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Evidence on Use of PAMs with Lateral Elbow Tendinopathy: An Evidence-based Practice Project

Natalie Cerchio

Kat Hillstrom

Anna Restemayer

Karla Scherber

Emenet Sime

See next page for additional authors

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Author

Natalie Cerchio, Kat Hillstrom, Anna Restemayer, Karla Scherber, Emenet Sime, Grace Smith, Olivia St. Martin, and And Kyia Wu

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Natalie Cerchio, Kat Hillstrom, Anna Restemayer, Karla Scherber, Emenet Sime, Grace Smith,

Olivia St. Martin, And Kyia Wu

Faculty Advisors: Hannah Oldenburg, EdD, OTR/L, BCPR

and Kimberley Persons, DHS, OTR/L, CLA

St. Catherine University
Department of Occupational Therapy

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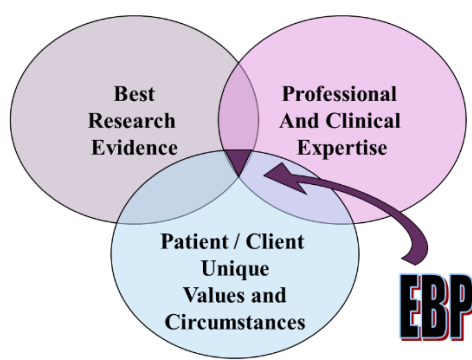
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Introduction

Evidence Based Practice

Evidence based practice is defined as the integration of knowledge from professional and clinical expertise, patient/client unique values and circumstances, and best research evidence (Straus, Richardson, Glasziou, & Haynes, 2005). The EBP courses in the St. Catherine University occupational therapy programs emphasizes skill building in finding, analyzing, and synthesizing research.

A definition of Evidence-Based Practice (EBP)



(Straus, Richardson, Glasziou & Haynes, 2005)



The EBP Project

Occupational therapy graduate students at St. Catherine University complete an EBP project in partial fulfillment of the requirements for a course on Evidence-Based Practice.

The EBP Process

- Begins with a practice dilemma
- Dilemma is framed as an EBP question and PICO
P (population/problem) I (intervention) C (comparison group) O (outcome(s) of interest)
- Background learning
- Search for the best evidence
- Initial appraisal and critical appraisal of the evidence
- Summary of themes from the evidence
- Recommendations for practice
- Next steps – implementation in practice

EBP Practice Dilemma: Evidence Based Practice Case Scenarios

The overall focus of each of case scenarios are related to assessment or interventions that are related to Choosing Wisely Campaign® items 1, 2, 3, 5, 8, 10. Case scenarios were developed related to each initiative with clientele and conditions across the lifespan in various practice settings. Practice settings included school district, outpatient pediatric, primary care, skilled nursing facility, work rehabilitation, and acute care.

Six EBP Projects: Choosing Wisely Campaign Initiative

The six projects are representative of 6 campaign items for the Choosing Wisely Campaign® and initiatives. There are a total of 10 campaign item initiatives promoted by the American Occupational Therapy Association.

Thing 1: Don't provide intervention activities that are non-purposeful (e.g., cones, pegs, shoulder arc, arm bike).

Thing 2: Don't provide sensory-based interventions to individual children or youth within documented assessment results of difficulties processing or integrating sensory information.

Thing 3: Don't use physical agent modalities (PAMS) without providing purposeful and occupation-based intervention activities.

Thing 5: Don't provide cognitive-based interventions (e.g., paper and pencil tasks, table-top tasks, cognitive training software) without direct application to occupational performance.

Thing 8: Don't use reflex integration programs for individuals with delayed primary motor reflexes without clear links to occupational outcomes.

Thing 10: Don't provide ambulation or gait training interventions that do not directly link to functional mobility.

Background on Choosing Wisely Campaign®

The Choosing Wisely started in 2012 by American Board of Internal Medicine (ABIM) and *Consumer Reports*®, which includes 75 health care provider organization partners, with the American Occupational Therapy Association (AOTA) being one of the organizations. Choosing Wisely aims to promote meaningful conversations between health care practitioners and clients to ensure that appropriate and quality care is being provided (AOTA, 2021). The mission is helping health care providers and clients in making informed and effective health care decisions, promote effective health care resources, and improve quality and safety of health care in the United States (AOTA, 2021). More specifically, campaign promotes assessment and interventions are evidence based, effective, necessary, safe, and not duplicated among health care providers including occupational therapy practitioners. Experts within this campaign developed and published 10 things providers and clients should question with occupational therapy services

across various practice settings. See table below for current “10 Things Patients and Providers Should Question”.

Table 1

10 Things Patients and Providers Should Question

Thing	Related Item
1	Don't provide intervention activities that are non-purposeful (e.g., cones, pegs, shoulder arc, arm bike).
2	Don't provide sensory-based interventions to individual children or youth within documented assessment results of difficulties processing or integrating sensory information.
3	Don't use physical agent modalities (PAMS) without providing purposeful and occupation-based intervention activities.
4	Don't use pulleys for individuals with hemiplegic shoulder.
5	Don't provide cognitive-base interventions (e.g., paper and pencil tasks, table-top tasks, cognitive training software) without direction application to occupational performance.
6	Don't initiate occupational therapy interventions without completion of the client's occupational profile and setting collaborative goals.
7	Don't provide interventions for autistic persons to reduce or eliminate “restricted and repetitive patterns of behavior, activities, or interests” without evaluating and understanding the meaning of the behavior to the person, as well as personal and environmental factors.
8	Don't use reflex integration programs for individuals with delayed primary motor reflexes without clear links to occupational outcomes.
9	Don't use slings for individuals with a hemiplegic arm that place the arm in a flexor pattern for extended periods of time.
10	Don't provide ambulation or gait training interventions that do not directly link to functional mobility.

Note. American Occupational Therapy Association. (2021). 10 Things Patients and Providers Should Question

Resources Regarding Choosing Wisely Campaign®

What is the AOTA Choosing Wisely Campaign?

Website Link: <https://www.aota.org/Practice/Researchers/choosing-wisely.aspx>

Implementing the Choosing Wisely Recommendations

Website Link: <https://www.aota.org/Publications-News/otp/Archive/2019/implementing-choosing-wisely.aspx>

Ten Things Patients and Providers Should Question (Updated July 2021)

Website Link: <https://www.choosingwisely.org/societies/american-occupational-therapy-association-inc/>

AOTA Choosing Wisely Campaign Resources (Select Clinical Application Resources)

Website Link: <https://www.aota.org/Practice/Researchers/choosing-wisely.aspx>

References

American Occupational Therapy Association. (2021). *AOTA's Involvement with Choosing Wisely®*. Retrieved from <https://www.aota.org/practice/researchers/choosing-wisely.aspx>

Appraisals of Best Evidence, Themes, and Recommendations

After searching and finding evidence available from library databases and alternative sources, students conducted an initial appraisal to evaluate the quality and relevance of the evidence and select the best research for further review. Then they conducted critical appraisals of the best formal reviews of primary research (e.g., systematic reviews, meta-analyses) and/or primary/original research studies. One of the steps in the CAP process is to evaluate the strength or level of the research design and the types of conclusions that are possible from each design.

Initial Appraisal

- Quality of the evidence
 - type of evidence and research design
 - investigator qualifications and journal/publication/website
 - journal/publication/website
- Relevance of the evidence

Critical Appraisal

- Appraisal of methods, results, and implications
- Classification of type of research study
 - Reviews of primary research (e.g., systematic reviews, meta-analyses)
 - Qualitative studies
 - Psychometric studies
 - Primary quantitative research studies
 - Level 1: randomized controlled trials
 - Level 2: two groups, nonrandomized/cohort and case control
 - Level 3: nonrandomized, pretest/posttest and cross-sectional
 - Level 4: single subject
 - Level 5: case report or series

After completing initial and critical appraisals, themes are summarized related to the EBP question and other findings that emerged from the evidence. Recommendations for practice and reflection on participating in an EBP project are identified in the conclusions.

Evidence Based Practice Question

What is the current evidence regarding return to work after a lateral tendinopathy injury in an outpatient setting?

Presentation Slides

12/16/21

Choosing Wisely Campaign: Thing #3

Evidence on Use of Physical Agent Modalities with Lateral Elbow Tendinopathy: An Evidence-Based Practice Project



Presenters: Natalie Cerchio, Kat Hillstrom, Anna Restemayer, Karla Scherber, Emenet Sime, Grace Smith, Olivia St. Martin, & Kyia Wu

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Choosing Wisely® Campaign

- Campaign Number 3
- "Don't use physical agent modalities (PAMs) without providing purposeful and occupation-based intervention activities" (American Occupational Therapy Association, 2018)
- "Occupation must remain the focus of occupational therapy interventions"

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Case Scenario

"You are an occupational therapist working in an outpatient work rehabilitation program. Your supervisor has noted an increase in referrals for lateral elbow tendinopathy secondary to a repetitive use injury in adult populations. You are tasked with determining current evidence for pain management and return to work tasks and occupations. Your supervisor wants you to focus on purposeful and occupation-based activities to support billing."

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Case Scenario – Question

P	Adults with lateral elbow tendinopathy; outpatient	"What is the current evidence regarding return to work after a lateral elbow tendinopathy injury in an outpatient setting?"
I	Physical agent modalities for pain management	
C	Physical agent modalities vs. pharmacological interventions	
O	Return to work tasks and occupations; preventative care	

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Rationale for Evidence

- Free of harm and truly necessary
 - Aspect of Choosing Wisely Campaign
- Enhancing the use of PAMs with purposeful occupations
 - Specifically addressing LET
- Cost effectiveness
 - Less burden on healthcare system with effective treatment options

(Gillen et al., 2019; Richardson, 2019)

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Background Knowledge


- Preliminary Review
 - Advantages and disadvantages of pharmacological and non-pharmacological interventions.
 - Identify characteristics of lateral elbow tendinopathy (LET) and prevention to avoid repetitive injury
 - Analyze the use of physical agent modalities (PAMs) for LET
 - Implications for return to work after LET

(American Occupational Therapy Association, 2018)


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Search Process: Tools



Date of Search
November 2021



Database Search
PubMed, CINAHL, MEDLINE, Science Direct, PSYCInfo, ERIC, ProQuest, OTSeeker, PEDro, AJOT, JOTE, Google Scholar



Alternative Search
Mayo Clinic, Centers for Disease Control and Prevention, National Institute of Health

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Search Process: Details

- Keywords
 - Lateral elbow tendinopathy, physical agent modalities, pain management, occupational therapy, return to work
- Inclusion Criteria / Filters
 - 10 years, English, peer reviewed scholarly journals
- Level of Evidence Found
 - Level I – V

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Overview of Initial Appraisals

- Range in Levels of Evidence: I – V
- Methodology of Articles
- Stakeholders
- Article Categories
 - Primary Research
 - Secondary Research
 - Systematic Review
 - Conceptual or Theoretical Article

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Critical Appraisals – Education Interventions
(Tran et al., 2021)

- Level of Evidence: I
- Relevant to workplace-based education interventions for individuals with LET
- Randomized Controlled Trial
- Findings
 - Pain level, grip strength, function
 - Multimodal self-management approach

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Critical Appraisals – Pain Management
(Hsu et al., 2016)

- Level of Evidence: II
- Relevant to understanding which, of two PAM's, offer relief sooner
- Randomized Controlled Trial; quantitative
- Findings
 - Acupuncture improved maximum grip strength
 - Manipulation therapy more rapidly improved functional impairment and pain

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Critical Appraisals – Interdisciplinary Work Rehab
(Voss et al., 2019)

- Level of Evidence: III
- Relevant to return to work and interdisciplinary influence on rehab
- Retrospective Database Analysis
- Findings
 - Interdisciplinary work rehabilitation programs are efficient solutions for workers to return to work after injury

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Theme One: Client-Centered and Interdisciplinary Approach

- Approach to treatment of LET should be focused on the client and their vocation
- Interdisciplinary cooperation results in more effective treatment of LET

(Bachman, 2016; Hardison & Rol, 2017; Kim et al., 2021; Murphy, 2009; Nilsson et al., 2012; Tran et al., 2020)

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Theme Two: Early Access to Care

- Intervention begins at the hospital
- Technology is an addition to care
- Work centered prevention

(Hsu et al., 2013; Kuruda et al., 2021; Pitt et al., 2017; Rol & Hardison, 2017)

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Theme Three: Rehab Interventions for Lateral Elbow Tendinopathy

- No universal treatment
- PAMs to address pain and improve occupational performance
- Pharmacological interventions have worse long-term outcomes

(American Occupational Therapy Association, 2016; Albersman et al., 2020; Coombes et al., 2016; Francis et al., 2021; Jenks, 2019; Ma & Wang, 2020)

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Theme Four: Efficacy of Physical Agent Modalities

- Manipulation therapy works to reduce pain more quickly
- Mulligan's Mobilization with Movement used to adjust positional faults
- Dependent on client's level of deficits

(Hsu et al., 2016; Joshi et al., 2013; Kim et al., 2012; Schreiner & Birklein, 2007; Vicenzino et al., 2007; Zurke et al., 2020)

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Theme Five: Return to Work

- Swift returns are most successful
- Evaluations that meet needs of employers and employees
- Workplace education approach to prevention

(American Occupational Therapy Association, 2017; Albersman, et al., 2011; Bohr, 2011; Densberg et al., 2005; Hardison & Rol, 2021; Pitt et al., 2021; Tran et al., 2020; Tran et al., 2021)

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Summary

Occupational therapists can use physical agent modalities (PAMs) before occupation-based therapy sessions to reduce pain in order to help patients participate in therapy, which leads to a quicker and more successful return to work.

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Implications For Practice

- Pain reduction from PAMs facilitates earlier participation in therapy, leading to better client outcomes.
- PAMs are appropriate for use as a preparatory activity for occupation-based therapy.
- Collaboration between employers and healthcare professionals improves client outcomes

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Limitations

Lack of evidence comparing efficacy of different PAMs

Limited evidence regarding long-term outcomes after return to work

No literature directly addressed our entire question

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Recommendations

- Earlier intervention strategies targeting musculature component of LET
- Further research on the effectiveness of occupational therapy specific PAMs for LET
- Further research on occupational therapy education in the workplace

(Hsu et al., 2016; Kim et al., 2012; Tran et al., 2021)

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Conclusion

PAIN	A significant barrier to participation in therapeutic activities
PHARM	May be appropriate for some, but non-pharm approaches have better long-term outcomes
PAMs	Relieves pain prior to occupation-based therapy, facilitates participation, and speeds recovery

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Themes

Lateral elbow tendinopathy (LET), commonly known as tennis elbow, is a prevalent risk work-related upper extremity musculoskeletal disorder. LET affects upper extremity function and is a barrier to occupational participation, often requiring time off work (Tran et al., 2021). We found that the longer an injured worker took to return to the job, return became both less likely and less successful. Pain associated with lateral tendinopathy can limit participation in therapeutic activities, thereby slowing recovery and delaying return to work. The use of physical agent modalities (PAMs) as a preparatory activity for client-centered, occupational-based therapy, facilitates successful therapy session and are appropriate for use by occupational therapists and among interdisciplinary teams.

Client-Centered and Multidisciplinary Approach

The most effective treatment of lateral elbow tendinopathy utilizes an interdisciplinary approach involving healthcare professional from multiple fields (Nilsson et al., 2021). Occupational rehabilitation programs require a multimodal or multidisciplinary approach to improve upon a client's physical capabilities and address their psychological outcomes (Hardison & Roll, 2017). Professionals involved within the treatment process include medical practitioners and hand therapists, who manage LET with commonly available treatments; however, there is limited evidence of long-term relief or functional restoration from these treatments (Tran et al., 2020). To improve gains in functional restoration, specialized treatments performed by a therapist on a client with LET may improve their function by reducing pain and improving their ability to perform daily work tasks (Kim et al., 2012).

When cooperation occurs between professional from multiple disciplines, treatment for patients with acute LET ultimately spend less time in the rehabilitation period (Nilsson et al.,

2012). A multidisciplinary approach utilizing knowledge from physical therapy, occupational therapy, and hand therapy allows for an all-encompassing treatment for LET.

The treatment process for LET should be client centered. For a person with LET who is aiming to return to work, occupational therapists should ensure that rehabilitation plans, and services are created to be vocationally relevant to the client and rehabilitation coordinators should take the necessary time to understand a client's social environment – including family, friends, and/or partner interactions (Murphy, 2009). Occupational therapy interventions should be goal-directed and hold significance for the client to support the client's feeling of independence and overall well-being (Bachman, 2016). It is important that occupational therapists maintain a line of communication with the client's employer to increase chances of an earlier return to work (Murphy, 2009). The earlier occupational therapy interventions are implemented, the better the results are for the client.

Early Access to Care

Early access to care has been shown to be a positive predictor of recover from LET>. Musculoskeletal disorders are one of the most common causes of disabilities that negatively impact performance function and quality of life (Kuroda et al., 2021; Pitts et al., 2017; Roll & Hardison, 2017). Specially, LET causes people to miss work, experience pain, and a decrease in occupational performance. This includes early access to care when treating patients who recently had surgery, conducting follow up care through home. Visits, and utilizing occupational methodology in the workplace in the prevention of injuries (Hour et al., 2013; Kuroda et. al., 2021; Pitt et al., 2017; Roll & Hardison, 2017).

