of the thumb carpometacarpal (CMC-1) joint is the second most prevalent, yet most disabling type of hand OA
- Numerous hand therapy intervention approaches for persons with this condition
- The dynamic stability approach intended to restore the thumb web space, realign the thumb metacarpal (Figure 1), and to re-educate selected thumb muscles (Figures 2 and 3), joint protection training, and orthoses
- Personal factors and treatment parameters likely influence clients’ responsiveness to interventions
- Currently, no exploration of how these factors influence patients’ response to dynamic stability program

**Purpose:** To evaluate which personal and intervention factors influence responsiveness of the dynamic stability approach intervention on persons with Thumb CMC Pain

**Methods**

**Design:** Retrospective Cohort Design

**Inclusion Criteria:** Presence of thumb pain (1 of 12 ICD-9 codes), located within EMRs of midwestern-based healthcare system, authorized release of records for research, attended hand therapy

**Exclusion Criteria:** only 1 therapy visit, 1 report of QuickDASH score, no record of dynamic stability exercise
ABSTRACTS

Measures:
• **Response Variable**: Change in QuickDASH scores
• **Predictor Variables**: Age, comorbidities (Diabetes & Carpal Tunnel), duration of treatment, frequency of treatment, treatments per month, baseline QuickDASH score, units billed for therapeutic exercises, self-care, therapeutic activities, paraffin, and ultrasound

Statistical Analyses:
• **Statistical Packages**: SPSS ver. 22 and SAS 9.0 software
• Descriptive statistics reported on demographics, response, and predictor variables
• Paired T-test performed to compare pre and post QuickDASH scores for individuals (p < .05)
• Backwards stepwise multiple linear regression analysis was used to test primary research question, β, standardized β, and the coefficient of determination were calculated

Results
• 1805 charts met diagnostic inclusion criteria. Upon further screening, 339 total charts were included
• Sample demographics presented in Table 1
• Statically significant differences between baseline and discharge QuickDASH scores (Table 2)
• Large treatment effect (Cohen's d = 1.18)
• Descriptive Statistics on Interventions and Outcomes presented in Figure 4. Ther ex. most commonly billed code; modalities and self-care least
• Baseline QuickDASH, number of ther. ex. units billed, and total visits per month predictors of change in QuickDASH scores; baseline QuickDASH scores strongest predictor (Figure 5). Model explained 31% of variance.
• Skewness statistics of Discharge QuickDASH score = 1.435 (right skewed)

Conclusion: A first glance at factors predicting response to the dynamic stability approach
• Methods can be reproduced for other interventions/populations but requires therapists to standardize approaches
• Discharge QuickDASH scores right skewed, indicating a possible floor effect in the QuickDASH for this population/approach
• Low level of evidence (Level IV) to support that intervention approach results in:
  1. Statistically significant changes in QuickDASH scores
  2. QuickDASH change scores greater than standard error of measurement of 4.5 indicating it exceeds measurement error reported in a study on persons after CMC-1 arthroplasty
  3. QuickDASH change scores less than MCID (15.91) in a population with heterogeneous upper limb conditions
• Total visits/month was a negative predictor of QuickDASH scores - Hand Therapists may schedule more appointments per month for those with greater need
• Baseline QuickDASH is a significant positive predictor of change in QuickDASH - those with higher initial QuickDASH scores have more potential to show improvement; those with lower scores may not have detectable change as per QuickDASH
• Therapeutic exercise units were the only intervention type to predict positive change in QuickDASH scores.

Future Research:
• Gather the aforementioned missing data through chart reviews and then perform analyses on 1) the predictive qualities of which hand is treated and which is dominant, 2) the impact of radiographic stage (Eaton Litler) of OA, and 3) the impact of co-interventions (e.g., Cortisone injections) and other comorbidities on intervention responsiveness
• Explore other tools that might better detect change in this population/approach (e.g., MHQ, PRWHE, AUSCAN)
• Randomized controlled trials; including measures of therapy adherence/fidelity

Limitations:
• QuickDASH may not be sensitive to changes in disability in persons with CMC arthritis in response to this treatment approach
• Data on affected/treated hand, length of symptoms, QuickDASH subscores, orthosis type, cointerventions, OA staging, and other comorbidities was not available through our informatics group
• Retrospective design – poor internal validity
  - No assurance of treatment fidelity or adherence
  - No comparison group
CONSERVATIVE MANAGEMENT OF MALLET FINGER: CURRENT PRACTICE PATTERNS OF CERTIFIED HAND THERAPISTS

R. Parish, C. M. Morgan, B. Artman, A. Hartman, S. Hearn, T. Lott, S. Putt
University of Mississippi Medical Center

Purpose The objective of this study was to explore the current perceptions and practice patterns of Certified Hand Therapists (CHTs) for the conservative management of mallet finger.

