

ASHT

TIMES

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THE NEWSLETTER OF THE AMERICAN SOCIETY OF HAND THERAPISTS

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Feature

Special Considerations FOR HAND THERAPY AFTER COVID-19

By Hannah Gift, OTR/L, CHT, COMT, CEAS

While the clinical practice of hand therapists is always evolving, 2020 has presented us with unique challenges.

An increasing number of individuals are now attending therapy while recovering from COVID-19. They may be experiencing upper extremity symptoms related to immobility and positioning while critically ill, or they may be seeking outpatient therapy for more general improvements in endurance and function. Each facility should have clear guidelines for returning to therapy after being sick with COVID-19; see also the Center for Disease Control Guidelines recommending that patients are cleared by a medical doctor or public health official prior to the evaluation, are no

longer experiencing a fever or symptoms, and have quarantined more than 14 days after a positive test. This article focuses on the unique considerations for hand therapy evaluation and intervention of the post-COVID-19 patient.

Evaluation

A traditional hand therapy evaluation will identify patterns of weakness and/or range of motion limitations related to prolonged hospitalization or illness. Additional, easily-incorporated evaluation measures can promote safety in therapy and further demonstrate the impact of COVID-19 on health and function.

CONTINUED ON PAGE 4



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Editors' Letter

AN EDITOR'S PERSPECTIVE

Happiness

Welcome to our third-quarter edition of the Times! As autumn arrives, change is in the air in many parts of the country.

Most of us have also experienced significant change, as this global pandemic has affected every part of our lives. It is easy to see how COVID-19 has directly and negatively had an impact on many aspects of our personal and professional selves. Things such as job loss, reduced hours and how we approach work tasks are very different. What we do personally, socially and leisurely has changed, too.

For me, in full-time academia, guiding and facilitating students is much more difficult while wearing PPE and social distancing. Teaching basic skills like ROM, MMT and even interviewing can be challenging when you can't read expressions, clearly hear tone of voice and are wearing gloves. Of course, like you, my daily life has been altered as well, with less fun with family, friends and a constant concern about remaining healthy. While it is easy to focus on how much more difficult everyday life is, I have been listening to a podcast that has challenged me to alter my thinking. In full disclosure, these are not my ideas; they come from *The Happiness Lab*, by Pushkin.

One of the take-aways from the podcast is to focus on the positive. An example of this is our limited social activity which, as an extrovert, has been nothing less than difficult for me. However, I have found that more time at home also means more family togetherness and creativity in the kitchen. I have also discovered that a virtual happy hour with friends and family can be a great deal of fun!

An action item suggested in the podcast series is to intentionally "compare up." Comparing up is the act of looking at your own circumstances and

realizing that they could be much worse. Comparing up is meant to focus on your own situation — not others' — and forces you to alter your perception. If I look at my changed work conditions, I realize that I could be attempting to teach all of the necessary aforementioned skills from a Zoom environment, which would be much more of a challenge.

Gratitude is another skill that the podcast discusses, and this skill is one that can easily be practiced. I won't lie, sometimes it is difficult to find anything to be grateful for, but these are the days that the practice of gratitude is needed most! On these days in particular, I choose to be grateful for the simplest things, such as a strong cup of coffee, or that fact that I woke up on time. The podcast also suggests that the more frequently we practice this skill, as with any skill, it becomes that much easier.

There are many episodes in the podcast, and I do not always have time to listen. What I have heard thus far serves as a reminder that I am able to influence my own happiness during a time when so much seems beyond my control. I hope you have time to give these ideas some thought, as we need this for ourselves, as well as our patients. It takes intentionality, but during these uncertain times you may increase your happiness by focusing on the positive, comparing up and looking for opportunities to show gratitude.

Cheers!
Dianna



**Dianna Lunsford,
OTD, OTR/L, CHT
ASHT Times Editor**

ASHT

AMERICAN SOCIETY OF HAND THERAPISTS™

ASHT Times Editors

Dianna Lunsford, OTD, OTR/L, CHT
Kim Kraft, PT, DPT, CHT

Contributing Editors

Hannah Gift, OTR/L, CHT, COMT UE, CEAS
Gwen Morris, OTD, OTR/L, CHT, CLT

American Society of Hand Therapists

1120 Rt. 73, Ste. 200
Mount Laurel, NJ 08054
Phone: 856.380.6856
Fax: 856.439.0525
Email: asht@asht.org
Website: www.asht.org



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SPECIAL CONSIDERATIONS

→ CONTINUED FROM PAGE 1

Vital Signs¹

Monitor heart rate, respiration rate, blood pressure and oxygen saturation at minimum before and after each treatment session. Take note of abnormalities during the session and throughout the plan of care. The evaluation and/or treatment should be paused and symptoms monitored if oxygen saturation falls below 95%, blood pressure is less than 90/60 or greater than 140/90 or heart rate exceeds 100 beats per minute. Precautions also include excessive



>> **Figure 1.** Example of a Cervical Rotation, Lateral Flexion test to assess the mobility of the left first rib

cough, chest pain, blurred vision, dizziness, sweating, loss of balance and headache. The session should be stopped, and an immediate referral to a physician is required if resting heart rate exceeds 120 beats per minute or resting blood pressure systolic is greater than 180 or diastolic greater than 120.

Observation of Posture and Breathing Mechanics^{1,2}

Due to hospital bed positioning and posture during critical illness, forward shoulder and forward head posture may be more pronounced. The use of prone positioning for COVID-19 patients may specifically have negative consequences on posture with potential brachial plexus involvement. When analyzing posture, look at mobility of the cervical and thoracic spine, shoulder and scapula. Also, examine posturing of the upper limbs at rest and with movement to identify adverse neural tension.

Breathing mechanics should also be observed, assessing if the patient is performing diaphragmatic

“belly breathing” or chest breathing. With the latter, accessory breathing muscles — such as the scalenes, sternocleidomastoid, pectoralis major and minor and latissimus dorsi — are overactive and compensate for underuse of the diaphragm. Utilizing secondary breathing muscles will result in increased tone in this musculature and an elevated first rib, resulting in pain or neural symptoms. One evaluation technique to identify an elevated first rib is the cervical rotation lateral flexion (CLRf) test (Figure 1). Rotate the head away from the rib to be tested and attempt to laterally flex the head. A hypomobile first rib will block lateral flexion. The assessment looks for asymmetries in the flexed movement and reproduction of pain.

Six-Minute Walk Test (6MWT)^{3,4}

This test measures the distance (in meters) the patient walks within six minutes. Heart rate, oxygen saturation, blood pressure, respiratory rate and perceived exertion are measured before and after the test. This is a quick assessment to measure endurance and aerobic capacity.

Five Times Sit to Stand Test⁵

Patients are instructed to stand up from a chair, five times, as quickly as possible without using their arms to push off. The inability to stand from a chair or perform five repetitions of sit to stand within 15 seconds can identify patients with a higher risk for falls and muscular weakness in the lower limbs.

Treatment

While specific treatments are prescribed based on the evaluation findings, this section discusses strategies addressing common needs of patients with sequelae of COVID-19.

Respiratory Rehabilitation^{1,6,7}

Diaphragmatic breathing re-educates the patient to breathe through the belly and avoid raising the chest during breathing. Training may require neuromuscular re-education and pursed lip breathing. Once the movement is trained, a small weight (1-3#) may be added to the belly to resist the breath (Figure 2). This strategy will improve inspiration and lung capacity and may have the added benefit of reducing anxiety related to the COVID-19 illness experience.

Another component of respiratory rehabilitation is aerobic activity. Aerobic activity can be any combination of an upper body ergometer, elliptical, treadmill, or bicycle. Shown (on page 5) is a formula to calculate target heart rate (THR) based on Karvonen's equation. Maximum heart rate is found by subtracting the patient's age from 220. For a patient without a cardiac or pulmonary history, 50-70% may be used for moderate-intensity exercise, and 70-85% may be used for vigorous activity. For a patient post-COVID-19, consider starting with an intensity of 30% and then increasing the intensity as function improves.

Feature

Target Heart Rate (THR) = $[(\text{Max Heart Rate} - \text{Resting Heart Rate}) \times \% \text{intensity}] + \text{Resting Heart Rate}$

An example for a 32-year-old with a resting heart rate of 55:
 $[(220 - 32) - 55] \times .3 + 55$

THR = $(188 - 55) \times .30 + 55 = 94.9$

While the patient performs aerobic activity in the clinic or as a prescribed home program, have them wear a watch or heart rate monitor so they can reach their target but avoid overexertion. Review the patient's medical history and medications prior to performing aerobic activity as beta blockers may affect heart rate. Rate of perceived exertion should be used as a target for these patients.