The most common places where clients initially receive treatment in the recovery of LET are in the hospital setting followed by at home care. According to a systematic review conducted

by Kuroda et al. (2017), an interdisciplinary team utilized technology and continuous passive motion to assist clients during physical and occupational therapies within days of having surgery. They reported that inertial sensors, smart phones, software applications, and commercial gaming technology such as Nintendo Wii and Microsoft Xbox were utilized to accurately assess function, range of motion, balance, and sensory information resulting in positive outcomes for patient (Kuroda et al., 2021). Additionally, these early access to care methods were reported as being inexpensive and reliable, and clients noted being motivated to continue using the technology after discharge from the hospital through continued home care due to familiarity and accessibility (Kuroda et al., 2021).

The benefits of early access to care were also reported in a systematic review by Roll and Hardison (2017). This review was updated after recent research on the effectiveness of OT interventions in adults with musculoskeletal disorders of the distal upper extremity. They emphasized that early access to care utilizing technology, splinting, and active physical motion as effective treatment strategies whether at home or in the hospital.

The earliest point a worker can access care for injury is through preventative interventions at the workplace. Workers' compensation claims cost employers an estimated one billion dollars per week (Pitt et al., 2021). To mitigate these costs, industrial organizations employ occupational therapists to assist in compliance with Occupational Safety and Health Administration (OSHA) guidelines to prevent and minimize workplace injury (Pitt et al., 2021). In these settings, occupational therapists certified in hand therapy are trained in ergonomics and job analysis, provide employers with job site recommendations to minimize injury through repetitive muscle strain, and retrain employees on how to minimize wear and tear on their body

before injury (Pitts et al., 2021). Evidence provided by Pitt et al (2021) suggests that OTs are valuable to an organization in the prevention of upper extremity injuries in the workplace setting.

Rehab Interventions for LET

Ma and Wang (2020) suggest that there are multiple considerations for LET because of a lack of standards for treatment and self-limiting nature of the condition. The researchers concluded that multiple types of treatment strategies for approaching LET are necessary, mainly because there is no universal treatment that fully addresses the. Diversity of symptoms associated with LET (Ma & Wang, 2020). Some common treatments for Let include preparatory treatments such as eccentric exercise, splinting, bracing, and branch to more advanced modalities, such as robot-assisted therapy that focuses on occupational performance and upper limb functioning (Arbesman et al., 2020; Ferreira et al., 2021).

Non-surgical interventions are used in 90% of LET cases, which includes modalities such as shock-wave therapy and ultrasound (Ma & ang, 2020). These treatments fall under a larger scope of modalities described by the American Occupational Therapy Association as Physical Agent Modalities (PAMs) (2018). PAMs are therapeutic modalities that apply forms of force or energy to various tissues to create therapeutic change, and can be categorized as thermal, superficial, deep, electromagnetic, electric, and mechanical manipulation. Most of these modalities have potential to improve occupational performance and achievement, as well as give pain relief for physiological conditions (American Occupational Therapy Association, 2018).

The Federal Food & Drug Administration (FDA) (2019) states that there is some risk associated with the use of any medicine. With so many highly effective alternative treatment options available to treat lateral tendinopathy pain, often with better results than medications (Coombes et al., 2015; Jette, 2019), using pharmacological interventions may pose an

unnecessary risk to those with lateral tendinopathy. Because some aspects of pain are psychosocial, non-pharmacological treatments can be used to effectively correct maladaptive coping strategies that lead to a worse experience of pain (Jette, 2019).

Although pharmacological interventions may be necessary for those with severe pain, a multimodal non-pharmacological approach yields the best results in most cases (coombes et al., 2015). A shift in focus away from pharmaceuticals will lead to better long-term outcomes for pain management (Jette, 2019), which in turn facilitates participation in therapeutic activities and eventual return to work.

Efficacy of PAMs

The PAMs that most successfully reduce pain for LET are manual and manipulation treatments. In a study by Hsu et al (2016), two treatment groups of individuals with pre-existing LET were administered either acupuncture or radial manipulation treatment and were assessed for pain reduction, functional improvement, and grip strength after a total of eight weeks. Using insight from Mulligan's Mobilization with Movement (MWM) studies, the main cause of LET pain is derived from positional faults in the joints and cervical subluxations in the spine that cause pain (Hsu et al., 2016; Kim et al., 2012). Positional faults meaning a condition where the joint surface is in an unnatural position (Kim et al., 2012). Reversal of these positional faults using this manual manipulation technique showed rapid alleviation of pain and improved function sooner than acupuncture (Hsu et al., 2016).

Similar manipulation techniques that have been shown to be productive in treating symptoms of LET were evaluated in two smaller studies. Joshi et al. (2013) discovered that effective PAM treatment for LET was not ultrasound, friction massage, nor muscle stretching/strengthening, but manual wrist manipulation. The other, more recent manipulation

technique addresses the connections between cervical subluxation adjustments and the reduction of elbow pain, improvement in pain-free grip (Zunke et al., 2020; Vicenzino et al., 2007), and the role the sympathetic nervous system plays in reducing pain in patients with LET (Zunke et al., 2020). The activation of the sympathetic nervous system helps to suppress pain, while the positional adjustments relieve tension in the adjacent muscles (Schereth & Birklein, 2007; Vicenzino et al, 2007). These manipulation techniques, done early on, have shown to be effective in pain and symptom management of LET.

Various findings indicate that manipulation treatment helps patients manage LET symptoms more effectively than other PAMs (Joshi et al., 2013). When considering treatment for LET, most of what determines the effectiveness of a given treatment is dependent on the client's level of deficits (Vicenzino et al., 2007). Each patient must be assessed independently for treatment options. However, given the information from current studies, an initial treatment approach for patients could be manual manipulation interventions. This would offer the most immediate impact on pain relief for LET patients when utilized early (Hsu et al., 2016; Zunke et al., 2020).

Return to Work

There is limited evidence regarding both short- and long-term occupational therapy interventions for return to work for LET patients; however, Hardison and Roll (2021) found that completing occupation-based activities is an important predictor of success in occupational rehabilitation. Ultimately, the goals of work rehabilitation include maximizing levels of function, facilitating a safe and timely return to work, remediating and/or preventing injury, and assisting individuals retaining/resuming their worker role (American Occupational Therapy Association, 2017).

Evidence has shown that occupational therapy intervention methods such as range of motion and exercise, as well as modalities of ultrasound and ionization, are beneficial in the treatment of LET and support a multidisciplinary, biopsychosocial approach to help individuals safely return to work (Arbesman, et al., 2011; Bohr, 2011). Exercise is associated with a decrease in pain from LET (Bohr, 2011). Ultrasound and ionization interventions provide short term benefits (≤ 3 months) but no long-term benefits (Bohr, 2011). The use of splints in the rehabilitation of Let provides some benefits in treating LET but may also have adverse effects and therefore may not be ideal for facilitating return to work (Derebery et al., 2005).

Researchers found that a workplace-based education approach is an effective long-term intervention for return-to-work procedures for those recovering from LET (Tran et al., 2020; Tran et al., 2021). This intervention provides specific and individualized education and work recommendations about a participant's risk factors in the context of their work environment (Tran et al., 2021). Hand therapists can modify and adapt individualized activities to increase return to work (Tran et al., 2021). Hand therapists have specialized knowledge of Let pathology which allows them to make recommendations that are specific to the injured individual within their physical work environment, providing a more holistic intervention (Tran et al., 2020, Tran et al., 2021). Providing education on healing time frames, positions to avoid, and activity modifications for individuals with LET can help reduce the need for pain-focused interventions after an injury (Tran et al., 2020; Tran et al., 2021).

Work hardening and functional capacity evaluations are used as a part of a multidisciplinary approach in matching the worker's physical abilities to the essential functions and demands of work (American Occupational Therapy Association, 2017; Pitts et al., 2021). Work hardening programs involve strengthening, conditioning, behavioral coaching, and

functional testing to help return to work duties (Pitts et al., 2021). Researchers have shown the importance of using a functional capacity evaluation that meets both the employee's and the employer's needs (Pitts et al., 2021). Physicians use the results of the functional capacity evaluation in making a disability rating for insurance purposes which helps determine when an individual can return to work safely (American Occupational Therapy Association, 2017; Pitts et al., 2021).

Conclusion

Occupational therapists play an important role in a multidisciplinary approach to treating LET and facilitating return to work. Because early access to care is critical to ensure that LET patients can successfully return to occupational activities, therapies must begin as soon as possible. However, pain may be a significant barrier to participation in therapeutic activities. Pharmaceutical pain interventions may be appropriate for some patients, however multimodal, non-pharmacological approaches typically have the best long-term outcomes. While occupation-based therapies should be the focus of our interventions, PAMs can be used as a preparatory activity to relieve pain at the beginning of a session to maximize participation and later results.

Executive Summary

Our evidence-based project process began with the question, “what is the current evidence regarding return to work after a lateral tendinopathy injury in an outpatient setting?” The initial stages of research were geared towards addressing the medical process of treating lateral tendinopathy. We broke down the larger questions into treatment categories of 1) pharmacological approach, 2) non-pharmacological approach, 3) client centered, and 4) work protocol and general lateral elbow tendinopathy (LET) background. Through this process, our PICO question, “Do adults with lateral tendinopathy receiving PAMs to treat pain return to work tasks and occupations more quickly than those receiving pharmacological interventions?”, emerged. We conducted a thorough search of databases, which brought us to our themes. The main takeaways from our roughly 70 articles we retrieved were under these umbrellas: client centered and multidisciplinary approaches, early intervention and education, rehab interventions that include physical agent modalities, efficacy of physical agent modalities, and return to work protocol for those with LET. Equipped with the knowledge of common therapeutic practices for treating LET with a focus on purposeful occupation-based activities, we feel confident in our findings.

Take Home Message

Pain associated with lateral tendinopathy can limit participation in therapeutic activities, thereby slowing recovery and delaying return to work. With this in mind, the use of physical agent modalities (PAMs) as a preparatory activity for client-centered, occupation-based therapy, facilitates successful therapy sessions and are appropriate for use by occupational therapists and among interdisciplinary teams.

Findings

There is a wide range of treatment options, but 90% of cases of LET can be treated efficiently through non-surgical interventions. Of these non-surgical interventions, physical agent modalities (PAMs) are the most common and are effective at treating symptoms of LET. Of the various PAMs, manipulation techniques have been found to reduce pain early on and improve grip strength. Treatment of LET is most effectively treated when an interdisciplinary and client centered approach is taken. Considering what is known about LET, treatment should be tailored to the client's level of deficits and occupational goals, as well as provide education on injury prevention to both workers and employers.

Strengths and Limitations

One limitation of the research is lack of existing research comparing the effectiveness of various PAMs for physiological conditions or injuries to each other, especially as it relates to LET. We found literature comparing two PAMs to each other, but none comparing the efficacy of multiple PAMs. The uses of PAMs are important, however, how they translate across populations and conditions is less known. Most of the literature we looked at regarding the effectiveness of PAMs did not address how the condition is treated within various demographic or cultural groups. The evidence that was found was limited in what short- and long-term outcomes are for people with LET post treatments in addition to what occupational therapy interventions are necessary for return to work. Strengths in the literature addressed upper extremity treatments, but few were specific to LET. Despite the dearth of literature, the research we were able to find was strong, and therefore, we feel confident in our conclusions. These studies included significant *p*-value claims in the studies of PAMs treatment and used comparable evidence based on reliable assessments, such as the Disability of Arm, Shoulder, and Hand questionnaire (DASH) assessment and Visual Analog Scale (VAS).

Implications and Recommendations

Occupational therapists should address LET through a multidisciplinary, client-centered approach. Occupational therapists are uniquely qualified to act as a liaison between practitioners, the client, and the employer. Collaborating with employers creates safer work environments that are better prepared to welcome an injured worker back to the job successfully. The use of PAMs as a preparatory activity before occupation-based therapy will decrease pain and promote participation in therapy, allowing for earlier interventions and speeding recovery.

Future Considerations

We recommend that practice include early intervention strategies that target the musculature component of LET through manipulation PAMs. Because pharmacological treatments pose various risks and are associated with worse long-term outcomes, PAMs are ideal to address pain associated with LET. Continued research is necessary for determining which treatments are most effective and how to integrate various techniques to determine what best suits the client needs. Considering very few studies have been done on occupational therapy education in the workplace, we recommend future research focused on interventions in this area. Based on the current literature, we believe that integrating occupational therapy and educational interventions into the workplace will help decrease the amount of hand and elbow related injuries on the job and will facilitate return to work for those that do experience injury.

Conclusion

Through this research process, we found compelling evidence that suggests treating the pain associated with LET with PAMs results in better long-term outcomes than when using pharmacological interventions. While PAMs treatments are not occupation-based, they are an appropriate preparatory technique to facilitate occupation-based therapy. Early intervention is

critical for successful return to work after developing LET. Future studies are needed to better understand the effectiveness of various PAM techniques and the implications they have on various demographics.

Evidenced Based Resources

Table 1

Government and Major Foundations Resources

Title Name	Brief Description	Source
American Academy of Orthopedic Surgeons (AAOS)	Clinical and assessment tools for continuing education for all health professional in musculoskeletal care	https://www.aaos.org/
Center for Disease Control and Prevention (CDC)	Database for global health related information	https://www.cdc.gov
Mayo Clinic	Patient care and health care information; publications and newsletter regarding recent up to date news	https://www.mayoclinic.org/
Minnesota Department of Health	Provides overview, description, data/statistics, and resources for various diseases and conditions	https://www.health.state.mn.us/diseases/index.html
National Institute of Health	Health information, health news, health services, research and resources, wellness toolkits	https://www.nih.gov/health-information

Table 2***Occupational Therapy Resources***

Title Name	Brief Description	Source
American Journal of Occupational Therapy (AJOT)	Journal for research in occupational therapy connected to AOTA	https://research.aota.org/ajot
American Occupation Therapy Foundation (AOTF)	Organization that supports occupational therapy research and wants to increase public understanding of the relationship between occupations and health. It is associated with the OTJR: Occupation, Participation and Health journal	https://www.aotf.org
American Occupational Therapy Association (AOTA)	AOTA focus is on promoting professional development to advance OT practice, education, and research through a variety of settings. AOTA has major programs and access to many findings from a variety of AOTA members such as OTs, OTAs, and OTS	https://www.aota.org
Canadian Journal of Occupational Therapy (CJOT)	Canadian OTP occupation-based, client0centered findings both empirical and theoretical/conceptual studies. The journal features full-length articles that highlight the mission to advance practice, theory, research, and policies related to occupational therapy.	https://journals.sagepub.com/home/cjoc
Occupational Therapy Journal of Rehabilitation: Occupation, Participation and Health	Peer-reviewed journal that focuses on advancements on the knowledge of science in occupational therapy through national and international publication of literature and research	https://us.sagepub.com/en-us/nam/journal/otjr-occupation-participation-and-health

Table 3***Interdisciplinary Journal, Databases, and Professional Associations***

Title Name	Brief Description	Source
CINAHL	Unfiltered databases that have collective articles referencing nursing, biomedical, and health journals. This will be helpful for translating research into practice. A helpful tip that was on the website was citing authors, there are a couple ways: index, link (times cited)	https://www.ebsco.com/products/research-databases/cinahl-database
EBSCO	Biomedical literature content in disciplines of chemical science, biomedical science, and life science.	https://web.p.ebscohost.com/
Gale	Collaborates with academic institutions, providing an extensive selection of articles, case studies, archives, and educational primary sources used for research	https://www.gale.com/
Google Scholar	Broad search for scholarly literature across all disciplines. Sources include articles, theses, etc. from academic publishers, professional societies, online repositories, universities, and other web sites. Be sure to double check these sources because very large amount of information goes into Google Scholar	https://scholar.google.com/
JSTOR	Contains back and current issues of academic journals, books, and primary sources for humanities and social sciences	https://www.jstor.org/
PubMed	Search Engine that references biomedical and life sciences articles within its database. Be sure to filter findings using the sidebar to narrow the focus	https://pubmed.ncbi.nlm.nih.gov/

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Appendix A. Initial Appraisals

Primary Research

	Overview of Article
Type of Article	Overall Type: Primary Research Study - quantitative Specific Type: Randomized clinical trial
APA Reference	Hsu, C.-Y., Lee, K.-H., Huang, H.-C., Chang, Z.-Y., Chen, H.-Y., & Yang, T.-H. (2016). Manipulation therapy relieved pain more rapidly than acupuncture among lateral epicondylalgia (tennis elbow) patients: A randomized controlled trial with 8-week follow-up. <i>Evidence-Based Complementary & Alternative Medicine</i> , 2016, 1–7. https://doi.org/10.1155/2016/3079247
Abstract	“Radial bone adjustment manipulation treatment may be effective to reduce pain rapidly in lateral epicondylalgia patients and the pathological tension in the biceps brachii muscle is highly concerning. To prove this hypothesis, we conducted a randomized controlled trial and included 35 patients with lateral epicondylalgia for more than 2 months. Either manipulation treatment (n=16) or acupuncture (n=19) was given to these patients for 2 weeks and all patients’ symptoms were followed up for 8 weeks after treatment. Both groups demonstrated changes in pain VAS score, grip strength, and DASH questionnaire. Lateral epicondylalgia patients who received manipulation treatment felt pain relief sooner than those who had acupuncture treatments during the first few treatments. However, both acupuncture and manipulation are effective, while the difference has no significance at the 8-week follow-up. The trial was registered with Current Controlled Trials” (p.1).
Author	Credentials: National Pingtung University of Science and Technology: Pingtung, TW Position and Institution: Professor, National Pingtung University of Science and Technology. Publication History in Peer-Reviewed Journals: Moderate
Publication	Type of publication: scholarly, peer-reviewed Publisher: Evidence-based Complementary & Alternative Medicine (eCAM) Other: CINAHL Plus with Full Text -- Publications
Data and Citation History	Date of publication: April 6th, 2016 Cited By: 6
Stated Purpose or Research Question	“We hypothesized that pathological tension in the biceps brachii muscle is related to lateral epicondylalgia according to our clinical experience and physio pathological association. To test this hypothesis, we conducted a clinical trial and investigated the effect of radial bone adjustment therapy on pain relief during rest, daily activity, and work in patients with lateral epicondylalgia. In addition,