Primary Aim 1: To determine which orthoses CHTs are commonly utilizing in the conservative treatment of mallet finger, as well as the current practices regarding duration and position of immobilization.

Primary Aim 2: To identify specific interventions being used in post-orthotic management.

Primary Aim 3: To determine what CHTs are currently doing to enhance compliance among patients.

Methods This study used a mixed methods design implementing a cross-sectional survey and open ended questions to capture qualitative data. An electronic survey addressing the current practice patterns CHTs utilize to treat patient with mallet finger was completed by 412 CHTs (2,255 CHTs were invited). The participants were active members of the American Society of Hand Therapists (ASHT). Quantitative data was analyzed using the Statistical Package for Social Sciences version 23.0 (SPSS v 23.0) and Microsoft Excel 2013. Qualitative data was coded and analyzed by the researchers and common themes were identified.

Results CHTs reported immobilizing the DIP in slight hyperextension using a custom volar thermoplastic orthosis for 6-8 weeks. AROM of the DIP combined with the use of heat modalities is initiated to promote function post-immobilization phase. Patient education is used to promote patient compliance with treatment. Qualitative themes for enhancing compliance strategies among patients were also identified.

For more complete results, please refer to the uploaded images for figure 1 and 2; table 1 and 2.

Conclusion This study serves as a reference for clinical practice, as well as a basis for future studies regarding protocols for conservative management of mallet finger. This study provides the clinical expertise portion of the evidence-based practice triad. This allows therapists to focus more on patient preferences which promotes client-centered care. However, the need for more high level studies is indicated.
Abstracts

19

SPANISH FOR MEXICO VERSION OF THE DISABILITY OF ARM, SHOULDER, AND, HAND QUESTIONNAIRE: A CROSS-CULTURAL ADAPTATION

G. Bachman1, 2, C. C. Ivy1, A. Vanruff3, J. Sanchez1
1Northern Arizona University, 2Bachman Performance Therapy

Purpose Completion of the cross-cultural adaptation of the Disabilities of the Arm, Shoulder, and Hand (DASH) outcome questionnaire into Spanish for Mexico

Methods This cross-cultural adaptation study was submitted to the Institutional Review Board through Northern Arizona University and accepted with Exempt Approval. Permission was obtained from the Institute for Work and Health (IWH) to complete the cross-cultural adaptation of the DASH questionnaire into Spanish for Mexico. The IWH has created a structured guideline that is followed for all translations. The first part of this process is to forward translate the DASH from English to Spanish by native Mexican Spanish speaking individuals. All translations were combined into one version through a structured process, and as agreed upon by a documented consensus process of an executive committee to include not only language but cultural nuances of the questions themselves. The consensus process is also the sole methodology of data analysis in this stage of the questionnaire’s development. Next a backward translation was completed from Mexican Spanish to English by primary English language speakers assuring the integrity of the questionnaire closely resembled the original DASH questionnaire. This pre-final version of the adaptation was then given to participants whose primary language is Mexican Spanish. They all were then interviewed to ensure their response to each question matched the intention of their response. All materials, translations, meeting notes and resolutions to differences were submitted to the IWH Cross Cultural Adaptation Review Committee for review and accepted as the official translation of the Spanish for Mexico DASH questionnaire.

Results The cross-cultural adaptation process was completed for the Spanish for Mexico DASH questionnaire. The DASH has now been translated into 52 languages.