Manual Therapy⁶

Manual therapy may be indicated prior to active movement to improve tissue extensibility and decrease pain. It may include soft tissue mobilization to scalenes, pectoralis minor and major and latissimus dorsi. Joint mobilizations may be indicated to mobilize the first rib related to scalene tightness or to decrease neural symptoms experienced distally (Figure 3).

Stretching and Strengthening Program^{4,6}

Movement programs begin with functional range of motion and strengthening to improve performance with daily activity. Stretching may be recommended for pectoralis minor and major, scalenes and/or latissimus dorsi to overcome hypertonicity associated with chest breathing. Strengthening may include core and scapular stabilizers to restore upright posture and will progress as tolerated with functional upper and lower body strengthening.

Psychosocial Interventions⁹⁻¹⁰

Consider utilizing psychosocial approaches to decrease the fear, stress and anxiety the patient is likely experiencing. Build a therapeutic alliance through communication techniques. Strategies may also include sleep hygiene discussions and education about progressive relaxation with deep breathing. Progressive relaxation is selectively tensing and relaxing muscles starting with the face muscles and moving down to the feet for 10-15 seconds for each muscle group. This has the potential to improve sleep quality and level of anxiety in COVID-19 patients. Nutrition and focusing on energy and protein requirements may also need to be addressed due to poor eating habits during quarantine and high levels of stress or muscle wasting related to hospitalization.

Conclusion

In conclusion, while the long-term impact of COVID-19 continues to be studied, physical and occupational therapists have a unique skill set to improve a patient's level of function and quality of life. Described above are a few evaluations and interventions that



>> **Figure 2.** After re-educating diaphragmatic breathing, a small weight may be placed on the belly to increase resistance for breathing



>> **Figure 3.** Example of a first rib mobilization. The cervical spine is side bended to place slack on the upper trapezius. The index finger metacarpophalangeal joint is utilized to provide a force toward the opposite anterior superior iliac spine (ASIS)

can supplement traditional hand therapy and address the unique considerations of COVID-19 recovery. During unprecedented times comes unprecedented patients, and our practice must continue to evolve to meet their needs. ♦

Feature

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Regional Updates

WHAT'S HAPPENING?



Hand Therapy Association of California is hosting their 10th Annual Conference: Finding the Key to Evidence-Based Practice on April 24-25, 2021, pending the COVID-19 guidelines. It will take place at the Crowne Plaza in Foster City, California. Check out the event website and full events calendar at hta-ca.org.



Georgia Hand and Upper Extremity Special Interest Group will be hosting a conference March 12-13, 2021 in Savannah, Georgia. A virtual orthosis fabrication course is being developed for November 2020. More information can be found at www.ghuesig.com.



Kansas City Hand Rehabilitation Special Interest Group is hosting webinars on November 12, 2020 and February 18, 2021. Their spring meeting is to be determined. Visit www.kchrsig.com for more information.



Michigan Society of Hand Therapists has two conferences upcoming in 2021. In April, a conference will focus on joint mobilizations for the upper extremity and in October, a conference will focus on graded motor imagery. More information will be posted at misht.org.

President's Message



Mojca "Mo" Herman,
MA, OTR/L, CHT
2019-2020 ASHT President

Farewell from the 2020 President

This issue of the *ASHT Times* is a befitting reminder that 2020 is a year we will never forget. Not only because of the crises we have been living through, but because of the successes we have achieved in light of them.

This past year, our nation and local communities faced extraordinary life-altering crises. First, the emergence of the novel coronavirus outbreak rapidly spread and posed enormous health, economic, environmental and social challenges. Overnight, COVID-19 became a global health emergency affecting the entire human population. Then, the death of George Floyd at the hands of police unleashed a massive protest movement across the United States, exposing social injustice and widespread racism. To compound a year that has already been complex, natural disasters have been consuming our communities and exhausting our resources. The unexpected disruption to our personal and professional lives has been immense.

In light of these catastrophic and transformative events, our board room leaders, colleagues, allied organizations and friends have rallied to avoid interruption. As a community we connected via technological means to provide each other emotional support. The selfless willingness to help one another during these crises reinforces the unity of our extended community.

Despite living through an unprecedented and difficult year, we had two landmark successes. The first was a massive advocacy milestone! We championed the successful inclusion of occupational therapy and physical therapy as eligible providers of services via telehealth for the duration of the coronavirus pandemic. The ability to access our patient population without risking exposure to the virus was profound. The second was our ability to successfully pivot our in-person Annual Meeting. For the first time in its 43-year history, ASHT planned for an unparalleled, fully-virtual conference. The successful ability to transform to a virtual event truly embodied this year's Annual Meeting tagline: Collaborate-Innovate-Advocate.

This past year truly accentuates that we have the capacity to persevere. Our ability to innovate and advocate in the midst of ever-changing unknowns is defining for our organization, our profession and as individuals. Despite the global pandemic, we have continued to strive for excellence in order to be the recognized leader in advancing the science and practice of hand and upper extremity therapy.

In response to the unexpected, life-changing events, 2020 has been a defining year for ASHT. 2020 has taught us that we can face any hurdle with resilience. In a time of crisis, our team of leaders mobilized and adapted, and our association thrived. Based on this year's successes, I can emphatically say that we are ALL leaders! I encourage every individual to continue to ignite the leader within, collaborate with your fellow peers and feel confident in being ambassadors for our specialty. Through teamwork, innovation, advocacy and visionary leadership, we will continue to impact the future of hand and upper extremity rehabilitation with purpose.

It has been a complete honor to serve ASHT and its members — a team I believe in.

Respectfully,
Mo Herman, MA, OTR/L, CHT ♦

“In response to the unexpected, life-changing events, 2020 has been a defining year for ASHT. 2020 has taught us that we can face any hurdle with resilience.”

Viewpoint

What are the biggest changes and/or challenges you face daily in your practice since the start of COVID-19?

"The challenge to keep the flow of patients through the waiting room and treatment areas socially distanced and the equipment sanitized, while maintaining the utmost level of personalized care."

Komal Gulati, MHD, OTR, CHT
Canton, MI

"The changes required due to COVID have been minor in my opinion — only double masking (patient and therapist) and more frequent cleaning/disinfecting. These have been effective in preventing the spread, as patients have called a few days after treatment saying they are positive and the therapists have not come down with the disease. I have had only one patient who was very afraid and brought her own food-grade gloves to use when touching exercise equipment, despite frequent disinfection. She even requested receiving paraffin treatment with these gloves on but this actually worked fine! The only challenges have been decreased referrals with patients putting off receiving therapy for chronic conditions, and finding PM coverage from our retired therapists who choose not to work at this time because of family members with preexisting conditions."

Carla Cleary, PT, DPT, CHT
Jackson, MS

"Patients wearing cheap masks, bandanas, dirty re-used masks, and constantly telling patients to keep the mask over their nose! When patients call to set up an appointment, our office manager states that when you come in your mask HAS to cover you from nose to chin, and please wear a clean, effective mask! It's so frustrating! Also, I can't wear gloves when splinting, it's too hard. I also find it challenging to sit so close to patients. I also have to remind patients get a drink before or after treatment, but not during their 40-60 minute time slot. I am amazed at how many patients say, 'Oh, can I just get one sip from my water bottle?'"

Sally Hawkins, OTR, CLT, CHT
Ocean City, MD

"Patient volume reductions have given me insight into having a healthier pace of life, and have also made clear how much higher quality treatment I can offer when I am not heavily multi-tasking. These are changes that I intend to retain permanently (a decision I have the privilege of making in my setting), and that I may not have recognized so clearly without the sudden drop in volume due to COVID-19. I hope our profession can offer services to every client who needs it through having more therapists working, rather than therapists seeing higher and higher volumes of patients."

Rachel Spencer, OTR/L, CHT
Charleston, SC

"The logistics of sanitizing all the little parts of a test or activities like the MRMT between patients. I hate using them now. More serious is keeping productivity in the face of patient fears (and actual exposures)."

Jeremy Seip, OTD, OTR/L, CHT
Los Angeles, CA

"The increase of expenses for disinfectant and safety equipment; changes of personnel due to COVID exposure; and patients' emotional status in this time (anxiety, sadness, fear, depression, mourning) is more challenging for the hand therapist to manage."

Merlyn López, OTL, MPH, CHT
Puerto Rico

"The biggest challenge is limiting manual therapy in patients that I feel really could benefit from it. I am making the decision to limit it because some patients may feel anxious about just being outside or in therapy, and I get a sense the patient may not feel comfortable with the physical contact. So as part of my treatment plan, it appears to be best to limit manual therapy."