	Overview of Article
	we evaluated functional improvement and grip force change in this study and all assessments were measured in acupuncture too” (p.1).
Author’s Conclusion	<p>“In our study, the patients who received manipulation treatment showed faster improvement than the acupuncture group during the treatment period, but both were effective at the 8-week follow-up. The possible reason may be that the subjective sense of our patients about the quality of daily activity is more related to painful sensation than the real grip strength” (p.7).</p> <p>“The novel manipulation technique improved pain in patients with lateral epicondylalgia (tennis elbow) during the first few treatments till 8-week follow-up” (p.7).</p>
Overall Relevance to you EBP Question	<p>Overall Relevance of Article: Extremely</p> <p>Rationale: The article addresses specific PAMs, which is relevant when answering the question “which PAM is more efficient at treating lateral epicondylitis among adults”. It does not compare multiple PAMs, so related articles would need to be used to justify their claims that manipulation therapy was more efficient at providing pain relief than other treatments such as acupuncture.</p>
Overall Quality of Article	<p>Overall Quality of Article: Good/Moderate</p> <p>Rationale: The author has been a contributor to many different articles and this article has been cited among 6 different sources. However, this article does draw evidence from countries outside the US. and is more founded on traditional medicine techniques than western medicine, which is a different cultural perspective to practice techniques as traditional medicine therapies aren’t always classified as PAMs.</p>

	Overview of Article
Type of Article	Overall Type: Primary Research Study - quantitative Specific Type: Randomized clinical trial
APA Reference	Joshi, S., Metgud, S., & Ebnezer, C. (2013). Comparing the effects of manipulation of wrist and ultrasound, friction massage and exercises on lateral epicondylitis: A randomized clinical study. <i>Indian Journal of Physiotherapy & Occupational Therapy</i> , 7(3), 205–209. https://doi.org/10.5958/j.0973-5674.7.3.093
Abstract	<p>“Background and Purpose: Lateral epicondylitis ("tennis elbow") is a common entity. Several nonoperative interventions, with varying success rates, have been described. The aim of this study was to compare the effectiveness of 2 protocols for the management of lateral epicondylitis: (1) manipulation of the wrist and (2) ultrasound, friction massage, and muscle stretching and strengthening exercises. Design: A Randomized Clinical Study. Subjects and Method: Ten subjects with a history and examination results consistent with lateral epicondylitis participated in the study. The subjects were randomly assigned to either a group that received manipulation of the wrist (group 1) or a group that received ultrasound, friction massage, and muscle stretching and strengthening exercises (group 2). Follow-up was at 3 weeks. The primary outcome measure was a global measure of improvement, as assessed on a 10-point scale. Analysis was performed using independent t tests, Mann-Whitney U tests, and Fisher exact tests. Results: Differences were found for 2 outcome measures: success rate and decrease in pain at 3 weeks. Both findings indicated manipulation was more effective than the other protocol. After 3 weeks of intervention, the success rate in group 1 was 62%, as compared with 20% in group 2. Also, improvement in pain as measured on a 10-point numeric scale was 5.2 (+ 2.4) in group 1, as compared with 3.2 (+ 2.1) in group 2. Conclusion: Manipulation of the wrist appeared to be more effective than ultrasound, friction massage, and muscle stretching and strengthening exercises for the management of lateral epicondylitis when there was a short-term follow-up” (p. 205).</p>
Author	<p>Credentials: Student Position and Institution: Student (first author), Professor, KLE Institute of Physiotherapy (2nd author); HOD, Metas of Seventh Day Adventist College of Physiotherapy, Surat, Gujrat (3rd author) Publication History in Peer-Reviewed Journals: Extensive</p>
Publication	<p>Type of publication: Peer-reviewed Publisher: Indian Journal of Physiotherapy & Occupational Therapy Other: Allied Health</p>
Data and Citation History	<p>Date of publication: July-Sep. 2013 Cited by: 4</p>

	Overview of Article
Stated Purpose or Research Question	“The aim of this study is to compare the effectiveness of manipulation with the effectiveness of an intervention consisting of friction massage, ultrasound and muscle stretching and strengthening exercises for the management of lateral epicondylitis” (p.205-206).
Author’s Conclusion	“After 3 weeks of intervention, our primary outcome measurements differed between 2 groups, indicating that manipulation was more effective than the other intervention used in the study. Moreover, the decrease in Visual Analogue Scale (VAS) scores for the main complaint, for the pain at the moment, for the pain during the day differed between the 2 groups” (p.208).
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: The author identifies that the manipulation therapy was more effective than other PAM interventions; this is helpful in identifying the most productive one to use for lateral epicondylitis.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The study was only able to look at the short-term benefits of the intervention rather than the long term, so the efficacy of manipulation therapy can only be stated for short term benefits. Small sample size; appears to be n=10.

	Overview of Article
Type of Article	Overall Type: Primary Research Study - quantitative Specific Type: Experimental study
APA Reference	Shilpa Chandran, K., Nitha, N., Saji, V.T., Praveena, D., Anjupriya, D., Nishanth, O. (2021). A study to compare the effect of active release technique and myofascial release technique on pain, grip strength & functional performance in subjects with lateral epicondylitis. <i>Indian Journal of Physiotherapy & Occupational Therapy</i> , 15(3), 173–177. https://doi.org/10.37506/ijpot.v15i3.16179
Abstract	“Background of the Study: Lateral epicondylitis is one of the most common musculoskeletal conditions occurring due to repetitive movements. Active release technique and myofascial release technique is used to reduce pain, improve grip strength and functional performance in subjects with lateral epicondylitis. Methods: Patients in Group A received Active Release Technique (ART) along with ultrasound. Patients in Group B received Myofascial Release Technique (MFR) along with ultrasound. For a treatment period of about 30- 40min in each session for regular period of 2 to 3 for a week outcome. Measures: Visual analogue scale, hand dynamometer, Patient rated tennis elbow evaluation score Results: Myofascial Release Technique was slightly more effective in improving grip strength, reducing pain & disability when compared to Active Release Technique. Conclusion: Active Release Technique and Myofascial Release Technique both along with ultrasound are effective in patients with Lateral Epicondylitis. Myofascial Release Technique demonstrated slightly better outcomes than Active Release Technique in the management of Chronic Lateral Epicondylitis” (p.173).
Author	Credentials: Professor. Position and Institution: Assistant Professor (Physiotherapy Department) Cooperative Institute of Health Sciences, Thalasseri, Kannur, Kerala, India Publication History in Peer-Reviewed Journals: N/A
Publication	Type of publication: peer reviewed Publisher: Indian Journal of Physiotherapy & Occupational Therapy Other: Allied Health; Asia; Peer Reviewed
Data and Citation History	Date of publication: September 2021 Cited By: N/A
Stated Purpose or Research Question	“Recent soft tissue technique to gain importance is Active release technique is application of deep digital tension over tenderness and asking the patient to actively move the tissue from the shortened to a lengthened position ART is intended to remove adhesions and restore normal tissue texture” (174).

	Overview of Article
Author's Conclusion	“This study leads to the following conclusions that after 12 sessions of treatment both active release technique and myofascial release technique were effective in the treatment of chronic lateral epicondylitis, but myofascial release technique was found slightly superior than active release technique” (p.176).
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: Concludes that type of active release therapy is beneficial grip strength. They don't compare this PAM to others, so it's hard to say how relevant this article is besides pointing out different PAM techniques that could be useful.
Overall Quality of Article	Overall Quality of Article: Poor Rationale: Their group numbers were not clear, their objectives were muddled, and although their findings were supportive of articles, they did not seem to have a strong study design.

	Overview of Article
Type of Article	Overall Type: Primary Research Study - quantitative Specific Type: Randomized clinical trial
APA Reference	Zunke, P., Auffarth, A., Hitzl, W., & Moursy, M. (2020). The effect of manual therapy to the thoracic spine on pain-free grip and sympathetic activity in patients with lateral epicondylalgia humeri. A randomized, sample sized planned, placebo-controlled, patient-blinded monocentric trial. <i>BMC Musculoskeletal Disorders</i> , 21(1), 1–11. https://doi.org/10.1186/s12891-020-3175-y
Abstract	<p>“Background: The treatment of first choice for lateral epicondylalgia humeri is conservative therapy. Recent findings indicate that spinal manual therapy is effective in the treatment of lateral epicondylalgia. We hypothesized that thoracic spinal mobilization in patients with epicondylalgia would have a positive short-term effect on pain and sympathetic activity.</p> <p>Methods: Thirty patients (all analyzed) with clinically diagnosed (physical examination) lateral epicondylalgia were enrolled in this randomized, sample size planned, placebo-controlled, patient-blinded, monocentric trial. Pain-free grip, skin conductance and peripheral skin temperature were measured before and after the intervention. The treatment group (15 patients) received a one-time 2-min T5 costovertebral mobilization (2 Hz), and the placebo group (15 patients) received a 2-min one-time sham ultrasound therapy.</p> <p>Results: Mobilization at the thoracic spine resulted in significantly increased strength of pain-free grip + 4.6 kg ± 6.10 ($p = 0.008$) and skin conductance + 0.76 $\mu\text{S} \pm 0.73$ ($p = 0.000004$) as well as a decrease in peripheral skin temperature by $-0.80 \text{ }^\circ\text{C} \pm 0.35$ ($p < 0.0000001$) within the treatment group.</p> <p>Conclusion: A thoracic costovertebral T5 mobilization at a frequency of 2 Hz shows an immediate positive effect on pain-free grip and sympathetic activity in patients with lateral epicondylalgia” (p.1).</p>
Author	<p>Credentials: For Wolfgang, Hiltz - Paracelsus Medical University for their Research Office.</p> <p>Position and Institution: N/A</p> <p>Publication History in Peer-Reviewed Journals: N/A for first author, but extensive for the 3rd author</p>
Publication	<p>Type of publication: Peer reviewed</p> <p>Publisher: BMC Musculoskeletal Disorders</p>
Data and Citation History	<p>Date of publication: 2020</p> <p>Cited By: 2</p>
Stated Purpose or Research Question	“We hypothesize that a grade III spinal manual therapy directed to the ribs of T5 on the affected side with 2 Hz increases pain-free grip and excites peripheral sympathetic activity correlating with skin

	Overview of Article
	conductance increase and a skin temperature decrease in patients with lateral epicondylalgia humeri” (p.2).
Author’s Conclusion	“Thoracic costovertebral T5 mobilization at a frequency of 2 Hz has immediate unilateral positive effects recorded as an increase in pain-free grip and sympathetic activity in patients with lateral epicondylalgia. Because this is the first study on thoracic mobilization in a population with lateral epicondylalgia, there is a need for further investigation” (p.9).
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: This article addresses specific chiropractic related techniques, not necessarily ones that an OT would be certified to perform during therapeutic sessions. So, this is out of the scope of our practice, but still relevant information to know in terms of varieties of therapeutic techniques for treating lateral epicondylitis.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Extensive precautions to create a valid testing set up. Somewhat medium sample size of 30 won’t lead to significant bias but might be some traces of it.

	Overview of Article
Type of Article	Overall Type: Primary Research Study Specific Type: mixed methods pilot study
APA Reference	Baptista, M., Kugel, J., Javaherian, H., & Krpalek, D. (2018). Functional outcomes of a community occupation-based hand therapy class for older adults. <i>Physical & Occupational Therapy In Geriatrics</i> , 36(4), 380–398. https://doi.org/10.1080/02703181.2018.1556230
Abstract	<p>Aim: This mixed methods study examined the functional outcomes of an occupation-based educational program for older adults with hand and wrist pain. A pretest–posttest design was used to understand changes in occupational performance, hand function, pain, grip and pinch strength, dexterity.</p> <p>Method: Two groups of classes met once a week for one hour, for four consecutive weeks. A total of 18 participants attended both weekly classes. Each class addressed functional activities, symptom management, exercises, questions, and sharing. Class content was determined based on pre-assessments of the Canadian occupational performance measure (COPM), tests of grip and pinch strength, hand dexterity, and open-ended semi-structured interviews.</p> <p>Results: All participants reported improvements in function, and significant improvements in COPM performance and satisfaction. Additionally, reported levels of pain significantly decreased from pre- to posttest.</p> <p>Conclusion: This study demonstrated that a community occupation-based hand therapy program is effective in improving occupational performance for older adults.</p>
Author	<p>Credentials: OTD, OTR/L; Certified Hand Therapist; Ergonomic Evaluator</p> <p>Position and Institution: School of Allied Health Professions, Loma Linda University, Loma Linda, California</p> <p>Publication History in Peer-Reviewed Journals: limited</p>
Publication	<p>Type of publication: scholarly peer-reviewed journal</p> <p>Publisher: Taylor & Francis Ltd</p> <p>Other: Physical & Occupational Therapy in Geriatrics</p>
Data and Citation History	<p>Date of publication: 2018</p> <p>Cited By: 3</p>
Stated Purpose or Research Question	“The purpose of this study was to determine (1) the outcomes of an educational program for older adults with hand and wrist pain and (2) the nature and extent of the effects on functional ability and hand pain” (p. 382).
Author’s Conclusion	“This mixed methods pilot study suggests that a 4-week community occupation-based hand therapy program was effective in improving occupational performance for older adults. The qualitative findings from this study added a dimension of personal insight into the

	Overview of Article
	functional lives of the participants further enriching the quantitative findings.” (p. 395).
Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: Research into successful treatment to upper extremity function depends on client factors, motivation, and personal meaningfulness to occupation. These factors influence a patient’s overall ability to decrease time in rehabilitation and return to work.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: Author credentialed hand therapist. Reputable journal and publisher. Publication within last 5 years.

	Overview of Article
Type of Article	Overall Type: Primary Research Study Specific Type: Descriptive Correlational
APA Reference	Thiese, M. S., Hegmann, K. T., Kapellusch, J., Merryweather, A., Bao, S., Silverstein, B., Tang, R., & Garg, A. (2016). Psychosocial factors related to lateral and medial epicondylitis: Results from pooled study analyses. <i>Journal of Occupational & Environmental Medicine</i> , 58(6), 588–593. https://doi.org/10.1097/JOM.0000000000000701
Abstract	<p>Objective: The goal is to assess the relationships between psychosocial factors and both medial and lateral epicondylitis after adjustment for personal and job physical exposures.</p> <p>Methods: One thousand eight hundred twenty-four participants were included in pooled analyses. Ten psychosocial factors were assessed.</p> <p>Results: One hundred twenty-one (6.6%) and 34 (1.9%) participants have lateral and medial epicondylitis, respectively. Nine psychosocial factors assessed had significant trends or associations with lateral epicondylitis, the largest of which was between physical exhaustion after work and lateral epicondylitis with and odds ratio of 7.04 (95% confidence interval = 2.02 to 24.51). Eight psychosocial factors had significant trends or relationships with medial epicondylitis, with the largest being between mental exhaustion after work with an odds ratio of 6.51 (95% confidence interval = 1.57 to 27.04).</p> <p>Conclusions: The breadth and strength of these associations after adjustment for confounding factors demonstrate meaningful relationships that need to be further investigated in prospective analyses</p>
Author	<p>Credentials: PhD, MSPH</p> <p>Position and Institution: Assistant Professor at the University of Utah’s Rocky Mountain Center for Occupational and Environmental Health</p> <p>Publication History in Peer-Reviewed Journals: 25+</p>
Publication	<p>Type of publication: Peer Reviewed</p> <p>Publisher: National Institute for Occupational Safety and Health</p>
Data and Citation History	<p>Date of publication: June 2017</p> <p>Cited By: 9</p>
Stated Purpose or Research Question	“The goal of this study is to quantify the relationship between independent outcomes of LE and ME psychosocial factors in both occupational and personal domains while controlling for occupational and personal factors that may confound this relationship.” (p. 2)

	Overview of Article
Author's Conclusion	“There are statistically significant relationships between numerous personal and occupational psychosocial factors and both medial and lateral epicondylitis that persisted after adjustment for personal demographics and job physical exposures. Additional evaluation of incidence data is needed to quantify the potential risk.” (p. 7)
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: Statistically significant relationships between the psychosocial factors with both lateral and medial epicondylitis that persist. Job physical exposures have seen to be a factor of this relationship. Individual differences create factors that can relate to lateral and medial epicondylitis repeating.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: Using descriptive statistics and correlations, relationships were found between the psychosocial factors and Le and ME. The study also “used a large sample size, multi-state capture, diverse populations, and systematic capture of symptoms and physical examinations.” (p.6)