Conclusion The DASH questionnaire is a widely used and accepted regional outcome measure throughout the world. There was currently not an adapted version of the DASH for Spanish for Mexico. This became problematic when gathering data for assessment, treatment and reimbursement of services when treating Mexican Spanish speaking patients with upper extremity injuries. This research study’s aim was to fill this gap and complete the cross-cultural adaptation process for this widely used functional outcome measure for the Mexican Spanish speaking population. This will contribute to a growing database of functional tests and measures to assist in rehabilitation of the upper extremity across cultures. The researchers’ next step is to test the cross-cultural adaptation for validity and reliability within the Mexican Spanish speaking population in upper extremity surgery and therapy centers. This will require additional data analysis that will be reported upon completion in a separate but related study.

20

COMPARISON OF TWO TYPES OF MIRROR THERAPIES: MIRROR BOX VERSUS FUNCTIONAL ACTIVITY MIRROR USING MIXED METHODOLOGY

A. D. Heathfield1, 2, 3, G. K. Lee1
1Michigan State University, 2Grand Valley State University, 3Mary Free Bed Rehabilitation Hospital

Purpose Given both mirror therapy utilizing rote exercise and functional activities alone produce positive outcomes; it warrants studying the combination of functional activities with mirror therapy to provide more effective outcomes. The purpose of this study was to determine if individuals aged 55 years to 75 years old believe mirror therapies have applications to their activities of daily living (ADL),

Table 1: Home exercise program components

<table>
<thead>
<tr>
<th></th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AROM of DIP</td>
<td>282</td>
<td>71.0</td>
</tr>
<tr>
<td>Functional Activities</td>
<td>101</td>
<td>25.4</td>
</tr>
<tr>
<td>Strengthen Terminal Extensor Tendon</td>
<td>94</td>
<td>23.7</td>
</tr>
<tr>
<td>Modalities</td>
<td>84</td>
<td>21.2</td>
</tr>
<tr>
<td>Dexterity Activities</td>
<td>75</td>
<td>18.9</td>
</tr>
<tr>
<td>Strengthening Activities</td>
<td>57</td>
<td>15.9</td>
</tr>
<tr>
<td>Other</td>
<td>57</td>
<td>14.4</td>
</tr>
<tr>
<td>PROM of DIP Flexion/Extension</td>
<td>31</td>
<td>7.8</td>
</tr>
<tr>
<td>Strengthen Flexor Tendon</td>
<td>31</td>
<td>7.8</td>
</tr>
<tr>
<td>PROM of DIP Extension Only</td>
<td>27</td>
<td>6.8</td>
</tr>
</tbody>
</table>

Table 2: Modalities

<table>
<thead>
<tr>
<th></th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat</td>
<td>180</td>
<td>45.3</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>55</td>
<td>14.9</td>
</tr>
<tr>
<td>Ice</td>
<td>55</td>
<td>13.9</td>
</tr>
<tr>
<td>Other</td>
<td>29</td>
<td>7.3</td>
</tr>
<tr>
<td>Laser</td>
<td>10</td>
<td>2.5</td>
</tr>
<tr>
<td>Iontophoresis</td>
<td>3</td>
<td>.8</td>
</tr>
<tr>
<td>Nifamat</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
and if individuals prefer the Functional Activity Mirror Therapy over the Mirror Box.

**Methods** Five participants were recruited from a rural community in western Michigan using flyers and snowballing techniques. Participants were asked to identify activities of daily living for a typical day using Activity Card Sort, 2nd Edition (ACS). Using a cross over design to randomly split into two groups, participants were asked to perform similar elbow, forearm, wrist, and hand movements using the Mirror Box for rote exercise and the Functional Activity Mirror (patent pending) for functioning activities. After each mirror intervention, participants identified which ACS cards from their typical day related to the mirror rote exercise/functions. Participants were asked what it was like to use the mirrors, how the two mirrors differ, and which mirror they preferred to use in therapy. Using the number of cards generated by the ACS after each intervention, a comparison of means was performed.

**Results** Using descriptive statistics to test assumptions, an outlier was identified using a Box Plot, but it did not affect the mean difference. The Shapiro-Wilk test indicated that the differences were normally distributed as p > .05. The Functional Activity Mirror did not elicit a statistically significant difference compared to the Mirror Box \( t(4) = -.286, p = .789 \). Qualitative analyses revealed the degree of difficulty for each mirror varied: one participant believed the Mirror Box was more difficult, two participants believed the Functional Activity Mirror was more difficult, and two participants believed both were easy. Four of the five participants preferred using the Functional Activity Mirror in therapy over the Mirror Box. Reasons provided were that it required strength \( (n=2) \) and more range of motion because the attachments were connected through the mirror \( (n=3) \). Two participants reported that the Functional Activity Mirror had more options and “It felt like you were doing something.”