Jennie Yen, PT, DPT, CHT
New York, NY

Feature

Telehealth:

WHAT HAVE WE LEARNED, AND WHERE WE WILL GO?

By Emily Skoza Brackenridge,
MS, OTR/L, CHT

Many of us found ourselves thrown into the maelstrom of telehealth over the last few months. A few of the lucky ones may have been involved in a pilot program or worked virtually before, but many of us have had to make a quick transition into the unknown. Looking back at these collective experiences, Nora Barrett, Gary Solomon and I wanted to share some of the tips, struggles, ideas and success stories we chatted about on our recent webinar, "Telehealth and Hand Therapy: A Panel Discussion Focused on the Unique Needs and Challenges of Treating Hand Therapy Patients."

Prepare the Best You Can

As COVID-19 restrictions quickly shuttered doors or kept patients at home, there was a scramble to continue patient care. Many therapists were left to find a way to communicate with patients in whatever way they could. Patients came first, and asking for forgiveness might have been second! Moving forward, we hope we all have access to a better plan with clear national and state guidelines, reliable insurance coverage and readily available HIPPA compliant platforms.

Once you are set up for a telehealth visit your preparation is not over. We all felt the best visits started with a good plan. Come up with treatment ideas prior to the appointment and have necessary materials gathered and ready to use near your virtual platform area. You can even ask your patient to gather a few items you may want to use for exercise ahead of time. It is important to make every minute of the visit worthwhile for you and the patient. Also, always remember to have a backup plan! It is inevitable that there will sometimes be a day when your visual platform is not cooperating, or someone experiences a technical difficulty. Make sure you both have a secondary means of communication and have phones accessible.

Treatment Tips and Pearls

We found that setting up the call like a typical therapy session helped us to get in the groove. Begin with a welcoming conversation that collects subjective data. Take a few minutes to establish a connection with the patient and get a good sense of how they are handling their condition. Rely on the communication and empathy skills you have built over the years. We found that our therapy visit might have been the most meaningful conversation the patient had that day. Do not forget the importance of incorporating the psychosocial part of therapy. Many people were isolated at home and missing out on personal connections.



Feature

Hand therapists tend to be creative and thrifty, so why not embrace it? We all enjoyed sharing ideas on household items you can use for therapy. Grab some keys, open doors, turn on/off light switches, hold kitchen tools, borrow a child's toy, play musical instruments or find simple items on their desk to grasp. We were all surprised at how many exercises could be completed with a highlighter or a ball! Telehealth can be a wonderful opportunity to set true functional goals and work in the patient's environment. Maximize functional strength! Can they turn a doorknob? Can they carry a gallon of milk or open a jar? Don't get caught up in your inability to record exact grip strength numbers. There is still plenty of objective data to record and track by following their functional gains.

Where Will We Go?

Please do not worry! None of us want telehealth to take away from in-person therapy visits. We all value the time spent with patients in the clinic environment. The hope is that virtual therapy can remain an accessible, respected and reimbursable tool in our toolbox. The possibilities are endless! A virtual visit model could fit well into a specialty clinic that serves a rural population unable to return regularly. A telehealth visit could be a reimbursable way to check in on patients who are doing well but need to advance their home program. Or telehealth could serve as a consulting platform where CHTs can mentor general therapists in rural areas on specialized care, orthosis fabrication or treatment ideas.

I encourage you to share your experiences and ideas with colleagues and fellow ASHT members! We can all work together to make a better future. Always remember, "Many hands make light work!" ♦

FIND ADDITIONAL ASHT RESOURCES

TELEHEALTH CHECKLIST

RECORDED WEBINAR:
TELEHEALTH
AND HAND THERAPY

Quiz

TEST YOUR KNOWLEDGE

Robert McClellan, OTR/L, CHT

1. What WOULD you expect to see in a patient diagnosed with a VISI deformity?

- Dorsal tilt of the lunate with the SL angle greater than 60 degrees and capitolunate angle greater than 30 degrees.
- Volar tilt of the lunate with the SL angle less than 30 degrees and a capitolunate angle greater than 30 degrees.
- Volar tilt of the lunate with the SL angle greater than 30 degrees and a capitolunate angle less than 30 degrees.
- Terry Thomas sign.

2. Clawing of the ring and small finger is most pronounced in:

- High ulnar nerve injury.
- Combined high median and high ulnar nerve injury.
- Combined low radial and low median nerve injury.
- Low ulnar nerve injury.

3. The Camitz Tendon Transfer refers to:

- Ring finger FDS to the APB to restore combined palmar abduction, MCP flexion and thumb pronation.
- Abductor digiti minimi opponensplasty.
- Palmaris Longis to the APB to improve thumb opposition.
- Ring finger FDS for claw hand reconstruction.

Find the answers on page 23.

AHTF Update



The American Hand Therapy Foundation 2020: Supporting Research and Education for the Hand and Upper Limb

By April C. Cowan, OTR, OTD, CHT, AHTF Director of Grants

The mission of the American Hand Therapy Foundation (AHTF) is to improve patient outcomes by promoting evidence-based practice through funding clinical and scientific research and education. Building on the mission, the AHTF vision is for all evaluation and treatment methods in hand and upper extremity therapy to be based on well-documented evidence. Here, you will find the results of our granting efforts and exciting donor news that will strengthen our awarding potential for years to come.

The 2020 grant cycle for the AHTF is now complete. All received applications have been reviewed and funding decisions have been made. One grant in the amount of \$10,000 has been awarded to Emily S. Ho, PhD, MEd, OT Reg (Ont.), and her colleagues Kristin Davidge, MD; Sevan Hopyan, PhD,

MD; Andrew Price, MD; and Howard Clarke, PhD, MD. Dr. Ho and her research team were awarded the Burkhalter New Investigator Grant for their project entitled "Musculoskeletal Characteristics of Elbow Flexion Contractures in Infants and Children with Brachial Plexus Injury."

Dr. Ho is an Assistant Professor in the Department of Occupational Science and Occupational Therapy at the University of Toronto and a clinician-investigator in the Division of Plastic and Reconstructive Surgery at the Hospital for Sick Children (SickKids), Toronto Canada. As per Dr. Ho:

"It is truly an honor to be the recipient of the AHTF Burkhalter New Investigator Award. As I embark on a career as an academic researcher, this award fuels my resolve to advance scientific evidence



>> Emily S. Ho, PhD, MEd, OTReg (Ont.)

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AHTF Update

in upper extremity rehabilitation science to optimize functioning and quality of life of youth with upper limb conditions and their families. With the support of the Burkhalter award, our multidisciplinary research team in the SickKids Brachial Plexus program will investigate the muscular, joint and osseous characteristics of elbow flexion contractures secondary to brachial plexus birth injury. This research will provide objective evidence to support proposed etiologies and the results will provide hand therapists working with this pediatric population a clear road map to discern optimal treatment modalities to address joint stiffness, muscle shortening and/or muscle weakness associated with these contractures.”

The AHTF board of directors wishes to thank the volunteers who served as expert peer reviewers for the Grant Application Review committee during the 2020 grant cycle. The grant application reviews are a major undertaking that is made possible only by the efforts of each of the volunteers, who work both individually and in concert as a team and are committed to reviewing, discussing and making unbiased funding decisions in support of upper limb rehabilitation.

New funding opportunities have also arisen during the past year. The AHTF is excited to have partnered with the American Foundation for Surgery of the Hand for a collaborative research grant in the amount of \$20,000. The grant was offered as a one-time opportunity and was open to a hand surgeon/hand therapist team studying any hand/upper limb surgery or therapy topic. Applications were submitted October 1, 2020 and are currently undergoing a peer review process. Stay tuned for more information about this exciting opportunity!

Another thrilling happening for the AHTF is the creation of the Doris Ann Slack Upper Extremity Education and Research Innovation Fund to support clinical innovations and education in the field of upper extremity rehabilitation in perpetuity. The Doris Ann Slack Fund serves as the bedrock that sustains the



>> **Pictured from left:** Emily Ho (occupational therapist), Howard Clarke and Kristen Davidge (plastic surgeons), Alison Anthony and Karen Klar (physical therapists) and Sevan Hopyan (orthopedic surgeon)

pre-existing AHTF grants, just as a teacher imparts the foundational knowledge that prepares future generations for research and advance practice. Through a generous donation from Doris Ann Slack, the fund is established to support the mission of the AHTF to fund clinical and scientific research and education to advance the practice of hand therapy and quality of patient care throughout the world.