	Overview of Article
Type of Article	Overall Type: Primary Research Study Specific Type: Randomized Controlled Trial
APA Reference	Tran, T., Harris, C., & Ciccarelli, M. (2021). The impact of a hand therapy workplace-based educational approach on the management of lateral elbow tendinopathy: A randomized controlled study. <i>Journal of Hand Therapy</i> . https://doi.org/10.1016/j.jht.2021.09.004
Abstract	<p>Background: Lateral elbow tendinopathy (LET) is one of the most prevalent work-related musculoskeletal conditions. Management strategies for LET rarely consider patients' work environments and have limited focus on education regarding occupational risk factors. Workplace-based rehabilitation has shown benefits in the return-to-work processes for injured workers with other health conditions, but no studies have investigated the impact of a workplace-based educational approach in the management of LET.</p> <p>Purposes: First, to identify the impact of an additional workplace-based educational intervention to standard hand therapy care on the outcomes of pain, grip strength, and function. Second, to identify the effectiveness of standard hand therapy on the same clinical outcomes.</p> <p>Study Design: A randomized controlled trial.</p> <p>Methods: Forty-nine participants were randomized to the control group ($n = 25$) or intervention group ($n = 24$). The control group received standard hand therapy for 12 weeks. The intervention group received standard hand therapy for the first 12 weeks plus an additional workplace-based educational intervention, "Working Hands-ED," delivered by a hand therapist. Pain levels for provocative tests, grip strength, and function were measured using a Numeric Rating Scale, Jamar Dynamometer, and the Patient-Rated Tennis Elbow Evaluation questionnaire at baseline, weeks 6 and 12. The Patient-Specific Functional Scale was also used for the intervention group.</p> <p>Results: There were no statistical differences between both groups for all clinical outcomes by 12 weeks ($P > .05$). Pain levels for all provocative tests and Patient-Rated Tennis Elbow Evaluation scores statistically improved within both groups ($P < .05$), however with small effect sizes observed. The Patient-Specific Functional Scale scores statistically improved for the intervention group by 12 weeks ($P < .05$).</p> <p>Conclusion: The addition of a hand therapy workplace-based intervention did not result in superior clinical outcomes for pain, grip strength, and function. The study identified that a multimodal self-management approach used by hand therapists improved their patients' pain and function regardless of whether the education was given in the clinic or the workplace.</p>

	Overview of Article
Author	Credentials: BSc OT Position and Institution: Curtin School of Allied Health, Curtin University, Perth, Western Australia, Australia Publication History in Peer-Reviewed Journals: 25+
Publication	Type of publication: Peer reviewed Publisher: Elsevier
Data and Citation History	Date of publication: October 29, 2021 Cited By: 0
Stated Purpose or Research Question	“The primary aim of this study was to identify the impact of an additional workplace-based educational intervention to standard hand therapy care on the outcomes of pain, grip strength, and function. The secondary aim was to identify the effectiveness of standard hand therapy on the same clinical outcomes.” (p. 2)
Author’s Conclusion	“The findings of this study suggest that the addition of a hand therapy workplace-based intervention to standard therapy care for work-related LET did not result in superior clinical outcomes for pain, grip strength, and function. The study identified that a multimodal self-management approach used by hand therapists improved their patient’s pain and function regardless of whether the education component was given in the clinic or the workplace.” (p. 9)
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: The article relates to EBP question 3 because it focuses on self-management approaches to regulating pain of lateral elbow tendinopathy.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: Hand-therapy workplace-based intervention did not result in statistically significant outcomes for pain, grip strength, and function. However, self-management multimodal approaches improved patient’s pain and function. The study was the first of its kind to measure the efficacy of including specific education within the context of the work environment.

	Overview of Article
Type of Article	Overall Type: Primary Research Study Specific Type: Retrospective Data Analysis
APA Reference	Bronchetti, E. T., & McInerney, M. P. (2015). What determines employer accommodation of injured workers? The influence of workers' compensation costs, state policies, and case characteristics. <i>ILR Review</i> , 68(3), 558–583. https://doi.org/10.1177/0019793915570874
Abstract	“Despite a recent dramatic increase in the rate of employer accommodation of injured workers, the extant literature provides little evidence on the determinants of accommodation or the reasons for this upward trend. In this study, the authors take a comprehensive approach to estimating the determinants of workplace accommodation, assessing the influence of employer workers' compensation (WC) costs; WC market features and state WC laws; and characteristics of firms, injured workers, and their injuries. Using state-level data from the BLS, they find that employer WC costs, WC market features, and state return-to-work (RTW) policies all have an impact on accommodation, but the effects are small and explain only one-fifth of the increase in restricted work. With data on injured workers from the NLSY79 and HRS, the authors study case-specific determinants of accommodation. Results suggest that employer and injury characteristics matter most, and these results are consistent with accommodation occurring mostly at large, experience-rated employers.” (p. 1)
Author	Credentials: PhD Economics Position and Institution: Assistant Professor in the Department of Economics, Swarthmore College Publication History in Peer-Reviewed Journals: extensive (25+)
Publication	Type of publication: scholarly peer-reviewed journals Publisher: ILR Review
Data and Citation History	Date of publication: February 17, 2015 Cited By: 18
Stated Purpose or Research Question	“This study takes a comprehensive approach to analyzing the determinants of workplace accommodation of injured workers and attempts to shed light on which of these factors are important in explaining the recent increase in accommodation.” (p. 2)
Author's Conclusion	“One interpretation of our finding that accommodation is most impacted by employer and injury characteristics may be that large employers put in place accommodation programs at the firm level, by implementing return-to-work programs, rather than weighing the costs and benefits of accommodating each injured worker.” (p. 25)
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate

	Overview of Article
	Rationale: While the article addresses return-to-work from an employer perspective, the findings have minimal implications for our particular question.
Overall Quality of Article	Overall Quality of Article: Good Rationale: The author is an experienced researcher, the journal that published it is reputable and peer-reviewed, and the article has been cited in other articles.

	Overview of Article
Type of Article	Overall Type: Primary Research Study Specific Type: A national, cross-sectional survey
APA Reference	Linden, M., & Milchus, K. (2014) Teleworkers with disabilities: characteristics a accommodation use. <i>Work</i> , 47(4), 473–483. https://doi.org/10.3233/WOR-141834
Abstract	<p>“BACKGROUND: The prevalence of telework among people with disabilities is not as great as the general population, despite the accommodative benefits of telework. OBJECTIVE: This study of employment and accommodation use patterns of people with disabilities investigates relationships between functional abilities, work location and nature, and accommodation use.</p> <p>PARTICIPANTS: Currently employed subjects with disabilities were recruited from client lists of research, technical assistance, and service provision centers, as well as through over 100 social networking venues focused on individuals with disabilities.</p> <p>METHODS: A national, cross-sectional survey was administered electronically. Details of accommodation use for 373 individuals were compared using Chi-Square distribution analysis. RESULTS: Those in white-collar and knowledge-based jobs were twice as likely to telework as other worker types, and teleworkers were twice as likely to use flexible scheduling. Only 47% of teleworkers reported telework as a job accommodation. Of those, 57% were satisfied with telework and 76% reported it as important to job task completion.</p> <p>CONCLUSIONS: Increased use of flexible scheduling, particularly among those who view telework as an accommodation, suggests the primary accommodative benefit of telework is to reduce pain and fatigue-related barriers to traditional employment. Relatively low satisfaction with telework suggests that it presents other employment-related barriers.” (p. 1)</p>
Author	<p>Credentials: Master of Biomedical Engineering</p> <p>Position and Institution: Associate Director of Research, Center for Inclusive Design and Innovation, Georgia Institute of Technology, Atlanta, Georgia</p> <p>Publication History in Peer-Reviewed Journals: extensive (25+)</p>
Publication	<p>Type of publication: scholarly peer-reviewed journal</p> <p>Publisher: Netherlands: IOS Press BV</p>
Data and Citation History	<p>Date of publication: April 1, 2014</p> <p>Cited By: 31</p>
Stated Purpose or Research Question	<p>“1) What are the differences in characteristics of employees with disabilities based on telework status? M. Linden and K. Milchus / Teleworkers with disabilities: Characteristics and accommodation use 475 2) What are the perceptions of employees with disabilities about the accommodative nature of telework? Specifically, a) Are employees with disabilities satisfied with telework? b) Do employees</p>

	with disability feel that telework is important in completing their job tasks? 3) What are the differences in accommodation use for employees with disabilities based on telework status? a) Are there differences in the numbers of accommodation used? b) Are there differences in types of accommodations used?” (p.3)
Author’s Conclusion	“Only a small majority report satisfaction with telework as an accommodation. Future research would be required to explore what barriers and undesirable effects telework presents for people with disabilities.” (p. 10)
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: This study has some relevance to our PICO question because it brings up possible barriers for using telework as a return-to-work strategy
Overall Quality of Article	Overall Quality of Article: Good Rationale: The author is an experienced researcher in a relevant field, the journal that published it is reputable and peer-reviewed, and the article has been cited in other articles.

	Overview of Article
Type of Article	Overall Type: Primary Research Study (qualitative) Specific Type: Semi-structured interviews
APA Reference	Seing, I., MacEachen, E., Ekberg, K., & Ståhl, C. (2015). Return to work or job transition? Employer dilemmas in taking social responsibility for return to work in local workplace practice. <i>Disability and Rehabilitation</i> , 37(19), 1760–1769. https://doi.org/10.3109/09638288.2014.978509
Abstract	<p>“Purpose The aim was to analyze the role and activities of employers with regard to return to work (RTW), in local workplace practice. Method Semi-structured interviews were conducted with sick-listed workers and their supervisors in 18 workplaces (n=36). The analytical approach to study the role of employers in RTW was based on the three-domain model of social corporate responsibility. The model illustrates the linkage between corporations and their social environment and consists of three areas of corporate responsibility: economic, legal, and ethical. Results Employers had difficulties in taking social responsibility for RTW, in that economic considerations regarding their business took precedence over legal and ethical considerations. Employers engaged in either ‘RTW activities’ or ‘transition activities’ that were applied differently depending on how valued sick-listed workers were to their business, and on the nature of the job (e.g., availability of suitable work adjustments). Conclusions This study suggests that Swedish legislation and policies does not always adequately prompt employers to engage in RTW. There is a need for further attention to the organizational conditions for employers to take social responsibility for RTW in the context of business pressure and work intensification. “(p.2)</p>
Author	<p>Credentials: PhD Position and Institution: Senior Lecturer, National Centre for Work and Rehabilitation, Department of Medical and Health Sciences, Linköping University Publication History in Peer-Reviewed Journals: extensive (25+)</p>
Publication	<p>Type of publication: scholarly peer-reviewed journals Publisher: Linköping University Electronic Press</p>
Data and Citation History	<p>Date of publication: 2015 Cited By: 58</p>
Stated Purpose or Research Question	<p>“The aim of this study was to analyze the role and activities of employers with regard to RTW, in local workplace practice. Special focus is on how economic, legal and ethical considerations influence their willingness and ability to engage in RTW activities.” (p. 6)</p>
Author’s Conclusion	<p>“This study illustrates how employers had several difficulties in taking social responsibility for RTW; and that economic considerations for their business took precedence over legal and ethical considerations. Current legislation had a limited practical</p>

	Overview of Article
	impact on employers' activities in RTW, since these could support both RTW and transition, and involvement in formal RTW procedures could legitimize the decisions of employers not to provide suitable adjustments for sick-listed workers." (p. 24)
Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: This article directly addresses our questions regarding employer attitudes about return-to-work
Overall Quality of Article	Overall Quality of Article: Good Rationale: The author is an experienced researcher in a relevant field, the journal that published it is reputable and peer-reviewed, and the article has been cited in other articles

	Overview of Article
Type of Article	Overall Type: Primary Research Study Specific Type: Student Dissertation. “To investigate the research hypotheses, linear, generalized logit chi-squared and one-way ANOVA tests were conducted to examine differences between women and men with physical disabilities at acceptance into the VR system” (Featherston, 2011).
APA Reference	Featherston, J. F. (2011). Gender equity and differences in support in the vocational rehabilitation system. <i>Graduate Theses and Dissertations</i> . https://scholarworks.uark.edu/etd/227
Abstract	“Women with disabilities have different vocational rehabilitation (VR) experiences than men with disabilities. When they enter the VR system, they tend to be older, divorced, primary caregivers, more dependent on public assistance, and have less education and less work experience than their male counterparts. Given these differences, women may need to receive different treatment than men, yet the Civil Rights Act of 1964 (Pub.L. 88-352, 78 Stat. 241, July 2, 1964) and the Equal Protection clause of the Fourteenth Amendment state that men and women must be treated equally within the state-federal vocational rehabilitation system. Because they have been out of the workforce for longer periods of time than men, they may require educational services that can prepare them for work. They may also benefit from ancillary services such as childcare and transportation that would allow them to get the additional training or services they need to become successfully employed. Men experience higher numbers of successful closures in the VR system, which means that they are able to maintain employment for at least 90 days. Participants for the current study will be consumers with physical disabilities from the RSA-911 data set from fiscal year (FY) 2006. The study examined whether men and women with physical disabilities enter the vocational rehabilitation (VR) system with different types and amounts of various supports. To investigate the research hypotheses, linear, generalized logit chi-squared and one-way ANOVA tests were conducted to examine differences between women and men with physical disabilities at acceptance into the VR system. Results indicate differences for men and women with physical disabilities in terms of types and amounts of public support received. Implications for service provision and disability policies are discussed, as well as limitations of the study and recommendations for further research” (p.5).
Author	Credentials: Graduate Student Position and Institution: The University of Texas at Dallas; Bachelor of Arts in Psychology, 2000; University of Texas Southwestern Medical Center at Dallas Master of Science in Rehabilitation Counseling Psychology, 2005

	Overview of Article
	Publication History in Peer-Reviewed Journals: Limited; There is one other source by this author.
Publication	Type of publication: Gray literature: Dissertation Publisher: University of Arkansas, Fayetteville, ScholarWorks@UARK
Data and Citation History	Date of publication: 12/2011 Cited By: It has not been cited by any other authors
Stated Purpose or Research Question	<p>“Research question 1. Do women with physical disabilities who are accepted into the VR system and do not receive an IPE differ in types and amounts of support than men with physical disabilities who are accepted into the VR system and do not receive an IPE? Research Hypothesis 1. Is there a significant difference in types of support among women with physical disabilities and men with physical disabilities who are accepted into the VR system and do not receive an IPE?” (p. 91)</p> <p>“Research Hypothesis 2. Is there a significant difference in the amount of support among women with physical disabilities and men with physical disabilities who are accepted into the VR system and do not receive an IPE? Research Question 2. Do women with physical disabilities are accepted into the VR system and do receive an IPE differ in types and amounts of support than men with physical disabilities who are accepted into the VR system and do receive an IPE?” (p. 92).</p> <p>“Research Hypothesis 3. Is there a significant difference in types of support among women with physical disabilities and men with physical disabilities who are accepted into the VR system and do receive an IPE?” (p. 92).</p> <p>“Research Hypothesis 4. Is there a significant difference in the amount of support among women with physical disabilities and men with physical disabilities who are accepted into the VR system and do receive an IPE?” (p. 94).</p>
Author’s Conclusion	“The research revealed that women received fewer and lower benefits than men, meaning that these programs do not protect women with disabilities from the economic threats associated with disability in the same way that they protect men” (p. 1).
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: This dissertation identified the differences between vocational rehabilitation services for male and female adults and some reasoning behind those differences. This is relevant to the EBP question because it gives a bigger perspective how adults are receiving vocational rehabilitation services that have disabilities (including injury).
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: Although this source is very extensive and thorough, the value of the source decreases because the author has not been doing

	Overview of Article
	any other research or cited in any other works, as well as the source being a dissertation.

	Overview of Article
Type of Article	Overall Type: Primary Research Study (qualitative, quantitative, etc.) Specific Type: Interview; “Subjects in all cases were interviewed individually and within their own home. The length of interviews ranged from 15 minutes to 90 minutes, with the majority being between 30 and 60 minutes. With the permission of the participants, the interviews were tape recorded and transcribed. In conducting the interviews, it was hoped that the researcher’s obvious familiarity with the area of SCI rehabilitation would facilitate interview “honesty” but no specific procedures were instituted to test for social bias or misreporting in the conduct of the interview” (275).
APA Reference	Murphy, G. C., & King, N. J. (2007). Clinical data illustrating the need for greater involvement of behaviorally-oriented psychologists in the design and delivery of rehabilitation services. <i>Behavior Analyst Today</i> , 8(3), 273–283.
Abstract	Post-injury vocational achievement is an important index of successful rehabilitation. This study involved the identification of factors reported to influence (positively or negatively) labour force participation of people with spinal cord injury (SCI). Forty participants were selected from a larger study of 450 based on the most extreme prediction errors from the application of a discriminant function analysis, which aimed to predict vocational achievement (both in and not in the labour force) post-SCI. Participants were interviewed to gain an understanding of their explanations for their labour force status. Factors nominated as most influencing post-injury achievements were family, friends and representatives of pre-injury employers. Implications of these findings for the delivery of rehabilitation services are presented, including the value of having service plans based on a behaviour analysis of the influence of environmental factors” (p. 273).
Author	Credentials: PhD Position and Institution: School of Public Health, Faculty of Health Sciences Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: Journal Articles; Reports - Research Publisher: Behavior Analyst Today
Data and Citation History	Date of publication: 01/01/2007 Cited By: Has not been cited by any other research
Stated Purpose or Research Question	“The aim was to identify factors beyond those assessed originally which participants perceived to have influenced their post-injury situations and achievements. It was anticipated that emerging factors could usefully guide future research and service in the area of vocational achievement following serious injury” (p. 274).
Author’s Conclusion	“At the individual level, having been self-employed pre-injury seemed to have been a powerful influence on more than a third of the

	Overview of Article
	“positive surprise” group. The pre-injury self-employed status seems to be associated with certain attitudes or behaviours not well assessed by psychological measures usually used by vocational rehabilitation researchers. Certainly, the role of pre-injury self-employment has been largely ignored in the SCI rehabilitation literature, and indeed in the wider vocational rehabilitation literature” (p. 280).
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: Post-injury vocational achievement is important to consider for adults when thinking about returning to their job. This source looks at the understanding of adults’ environmental factors towards injury and vocational rehabilitation.
Overall Quality of Article	Overall Quality of Article: Good Rationale: This is a peer-reviewed article that has detailed graphs and tables to identify the data being presented. The author also has good credentials to understand and relay the information.