**Conclusion** No significant difference between the related groups was found. Both conditions had similar applications to the selected ADL. Most of the participants preferred the Functional Activity Mirror for use in therapy because it was believed to elicit more range of motion, strength, and hand use. This outcome is consistent with previous literature supporting the use of functional activity over rote exercise.

**Conservative Management of Proximal Wrist Instability: Current Practice Patterns of Certified Hand Therapists**

**Purpose** The objective of this study was to learn the current practice patterns of certified hand therapists (CHTs) when treating proximal wrist instability.

**Primary Aim 1**: To determine which traditional interventions are being utilized by CHTs for conservative management of proximal wrist instability.

**Primary Aim 2**: To determine what emerging interventions are being utilized by CHTs for conservative management of proximal wrist instability.

**Methods** This descriptive research study utilized a cross-sectional survey designed by the researchers. The electronic survey was emailed to 2,232 CHTs with membership in the American Society of Hand Therapist (ASHT). The researchers received 394 responses. Data was analyzed via Statistical Package for the Social Sciences version 22.0 (SPSS v. 22.0) and Microsoft Excel 2013.
Results CHTs are using both traditional and emerging practices when treating proximal row wrist instability. Figure 1 illustrates the top 10 interventions utilized by the CHT respondents for conservative management of proximal wrist instability. Of the 10 most common interventions, seven of them were found to be traditional interventions, and the remaining three were identified as emerging interventions.

* Please refer to uploaded images to see more detailed results of traditional and emerging interventions being utilized by respondents (i.e., Table 1, Table 2, and Figure 1).

Conclusion Current practice patterns for conservative management of proximal wrist instability are treated utilizing both traditional and emerging interventions. The literature identifies many theories concerning emerging interventions. This study confirms that emerging interventions are utilized in treatment of conservative management of proximal wrist instability, but an insufficient amount of higher level research has been conducted to show the effectiveness of emerging interventions on patient outcomes. In conclusion, this study provides new insight into what the experts are doing in the clinic. Expert opinion is part of the triad of evidence-based practice which includes research, expert opinion and patient preferences. This study may serve as the foundation for further research regarding therapeutic interventions unique to proximal wrist instability.

INCLUSION AND PERCEPTIONS OF HAND THERAPY CONTENT IN OCCUPATIONAL THERAPY PROGRAMS: A MIXED-METHOD STUDY

N. Short, J. Bain, C. Barker, K. Dammeyer, F. Ethan, K. Hale, C. Nieman
Huntington University

Purpose The purpose of this study was to examine trends of inclusion of hand therapy content in entry-level occupational therapy program curricula as well as perceptions of hand therapy education and practice within occupational therapy as a profession.

Methods A survey was developed, peer-reviewed, and emailed to the program directors of all 183 accredited entry-level masters and doctorate occupational therapy programs via Survey Monkey. Supplemental to the survey, respondents were also given the opportunity to provide further information regarding perceptions of hand therapy content within occupational therapy curriculum through an interview. The qualitative responses from the survey and interviews were analyzed and used to identify common themes.

Results A total of 43 participants responded to the survey, representing a 23% response rate. Quantitative results provided insight into the amount of hand therapy content that is currently included in entry-level OT programs, with 65% reporting inclusion of 41+ hours of content and 54% reporting integration of content in 2-3 courses. Qualitative trends included the perception of hand content as necessary and beneficial to other areas of practice as well as the perspective that it is too specialized and advanced for generalist curriculum.

Conclusion While trends of hand therapy content inclusion were revealed in the survey, perceptions of hand therapy within the broad spectrum of occupational therapy curricula were diverse, indicating a possible lack of unity within the profession regarding this specialty area of practice.