Doris Ann Slack, a master clinician and educator whose life-long reverence for the hand and upper extremity profoundly benefited and equally inspired her patients and students. Her dedicated service to others is epitomized by this legacy gift to the AHTF. Doris' selection of the AHTF for this generous endowment is a genuine reflection of her desire to improve patient outcomes by promoting evidence-based practice. Simply stated, it is a perpetuation of her life's work and her admiration for the

miraculous design and competence of the upper extremity.

The 2021 grant cycle will open January 1 and close on March 1, 2021 for the Burkhalter New Investigator Grant, the Judy Bell-Krotoski Grab the Evidence Grant, the ASHT Founders Award and the HTCC Mary Kasch Scholarship. The application window for the Evelyn Mackin Traveling Hand Therapist Award and the Janet Albrecht Memorial Scholarship will open May 1 and close June 1, 2021. Please see Table 1 (see page 13) for more details, including links to the application portals.

For inquiries, questions, or concerns, contact April C. Cowan, AHTF Director of Grants at grants@ahtf.org.

The Grants Committee of the AHTF is available to assist researchers by answering questions to facilitate formulating written grant application proposals. For questions or assistance, reach out to grants@ahtf.org.

AHTF Update

“In closing, the AHTF grant application cycle for 2020 was a success!”

Table 2 (see page 13) offers some tips on generating a fundable grant application.

In closing, the AHTF grant application cycle for 2020 was a success! Researchers received feedback from experienced reviewers, a deserving research project received funding that will benefit children with brachial plexus injuries, and new grant opportunities arose. Regarding the new grant opportunities, the AHTF has initiated a new collaborative effort with AFSH and was also able to honor Doris Ann Slack for her generous donation in support of hand and upper limb rehabilitation. What remains now is a call to action, for both

grant application submissions and expert reviewer volunteers. Do you have a clinical research idea that needs financial support to become a reality? Submit a grant application proposal!

For more on the grant opportunities, please see www.ahtf.org/grants.

On the other hand, are you looking for a way to serve the profession of hand and upper limb therapy? Consider serving as an expert reviewer for the AHTF Grants Committee! Interested clinicians may reach out to grants@ahtf.org. ♦

>> **Table 1.**

Opportunities to Support Hand and Upper Limb Rehabilitation	Focus/Priority	Amount	Window	Funding
Burkhalter New Investigator https://www.ahtf.org/grants/burkhalter-new-investigator-grant/	Novice researcher or research team	Up to \$10,000	Jan 1 – Mar 1	AHTF
Judy Bell-Krotoski Grab the Evidence https://www.ahtf.org/grants/judy-bell-krotoski-grab-the-evidence-award/	Experienced researcher or research team	Up to \$10,000	Jan 1 – Mar 1	AHTF
ASHT Founders Award https://www.ahtf.org/grants/asht-founders-award/	Meaningful research in hand therapy	Up to \$15,000	Jan 1 – Mar 1	ASHT, AHTF, & HTCC
Evelyn Mackin Traveling Hand Therapist Award https://www.ahtf.org/grants/evelyn-mackin-grant/	Educational outreach, including telerehabilitation	Up to \$5,000	May 1 – Jun 1	AHTF
Janet Albrecht Memorial Scholarship https://www.ahtf.org/grants/the-janet-albrecht-memorial-scholarship/	Academic education or hand therapy certification expenses	Up to \$1,000	May 1 – Jun 1	AHTF
Mary Kasch Scholarship (HTCC) https://www.htcc.org/mary-kasch-hand-therapy-certification-scholarship	Hand therapy certification expenses	Up to \$1,500.00	Jan 1 – Mar 1	HTCC

>> **Table 2.**

Writing a Successful Grant Application Proposal (American Association for Hand Surgery, 2016)		
General Tips	Necessary Components	Review Criteria
<ul style="list-style-type: none"> • Describe impact on hand therapy practice • Identify the aims of the project • Share ideas and seek critical feedback • Make it easy for the reviewers, state key points 	<ul style="list-style-type: none"> • Abstract • Specific aims • Background and significance • Preliminary studies and results • Research design and methods • Budget justification 	<ul style="list-style-type: none"> • Significance of the project • Planned approach or research design • Innovative in nature • Investigators are experienced • Environment is appropriate • Budget Justifications are clear • Inclusion of women, minorities, and children

Diagnosis: PANDEMIC TENDONITIS

By Chaya Schachter, OTR/L, CHT; Kim Conti, OTR, CHT; and Alexander Marcus, MD

As occupational, physical and hand therapists, our role during the pandemic requires us to adapt to the changes around us. Initially, a key concern was learning and implementing telehealth services. To date, parts of the country that are returning from lockdown have shifted their focus towards the consequences of the shelter-in-place orders. As a consequence of the COVID-19 pandemic, more workers than ever are working from home¹ where the ergonomics may be sub-optimal. Anecdotal reports have hinted at recent job changes and adjustments of work contexts and tasks. Looking further down the road, people and companies may realize the advantages of working from home and learn ways to overcome some of the barriers to having a distributed workforce.² As a result, more people may be working from home indefinitely.

Over the last few months, hand surgeons and therapists have been seeing patients suffering from some of the ill effects of this new normal. A common phenomenon and a steady trend we have been witnessing is various complaints of (usually) non-specific elbow, wrist and digital pain or paresthesia. Although a proven causative relationship between a work-from-home setting as it relates to poor workstation design, ergonomic pitfalls and work-related musculoskeletal disorders has not been definitively determined, many patients are presenting with these symptoms.

Our objective is to highlight and underscore the importance of effective information gathering and history taking.

Case Report

Presentation

A 52-year-old healthy math teacher presented with bilateral dorsal wrist pain for six weeks. There was no history of trauma, infection nor other symptoms. His exam was unremarkable except for pain with wrist flexion and extension as well as tenderness over the fourth extensor compartment. His x-rays were normal.

Upon further questioning, his school building had closed because of COVID-19 eight weeks prior to his visit. Instead of teaching in front of a classroom, writing on the board, and moving around to observe students' work, he was now teaching all his lessons from his home computer. He used his personal laptop positioned on the coffee table in front of his couch. All his communication with students, parents and co-workers was by email. His total workday was seven hours, with a 30-minute lunch break.

Diagnosis

Pandemic Tendonitis — *tendonitis caused or exacerbated by new working conditions resulting from the COVID-19 pandemic.*

Discussion

We are experienced in evaluating and teaching patients about ergonomics. Now, during this unprecedented time, we need be aware of the new challenges our patients face and to improve our history gathering and intake as it relates to ergonomic challenges and risks. This heightened awareness will allow us to better understand and treat this growing sector of the work force.

“Over the last few months, hand surgeons and therapists have been seeing patients suffering from some of the ill effects of this new normal.”

Asking the right questions

An increased recognition of these developments will enable us to ask important questions, including inquiries about specific situations that can exacerbate tendonitis (i.e., secondary factors such as increased workload, pressure and stress due to recent furloughs and layoffs). For example, an answer of yes to a question such as, “Has your work environment changed?” would then lead us to ask:

Where are you and your computer situated?

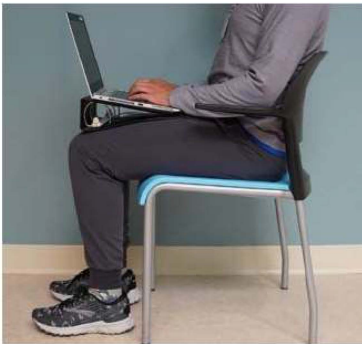
Often the at-home work environment causes us to use whatever is available. Despite setting up a workstation replete with a proper desk, chair and monitor, the dynamic duties at home may interfere with a static workstation design. Are you working at the kitchen table? A kitchen table is designed to be used for meals, but the height relative to the chairs is sub-optimal for typing. Are you working on the couch while watching the kids? Although comfortable, one can easily assume the “tech neck” posture (descriptive terminology coined to describe general postural compromise). A couch is

Feature

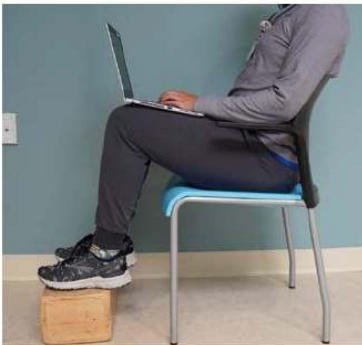
not designed to sit on while typing for several hours.¹ Are you doing a significant proportion of your work, especially elements that involve significant typing, on a phone, tablet or other handheld device?

Is your work setup dictated by other factors?

The pandemic has altered many components of home life. If children are now at home full time, office work may be done wherever the kids are so that they can be supervised simultaneously. The playroom may not be conducive for proper typing ergonomics, and other responsibilities may dictate where work is done. Have you resorted to typing while standing at a kitchen counter to juggle dinner preparation and writing a work report?