	Overview of Article
Type of Article	Overall Type: Primary research study Specific Type: Cross sectional, survey study
APA Reference	Tran, T., Falkmer, T., & Ciccarelli, M. (2020). Do hand therapists have a role in workplace-based education to manage tennis elbow? Beliefs about effective treatments among Australian hand therapists and medical practitioners. <i>Work</i> , 66(3), 539–549. https://doi.org/10.3233/WOR-203196
Abstract	“Background: Lateral elbow tendinopathy (LET), commonly known as tennis elbow, is a prevalent work-related upper extremity musculoskeletal disorder. Medical practitioners and hand therapists manage LET with commonly available clinic-based treatments, despite no sound evidence to suggest long-term relief and functional restoration for workers with LET. Workplace-based rehabilitation is effective for injured workers with other health conditions, but no studies have investigated this rehabilitation approach in the management of LET. Objectives: (i) Identify, compare, and contrast Australian hand therapists' and medical practitioners' perceptions about the effectiveness of common treatments for LET, and (ii) obtain their views towards a hand therapist delivered workplace-based education approach. Methods: In this cross-sectional study, 38 medical practitioners from Western Australia and 104 hand therapists around Australia completed online surveys. Independent t-tests were used to identify between-group differences in responses. Results: Despite some between-group differences regarding the perceived effectiveness of common LET treatments, both groups believed education about LET pathology, activity modification, postures, and workplace recommendations were most effective. Most medical practitioners (81%) and hand therapists (71%) believed workplace-based education delivered by a hand therapist would be beneficial for patients with acute and chronic LET. Conclusion: Australian hand therapists and medical practitioners believed educational approaches were the most important component in the management of LET, and supported workplace-based educational interventions provided by hand therapists in the management of LET.” (Pg. 1)
Author	Credentials: BSc (OT), (Hons) Position and Institution: Corresponding author. Curtin School of Allied Health, Curtin University. Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: Journal of Hand Therapy
Data and Citation History	Date: 2020 Cited By: 2

	Overview of Article
Stated Purpose or Research Question	“The primary aim of this study was to identify the impact of an additional workplace-based educational intervention to standard hand therapy care on the outcomes of pain, grip strength, and function. The secondary aim was to identify the effectiveness of standard hand therapy on the same clinical outcomes.” (Pg. 2)
Author’s Conclusion	“The findings of this study suggest that the addition of a hand therapy workplace-based intervention to standard therapy care for work-related LET did not result in superior clinical outcomes for pain, grip strength, and function. The study identified that a multimodal self-management approach used by hand therapists improved their patient’s pain and function regardless of whether the education component was given in the clinic or the workplace.” (Pg. 9)
Overall Relevance to you EBP Question	Overall Relevance to EBP Question: Good Rationale: Although the education component that was given in the clinic/workplace was not necessary, this study is still directly related to how occupational therapy, specifically hand therapy can improve patients’ with LET’s pain & function.
Overall Quality of Article	Overall Quality of Article: Good Quality Rationale: Established author. Reputable journal and publisher. Publication within last 10 years

	Overview of Article
Type of Article	Overall Type: Primary research study Specific Type: Questionnaire
APA Reference	Peters, S. E., Truong, A. P., & Johnston, V. (2018). Stakeholders identify similar barriers but different strategies to facilitate return-to-work: A vignette of a worker with an upper extremity condition. <i>Work: Journal of Prevention, Assessment & Rehabilitation</i> , 59(3), 401-412. http://dx.doi.org/10.3233/WOR-182692
Abstract	<p>“BACKGROUND: Stakeholders involved in the return-to-work (RTW) process have different roles and qualifications OBJECTIVE: To explore the perspectives of Australian stakeholders of the RTW barriers and strategies for a worker with an upper extremity condition and a complex workers' compensation case. METHODS: Using a case vignette, stakeholders were asked to identify barriers and recommend strategies to facilitate RTW. Content analysis was performed on the open-ended responses. The responses were categorized into RTW barriers and strategies using the biopsychosocial model. Pearson's Chi Square and ANOVA were performed to establish group differences. R RESULTS: 621 participants (488 healthcare providers (HCPs), 62 employers, 55 insurers and 16 lawyers) identified 36 barriers (31 modifiable): 4 demographics; 8 biological; 15 psychological and 9 social barriers. 484 participants reported 16 RTW strategies: 4 biological; 6 psychological and 6 social strategies. 'Work relationship stressors' (83.4%) and 'Personal relationship stressors' (64.7%) were the most frequently nominated barriers. HCPs most frequently nominated 'Pain management' (49.6%), while employers, insurers and lawyers nominated 'RTW planning/Suitable duties programs' (40.5%; 42.9%; 80%). CONCLUSIONS: Stakeholders perceived similar barriers for RTW but recommended different strategies. Stakeholders appeared to be more proficient in identifying barriers than recommending strategies. Future research should focus on tools to both identify RTW barriers and direct intervention” (p. 401).</p>
Author	<p>Credentials: unknown Position and Institution: Occupational Therapy, School of Health and Rehabilitation Sciences, The University of Queensland, QLD, Australia; Brisbane Hand and Upper Limb Research Institute, Brisbane, QLD, Australia; Harvard Center for Work, Health and Wellbeing, Harvard T.H. Chan School of Public Health, Boston, MA, USA Publication History in Peer-Reviewed Journals: extensive 25+</p>
Publication	<p>Type of publication: Scholarly Peer Reviewed Publisher: IOS Press; Australian Hand Therapy Association</p>

	Overview of Article
	Other: unknown
Data and Citation History	Date of publication: 2018 Cited By: 5
Stated Purpose or Research Question	“The aim of this study was to explore the level of agreement between Australian stakeholders on the barriers and subsequent strategies for RTW using a vignette of a worker with a non-traumatic UE disorder with a complex case history using the biopsychosocial model as a framework” (p. 402).
Author’s Conclusion	“Stakeholders perceived similar barriers to RTW but identified different strategies according to their area of professional expertise. Employers and insurers were more consistent in the barriers identified. HCPs tended to report more biological-related strategies than the other stakeholder groups” (p. 410)
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: This article could help us understand biological, psychological, and social barriers and strategies for employees who return to work after experiencing an upper extremity injury.
Overall Quality of Article	Overall Quality of Article: Poor Rationale: The study was based on a hypothetical vignette and examined the perceptions of stakeholders on their employees returning to work after an upper extremity injury, not on the perceptions of the employees themselves. Our EBP question focused on the client’s perspective.

	Overview of Article
Type of Article	Overall Type: Primary Research Study Specific Type: baseline, cross sectional data for these prospective cohort studies.
APA Reference	Hegmann, K. T., Thiese, M. S., Kapellusch, J., Merryweather, A., Bao, S., Silverstein, B., Wood, E. M., Kendall, R., Foster, J., Drury, D. L., & Garg, A. (2017). Association between epicondylitis and cardiovascular risk factors in pooled occupational cohorts. <i>BMC Musculoskeletal Disorders</i> , 18(1), 227. https://doi.org/10.1186/s12891-017-1593-2
Abstract	<p>Background: The pathophysiology of lateral epicondylitis (LE) is unclear. Recent evidence suggests some common musculoskeletal disorders may have a basis in cardiovascular disease (CVD) risk factors. Thus, we examined CVD risks as potential LE risks.</p> <p>Methods: Workers (n= 1824) were enrolled in two large prospective studies and underwent structured interviews and physical examinations at baseline. Analysis of pooled baseline data assessed the relationships separately between a modified Framingham Heart Study CVD risk score and three prevalence outcomes of: 1) lateral elbow pain, 2) positive resisted wrist or middle finger extension, and 3) a combination of both symptoms and at least one resisted maneuver. Quantified job exposures, personal and psychosocial confounders were statistically controlled. Odds ratios (ORs) and 95% Confidence Intervals (CIs) were calculated.</p> <p>Results: There was a strong relationship between CVD risk score and lateral elbow symptoms, resisted wrist or middle finger extension and LE after adjustment for confounders. The adjusted ORs for symptoms were as high as 3.81 (95% CI 2.11, 6.85), for positive examination with adjusted odds ratios as high as 2.85 (95% CI 1.59, 5.12) and for combined symptoms and physical examination 6.20 (95% CI 2.04, 18.82). Relationships trended higher with higher CVD risk scores.</p> <p>Conclusions: These data suggest a potentially modifiable disease mechanism for LE.</p>
Author	<p>Credentials: MD, MPH, PI</p> <p>Position and Institution: Rocky Mountain Center for Occupational and Environmental Health (RMCOEH), School of Medicine, University of Utah</p> <p>Publication History in Peer-Reviewed Journals: extensive</p>
Publication	<p>Type of publication: scholarly peer-reviewed journal</p> <p>Publisher: Springer Nature</p> <p>Other: National Institute for Occupational Safety and Health (NIOSH/CDC); NIOSH Education and Research Center</p>

Data and Citation History	Date of publication: 2017 Cited By: 7
Stated Purpose or Research Question	“The purpose of this study is to evaluate the potential for association(s) between cardiovascular disease risk factors and LE separately in a large, pooled study of three prospective cohort studies involving systematic data collected from over 1800 workers in 35 workplaces in 4 US states.” (p. 2).
Author’s Conclusion	“This study suggests there is a strong association between CVD risk score and LE that demonstrates strength of association, consistency with other studies evaluating individual CVD factors, a biological gradient response, and biological plausibility” (p. 7).
Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: Research into cardiovascular risk may influence clinical care for populations affected by lateral epicondylitis. Evidence suggested a strong relationship between cardiovascular disease and LET which can compound an employee’s return to work.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Established and credentialed author. Reputable journal and publisher. Stakeholders in occupational and environmental safety are invested in mitigating risk factors to prevent workplace injuries. Publication within the last 5 years.

	Overview of Article
Type of Article	Overall Type: Primary Research Study (mixed methods) Specific Type: Questionnaire
APA Reference	Nilsson, P., Lindgren, E.-C., & Månsson, J. (2012). Lateral epicondylalgia. A quantitative and qualitative analysis of interdisciplinary cooperation and treatment choice in the Swedish health care system. <i>Scandinavian Journal of Caring Sciences</i> , 26(1), 28–37. https://doi.org/10.1111/j.1471-6712.2011.00899.x
Abstract	<p>“Lateral epicondylalgia. A quantitative and qualitative analysis of interdisciplinary cooperation and treatment choice in the Swedish health care system Objective and aim: Interdisciplinary cooperation is essential to develop a broad range of knowledge and skills. The aim of this study was to describe health care professionals’ treatment choices, their cooperation with other professionals and their perceptions of potential risks regarding treatments of acute lateral epicondylalgia (LE). Design: A quantitative descriptive study design with a summative approach to qualitative analysis. Ethical issues: The ethical committee was asked verbally for approval but, as this study was performed to develop an organized way to treat LE, it did not require approval. The four ethical aspects of information, consent, confidentiality and the use of the study materials were all addressed. Subjects: All orthopedic surgeons, general practitioners, physiotherapists and occupational therapists in a county. Methods: Questionnaire with 18 dichotomous, multiple response, multiple-choice questions and three open-ended questions were analyzed using quantitative crosstab and qualitative content analysis with a summative approach. Results: The most common treatment choices were Non-Steroidal Anti-Inflammatory Drugs (NSAID), corticosteroid injections, training programmes, braces and ergonomics. Advantages from interdisciplinary cooperation were higher rated than disadvantages. The qualitative findings dealt with perceptions of interdisciplinary cooperation and resulted in three categories: right level of care, increased quality of care and decreased quality of care. Almost half of the physicians felt potential risks associated with their treatment methods. The qualitative findings dealt with perceptions of the potential risks and resulted in two categories: side effects and inadequate treatment. Study limitations: The number of responses varied because some of the respondents did not answer all of the questions. Conclusion: Interdisciplinary cooperation in the treatment of patients with acute LE benefits the patients by shortening the rehabilitation period and provides health care professionals the opportunity for an improved learning and exchanging experiences. These basic conditions must be met to improve health care quality.” (p. 1)</p>

	Overview of Article
Author	Credentials: PhD Economics Position and Institution: Associate professor in Economics Swedish University of Agricultural Sciences, Department of Economics Publication History in Peer-Reviewed Journals: extensive (25+)
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Scandinavian Journal of Caring Sciences
Data and Citation History	Date of publication: March 1, 2012 Cited By: 15
Stated Purpose or Research Question	“The aim of this study was to describe health care professionals’ treatment choices, their cooperation with other health care professionals and their perceptions of potential risks regarding treatments for acute LE.” (p. 2)
Author’s Conclusion	“The main findings of this study were that interdisciplinary cooperation exists in primary health care in the treatment of LE and that many health care professionals perceived that such cooperation increased the quality of care. Cortisone was described as a high-risk treatment but was still the most used amongst GPs and OSs despite the perceptions that PTs and OTs might be the right level of care for these patients.” (p. 7)
Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: This study finds that doctors believe that pharmaceutical treatments are inadequate for treating LE and that collaboration with OTs and PTs improves outcomes. This relates directly to my research topic on the benefits and drawbacks of pharmaceutical treatments for LE
Overall Quality of Article	Overall Quality of Article: Good Rationale: The author is an experienced researcher, the journal that published it is reputable and peer-reviewed, and the article has been cited in other articles. The study design is sound and limitations were appropriately addressed.

	Overview of Article
Type of Article	Overall Type: Primary Research Study Specific Type: randomized cross-over study
APA Reference	Dones, V. C., Serra, M. A. B., Kamus, G. O. T., Esteban, A. C., Mercado, A. M. S., Rivera, R. G. A., Vergara, A. C. B., Francisco, R. J., De Ocampo, L. M., & De Jesus, P. J. P. (2019). The effectiveness of biomechanical taping technique on visual analogue scale, static maximum handgrip strength, and patient rated tennis elbow evaluation of patients with lateral epicondylalgia: A cross-over study. <i>Journal of Bodywork and Movement Therapies</i> , 23(2), 405–416. https://doi.org/10.1016/j.jbmt.2018.05.004
Abstract	<p>“Introduction: Lateral epicondylalgia (LE) is a musculoskeletal injury involving the common extensor origin in elbow manifesting as pain and ineffective handgrip affecting the daily activities of the individuals with LE. Objectives: This study determined the effectiveness of Standard Biomechanical Taping (SBMT), Vector Correcting Dysfunction Techniques 1 (VCDT 1) and Vector Correcting Dysfunction Technique 2 (VCDT 2); and compared their differences on effects on pain, grip strength and daily functions of individual with unilateral LE. Methods: A cross-over study design was used. The senior investigator applied three BMT techniques namely: a. SBMT, b. VCDT 1, and c. VCDT 2. On Day 1, SBMT and VCDT1 were randomly assigned. On Day 3, either SBMT or VCDT1 not performed on Day 1 was applied to LE elbows. On Day 5, VCDT2 was applied on LE elbows. Visual Analogue Scale (VAS), Static Maximum Handgrip Strength Test (SMHGT) and Patient-Rated Tennis Elbow Evaluation (PRTEE) were used as outcome measures administered by three blinded junior investigators. On Days 1, 3, and 5, VAS and SMGHT were administered before and during BMT application. PRTEE was administered on Days 1 and 12. Results: The following were found in this study: a. significantly decreased VAS scores at Days 1, 3, and 5 of BMT application ($p < 0.05$); b. significantly improved final VAS, SMHGT strength and PRTEE scores on Day 12 compared to baseline scores on Day 1 ($p < 0.01$); and c. significantly decreased VAS scores when using SBMT compared to VCDT2 ($p < 0.05$). Conclusion: BMT is a novel taping technique effective in decreasing lateral elbow pain, increasing handgrip strength, and improving function of patients with LE. BMT can be applied on painful elbows effecting a better grip among patients with LE. (p. 1)”</p>
Author	Credentials: Doctor of Philosophy in Health Sciences, University of South Australia – Australia, 2013; Master of Science in Physical Therapy, University of Santo Tomas – Manila, Philippines, 2006;

	<p>Bachelor of Science in Physical Therapy (Cum Laude), University of Santo Tomas – Manila, Philippines, 1999</p> <p>Position and Institution: Professor at College of Rehabilitation Sciences, University of Santo Tomas, Philippines</p> <p>Publication History in Peer-Reviewed Journals: Extensive (20)</p>
Publication	<p>Type of publication: scholarly peer-reviewed journal</p> <p>Publisher: Journal of Bodywork & Movement Therapies</p>
Data and Citation History	<p>Date of publication: 2019</p> <p>Cited By: 11</p>
Stated Purpose or Research Question	<p>“Considering the lack of articles examining the effects of BMT on clinical manifestations of LE on elbows of patients, this study aimed to determine: 1. The effectiveness of SBMT, VCDT 1 and VCDT 2 on pain, handgrip strength, and daily functions of patients with LE; and 2. Compare the results of SBMT, VCDT 1 and VCDT 2 on pain, handgrip strength, and daily functions of patients with LE.” (p. 3)</p>
Author’s Conclusion	<p>“BMT is a novel taping technique effective in decreasing lateral elbow pain, increasing handgrip strength, and improving function of patients with lateral epicondylalgia. The BMT fascia tape through skin-fascia lift may be effective in holding the hypoechoogenicity in the common extensor origin and BMT skin tape through its elasticity may be effective in increasing slide in between fascia and muscle improving pain and function of patients with LE.” (p. 9).</p>
Overall Relevance to you EBP Question	<p>Overall Relevance of Article: Moderate</p> <p>Rationale: The article addresses a specific treatment to improve the symptoms of LE which may facilitate return-to-work; however, taping is not considered a PAMs treatment and so it is not directly applicable to our PICO question.</p>
Overall Quality of Article	<p>Overall Quality of Article: Good</p> <p>Rationale: The author is an experienced researcher in a relevant field, the journal that published it is reputable and peer-reviewed, and the article has been cited in other articles. The study design controlled well for bias and other confounding factors. Statistical analysis was appropriate to answer the research question.</p>