MOTION CAPTURE IDENTIFICATION OF THE EFFECT OF SHORT TERM EXERCISE THERAPY ON THUMB RANGE OF MOTION IN OSTEOARTHRITIC PARTICIPANTS

A. Vocelle1, G. Shafer2,3, T. Bush4
1Michigan State University, 2Michigan State University, 3Michigan State University, 4Michigan State University

Purpose Although several studies have suggested that hand exercises can improve thumb range of motion (ROM) in participants with thumb carpometacarpal osteoarthritis (OA), few studies have tried to quantify the effects of hand exercises on thumb ROM. Thumb ROM is primarily measured using goniometry, however goniometry can only be used to measure two dimensional planar motions, rather than the complex three dimensional (3D) motions the carpometacarpal joint produces.
The purpose of this study was to use motion capture techniques to measure 3D thumb ROM. We hypothesized that hand exercise therapy would increase ROM for all OA participants in radial abduction-adduction (Rad) and palmar abduction-adduction (Palm) tasks. Further, it was hypothesized that differences in circumduction between the OA group and two healthy groups could be identified by the assessment of the plane perpendicular to the thumb motion.

Methods Thumb ROM data was collected from three groups of participants, young healthy (YH, n = 5), older healthy (OH, n = 5) and older osteoarthritic (OA, n = 13). All participants were right handed and data were collected from the right hand. Baseline Rad, Palm, and repetitive circumduction tasks were completed by all participants. Only the OA participants completed the exercise regimen. A seven camera motion capture system in conjunction with reflective markers was used to collect location data of each of the markers on the hand. These data were then processed and a custom code was developed to calculate the axes in which the participant moved the thumb to enclose the largest area. OA participants completed a daily hand exercise regimen consisting of two weeks of stretching exercises followed by four weeks of stretching and strengthening exercises. ROM was measured after two weeks and six weeks of exercise training. The stretching exercise regimen included: first web space release, radial abduction passive ROM, palmar abduction passive ROM, cone stretch, bilateral web space stretch, radial abduction active ROM, palmar abduction active ROM, okay sign, opposition to base of 5th finger, opposition to fingertips, and finger spread. The strengthening exercises regimen included: radial abduction and palmar abduction with resistive band and putty exercises (putty roll, lateral pinch, okay sign, pinch grip, resisted finger spread, and putty squeeze).

Results As expected, healthy participants had a greater ROM during Rad (average ROM 55°, 58°, and 50° for YH, OH, and OA, respectively). However, OA had a greater ROM during Palm (average ROM 49° for OA, 48° for YH, and 43° for OH). During the circumduction task, the YH group was able to enclose the largest average area, 716 mm², while the OH and OA groups enclosed areas of 659 mm² and 496 mm², respectively. When assessing the plane perpendicular to the thumb’s path during circumduction, the YH group moved their thumbs in a more consistent plane than OH and OA groups.

With regard to the effects of exercise, seven of the 13 OA participants experienced an increase in Rad following two weeks of daily stretching exercises. Seven OA participants also had an increase in Palm. After six weeks of exercise, five and six participants maintained a higher ROM for Rad and Palm, respectively. OA participants also enclosed a larger area during thumb circumduction, from 496 mm² to 659 mm² at two weeks and 716 mm² at 6 weeks.

Figure 1. Plane perpendicular to repetitive thumb circumduction in representative a) YH, b) OH, and c) OA participants, and one OA participant at d) baseline (0 weeks), e) 2 weeks, and f) six weeks post-exercise.

ABSTRACTS

RELIABILITY OF A SMARTPHONE GONIOMETER APPLICATION FOR SMALL JOINT MEASUREMENTS
J. Reese Walter, H. Breitbart, K. Baumgartner, S. Miller, D. Stumpf, S. Wantanabe
Nova Southeastern University

Purpose The purpose of this study was to determine if the DrGoniometer smartphone application produced similar reliable and valid measurements in the finger joints when comparing the photographic-based goniometry application to a traditional goniometer. This study also aimed to determine agreement among inter and intra rater measurements of thePIP joint using a traditional goniometer and the DrGoniometer application.

Methods Six novice raters measured the right Index PIP ROM of 98 participants using both the DrGoniometer and traditional goniometer in order to determine instrument concurrent validity and intra and inter rater reliability.

Results The DrGoniometer application had a strong concurrent validity when compared to the traditional goniometer with Pearson’s statistics of 0.633-0.733 for group 1 and 0.677-0.733 for group 2. Interrater reliability was determined through Spearman’s correlation. Group 1 ranged from 0.742 to 0.842 and 0.733 to 0.799 for group 2, indicating reliability between raters. Chronbach’s alpha ICC was used to determine intra rater reliability. Values ranged from 0.942 to 0.955 for group 1 and 0.905 to 0.923 for group 2.