>> One possible keyboard positioning correction



>> Another possible correction of keyboard positioning

Are you taking fewer breaks?

In an office environment, people often move around to verbally communicate with colleagues. Now with people in their own homes, communication often takes place via email. Instead of walking over to your co-worker's desk to ask if s/he got the file you emailed, you just *type another email* to ask him or her. At the office, people leave their desks and computers to go to meetings. With everyone working remotely, meetings often occur via Zoom (or other platforms) while sitting at the computer.

Does your job involve light lifting or assembly?

While many of the issues affecting wrist tendonitis involve typing at a computer, other workers may be lifting files or assembling packages that are stored on the floor instead of in a waist-high file cabinet or table.

Did you have ergonomic devices in the office that you do not have at home?

Many people have an ergonomic keyboard or mouse at the office but not at home.

A telephone headset may allow you to sit properly while working at your desk but juggling your cellphone while typing at your laptop may not.

Are you doing the same job or has your job changed?

Many people have been furloughed during the economic downturn and forced to change jobs.

Had you previously been sitting at a computer all day, but are now doing physical labor for the first time in many years? Were you working outside or traveling between customers, but now only sitting at a desk?

If you are still working in the company office, has the setup changed?

Even if you are still going to the office or plant, your desk or workstation that was optimized for your job specifications may have changed because of new social distancing requirements. Is your workplace implementing a staggered return? If so, will you be able to re-occupy your station and

use your worker-specific equipment in this fluid design?

Getting More Information

Some patients may not be able to describe their work environment in a way that allows us to help them efficiently. Taking pictures is one way for patients to share this information, but only if they know how to best photograph their work location. There are new smartphone apps such as Ergoconnect that guide users on best methods to photograph a workstation in the most informative way (i.e., static positioning [side view, leg clearance] and whilst performing activities [using phone, mouse, keyboard]). Others, for example, include Ergominder and StretchMinder whose key feature is to remind the user to perform stretches throughout the day. Wellnomics and Healthworking are additional apps available with well-designed, user-friendly videos of various stretches of the body. Workrave is a program for your PC designed to offer rest periods and screen time limits to prevent repetitive strain injury. (Editors note: No conflict of interest.)

Educating Our Patients

Our experience includes teaching patients how to optimize their work environment. Our role remains the same in regards to patient education, determining aggravating factors and outlining ergonomic changes. There is a continued need to mitigate primary factors that are thought to trigger musculoskeletal disorders, such as excessive force, repetitive movements and harmful body postures. Research has shown that sustained postures or repetitive motion causes ischemic injuries, leading to tissue damage. We routinely discuss chair and desk heights, viewing distance of computer monitors, maintaining a 90-degree angle at the ankles/knees/hips/elbows, as well as encouraging rest breaks and performing various stretches.

Utilization of ergonomic equipment is important to consider, such as a split keyboard design to decrease excessive ulnar deviation and compression of the ulnar nerve. Use of a vertical mouse can lessen

Feature

forearm pronation and decreases stress and compression of the radial and median nerves. Placing a pen beneath the index finger to create MP joint hyperextension or wearing a yoke splint while typing can offload the radial nerve at the wrist. Posture rebalancing with the use of a figure eight strap can assist with scapular and core retraining. Educating our patients in joint protection, typing postures and the need to strengthen proximal muscles should also be reinforced.

Looking Forward

This time of unusual challenge has led to many changes in how and where people work. Some of these changes will lead to wrist and hand issues. As practitioners, we need to revolutionize our thinking as it relates to ergonomic shortcomings which should be reflected in our history taking. Our pattern of thinking needs to shift to encompass fluid and dynamic home ergonomic set ups, workstation design changes, environmental barriers, constant interruptions and increased overall stress.

We can better serve our patients by changing our line of questioning during the history

intake. This shift can help to mitigate patient symptoms using appropriate ergonomic education and therapeutic interventions. Helping patients adapt to their new environment will ultimately reduce the need for unnecessary tests and treatments, thereby creating a more favorable outcome. Since we need to grapple with a fluid workstation, we must shift our emphasis from the recommendation of ergonomic devices and instead work with our patients in mitigating poor work styles and habits (i.e., controlling neck, back and wrist positioning, using keyboard shortcuts).

The shift to work from home has been long in coming but the pandemic has expedited this transformation. In instances where employers were afraid to embrace this change, the widespread state lockdowns had an enormous effect on workplace trends that, in some shape or form, may remain permanent.³ For the remote employee population, the ease of abandoning the home office and, instead, switching to a mobile device while completing household duties may seem like an added efficiency in one's day; however, the pitfalls of a relaxed posture combined with surrounding,

hectic calls of duty and high responsibility at work can eventually morph into a repetitive strain injury. For us practitioners, we need to educate and bring awareness to the consequences of our new reality. ♦

Notes

1. In an article written by Susan Ward and published online in September, 2019, titled "Disadvantages of Working From Home", 25% of those surveyed reported a lack of proper work surface and 23% reported bad posture.
2. An early survey (administered and analyzed in combination by Iometrics and Global Workplace Analytics) collected results from approximately 3,000 employees globally who responded to a survey between 3/30/2020 and 4/24/2020. The "Global Work-from-Home-Experience Survey" discovered that 88% of office workers are working from home, and 77% of employees wish to continue working from home at least once a week.
3. In an online article titled, "The Workplace Revolution — a Picture of Flexible Working," information was extracted from an online survey during 2016 from 20,000 business respondents from more than 100 countries. It has become apparent, even prior to the pandemic, that the shift towards working from home has become widespread and prevalent.

“Since we need to grapple with a fluid workstation, we must shift our emphasis from the recommendation of ergonomic devices and instead work with our patients in mitigating poor work styles and habits.”



>> A simple posture trainer, side view



>> Simple posture trainer, rear view

Feature

Examining the Impacts of the Global Pandemic on Clinical Education Practices:

A FACULTY PERSPECTIVE

By Brian J. Wilkinson, PT, DPT, CHT, CLT

Before the onset of the global pandemic, I struggled to portray the “normal” challenges of identifying student clinical placements in a genuinely accurate manner. Soliciting rotations typically requires finesse and established networking, and even after coordinating comprehensive plans spanning several months, a handful of routine, last-minute cancellations requiring urgent intervention is still unavoidable. As conditions rapidly declined in March of 2020, clinical educators, such as myself, experienced untimely increases in workload and witnessed an imminent threat to anticipated graduation timelines. Without warning, some full-time rotations were canceled entirely, and others had up to a 50% cancellation rate with less than 12 weeks before the scheduled start date. To date, I have had 66 students affected by unexpected site cancellations. Though we have witnessed some improvement in the situational climate, the permanent transformation affecting clinical education practices, including these new trials impacting academic continuity, is undeniably apparent.

As a full-time faculty member in the Physical Therapy (PT) Program at Pacific University in Hillsboro, Oregon, I function in a hybrid role: my customary instructional duties and administrative responsibilities are related to shared oversight and management of graduate student clinical rotations. Our PT Program typically solicits around 250 annual student placements. Despite being an established institution with a solid reputation and an extensive alumni network, we hustle to fulfill our institution's lengthy requirements and the governing body in PT education, the



>> Charlette Wiggins-Gurich, SPT

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Commission on Accreditation in Physical Therapy Education.

Identifying clinical placements is inherently challenging due to several factors, including respecting student preferences, honoring clinical site specifications and expecting a prospective Clinical Instructor (CI) to voluntarily provide extended student mentorship. Generally, educational programs anticipate that a hopeful CI will generously offer to host a student as a means to give back to their profession, access knowledge from a more contemporary curriculum or assist directly with employer-based recruitment efforts. However, the reason(s) that motivate individual CIs is strikingly variable, and this type of personalized inspiration can fluctuate considerably over time.

During the global pandemic, the shift in PT clinical practice to telehealth platforms, reduced caseloads and modified operations and hours altered the clinical landscape

for our seasoned practitioners and CIs. As a result, mentees are participating in treatment sessions through media unfamiliar to CIs and students while spending time with multiple CIs to achieve full-time clinical duties. Many students are gaining the emerging skill of shifting between virtual and in-person interactions during the course of a day or week. As expected, there is an unprecedented strain on all parties involved and there continues to be limitations in the type and quality of clinical learning opportunities available.