	Overview of Article
Type of Article	Overall Type: Primary Research Study Specific Type: Randomized placebo-controlled pilot study
APA Reference	Kim, L.J., Hyunsu, C., & Donguchul, M. (2012). Improvement of pain and functional activities in patients with lateral epicondylitis of the elbow by mobilization with movement: A randomized, placebo-controlled pilot study. <i>Journal of Physical Therapy</i> , 24(9): 787-790. https://doi.org/10.1589/jpts.24.787
Abstract	“There is little known about mobilization with movement (MWM) which is used to treat lateral epicondylitis of the elbow and its effects on functional activities. The purpose of this study was to investigate the effects of the mobilization-with-movement technique on elbow pain and functional activities of subjects with lateral epicondylitis. [Methods] Ten subjects with lateral epicondylitis of the elbow were randomly divided into an experimental group (n=5) and a placebo control group (n=5). Therapeutic intervention for both groups included general therapy such as hot packs, transcutaneous electrical nerve stimulation, ultrasound therapy, and deep friction massage. The experimental group received MWM, whereas the placebo control group received sham MWM after general therapy. All subjects received therapeutic intervention every other day for 10 days. Pain and functional activities were assessed before and after the interventions using the patient-rated tennis elbow evaluation scale (PRTEE). [Results] Significant and clinically meaningful improvements in pain, special activity, and usual activity sub-domains were found post-intervention in the experimental group. [Conclusion] The results indicate that mobilization-with-movement has a positive effect on both pain and functional activities of patients with lateral epicondylitis.” (p.787)
Author	Credentials: PhD, PT Position and Institution: Professor at Department of Physical Therapy, College of Health Sciences, Catholic University of Pusan Publication History in Peer-Reviewed Journals: extensive, several pages of results
Publication	Type of publication: scholarly peer reviewed journal Publisher: Journal of Physical Therapy Science Other: From JSTAGE (Japanese database)
Data and Citation History	Date of publication: 1-31-2021 Cited By: 9
Stated Purpose or Research Question	“The purpose of this study was to investigate the effects of the mobilization-with-movement technique on elbow pain and functional activities of subjects with lateral epicondylitis.” (p.787)
Author’s Conclusion	“... correction of positional faults through MWM encourages normal joint motion and joint fluid flow, inducing recovery” (p.788)

Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: This article directly relates to our question of how PAMs (including hot packs, transcutaneous electrical nerve stimulation, ultrasound therapy, deep friction massage) can reduce pain due to lateral epicondylitis and the effect on functional activity.
Overall Quality of Article	Overall Quality of Article: Good Rationale: The author is established, and the article is published in a reputable journal. The authors provide extensive and well-written detail and provide 24 references. The methods of using randomized samples improves the relevance of this article, but the sample size was very small, so the information found is not generalizable. This pilot study article is useful because it delves into a topic that requires more research and increases the knowledge of this topic.

Review of Research

	Overview of Article
Type of Article	Overall Type: Review of Research Study Specific Type: One group pre-post longitudinal study (title says Case series study, however they have 60 participants)
APA Reference	Testa, G., Vescio, A., Perez, S., Petrantoni, V., Mazzarella, G., Costarella, L., & Pavone, V. (2020). Functional outcome at short and middle term of the extracorporeal shockwave therapy treatment in lateral epicondylitis: A case-series study. <i>Journal of Clinical Medicine</i> , 9(3), 633. https://doi.org/10.3390/jcm9030633
Abstract	“Lateral epicondylitis (LE) of the humerus is a chronic degeneration of wrist extensor tendons at their attachments to the lateral epicondyle of the humerus. There is not a common consensus on a specific therapeutic algorithm, but Extracorporeal Shockwave Therapy (ESWT) is widely used. The purpose of this study is to evaluate the clinical benefits of low dose ESWT in LE-affected patients in short and medium follow-up. Between January 2015 and December 2017, 60 patients (38 male, mean age 52.2 ± 10.1 years, the duration of the disease was 3.6 ± 1.3 months) were clinically evaluated using visual analog scale (VAS) and Patient Rated Tennis Elbow Evaluation Test (PRTEE-I) scores before treatment, at one, three, six and 12 months after treatment. According to the VAS and PRTEE-I scoring systems, all patients achieved an improvement of pain and functional outcome by comparing the baseline results with one, six- and 12-months values. Low dose ESWT is a safe and effective treatment of LE in the short and middle term. In elderly subjects, patients with a long disease history, or those with occupational and sportive risk factors, a longer persistence of the symptomatology could be observed.” (p.1)
Author	Credentials: MD Position and Institution: Department of General Surgery and Medical Surgical Specialties, Section of Orthopedics and Traumatology, A.O.U. Policlinico-Vittoria Emanuele, University of Catania Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: scholarly peer-reviewed journal (Journal of Clinical Medicine) Publisher: MDPI Open Access Journals
Data and Citation History	Date of publication: 2-27-2020 Cited By: 5
Stated Purpose or Research Question	“The purpose of this study is to evaluate the clinical benefits of low dose ESWT in LE-affected patients in short and medium follow-up” (p.1)
Author’s Conclusion	“Low dose extracorporeal shock wave therapy is a safe and effective treatment of LE in the short and middle term. In elderly subjects,

	Overview of Article
	patients with a long disease history, or with occupational and sportive risk factors a longer persistence of the symptomatology could be observed.” (p.6)
Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: This article discusses the effectiveness of extracorporeal shock wave therapy, which is a type of PAM, for lateral epicondylitis.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Established author and reputable journal. The study design includes a short term and medium-term follow up with 60 patients of the ESWT treatment. This demonstrates that the study focuses on the effectiveness of an intervention on a sample of the population that has LE.

	Overview of Article
Type of Article	Overall Type: Review of Research Study Specific Type: Systematic Review
APA Reference	Padula, R. S., Comper, M. L. C., Sparer, E. H., & Dennerlein, J. T. (2017). Job rotation designed to prevent musculoskeletal disorders and control risk in manufacturing industries: A systematic review. <i>Applied Ergonomics</i> , 58, 386–397. https://doi.org/10.1016/j.apergo.2016.07.018
Abstract	To better understand job rotation in the manufacturing industry, we completed a systematic review asking the following questions: 1) How do job-rotation programs impact work-related musculoskeletal disorders (MSDs) and related risk control for these MSDs, as well as psychosocial factors? and 2) How best should the job rotation programs be designed? We searched MEDLINE, EMBASE, Business Source Premier, ISI Web of Knowledge, CINAHL, PsyINFO, Scopus, and SciELO databases for articles published in peer-reviewed journals. Eligible studies were examined by two independent reviewers for relevance (population of manufacturing workers, outcomes of musculoskeletal disorders, physical factors, psychosocial factors, and strategies used in job-rotation implantation) and methodological quality rating. From 10,809 potential articles, 71 were read for full text analysis. Of the 14 studies included for data extraction, two were non-randomized control trial studies, one was a case-control study, and 11 were cross-sectional comparisons. Only one, with a case-control design, was scored with good methodological quality. Currently, weak evidence exists supporting job rotation as a strategy for the prevention and control of musculoskeletal disorders. Job rotation did not appear to reduce the exposure of physical risk factors; yet there are positive correlations between job rotation and higher job satisfaction. Worker training has been described as a crucial component of a successful job-rotation program. The studies reported a range of parameters used to implement and measure job-rotation programs. More rigorous studies are needed to better understand the full impact of job rotation on production and health.
Author	Credentials: Masters and Doctoral Program in PT Position and Institution: São Paulo, Brazil Publication History in Peer-Reviewed Journals: 25+
Publication	Type of publication: Peer reviewed Publisher: Elsevier
Data and Citation History	Date of publication: 9 August 2016 Cited By: 115
Stated Purpose or Research Question	“The specific questions addressed in this review are: 1. What is the effect of job rotation in manufacturing workers? In terms of:

	Overview of Article
	<p>a) specific work-related musculoskeletal issues (disorders, complaints, injury, pain, discomfort)</p> <p>b) risk control for MSDs, specifically exposure to physical load (posture, force, biomechanics, fatigue, effort exertion)</p> <p>c) psychosocial work factors (job satisfaction, stress, job control, engagement)</p> <p>2. How should such job-rotation programs be designed?" (p. 387)</p>
Author's Conclusion	<p>"We were only able to find a limited number of current studies on job rotation in manufacturing industries. Therefore, it was not possible to make any solid conclusions on job-rotation effectiveness with regard to prevention and control of MSDs. Weak evidence exists for the reduction of exposure to physical overload and for the influence of psychosocial factors. Although some studies have attempted to provide support for the advantages of a job-rotation program, the methodological quality was often poor, and they had inappropriate designs for assessing outcomes." (p. 396)</p>
Overall Relevance to you EBP Question	<p>Overall Relevance of Article: Poor</p> <p>Rationale: Weak evidence was found for the reduction of exposure to physical overload. There cannot come to solid conclusions on job-rotation effectiveness with prevention and control of MSD.</p>
Overall Quality of Article	<p>Overall Quality of Article: Poor</p> <p>Rationale: Limitations on the article were related to only finding information in the title and abstract. If articles were useful, the articles did not have clear criteria for the description of their methods. Due to the limited statistical data and heterogeneity of the studies, a meta-analysis could not be carried out.</p>

	Overview of Article
Type of Article	Overall Type: Review of Research Study Specific Type: Narrative
APA Reference	Burton, I. (2021). Combined extracorporeal shockwave therapy and exercise for the treatment of tendinopathy: A narrative review. <i>Sports Medicine and Health Science</i> . https://doi.org/10.1016/j.smhs.2021.11.00
Abstract	<p>“Tendinopathy is a chronic degenerative musculoskeletal disorder that is common in both athletes and the general population. Exercise and extracorporeal shockwave therapy (ESWT) are among the most common treatments used to mediate tendon healing and regeneration. The review presents current understanding of mechanisms of action of ESWT and exercise in isolation and briefly synthesizes evidence of their effectiveness for various tendinopathies. The central purpose of the review is to synthesize research findings investigating the combination of ESWT and exercise for five common tendinopathies (plantar heel pain, rotator cuff, lateral elbow, Achilles, and patellar tendinopathy) and provide recommendations on clinical applicability. Collectively, the available evidence indicates that ESWT combined with exercise in the form of eccentric training, tissue specific stretching or heavy slow resistance training are effective for specific tendinopathies and can therefore be recommended in treatment. Whilst there are at present a limited number of studies investigating combined EWST and exercise approaches, there is evidence to suggest that the combination improves outcomes in treatment of plantar heel pain, Achilles, lateral elbow, and rotator cuff tendinopathy. However, despite overall positive outcomes in patellar tendinopathy, the combined treatment has not been shown at present to offer additional benefit over eccentric exercise alone”</p>
Author	Credentials: Specialist Musculoskeletal Physiotherapist Position and Institution: NHS Grampian, Aberdeen, United Kingdom Publication History in Peer-Reviewed Journals: 25+
Publication	Type of publication: Peer Reviewed Publisher: Elsevier
Data and Citation History	Date of publication: November 5, 2021 Cited By: 0
Stated Purpose or Research Question	“The review will begin with an overview of mechanisms of action for ESWT and exercise in tendinopathy and include a summary of the effectiveness of each in isolation, and finally an overview of studies which have combined ESWT and exercise, concluding with clinical recommendations.” (p.6)
Author’s Conclusion	Tendinopathy has a high prevalence in the general population and in athletes, with both exercise and ESWT in isolation being found to be effective treatments in several studies. A limited number of studies have investigated combined exercise and ESWT for common

	Overview of Article
	tendinopathies, with further large high-quality RCTs required. The current limited evidence for combined ESWT and exercise interventions is positive for PHP, Achilles, lateral elbow and rotator cuff tendinopathy, especially when calcification exists. Despite overall positive outcomes in patellar tendinopathy, the combined treatment has not been found to offer additional benefit over eccentric training alone. However, studies not showing additional benefit have had methodological limitations and small sample sizes, limiting conclusions. Current evidence recommends combined rather than single modalities in tendinopathy treatment to achieve superior long-term outcomes. However, there is a dearth of high-quality RCTs investigating combined interventions for tendinopathies, such as ESWT, exercise and other emerging treatments. A clear need exists for further studies comparing combined treatments, such as comprehensive exercise programs which include different types of exercise as opposed to only one type. Detailed description of exercise protocols, adherence and progression parameters are required in future studies, with a lack of information provided in current studies. The current encouraging evidence suggests that combined specific exercise and ESWT interventions should be recommended for PHP, rotator cuff, lateral elbow, and Achilles' tendinopathies. Further well-designed RCTs are required to make definitive recommendations on the optimal treatment protocols for tendinopathies, particularly patellar tendinopathy. (pp. 17-18)
Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: Current evidence recommends combined rather than single modalities in tendinopathy treatment to achieve superior long-term outcomes.
Overall Quality of Article	Overall Quality of Article: Good Rationale: The article focused on specific exercise for tendinopathy or ESWT. The overall findings were that tendon specific exercises should be the recommended treatment for tendinopathy in isolation, with combined exercise and ESWT offered when available.

	Overview of Article
Type of Article	Overall Type: Review of Research Study Specific Type: Randomized Control Trials
APA Reference	Wen-Hsuan, H., Chi, C.C., Lo, H.L., Kuo, K.N., & Chuang, H.Y. (2017). Vocational rehabilitation for enhancing return-to-work in workers with traumatic upper limb injuries. <i>Cochrane Library</i> . https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD010002.pub3/full
Abstract	<p>Background: Traumatic upper limb injury is a leading cause of work-related disability. After return-to-work (RTW), many survivors of injuries are able to regain a quality of life (QoL) comparable with the normal population. Since RTW plays an important role in economic productivity and regaining health related QoL, enhancing RTW in workers with traumatic limb injuries is the primary goal of rehabilitation. Vocational rehabilitation has been commonly employed in the field of occupational safety and health to increase the number of injured people returning to the labour market, prevent illness, increase well-being, and reduce disability.</p> <p>Objectives: To assess the effects of vocational rehabilitation programmes for enhancing RTW in workers with traumatic upper limb injuries. Search methods: This is an update of a Cochrane review previously published in 2013. We updated our searches of the following databases: the Cochrane Central Register of Controlled Trials (CENTRAL; 2017, Issue 9), MEDLINE (to 30 August 2017), EMBASE (to 3 September 2017), CINAHL (to 6 September 2017), and PsycINFO (to 6 September 2017), and we hand searched the references lists of relevant review articles. Selection criteria: We aimed to include all randomized controlled trials (RCTs) comparing vocational rehabilitation with an alternative (control) intervention such as standard rehabilitation, a limited form of the vocational rehabilitation intervention (such as advice on RTW, referral information, or liaison with employer), or waiting-list controls. Data collection and analysis: Two authors independently inspected abstracts, and we obtained full papers when necessary. When the two authors disagreed about the inclusion of a study, we resolved disagreements by discussion. A third author arbitrated when necessary. Main results: Our updated search identified 466 citations. Based on assessments of their titles and abstracts, we decided to evaluate the full texts of five records; however, none met our inclusion criteria. Authors' conclusions: There is currently no high-quality evidence to support or refute the efficacy of vocational rehabilitation for enhancing RTW in workers with traumatic upper limb injuries. Since injured people in occupational settings frequently receive vocational rehabilitation with the aim of decreasing work</p>

	Overview of Article
	disability, enhancing RTW, increasing productivity, and containing the welfare cost, further high-quality RCTs assessing the efficacy of vocational rehabilitation for workers with traumatic upper limb injury are needed to fill this gap in knowledge.
Author	Credentials: MD PhD Position and Institution: Department of Physical Medicine and Rehabilitation, Taipei Medical University Hospital, Taipei, Taiwan Publication History in Peer-Reviewed Journals: 25+
Publication	Type of publication: Scholarly Peer Review Publisher: John Wiley & Sons, Ltd.
Data and Citation History	Date of publication: December 6, 2017 Cited By: 30
Stated Purpose or Research Question	“To assess the effects of vocational rehabilitation programmes for enhancing RTW in workers with traumatic upper limb injuries.” (p. 4)
Author’s Conclusion	“There is currently no high-quality evidence to support or refute the efficacy of vocational rehabilitation for enhancing RTW in workers with traumatic upper limb injuries. Since injured people in occupational settings frequently receive vocational rehabilitation with the aim of decreasing work disability, enhancing RTW, increasing productivity, and constraining the welfare cost, further high-quality RCTs assessing the efficacy of vocational rehabilitation for workers with traumatic upper limb injury are needed to fill this gap in knowledge” (p. 2)
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: The VR programs have been developed to help workers who have an upper limb injury to return to the labor industrial workforce. No high-quality evidence supports the use of VR programs with traumatic upper limb injuries.
Overall Quality of Article	Overall Quality of Article: Poor Rationale: Received 466 articles based on assessment of titles and abstracts. However, after evaluating the full texts of 5 records, none met the inclusion criteria.