Conclusion Results of this study indicated a strong agreement between the DrGoniometer application and traditional goniometry when measuring Index PIP flexion. DrGoniometer may be used as an alternative when measuring Index finger PIP range of motion but may not be used interchangeably between tools. In addition, there are limitations to the use of photography-based goniometry techniques when attempting to measure the middle and ring fingers.

25

NAKED PROSTHETICS FOR A PARTIAL-THUMB AMPUTATION: A CASE STUDY
M. A. Stanley1, P. J. Schindeler1, A. Coe2
1University of New Mexico, 2University of New Mexico Hospital

Purpose Due to technological advancements, custom-made prosthetics are becoming more accessible for individuals with unique prosthetic needs. The purpose of this case study was to examine the functional effectiveness of a custom thumb mechanism for a partial-hand amputee who has had amputations of the index finger and long finger and a partial amputation of the thumb on the left hand, non-dominant hand.

Methods The prosthesis model was manufactured using a 3-dementional printer with stainless steel and nylon. Each aspect of this design is being customized to fit the patient’s hand it is being made for. Ideally, being developed to provide greater force and function of the effected hand.
A SURVEY OF CLIENT EXPERIENCES WITH ORTHOTICS USING THE QUEST 2.0

R. Constant, A. Mezzio, M. Joseph, M. Rickloff, K. Valdes
Gannon University

Purpose The purpose of this study was to determine the level of client satisfaction with device characteristics and service provision of custom fabricated hand orthotics using the Quebec User Satisfaction for Technology (QUEST) Version 2.0 questionnaire. Practitioners who prescribe and fit orthotics are reliant on patient adherence to achieve desired outcomes. Adherence, has been reported as the least controllable and unpredictable variable in treatment. Understanding client preferences may promote better client adherence.

Methods Subjects for this study were obtained through a convenience sample from a hand rehabilitation clinic. The study was approved by the university IRB board. After obtaining informed consent, 72 clients were administered the QUEST 2.0 to evaluate their satisfaction regarding various aspects of their orthotic devices. The clients answered 12 questions about the orthotic device characteristics and service provision. The 12 satisfaction categories in the Quest are: dimensions, weight, adjustments, safety, durability, easy to use, comfort, effectiveness, service delivery, repairs/services, professional service, and follow up service. Each question was scored on a 5-point Likert scale, and then recorded in the following three sections: device, service, and total score. The mean and standard deviation were calculated for each of the 12 items to determine the primary determinants of orthotic satisfaction.

Results The top three categories for a client’s orthotic device characteristics were Comfort (68%), Effectiveness (57%) and Ease of Use (55%). Out of the 72 clients, 7 styles of custom orthoses were fabricated and given to client. The top 3 prescribed orthotic devices were, the static wrist-hand-finger orthosis (49%), hand-finger orthosis (28%), and finger orthosis (17%). There are 2 subsections of the Quest, the Device and Service subscales, and each subsection is scored separately. The Device score is calculated based on the first 8 questions of the measure. The Service section is calculated based on the last 4 questions on the questionnaire. The highest possible score is a 5. The participants mean score for the Device section was 4.53. The mean Service scores was 4.71. The total mean score was 4.61.

Conclusion Therapists who are fabricating prescribed orthotic devices for individuals should consider comfort, effectiveness, and ease of use as they fabricate and adjust the device for their client. Identifying the client’s desired aspects of the device will help the therapist not only create a better therapeutic relationship with the client, but also improve their overall experience receiving orthotic intervention.