One of the most prevailing aspects of clinical placements that has been significantly impacted by the global pandemic is that student rotations are nearly always solicited as future requests. In our program, for example, my colleagues and I solicit upcoming clinical rotations up to 18 months in advance of their scheduled commencement, and this is an unavoidable necessity in the midst of planning around CI personal commitments

and accounting for the competitive nature of these voluntary pledges of mandatory mentorship. Unfortunately, the pandemic has created a humbling but universal environment where anticipating the future is impossible. From my perspective, this is why the future of clinical education is dire; it is impractical to anticipate and meet the needs of our students, clinical partners and licensed colleagues without maintaining an approach that is aptly future-minded.

In specific ways, clinical education practices are still very much the same; in light of anticipated challenges, we honor our students' preferences, we rely on relationships for placements and we invite clinical sites to preserve their perceived gains of continued collaboration. However, over the past several months, we have been forcefully reminded that adaptation is not only a requirement, but also a stark necessity. While we move forward in our efforts, embracing the unavoidable reality of clinical education's unexpected evolution, we also maintain a steadfast sentiment as servants of our professions: preparing future colleagues for their optimal autonomy is paramount to preserving skilled rehabilitation's vitality.

Despite the unsettling nature of our current situation and the multitude of uncertainties regarding the future, clinical educators are well-equipped to navigate this season and satisfy the needs of various stakeholders. Through persistence, creativity and innovation, we will lead our faculty colleagues and CIs to enhance curriculum around telehealth delivery, instill strategies for incorporating social distancing and personal protective equipment and promote the utilization of virtual forms of continuing education. Out of necessity, we will also remain steadfast in pursuing clinical placements that will prepare our future colleagues for flourishing in an altered state of therapy practice. Ultimately, we will continue to shelter the needs of our patients and community members and work diligently to anticipate how future student assignments will generate desired clinical preparation while helping to realize our evolving societal needs. ♦



>> Charlette Wiggins-Gurich, SPT

Student Perspectives on COVID-19

By Gwen Morris, OTD, OTR/L, CHT, CLT

COVID-19 has fundamentally changed the “normal” for many of us in our daily routines. When getting out of the car, I need to remember my purse, phone *and* the mask. Grocery shopping is a new adventure with one-way signage on the aisles. Plexiglass now separates us from cashiers, between tables at a restaurant and our patients. Masks are a perpetual challenge to our ability to express empathy with our facial expressions, and exist as a communication barrier for many of our hard of hearing patients who rely on lip reading. CDC guidelines seem to be ever-evolving. These changes trickle down to us in the clinic as we continue to try to treat our patients with the same level of care — but even the most seasoned clinicians can feel the burden of our responsibility to not only our patients, but to our staff, families and friends. In light of all of these changes, another demographic has also felt a significant impact related to COVID-19: our students, who are trying to complete clinical fieldwork in order to graduate. The following are a few personal perspectives from these students, in their own words.

Caitlin Weatherhead, OTS

I was in the hand therapy clinic for fieldwork when the news coverage on the novel coronavirus began to break. We were initially assured that we could stay at our fieldwork site if we were comfortable. A short while later, we received an email stating “all students are suspended from fieldwork, effective immediately.” I looked at my fieldwork supervisor in disbelief. I was supposed to be discharging a patient in two minutes, not leaving “effective immediately.” Tears fell out of my eyes, with a despairing realization that social distancing was in effect and there could be no hugs goodbye. After two months at home, I was finally able to begin my second fieldwork placement. I wear an N-95 and surgical mask at all times. This past Monday, effective immediately, everyone in patient contact is required to

wear a face shield, and many staff have been let go or reassigned. My skin is suffering. I sweat all morning in the patient rooms in my gown, double gloves, masks and face shield, but maybe it’s an easier adjustment for me than the staff because really, it’s all I know. There are still no guarantees I’ll get to finish this fieldwork or graduate in my anticipated year, 2020. However, I’m grateful I’m being challenged and more importantly, that I have the opportunity to help improve the quality of life of others.

LaQuestis Scott, OTS

Fieldwork during COVID-19 is definitely a challenge. It often gives me anxiety because I don’t want to get sick, I don’t want to take it home and get my family sick, I don’t want patients to get sick and I want to be able to complete fieldwork without any interruptions. It is also difficult having to wear a mask all day. I cannot use facial expressions and nonverbal communication with patients like I did in my first rotation, which sometimes can affect the rapport I try to build. On the bright side, I am learning great cleaning and disinfecting habits. I am also experiencing what it is like to work during a healthcare crisis, and that’s okay because that’s what health care providers sign up for. Most importantly, it is amazing to see occupational therapists on the front line, revealing how essential we are.

Katheryn Henderson, OTS

Occupational therapy services are often up close and personal, especially in a hand therapy setting where a therapist’s hands can act as an investigative tool for assessing one’s condition. Touch itself is also healing, and in a way communicates to your patients that you are there to support them. Therapy during COVID-19 looks and feels very different, in understanding the risk associated with close contact and contributing to the spread of the virus. The hypervigilance in sanitizing and limiting

contact with patients can occasionally feel aloof and impersonal, although I understand it is a necessary evil. As a student navigating these challenges during fieldwork, it’s been a constant reminder to continue to find ways to adapt and be flexible. To say the least, it’s been a practice in both problem solving and patience, all things useful in becoming a more compassionate, adept therapist.

Katelyn Herman, OTS

Working with patients during this time has given me a lot of practice with the mental health side of OT. Many of my patients have been scared and depressed due to the effects of COVID. I have the chance to talk with them during their therapy sessions, and hopefully help them work through some of these negative feelings by being a positive force. These experiences have shown me how holistic OT can be, and the importance of addressing the whole person to provide truly effective treatment. Fieldwork during COVID has also challenged me to be more creative with my treatment sessions. We could only use therapy items we could sanitize. It taught me to be flexible with my treatment plans and gave me a lot of practice coming up with new activities on the fly!

Clinicians, students and patients alike continue to struggle under the burden of change forced by COVID-19. Guidelines continue to change in order to provide best-practices that keep everyone safe. Addressing issues such as psycho-social implications with those in our care, communication and physical barriers, our own discomfort, fatigue from constant worry and sanitization practices and the flexibility required to address changes as they are necessary is important in order to move forward in these uncertain times. As the pandemic rages on, continued support for our clinicians, support staff and students is paramount in order to stay safe, healthy, and productive. ♦

Feature



Pivots, Policies and Procedures

By Ekta Pathare, FACHE, MBA, OTR, CHT
Practice Division Director, American Society of Hand Therapists

It is surely not to say that policy making occurs only at an organizational level, but that it could occur as national policy, foreign policy, drug policy, state policy, public policy, economic policy, labor policy, departmental policy and most importantly, health policy.

Policy making consists of collecting data, analyzing and making recommendations, conducting surveys and focus groups, identifying root cause problems and possible solutions, forecasting and projecting possible policy outcomes, conducting cost benefit analysis and sharing information with all stake holders (including academia, concerned officials and policy makers) using charts, research papers, fact sheets, magazine articles, newspapers, speeches and briefings.

Public policy making is the bridge that connects research and practice. Healthcare policy in the United States determines reimbursement for various healthcare services. Utilizing research and supporting data to impact sound policies is what advocacy is all about. In a democracy, support in large numbers is effective in creating sound policies. Great emphasis

is placed on health policy being research informed.

Yet a private practice owner rarely finds herself in the midst of large policy books, operating procedures and SOP manuals. Those items would be more appropriate in a bureaucratic organization. But what should one know about these "mystery novels?" That they provide direction may be an understatement. They also lay important ground rules.

Organizations small or large may choose to develop working guidelines for every aspect of their business including, but not limited to: an employee policy, a clear set of roles and responsibilities, a device usage policy, a code of conduct, a billing policy, an attendance and vacation policy, an equal opportunity/non-discrimination policy, a workplace safety policy, a smoke and drug-free policy, a whistleblower policy, an anti-harassment policy, a cybersecurity policy, a social media policy, etc.

A business owner should outline her business goals and values before writing out the policies. Once policies are written, a good business creates procedures to outline how things should be done. Policy and procedures

have to be managed continuously to set ground work for excellence, accountability, efficiency and compliance, and to ultimately make the organization stronger.

Nevertheless, none of this is an easy process. It relies on science, data, strategy, interests, values, projections, estimations, speculations, support, revisions and timeliness.

Compliance also deserves attention at this step. Compliance with federal programs and regulations can help practice owners protect themselves against incorrect billing and potential liabilities. A private practice owner should develop policies and procedures based on compliance requirements to prevent payment disruptions. Hence, being cognizant of these changes becomes a critical necessity.