	Overview of Article
Type of Article	Overall Type: Review of research article Specific Type: Literature review article
APA Reference	Waseem, M., Nuhmani, S., Ram, C. S., & Sachin, Y. (2012). Lateral epicondylitis: A review of the literature. <i>Journal of Back & Musculoskeletal Rehabilitation</i> , 25(2), 131–142. https://doi.org/10.3233/BMR-2012-0328
Abstract	“Lateral epicondylitis (Tennis Elbow) is the most frequent type of myotendinous and can be responsible for substantial pain and loss of function of the affected limb. Muscular biomechanics characteristics and equipment are important in preventing the conditions. This article presents an overview of the current knowledge on lateral Epicondylitis and focuses on Etiology, Diagnosis and treatment strategies, conservative treatment are discussed and recent surgical techniques are outlined. This information should assist health care practitioners who treat patients with this disorder” (pg. 131).
Author	Credentials: Dr. PT Position and Institution: Allied Health and Science, Jamia Hamdard University, Delhi, India, ITS college of Physiotherapy Publication History in Peer-Reviewed Journals: Extensive research in internal medicine and hospital medicine
Publication	Type of publication: scholarly peer-reviewed journals Publisher: IOS Press Library
Data and Citation History	Date of publication: 2012 Cited By: 86
Stated Purpose or Research Question	“This information should assist health care practitioners who treat patients with this disorder” (pg. 131).
Author’s Conclusion	“They reported excellent or good results in 96% of the 23 patients studied. A long term follow up study was published on this technique by Posch et al., who reported “excellent” or “good” in 31 of 35 patients. The author recommended the simple fasciotomy because of its simplicity, minimal complications, and general rapid recovery of 3–4 weeks [60]” (pg. 140).
Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: This is good as it relates to our evidence-based question to effectiveness of PAMs and how tennis elbow is understanding what it is for practitioners to develop areas of functions.
Overall Quality of Article	Overall Quality of Article: Good Rationale: While looking up this article in google scholar, there was some good citations from other authors and articles. Within the last 10 years.

	Overview of Article
Type of Article	Overall Type: Review of research article Specific Type: Systematic Literature review
APA Reference	Weber, C., Thai, V., Neuheuser, K., Groover, K., & Christ, O. (2015). Efficacy of physical therapy for the treatment of lateral epicondylitis: a meta-analysis. <i>BMC Musculoskeletal Disorders</i> , 16(223). https://doi.org/10.1186/s12891-015-0665-4
Abstract	<p>“Physical therapy for the treatment of lateral epicondylitis (LE) often comprises movement therapies, extracorporeal shockwave therapy (ECSWT), low level laser therapy (LLLT), low frequency electrical stimulation or pulsed electromagnetic fields. Still, only ECSWT and LLLT have been meta-analytically researched. Methods PUBMED, EMBASE and Cochrane database were systematically searched for randomized controlled trials (RCTs). Methodological quality of each study was rated with an adapted version of the Scottish Intercollegiate Guidelines Network (SIGN) checklist. Pain reduction (the difference between treatment and control groups at the end of trials) and pain relief (the change in pain from baseline to the end of trials) were calculated with mean differences (MD) and 95 %-Confidence intervals (95 % CI). Results One thousand one hundred thirty-eight studies were identified. One thousand seventy of those did not meet inclusion criteria. After full articles were retrieved 16 studies met inclusion criteria and 12 studies reported comparable outcome variables. Analyses were conducted for overall pain relief, pain relief during maximum handgrip strength tests, and maximum handgrip strength. There were not enough studies to conduct an analysis of physical function or other outcome variables.</p> <p>Conclusions Differences between treatment and control groups were larger than differences between treatments. Control group gains were 50 to 66 % as high as treatment group gains. Still, only treatment groups with their combination of therapy specific and non-therapy specific factors reliably met criteria for clinical relevance. Results are discussed with respect to stability and their potential meaning for the use of non-therapy specific agents to optimize patients’ gain” (pg. 1).</p>
Author	Credentials: MD Position and Institution: Department of Psychology, TU Darmstadt, Alexanderstrasse 10, 64287, Darmstadt, Germany Publication History in Peer-Reviewed Journals: Good
Publication	Type of publication: peer reviewed Publisher: BMC research
Data and Citation History	Date of publication: 2015 Cited By: 23

	Overview of Article
Stated Purpose or Research Question	“The aim of this study was to meta-analyze the empirical evidence for physical treatments for LE and give practitioners an estimate of what benefits patients might expect from various treatments, both based on treatment specific and non-specific agents” (pg. 2)
Author’s Conclusion	“Results are discussed with respect to stability and their potential meaning for the use of non-therapy specific agents to optimize patients’ gain” (pg.2).
Overall Relevance to your EBP Question	Overall Relevance of Article: Moderate Rationale: This relates to the EBP question as it mentions how non therapy agents can optimize patient strengths which represents a different perspective on PAMS.
Overall Quality of Article	Overall Quality of Article: Good Rationale: The author is credited multiple times and gives a good general overview and elaborateness in the depth of the abstract and conclusion of the intervention effectiveness.

	Overview of Article
Type of Article	Overall Type: Review of Research study Specific Type: systematic review
APA Reference	Yan, C., Xiong, Y., Chen, L., Endo, Y., Hu, L., Liu, M., Liu, J., Xue, H., Abududilibaier, A., Mi, B., & Liu, G. (2019). A comparative study of the efficacy of ultrasonics and extracorporeal shock wave in the treatment of tennis elbow: a meta-analysis of randomized controlled trials. <i>Journal of Orthopedic Surgery and Research</i> , 14(1), 248. https://doi.org/10.1186/s13018-019-1290-y
Abstract	<p>“Background: Tennis elbow or lateral epicondylitis is a common source of pain among craftsmen. Although it cannot be completely resolved, extracorporeal shock wave therapy (ESWT) and ultrasonics (US) have been found to be effective for tennis elbow as highlighted in previously published randomized controlled trials (RCTs) and reviews. However, the efficacy of these two therapies in treating tennis elbow is unknown. This meta-analysis compares the effectiveness of ESWT and US in relieving pain and restoring the functions of tennis elbow following tendinopathy.</p> <p>Methods: RCTs published in the PubMed, Embase, Cochrane Library, and SpringerLink databases comparing ESWT and US in treating tennis elbow were identified by a software and manual search. The risk of bias and clinical relevance of the included studies were assessed. Publication bias was explored using funnel plot and statistical tests (Egger’s test and Begg’s test). The major outcomes of the studies were analyzed using the Review Manager 5.3.</p> <p>Results: Five RCTs comprising five patients were included in the present meta-analysis. The results revealed a significantly lower VAS score of pain in the ESWT group (1 month: MD = 4.47, $p = 0.0001$; 3 months: MD = 20.32, $p < 0.00001$; and 6 months: MD = 4.32, $p < 0.0001$) compared to US. Besides, the grip strength was markedly higher 3 months after the intervention in ESWT (MD = 8.87, $p < 0.00001$) than in the US group. Although no significant difference was observed in the scores of the elbow function after 3 months of treatment (SMD = 1.51, $p = 0.13$), the subjective scores of elbow functions were found to be better in the ESWT group (SMD = 3.34; $p = 0.0008$) compared to the US group. Conclusions: Although there was no significant difference in the elbow function evaluation scores between ESWT and US, the superiority of the ESWT group in the VAS of pain (both at 1 month, 3 months, and 6 months follow-ups) raised grip strength in ESWT group and the scores for subjective evaluation of efficacy indicated that ESWT offers more effective therapy for lateral epicondylitis than US therapy” (Pg. 1).</p>
Author	Credentials: N/A

	Overview of Article
	Position and Institution: Department of Orthopedics, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Jiefang Rd. 1277#, Wuhan, 430022, Hubei, China Publication History in Peer-Reviewed Journals: Moderate
Publication	Type of publication: scholarly peer-reviewed journals. Publisher: BMC research
Data and Citation History	Date of publication: 2019 Cited By: 19
Stated Purpose or Research Question	“This meta-analysis compares the effectiveness of ESWT and US in relieving pain and restoring the functions of tennis elbow following tendinopathy” (p. 1).
Author’s Conclusion	“Although there was no significant difference in the elbow function evaluation scores between ESWT and US, the superiority of the ESWT group in the VAS of pain (both at 1 month, 3 months, and 6 months follow-ups) raised grip strength in ESWT group and the scores for subjective evaluation of efficacy indicated that ESWT offers more effective therapy for lateral epicondylitis than US therapy” (p.1).
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: this gives a good depiction of EBP interventions but does has limited credits
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The article is good. It discusses the efficacy of ultrasounds and shock wave therapy into our relevance of PAMS and its effectiveness.

	Overview of Article
Type of Article	Overall Type: Review of Research Study Specific Type: Systematic Review
APA Reference.	Ferreira, F. M. R. M., Chaves, M. E. A., Oliveira, V. C., Martins, J. S. R., Vimieiro, C. B. S., & Van Petten, A. M. V. N. (2021). Effect of robot-assisted therapy on participation of people with limited upper limb functioning: A systematic review with grade recommendations. <i>Occupational Therapy International</i> . https://www.hindawi.com/journals/oti/2021/6649549/ .
Abstract	<p>“<i>Background.</i> Previous studies have suggested that robot-assisted therapy (RT) is effective in treating impairment and that it may also improve individuals’ participation. <i>Objective.</i> To investigate the effect of RT on the participation of individuals with limited upper limb functioning (PROSPERO: CRD42019133880). <i>Data Sources:</i> PEDro, Embase, MEDLINE, CINAHL, Cochrane, AMED, and Compendex. <i>Inclusion Criteria.</i> We selected randomized or quasirandomized controlled studies comparing the effects of RT with minimal or other interventions on participation of individuals with limited upper limb functioning. <i>Data Extraction and Synthesis.</i> Methodological quality of the included studies was assessed using the 0-10 PEDro scale, and effect estimates were reported using standardized mean differences (SMDs) with 95% confidence intervals (CIs), and the certainty of the current evidence was assessed using the GRADE. <i>Results.</i> Twelve randomized controlled studies involving 845 participants were included. The estimates of medium effects between RT and minimal intervention (MI) at a short-term follow-up were pooled, but there are no short-term effects between RT and OI. Standardized differences in means were as follows: 0.6 (95% CI 0.1 to 1.2) and 0.2 (95% CI -0.0 to 0.4). There were also no effects of additional RT in the short- or medium-term follow-up periods. Standardized differences in means were as follows: -0.6 (95% CI -1.1 to -0.1) and 0.2 (95% CI -0.3 to 0.8). The methodological quality of the included studies potentially compromised the effect estimates of RT. The existing evidence was very low-quality with many confounding variables between studies. <i>Conclusions.</i> For patients with upper limb neurological dysfunction, low-quality evidence supports RT over MI in terms of improving individual participation in the short term. The existing low- to very low-quality evidence does not support RT over OI in either the short- or medium-term follow-up periods with respect to community participation” (p.1)</p>
Author	Credentials: MA, MS, PhD Position and Institution: Graduate Program in Mechanical Engineering

	Overview of Article
	Publication History in Peer-Reviewed Journals: 25+
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: Hindawi; Wiley
Data and Citation History	Date of publication: 07/31/2021 Cited By: No other publications for this article
Stated Purpose or Research Question	“Therefore, the aim of this review was to investigate the effects of RT on the participation of individuals with limited upper limb function. GRADE (Grading of Recommendations Assessment, Development and Evaluation) was used to summarize the strength of the existing evidence of the studies included” (p. 2).
Author’s Conclusion	“For individuals with chronic, limited upper limb function, in the short term, this systematic review provides low-quality evidence that RT improves individuals’ participation more than minimal interventions (MI). This review provides no evidence that RT improves participation compared to other interventions (OIs) in either the short or medium term. The findings from this systematic review cannot be generalized to participants with acute upper limb neurological impairments” (p. 11).
Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: This source includes an alternative way to address upper extremity weakness that could be occurring because of the elbow tendinopathy and a possible solution to aid in getting back to work.
Overall Quality of Article	Overall Quality of Article: Good Rationale: This source was published within this year, so it is an updated review of research done on the use of RT in rehabilitation. The fact that it includes a review of 12 randomized control studies with a larger sample size makes this source more valuable to look at.

	Overview of Article
Type of Article	Overall Type: Review of Research Study Specific Type: Narrative Review
APA Reference	Kuroda, Y., Young, M., Shoman, H. (2021). Advanced rehabilitation technology in orthopedics—a narrative review. <i>International Orthopaedics (SICOT)</i> 45, 1933–1940 (2021). https://doi.org/10.1007/s00264-020-04814-4
Abstract	<p>“Introduction: As the demand for rehabilitation in orthopedics increases, so too has the development in advanced rehabilitation technology. However, to date, there are no review papers outlining the broad scope of advanced rehabilitation technology used within the orthopedic population. The aim of this study is to identify, describe and summarize the evidence for efficacy for all advanced rehabilitation technologies applicable to orthopedic practice. Methods: The relevant literature describing the use of advanced rehabilitation technology in orthopedics was identified from appropriate electronic databases (PubMed and EMBASE) and a narrative review undertaken. Results: Advanced rehabilitation technologies were classified into two groups: hospital-based and home-based rehabilitation. In the hospital-based technology group, we describe the use of continuous passive motion and robotic devices (after spinal cord injury) and their effect on improving clinical outcomes. We also report on the use of electromagnetic sensor technology for measuring kinematics of upper and lower limbs during rehabilitation. In the home-based technology group, we describe the use of inertial sensors, smartphones, software applications and commercial game hardware that are relatively inexpensive, user- friendly and widely available. We outline the evidence for videoconferencing for promoting knowledge and motivation for rehabilitation as well as the emerging role of virtual reality. Conclusions: The use of advanced rehabilitation technology in orthopedics is promising and evidence for its efficacy is generally supportive” (p. 1933).</p>
Author	<p>Credentials: PhD Position and Institution: Department of Academic Orthopaedics, Trauma and Sports Medicine, Queens Medical Centre, University of Nottingham, Nottingham, UK Publication History in Peer-Reviewed Journals: 25+</p>
Publication	<p>Type of publication: Scholarly peer-reviewed journals Publisher: Springer Link</p>
Data and Citation History	<p>Date of publication: 10/13/2020 Cited By: 3</p>
Stated Purpose or Research Question	<p>“Therefore, the purpose of this narrative review is to explore the broad variety of technologies that are currently being used in orthopedic rehabilitation and determine the extent to which these</p>

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	technologies can support and complement traditional services such as physiotherapy” (p. 1934).
Author’s Conclusion	“Hospital-based technology, such as robotic devices, is widely used mainly in SCI, and it is expected that they will be utilized for other conditions in the future. The reliability of ETS for measuring kinematics of upper and lower limbs has been reported, but the challenge is to develop compact and user-friendly devices. Unlike hospital-based advanced rehabilitation technology, home-based technologies such as inertial sensor, application, and CAGC are relatively inexpensive and user-friendly, making them more accessible” (p. 1937-1938).
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: This source does not directly help to answer the EBP question, but instead allows for more information around the quality and availability of rehabilitation options, especially with home-based options.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: I think that the value of this source does decrease because it is a narrative review, but the information was relevant enough to be included for the EBP topic.

	Overview of Article
Type of Article	Overall Type: Review of Research Study Specific Type: Systematic Review
APA Reference	Roll, S. C., & Hardison, M. E. (2016). Effectiveness of occupational therapy interventions for adults with musculoskeletal conditions of the forearm, wrist, and hand: A systematic review. <i>The American Journal of Occupational Therapy</i> , 71(1). https://doi.org/10.5014/ajot.2017.023234
Abstract	“Occupational therapy practitioners are key health care providers for people with musculoskeletal disorders of the distal upper extremity. It is imperative that practitioners understand the most effective and efficient means for remediating impairments and supporting clients in progressing to independence in purposeful occupations. This systematic review provides an update to a previous review by summarizing articles published between 2006 and July 2014 related to the focused question, what is the evidence for the effect of occupational therapy interventions on functional outcomes for adults with musculoskeletal disorders of the forearm, wrist, and hand? A total of 59 articles were reviewed. Evidence for interventions was synthesized by condition within bone, joint, and general hand disorders; peripheral nerve disorders; and tendon disorders. The strongest evidence supports postsurgical early active motion protocols and splinting for various conditions. Very few studies have examined occupation-based interventions. Implications for occupational therapy practice and research are provided.” (Pg. 1)
Author	Credentials: PhD, OTR/L, RMSKS, FAOTA Position and Institution: Assistant Professor, Mrs. T. H. Chan Division of Occupational Science and Occupational Therapy, University of Southern California, Los Angeles. Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: The American Journal of Occupational Therapy (AJOT)
Data and Citation History	Date: 2016 Cited By: 58
Stated Purpose or Research Question	“A previous review was completed to evaluate the evidence published through 2005 for occupational therapy interventions for work-related MSDs of the forearm, wrist, and hand (Amini, 2011). This article provides an update to the review by summarizing articles published between 2006 and July 2014. In addition, the scope for this review was expanded to include all MSDs of the distal UE regardless of etiology. The review was conducted to answer the following focused question: What is the evidence for the effect of occupational therapy interventions on functional outcomes for adults with MSDs of the forearm, wrist, and hand?” (Pg. 2)

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Author's Conclusion	<p>“Along with the need to examine these novel interventions, a gap in the literature exists regarding the evaluation of occupation-based interventions and outcomes. Although many of the studies involved occupational therapy practitioners who may have used occupation-based activities as part of their interventions, only 1 study described an intervention, other than patient education for energy conservation and joint protection, that would be considered occupation based (Harth et al., 2008). Moreover, although all the studies in this review used a measure associated with function (e.g., ROM, grip strength, subjective reports) as the primary outcome, very few studies directly measured occupation-based, functional outcomes. The paucity of evidence for occupation-based interventions and outcomes points to an opportunity and need to expand the scope of UE rehabilitation research.” (Pg. 8)</p>
Overall Relevance to you EBP Question	<p>Overall Relevance to EBP Question: Moderate Rationale: This review is moderately relevant because although all the studies in this review used a measure associated with function (ROM, grip strength, subjective reports) as the primary outcome, findings show that very <i>few</i> studies directly measured occupation-based, functional outcomes.</p>
Overall Quality of Article	<p>Overall Quality of Article: Good Quality Rationale: Established author. Reputable journal and publisher. Publication within last 10 years</p>