<table>
<thead>
<tr>
<th>NUMBER OF CLIENTS</th>
<th>PATIENT PREFERENCE INDICATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>COMFORT</td>
</tr>
<tr>
<td>39</td>
<td>EFFECTIVENESS</td>
</tr>
<tr>
<td>38</td>
<td>EASE OF USE</td>
</tr>
<tr>
<td>18</td>
<td>SAFETY</td>
</tr>
<tr>
<td>14</td>
<td>FOLLOW UP CARE</td>
</tr>
<tr>
<td>13</td>
<td>WEIGHT</td>
</tr>
<tr>
<td>12</td>
<td>PROFESSIONALISM (OF SERVICES RECEIVED)</td>
</tr>
<tr>
<td>11</td>
<td>DURABILITY</td>
</tr>
<tr>
<td>8</td>
<td>ADJUSTMENTS</td>
</tr>
<tr>
<td>5</td>
<td>REPAIRS</td>
</tr>
<tr>
<td>4</td>
<td>SERVICE DELIVERY</td>
</tr>
<tr>
<td>3</td>
<td>DIMENSION</td>
</tr>
</tbody>
</table>

EFFICACY OF ORTHOTIC DEVICES FOR INCREASED ACTIVE PIP EXTENSION: A SYSTEMATIC REVIEW

M. A. Szelwach1, S. B. Povlak1, J. D. Boyd1, K. Valdes1
1Gannon University , 2Gannon University

Purpose To determine the efficacy of orthotic devices for increased active PIP joint range of motion and to determine optimal wearing schedule of the devices to guide clinical practice. The secondary purpose is to capture the outcome measures used by the authors. The final purpose was to determine if recent studies addressed patient satisfaction and adherence in the orthotic management of a PIP joint injury.

Methods A comprehensive literature search was conducted using the search terms splint, orthotic device, hand orthotic, brace, proximal interphalangeal joint, occupational therapy, and physical therapy using PubMed, CINAHL, Medline, and ProQuest. The following data was extracted according to PRISMA guidelines: background statement, objectives, data sources, study eligibility criteria, participants, and interventions, study appraisal and synthesis methods, results, limitations, conclusions, and implications of key findings.

Results Best results were achieved when the PIP orthoses were worn for a longer duration of time especially for the treatment of extension deficits. Studies that provided a wearing schedule of a minimum of 6hrs obtained the greatest improvements in extension deficits of the PIP joint.

Conclusion Recommended orthotic dosage to treat PIP joint injury is at least 6 hours a day for 8 to 17 weeks.
**ABSTRACTS**

**Table 4** - Results

<table>
<thead>
<tr>
<th>Author</th>
<th>Baseline Active PIP measurement [mean (SD)]</th>
<th>Active PIP motion at final assessment [mean (SD)]</th>
<th>Effect size of the intervention</th>
<th>Effect size between groups</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cantore-Tellez &amp; Cuesta-Vargas, 2015^6</td>
<td>AROM: [-37 (14.83)]</td>
<td>Mean improvement in AROM in degrees</td>
<td>Control Group AROM: -0.62</td>
<td>AROM Baseline (-0.15, 0.56)</td>
<td>AROM Final (-0.99, 1.79)</td>
</tr>
<tr>
<td></td>
<td>Control Group DASH: [37 (37.07)]</td>
<td>Control Group DASH: [-28 (14.20)]</td>
<td>AROM 1.40 DASH 0.02</td>
<td>Favoring the experimental group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experimental Group AROM: [-34 (14.22)]</td>
<td>Experimental Group DASH: [-31 (35.89)]</td>
<td>DASH Baseline (-0.40, 0.32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experimental Group DASH: [35 (54.83)]</td>
<td>Experimental Group DASH: [-13 (5.28)]</td>
<td>DASH Final (-0.38, 0.34)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MOTION FEEDBACK DEVICE TO ASSIST IN IMPROVING JOINT MOTION**

R. M. Jaiswal1, L. M. Reddy2, 3

1Texas Children's Hospital, 2Baylor Scott & White, 3Orthopedic Associates of Dallas, 4Health Texas Provider Network

**Purpose**

Stiffness in an elbow joint is one of the most challenging and disabling complications after a traumatic injury. Early mobilization is the essential component in helping to regain full mobility but also aids in decreasing edema and inflammation. Active gentle stretching is one of the safest methods of treating joint stiffness as the aim of treatment is to regain full pain-free mobility with stability. The motion feedback device promotes gentle active range of motion and is activated once the patient has achieved a preset amount of joint motion (a minimum of 10 degrees of flexion or extension). This device can be used on any large stiff joint (shoulder, elbow, wrist, hip, knee, or ankle), however, the device was initially validated on elbows. The device connects via Bluetooth to a smartphone, and once the preset amount of joint motion is achieved, music begins playing from any available music application on the phone. Patients must continue to actively stretch their stiff joint in order for the music to continue playing. This device provides instant feedback and motivates the patient through positive reinforcement to actively participate in preventing joint stiffness. Music allows patients not only to relax, but also may aid in distracting them from any pain they are experiencing. This device also has the potential to ease caregiver burden, as the caregivers will no longer be placed in the frustrating position of having to passively stretch their family member’s stiff joint.