Member participation during advocacy initiatives is a key step in impacting legislative changes to policy. Understanding how the various levels of policy and procedure making are related is key to effectively practicing as a hand therapist. Strong research can act as an important pivot in determining how practice is conducted, and how legislative impact can be made. ♦

Hand Assessment After Second to Fifth Metacarpal Fractures:

ICF Framework and Taxonomy of Human Hand Grasps

By Monique M. Keller, MA Hand Rehabilitation (UKZN); Dr. Roline Y Barnes, PhD Physiotherapy (UCT); Dr. Corlia Brandt, PhD Physiotherapy (UFS)

Rationale

A fully-rehabilitated hand after conservative or post-surgical management of second to fifth metacarpal fractures should be the primary aim after hand rehabilitation. The International Classification of Functioning, Disability and Health (ICF) framework provides a valuable framework to describe function and disability, and to organize information during a hand assessment.¹ Attaining all three concepts of the ICF — body function and structure, activity and participation — allow for prevention of disability, optimize hand function and allow individuals to return to preinjury participation. A second to fifth metacarpal fracture may negatively impact the three ICF levels, as well as contextual factors such as the person, community and environment.

The relationship between hand fractures and epidemiology in a social-deprived population has been investigated.² Boxer's fractures (27% of all hand fractures) were significantly associated ($p=0.017$) with social deprivation in men. Social deprivation further influenced the pattern and management of the fractures, where affluent individuals received operative treatment more often.² Fifth metacarpal fractures have left individuals with functional deficits including weakened grip strength and a decrease in metacarpal joint range of motion, and the concern of the residual deficits is the young and working adult population who sustains metacarpal fractures most frequently.³ With a decrease in hand function to earn a living and an increase in days off work, the concern is the economic consequences for both employees

and employers.⁴ To this end, human hand grasps offer a valuable observational assessment component that may prevent functional deficits.

The human hand grasps are static postures of the hand with which an object is securely held with one dominant or non-dominant hand, irrespective of the orientation of the hand.⁵ The earliest studies on human grasp behavior allowed the description of grasps categories into cylindrical, lateral, tip, palmar, hook and spherical grasp.⁶ These categories were defined by the object the hand had to manipulate and not the hand manipulation according to a task that had to be completed. Further research was conducted where a taxonomy of human grasp was developed.⁷ The taxonomy divides the grasps into power and precision grasps, thereafter object shape and then function was included. Early studies on grasps also focused predominantly on the posture of the hand for prior selected objects but had not investigated hand manipulation during unstructured tasks and behaviors. This was addressed where grasp types and frequency of its use in manipulation tasks were investigated.⁸ A literature study including the taxonomy of grasps was performed prior to conducting the research. The GRASP taxonomy that resulted includes the following categories: power grasps with palm or pad, intermediate grasp with the sides of the fingers and precision grasps with either the pad or sides of the fingers and opposition. For each of the three grasp categories, a distinction is made between thumb abduction and adduction during use.^{5,8} Bullock et al⁸ investigated two housekeepers and two mechanist. They were video recorded for a

period of 7.45 hours each and the recordings analyzed for most frequent grasp types used.⁸ The ten most frequently used grasps for the four participants presented under each grasp category were: medium wrap, power sphere, index finger extension, light tool, lateral pinch, lateral tripod, thumb-two finger, tripod, thumb-three finger and precision disk.⁸

The most extensive and complete grasp study had been conducted, with the result being the GRASP taxonomy (See Figure 1 on page 22).⁵ Thirty-three different hand grasp types were identified and included into the GRASP taxonomy after a review of literature.⁵ The GRASP taxonomy of human hand types included in Figure 1 falls under the activity and participation concepts of the ICF framework.

Conclusion

Incorporating the GRASP taxonomy of human grasp types as part of the observational assessment successfully incorporates the use of the ICF framework to assure multidimensional, interactive and comprehensive hand assessment and rehabilitation programs.

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Feature

Opp: VF:	Power					Intermediate			Precision					
	Palm	Pad		Side		Side			Pad		Side			
	3-5	2-5	2	2-3	2-4	2-5	2	3	3-4	2	2-3	2-4	2-5	3
Thumb Abducted		1: Large Diameter 2: Small Diameter 3: Medium Wrap 10: Power Disk 11: Power Sphere	31: Ring	28: Sphere Finger	18: Extension Type 26: Sphere 4-Finger	19: Distal Type	23: Adduction Grip		21: Tripod Variation	9: Palmar Pinch 24: Tip Pinch 33: Inferior Pincer	8: Prismatic 2 Finger 14: Tripod	7: Prismatic 3 Finger 27: Quadpod	6: Prismatic 4 Finger 12: Precision Disk 13: Precision Sphere	20: Writing Tripod
Thumb Adducted	17: Index Finger Extension	4: Adducted Thumb 5: Light Tool 15: Fixed Hook 30: Palmar					16: Lateral 29: Scick 32: Ventral	25: Lateral Tripod					22: Parallel Extension	

>> **Figure 1.** The GRASP taxonomy of human grasp types (Permission obtained for use by Thomas Feix⁵)

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Author Information

Monique M. Keller and Dr. Corlia Brandt
 Department of Physiotherapy, School of Therapeutic Sciences, Faculty of Health Sciences, University of Witwatersrand, South Africa

Dr. Roline Y. Barnes

Department of Physiotherapy, School of Therapeutic Sciences, Faculty of Health Sciences, University of Free State, South Africa

Correspondence

Monique M. Keller, School of Therapeutic Sciences, University of the Witwatersrand, Gauteng, South Africa Tel: (+27)0-84-4029493 E-mail: monique.keller@wits.ac.za ♦

TEST YOUR KNOWLEDGE

QUIZ ANSWERS

1. ANSWER: b

Volar intercalated segment instability (VISI) presents with volar tilt of the lunate with the SL angle less than 30 degrees and a capitulate angle greater than 30 degrees. Answer **a** describes a dorsal intercalated segment instability (DISI). Answer **d**, Terry Thomas sign, refers to the increased space between the scaphoid and lunate (greater than 5 mm) in scapholunate dissociation (SLD).¹

2. ANSWER: d

Low ulnar nerve palsy includes the abductor digiti minimi, flexor digiti minimi, opponens digiti minimi, adductor digiti minimi, third and fourth lumbricals, Interossei and flexor pollicis brevis (deep head). **High ulnar nerve palsy** includes the loss of the flexor carpi ulnaris and flexor digitorum profundus in the ring and small fingers. The ring finger and small finger do not present with clawing due to the loss of interphalangeal joint flexion. **High median nerve** includes FDP (IF and LF), FDS, PL, PT, FCR and PQ. **Low radial nerve** includes ECRB, ECU, EDC, EDM, APL, EPL, EPB, EIP

and **low median nerve** includes OP, FPB (superficial head), APB, Lumbricals (index and long).²

3. ANSWER: c

Camitz procedure involves transfer of the insertion of the palmaris longus tendon with a strip of the palmar aponeurosis to the insertion of abductor pollicis brevis in order to improve thumb opposition, and is usually done when severe carpal tunnel syndrome results in complete wasting of the thenar muscles' radial aspect of the thumb metacarpal.

Answer **a** describes Bunnell opponensplasty that passes the RF FDS through a constructed pulley in the FCU at the level of the pisiform across the palm and to the dorsal radial aspect of the thumb metacarpal. Answer **b** describes Huber opponensplasty to restore opposition following median nerve trauma. The abductor digiti minimi is detached distally and rerouted through a subcutaneous tunnel for insertion into the area of the thumb metacarpophalangeal joint. The pivot point for this rotation is the pisiform

bone and it is at this site that the ulnar nerve is vulnerable to compression by the transferred muscle. Answer **d** describes Stiles-Bunnell transfer for claw hand reconstruction in ulnar nerve injury.³

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Management of Lateral Epicondylitis Using the Mulligan Treatment Approach with an Occupation-Based Perspective

By Miremonde Joseph, OTD, OTR/L

Introduction

Lateral epicondylitis (LE), or tennis elbow, is one of the most prevalent disorders of the arm with a point prevalence of one to three percent.^{1,2} This diagnosis is described as a chronic degeneration of the wrist extensor muscles, particularly the extensor carpi radialis brevis (ECRB) muscle, which adheres to the lateral epicondyle of the humerus.³ Pain near the lateral epicondyle that is aggravated by contraction of the extensor muscles affects the individual's ability to complete work related tasks,⁴ grasp an object⁵ and participate in activities involving repetitive wrist extension, radial deviation and/or forearm in the supine or seated position.⁶ Lateral epicondylitis leads to significant functional disability from work which leads to high costs due to productivity loss and an increase in health care use, activities of daily living (ADL) and participation in meaningful occupations such as sports and leisure activities.^{3,7}