**Hypothesis**

To see whether a Bluetooth connected, motion sensitive device can lead to improved joint motion and overall function.

**Methods**

The motion feedback device was created in collaboration with the University of Houston’s industrial engineering department. The device initially had pre-recorded music and was mounted directly onto a pre-fabricated hinged elbow brace. Knowing that it would be cost prohibitive for patients needing to participate in an active stretching program to purchase a hinged brace, device was modified by removing it from the hinged brace, and a Velcro strap was added so that the device could be secured directly onto the patient’s stiff limb. By removing the device from the hinged brace, the device could now be used on any large, stiff joint, and not limited to just elbow flexion and extension. In addition to this modification, the device was connected via Bluetooth to any smartphone’s music library/music application, versus using pre-recorded music. The sensitivity of the device was modified so that it would immediately stop playing music if the patient was no longer actively stretching their stiff joint to the preset amount of joint motion the therapist was attempting to obtain.

While the device can be attached to any large stiff joint, it was initially tested on one hundred normal subjects with full range of motion in their elbows. In order to validate the device, it was tested to ensure that the music would begin playing once the subjects reached a predetermined amount of joint motion or a specific goniometric angle. The desired amount of motion will be set by the therapist and the device can then be adjusted according to the patient’s needs. The device is secured on the limb distal to any large joint that needs to be stretched. Each of the one hundred test subjects validated the sensitivity of the device to accurately reflect the amount of motion occurring at their elbow joint in both flexion and extension. Subjects were asked to place their elbow in 90 degrees of flexion and extend their elbow to at least 70 degrees to make the music begin playing. Once at least 20 degrees of extension had been obtained, the music on their smartphone began playing, if the subjects dropped to 19 degrees or less of extension, the music stopped. The device’s sensitivity was also tested in flexion by placing the subjects back in 90 degrees of elbow flexion and asking them to flex their elbow to at least 110 degrees. The music began playing once the subjects had obtained at least 110 degrees of elbow flexion and stopped if they dropped below this pre-set angle.
Results The device was validated to begin playing music once the subjects actively stretched their elbows into at least 20 degrees of flexion or extension. The music continued to play as long as they maintained at least 20 degrees of elbow flexion or extension.

Conclusion This device provides instantaneous feedback regarding how much “active stretch” the subjects were able to obtain. This device will be a valuable tool in assisting patients with stiff joints.

29

PERCEPTIONS OF PREPAREDNESS AND INTIMATE PARTNER VIOLENCE SCREENING PRACTICES AMONGST HAND THERAPISTS.

M. Sivagurunathan¹, T. Packham², L. Dimopoulos², R. Murray², K. Madden², M. Bhandari³, J. MacDermid¹

¹Western University, ²McMaster University, ³McMaster University

Purpose To explore Hand Therapists (HTs) Intimate Partner Violence (IPV) training, screening practices and knowledge of referrals.

Methods Sample of 189 Hand Therapists completed a standardized survey investigating perceptions regarding issues pertaining to IPV. Areas addressed included IPV training, perceived preparedness to deal with IPV related responsibilities, screening practices and knowledge of referrals. Data were analyzed using descriptive statistics while between group comparisons evaluating the impact of training, IPV experience, and knowledge of referrals on preparedness and screening practices used Mann-Whitney analysis.

Results The majority (72.8%) of HTs indicated having received no IPV training. HTs indicated low perceived preparedness scores and screening practices. Additionally, IPV training, IPV experience, and knowledge of referrals had significant impact on HTs’ perceived preparedness and screening practices.

Conclusion Training is significantly related to perceived preparedness and screening practices. Future research should seek out ideal method for offering IPV training for HTs so that they can meet the needs of clients with IPV experience.
ASHT 2019

OCTOBER 3-6, 2019 • WASHINGTON D.C.

A Shared Vision:
COLLABORATION FOR BEST OUTCOMES

2019.asht.org