More than forty different therapeutic methods exist for the treatment of LE due to the complexities associated with the anatomy, pathophysiology and biomechanics of LE.⁸ Traditional treatment interventions for LE include rest, nonsteroidal anti-inflammatory drugs (NSAIDs),⁹ ultrasound,¹⁰ laser, taping,¹¹⁻¹³ electrical agents, cryotherapy in the acute stage followed by heat in the more chronic stage,¹⁴ therapy, shockwave therapy, stretching exercise therapy,¹⁵ braces/orthoses,¹⁶ corticosteroid injections,⁷ iontophoresis, therapeutic exercises, manipulation and joint mobilization.^{13,17,18} Nonoperative, newer biologic treatments that are being increasingly utilized include platelet-rich plasma (PRP), autologous whole-blood injections (ABIs), and stem cell therapy.¹⁷

Mobilization with movement (MWM) and taping developed by Brian Mulligan has been widely used clinically to treat lateral epicondylitis of the elbow and a variety of joint-related soft tissue conditions of the upper and lower limbs.^{11,13,19} During the MWM component, the patient is placed in the supine position, with elbow in full extension and forearm in pronation, while the therapist stabilizes the distal part of the arm and a sustained lateral glide to the forearm is applied.¹³ The client is prompted to make a fist as the therapist maintains the lateral glide. The mobilization technique is completed for 12 repetitions for three trials with a short rest period in between. Taping is applied after mobilization and placed on the origin of the extensor carpi radialis when the elbow is in slight flexion, and to the forearm.¹³ At the beginning of taping there should be a lateral gliding of the extensor muscles group, then an application of the hypo fix to prevent skin irritation and then placement of the rigid leukotape tape firmly over it.¹³

Studies have reported reduced pain and increased grip strength after MWM treatment for LE,^{11,13} however, there has been a limited amount of studies which explore the changes in clients' ADLs, in functional terms related to taping.

Materials

- Tape
- Scissors

Methods

1. Perform middle finger extension test on client to determine the location of the pain extensor muscle group.

2. Then, perform lateral glide of wrist extensor muscle group with your bilateral thumbs or with assistance from the client's index and ring finger to determine if pain is reduced, with client's wrist in extension (Figure 1).
3. Using scissors, cut one piece of a 5 centimeter-wide strip of tape with circular ends.
4. Apply first strip of tape over the painful site on the wrist extensor muscles while maintaining a lateral glide (Figure 2).



>> Figure 1.



>> Figure 2.

Feature



>> Figure 3.



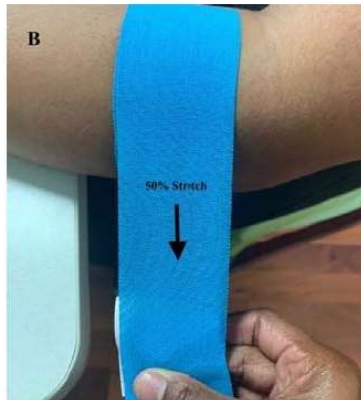
>> Figures 5A and 5B.



>> Figure 6.



>> Figure 4.



>> Figure 7.

5. Hold tape in a lateral direction and anchor to the volar surface of the forearm with 50% force (Figure 3).
6. Ensure tape does not wrap completely around the forearm and rub tape to activate properties within the tape and skin surface (Figure 4).
7. Reinforce with a second strip of tape, repeating the same glide and force more firmly (Figures 5A and 5B).
8. Rub second strip of tape (Figure 6).
9. Reassess the pain complaint or movement dysfunction by re-administering the middle finger extension test.
10. Have client perform an occupation-based task which previously elicited pain to determine if pain has been reduced with taping (Figure 7).

Clinical Example

MWM and taping was completed with a 51-year-old woman for four weeks. She reported right elbow pain of 8 out of 10 for the past three months that limited function when performing daily activities, sleep, lifting and gripping tasks. During clinical evaluation, a positive middle finger extension test was obtained. After the initial application of MWM and taping, she reported less pain when holding a 2 pound pot. Elastic tape was donned for three to four days during daily activities in the home and work setting, then re-applied weekly.

Post MWM and taping, she reported the intensity of pain decreased from 8 to 0 on a numerical pain scale. After week one, she reported better sleep and decreased pain when performing daily activities. She reported significant improvement

in performing work-related duties and 2/10 pain level with repetitive tasks. Grip strength improved from 20 to 35 pounds. Lateral pinch and tripod pinch improved from five to 11 pounds. Scores on the Upper Extremity Quick Disabilities of Shoulder the Arm, Shoulder, and Hand (*QuickDASH*) improved from 61.36/100 to 11.36/100.

Clinical Implications and Conclusion

In the clinic setting, the use of MWM and taping while performing occupation-based interventions decreases pain and alleviates symptoms in clients with LE. Further high-level research measuring the effectiveness of MWM and taping, supplemented with performing an occupation-based task using a large sample size, will contribute to the literature. ♦

Feature

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An Update on the Scratch Collapse Test

By Ashley Haapuro, PT, DPT, OCS

I first learned the scratch collapse test (SCT) on my final clinical rotation at Milliken Hand Rehabilitation Center in St Louis, Missouri. I have continued to use it in my practice, and have taught it to many colleagues and physician friends over the years. While searching the literature recently, I noted an update on the test,¹ and thought I would share a few pearls from it with you!

- The Scratch Collapse Test is a sensory stimulus test and can be used in the standard peripheral nerve exam.
- It is useful for evaluating carpal, cubital and peroneal nerve compressions, as well as long thoracic nerve palsy. It is also useful to rule out distal symptom sources of compression, and can guide referral to another specialist if more proximal sources need to be considered.
- It is believed to work by utilizing an inhibitory spinal reflex to inhibit movement in response to a painful stimulus.
 - › The stimulus applied is only noxious to an area of nerve irritation, not normal tissue, due to substance P.

How to Set Up the Test

- Standard set up is in the seated position, arms adducted, elbows at 90 degrees, forearms neutral. Standing and supine set up is an option.
- Practice the isometric resistance with the patient before performing the test.
 - › Establish a “balance point.”
 - › Discuss that this is not a maximum strength test.
 - › Tester palms are placed at the patient’s dorsal aspect of the bilateral forearms.
 - › Patient performs isometric shoulder external rotation against the tester’s palms.
- Establish a Negative Control by performing the test on the opposite side or an uninvolved area.

Test Procedure

- Sensory stimulus options include blowing air at the affected site, fanning air or a light touch “scratch” across the site.
- Immediately apply pressure at the bilateral forearms in the direction of shoulder internal rotation.
- A positive test occurs when the affected arm collapses inward toward the chest. Any momentary loss of force is considered positive.
- A negative test occurs when the affected arm can continue to maintain the equal pressure against the tester’s hand.
- Several points throughout the limb may be affected. These points can be tested without a rest period.
- One location may demonstrate increased weakness, and that location is considered the area of greatest injury.
- If a freezing agent like ethyl chloride spray is on hand in the clinic, it can be used to retest a positive result by blocking the positive result on a second testing (a false-negative result).
 - › The exact site is typically not re-tested for a true-positive result again during a clinic visit after being sprayed.
 - › One can continue to test other locations for signs of double crush after the primary location is “frozen out.”
- This test relies on an intact posterior rotator cuff and cognitive cooperation. Do not use this test when a patient’s baseline includes weak shoulder external rotation, an upper trunk plexopathy or poor cognitive function.
- Several videos on performance of this test, as well as case studies for atypical presentations, symptoms following a nerve release, double crush scenarios and nonspecific localization of symptoms are available online at: journals.lww.com/plasreconsurg/Abstract/2018/02000/Important_Details_in_Performing_and_Interpreting.24.aspx. (Please note there may be a paywall for this information). ♦

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Ode TO THE ELBOW

No one thought much about the elbow before Covid came around.
 It was always about the HAND
 and all the hand's wondrous deeds.
 That sense of touch,
 a variety of joints;
 it's not a simple hinge like the elbow.
 And of course, there was always talk about those dexterous digits,
 but no more.

Hands have to be washed, sanitized constantly.
 Handshakes have been abandoned
 And a simple touch is a NO.
 But,
 now there's the elbow.
 The joint that was coined "unforgiving,"
 but what's not to forgive?

It's now the "In" place to plant a cough or a sneeze.
 The "elbow bump" is the new handshake.
 It's the "go to" for pushing open a door,
 pressing a button,
 pushing down a lever.
 This funny bone is no longer laughed at.
 Finally, the elbow has gotten its rightful fame.



**Judy Folweiler, OTR/L, CHT, CLT, CEAS
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