	Overview of Article
Type of Article	Overall Type: Review of Research Study Specific Type: Systematic Review
APA Reference	Arbesman, M., Lieberman, D., & Thomas, V. J. (2011). Methodology for the systematic reviews on occupational therapy for individuals with work-related injuries and illnesses. <i>The American Journal of Occupational Therapy</i> , 65(1), 10–15. https://doi.org/10.5014/ajot.2011.09183
Abstract	“Systematic reviews of literature relevant to individuals with work-related injuries and illnesses are important to the practice of occupational therapy. This article describes the four questions that served as the focus for the systematic reviews of the effectiveness of occupational therapy interventions for individuals with work-related injuries and illnesses of the low back; hand, wrist, and forearm; elbow; and shoulder. The article includes the background for the reviews; the process followed for each question, including search terms and search strategy; the databases searched; and the methods used to summarize and critically appraise the literature. The final number of articles included in each systematic review; a summary of the results; the strengths and limitations of the findings; and the implications for practice, education, and research are presented.” (Pg. 10)
Author	Credentials: PhD, OTR/L Position and Institution: Consultant, Evidence-Based Practice Project, American Occupational Therapy Association (AOTA), Bethesda, MD; Clinical Assistant Professor, Department of Rehabilitation Science, University at Buffalo, State University of New York, Buffalo; and President, ArbesIdeas, Inc., 19 Hopkins Road, Williamsville, NY 14221 Publication History in Peer-Reviewed Journals: Moderate
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: The American Journal of Occupational Therapy (AJOT)
Data and Citation History	Date: 2011 Cited By: 18
Stated Purpose or Research Question	“The first step of this project involved the development of an evidence-based literature review focusing on occupational therapy’s role in the return to work of individuals with work-related diagnoses or clinical conditions of the shoulder; elbow; forearm, wrist, and hand; and low back and, more specifically, the identification of the questions for documenting the evidence to support current and future practice. The Occupational Therapy Practice Guideline for Individuals with WorkRelated Injuries and Illnesses (Kaskutas & Snodgrass, 2009) was published in 2009 and introduced at AOTA’s Annual Conference & Expo. Readers are encouraged to refer to this

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	publication for further information about the process and steps involved in developing an EBP guideline. More recently, in addition to the development of the occupational therapy practice guidelines discussed in this article, AOTA has assisted ACOEM in the review and update of individual chapters of its practice guidelines by coordinating the participation of occupational therapists with experience in this area of practice.” (Pg. 11)
Author’s Conclusion	“Results of the systematic review of interventions for the hand, wrist, and forearm support the use of occupation-based assessment tools, adaptation to the environment to enable function and reduce pain, and simulation of activities of daily living. In addition, evidence was found for the effectiveness of several preparatory activities such as exercise, the use of the thermal modality of heat, and early mobilization after fractures and acute trauma. Other preparatory methods have been found to be effective for specific clinical conditions, including splinting for osteoarthritis and carpal tunnel syndrome; scar massage to prevent hypertrophic scarring and promote extensibility; the use of sensory focusing, a cognitive pain control technique during burn dressing changes; and the use of pressure garment work gloves after burns.” (Pg. 14)
Overall Relevance to you EBP Question	Overall Relevance to EBP Question: Good Rationale: This review is relevant because it discusses how the use of occupation-based assessment tools and interventions for the hand, wrist, and forearm enable function and reduce pain, and simulation of activities of daily living.
Overall Quality of Article	Overall Quality of Article: Good Quality Rationale: Established author. Reputable journal and publisher. Publication within last 10 years

	Overview of Article
Type of Article	Overall Type: Review of Research Study Specific Type: Systematic Review
APA Reference	Bohr, P. C. (2011). Systematic review and analysis of work-related injuries to and conditions of the elbow. <i>The American Journal of Occupational Therapy</i> , 65(1), 24-8. http://dx.doi.org/10.5014/ajot.2011.09185
Abstract	“This systematic review of literature examines and synthesizes research findings related to interventions for people with work-related elbow injuries, particularly epicondylitis. It was carried out as part of the Evidence-Based Literature Review Project of the American Occupational Therapy Association. The 11 articles included in this review suggest multiple approaches to intervention but do not provide sufficient evidence to determine which methods or approaches are best practice. Research has provided little evidence to support the use of commonly prescribed interventions for epicondylitis, the most frequently reported work-related elbow injury. Collectively, the evidence to support the use of splinting, exercise, or physical agent modalities is weak and provides little guidance for approaching management of elbow injuries. The implications for education and research are discussed, as is the application of the evidence to clinical practice in occupational therapy.” (Pg. 24)
Author	Credentials: PhD, OTR/L, FAOTA Position and Institution: is a Director and Associate Professor, Occupational Therapy Program, Maryville University, 650 Maryville University Drive, St. Louis, MO. Publication History in Peer-Reviewed Journals: Limited
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: The American Journal of Occupational Therapy (AJOT)
Data and Citation History	Date: 2011 Cited By: 13
Stated Purpose or Research Question	“Occupational therapy practitioners use a variety of interventions that may relieve symptoms and facilitate the client’s safe return to work. Interventions may include range-of-motion (ROM) exercises, stretching and strengthening exercises, bracing, or splinting, forearm strapping distal to the epicondyle, ergonomic adjustments to work areas, and pain management using therapeutic heat and cold. In some cases, when occupational therapists are properly trained, physical agent modalities such as ultrasound or iontophoresis may be used. Because the symptoms associated with epicondylitis affect the client’s occupations in different ways, the most effective intervention to meet the client’s needs is often difficult to determine. An evidence-based treatment approach allows the occupational therapist to ensure that the client is receiving the best care possible so that he

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	or she is able to return to work and other desirable occupations. It is imperative that the therapist review available literature to determine the most reliable and effective course of intervention to allow the client to return to participation in valued tasks of daily life.” (Pg. 25)
Author’s Conclusion	“An evidence-based management approach to work-related injuries was not evident in the literature reviewed. Literature that met the inclusion criteria for this review was limited. The design and implementation of research studies varied greatly, making synthesis of the data difficult. This review of the literature found only weak evidence to inform and support the efficacy of occupational therapy interventions for the treatment of elbow injuries in clinical practice. Educational programs should focus not only on teaching the use of preparatory methods but also on relating those methods to potential impact on function. Future research efforts should be directed toward defining the parameters for outcomes research, perhaps using a national database that consistently records outcome data.” (Pg.28)
Overall Relevance to you EBP Question	Overall Relevance to EBP Question: Poor Rationale: This review of the literature has poor relevance because it only found weak evidence to inform and support the efficacy of occupational therapy interventions for the treatment of elbow injuries in clinical practice.
Overall Quality of Article	Overall Quality of Article: Good Quality Rationale: Established author. Reputable journal and publisher. Publication within last 10 years

	Overview of Article
Type of Article	Overall Type: Review of Research Study Specific Type: A narrative literature review
APA Reference	Ma, K.-L., & Wang, H.-Q. (2020). Management of lateral epicondylitis: A narrative literature review. <i>Pain Research and Management</i> , 2020, 1–9. https://doi.org/10.1155/2020/6965381
Abstract	“Lateral epicondylitis, also termed as “tennis elbow,” is the most common cause of elbow pain and dysfunction, mainly resulting from repetitive gripping or wrist extension during various activities. The exact pathogenesis remains largely elusive with putative tendinosis, a symptomatic degenerative process of the local tendon. It is usually diagnosed by clinical examinations. Sometimes, additional imaging is required for a specific differential diagnosis. Although most cases can be self-healing, the optimal treatment strategy for chronic lateral epicondylitis remains controversial. This article presents a landscape of emerging evidence on lateral epicondylitis and focuses on the pathogenesis, diagnosis, and management, shedding light on the understandings and treatment for healthcare professionals.” (Pg. 1)
Author	Credentials: N/A Position and Institution: Department of Orthopedics, Yongchuan Hospital of Chongqing Medical University, Hua Road. Publication History in Peer-Reviewed Journals: Limited
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: Pain Research and Management
Data and Citation History	Date: 2020 Cited By: 21
Stated Purpose or Research Question	“Lateral epicondylitis (LE) was first described in the English literature by Runge in 1873 [1]. It was described as chronic symptomatic degeneration of the forearm common extensor tendon attachment at the humeral ectocondyle. It is one of the most common overuse syndromes in primary medical care. LE affects 1% to 3% of the population, mainly those middle-aged people without gender difference [2]. LE can produce a great social and economic burden due to lost workdays and can even disable some patients from working for weeks [3, 4]. Despite advances in the treatment of LE, there is still a lack of established standards. It is generally self-limiting, and most cases require no treatment, with up to 80% cases recovering within one year [5]. Patients with refractory symptoms may require further conservative or surgical treatments.” (Pg. 1)
Author’s Conclusion	“LE is a common cause of pain and disability affecting patients aged between 35 and 55 years. Most cases have a self-limiting course of between 12 and 18 months. However, symptoms can be persistent and refractory, thus needing interventional measures. Nonoperative treatment remains the priority and mainstay for LE. Most cases can

	Overview of Article
	be well treated with multiple nonoperative treatments, with as high as 90% success rate. However, there is no evidence Pain Research and Management 5 suggesting the superiority of nonoperative treatment options. When nonoperative treatment fails, three surgical interventions will be recommended for patients with lateral LE, including open, percutaneous, and arthroscopic approaches. Similarly, no conclusions on the effectiveness of surgical interventions can be reached mainly due to a lack of high-quality evidence and inconsistent outcome measures.”(Pg. 5)
Overall Relevance to you EBP Question	Overall Relevance to EBP Question: Moderate Rationale: This review of the literature has moderate relevance because it discusses how nonoperative treatment remains the priority for LET, and how most cases can be well treated with multiple nonoperative treatments, with as high as 90% success rate. However, there is no evidence Pain Research and Management 5 suggesting the superiority of nonoperative treatment options over surgical options.
Overall Quality of Article	Overall Quality of Article: Moderate Quality Rationale: (Couldn't find Authors accreditations). Reputable journal and publisher. Publication within the last 10 years.

	Overview of Article
Type of Article	Overall Type: Review of research article Specific Type: Systematic literature review
APA Reference	Lenoir, H., Mares, O., & Carlier, Y. (2019). Management of lateral epicondylitis. <i>Orthopaedics & Traumatology, Surgery & Research: OTSR</i> , 105(8S), S241–S246. https://doi.org/10.1016/j.otsr.2019.09.004
Abstract	“Lateral epicondylitis is the most common cause of lateral elbow pain. Although also known as tennis elbow, lateral epicondylitis often develops as a work-related condition and therefore constitutes a major public health issue. This article reviews the pathophysiological factors involved in lateral epicondylitis, as well as the tools available for establishing the diagnosis and ruling out other causes of lateral elbow pain. Finally, the non-operative and surgical treatment options are discussed in detail” (pg. 241).
Author	Credentials: MD Position and Institution: Professor at University of Montpellier DESC in Orthopedic Surgery and Traumatology, Arthroscopy IUD, Hand surgical pathology IUD, DU in microsurgery Master2 in neuroscience Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly peer-reviewed journal Publisher: American Occupational Therapy Association (AOTA) Other: Official journal of the AOTA
Data and Citation History	Date of Publication: 2019 Cited By: 20
Stated Purpose or Research Question	“Reviews the pathophysiological factors involved in lateral epicondylitis, as well as the tools available for establishing the diagnosis and ruling out other causes of lateral elbow pain” (pg. 241).
Author’s Conclusion	“Surgery can be considered in patients who have no response to non-operative treatment, want faster symptom relief, or have very protracted symptoms. The uncertainty regarding the efficacy of surgical procedures should be carefully explained to the patient” (pg. 244).
Overall Relevance to you EBP Question	Overall Relevance to EBP Question: Effectiveness of Pams Rationale: The study is directly related to how tools in LE can alleviate the causes of elbow pain.
Overall Quality of Article	Overall Quality of Article: Good Quality Rationale: Established author. Reputable journal and publisher. Publication within the last 5 years. The article reviews the pathophysiological factors, diagnosis pitfalls, and treatments of LET.

	Overview of Article
Type of Article	Overall Type: Review of Research Study

	Overview of Article
	Specific Type: Integrative literature review
APA Reference	Stegink-Jansen, C. W., Bynum, J. G., Lambropoulos, A. L., Patterson, R. M., & Cowan, A. C. (2021). Lateral epicondylitis: A literature review to link pathology and tendon function to tissue-level treatment and ergonomic interventions. <i>Journal of Hand Therapy, 34</i> (2), 263–297. https://doi.org.pearl.stkate.edu/10.1016/j.jht.2021.05.005
Abstract	<p>“Background: Common treatments for lateral epicondylitis (LE) focus on tissue healing. Ergonomic advice is suggested broadly, but recommendations based on biomechanical motion parameters associated with functional activities are rarely made. This review analyzes the role of body functions and activities in LE and integrates the findings to suggest motion parameters applicable to education and interventions relevant to activities and life roles for patients. Purpose: This study examines LE pathology, tendon and muscle biomechanics, and population exposure outlining potentially hazardous activities and integrates those to provide motion parameters for ergonomic interventions to treat or prevent LE. A disease model is discussed to align treatment approaches to the stage of LE tendinopathy. Study Design: Integrative review Methods: We conducted in-depth searches using PubMed, Medline, and government websites. All levels of evidence were included, and the framework for behavioral research from the National Institutes of Health was used to synthesize ergonomic research. Results: The review broadened the diagnosis of LE from a tendon ailment to one affecting the enthesis of the capitellum. It reinforced the continuum of severity to encompass degeneration as well as regeneration. Systematic reviews confirmed the availability of evidence for tissue-based treatments, but evidence of well-defined harm reducing occupational interventions was scattered amongst evidence levels. Integration of biomechanical studies and population information gave insight into types of potentially hazardous activities and provided a theoretical basis for limiting hazardous exposures to wrist extensor tendons by reducing force, compression, and shearing during functional activities. Conclusions: These findings may broaden the first treatment approach from a passive, watchful waiting into an active exploration and reduction of at-risk activities and motions. Including the findings into education modules may provide patients with the knowledge to lastingly reduce potentially hazardous motions during their daily activities, and researchers to define parameters of ergonomic interventions” (p. 263).</p>
Author	Credentials: PT, PhD, CHT

	Overview of Article
	Position and Institution: Department of Orthopedic Surgery and Rehabilitation, The University of Texas Medical Branch, Galveston, TX, USA Publication History in Peer-Reviewed Journals: extensive 25+
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Journal of Hand Therapy
Data and Citation History	Date of Publication: 2021 Cited By: 2
Stated Purpose or Research Question	“The goal of this literature review is to explore, identify and integrate connections between tissue structures and function and activities, participation, environmental, and personal factors for the management of patients with LE, using the framework provided by the International Classification of Functioning, Disability and Health (ICF) by the World Health Organization” (p. 264).
Author’s Conclusion	“A full ergonomic inventory is suggested as an important first approach due to the potential to benefit patients in all stages of severity and recovery of LE. It is hoped that tendon-, motion- and activity- specific information and education may transform patients into change agents who with positive attitudes and positive phrasing skills, 205 supported by latitude, choice, and control within the occupational environment, encouragement, respect and social support, can cope with and recover from their personal lateral epicondylitis.” (p. 278).
Overall Relevance to you EBP Question	Overall Relevance to EBP Question: Moderate Rationale: The study uses an ICF lens and contextual factors to understand movement and demand on structures of the upper extremity to improve ergonomics.
Overall Quality of Article	Overall Quality of Article: Good Quality Rationale: Established author. Utilized research from PubMed, Medline, and government websites and include all levels of evidence. Reputable journal and publisher. Publication within last 5 years.

Conceptual or Theoretical Article

	Overview of Article
Type of Article	Overall Type: Conceptual or Theoretical Article Specific Type: Systemic review
APA Reference	Gliedt, J. A., & Daniels, C. J. (2014). Chiropractic treatment of lateral epicondylitis: A case report utilizing active release techniques. <i>Journal of Chiropractic Medicine</i> , 13(2), 104–109. https://doi.org/10.1016/j.jcm.2014.06.009
Abstract	“Objective: The purpose of this report is to describe the chiropractic management of a case of lateral epicondylitis with active release techniques (ART). Clinical features: A 48-year-old white man presented to a chiropractic clinic with a complaint of left lateral elbow pain that began 2 years previous with insidious onset. The patient reported an inability to play 18 consecutive holes of golf due to the pain. Intervention and outcome: Treatment consisted of 5 sessions of ART (a soft tissue technique that is applied to muscles, fascia, tendons, ligaments, and nerves) applied to the left elbow soft tissue over a duration of 3 weeks. The patient reported an absence of pain and ability to consistently play 18 consecutive holes of golf up to 3 times per week at 4- and 8-weeks post-treatment. Conclusion: This patient with lateral epicondylitis responded favorably to chiropractic treatment using the application of ART, as demonstrated by reduced pain and increased functional outcomes” (Pg. 1)
Author	Credentials: PhD Position and Institution: Medical college of Wisconsin, Chiropractic Physician, Private Practice, Gilbert, AZ Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: peer-reviewed journals. Publisher: Journal of Chiropractic Medicine
Data and Citation History	Date of publication: 2014 Cited By: 137
Stated Purpose or Research Question	“The purpose of this report is to describe the chiropractic management of a case of lateral epicondylitis with active release techniques (ART)” (Pg. 1).
Author’s Conclusion	This patient with lateral epicondylitis responded favorably to chiropractic treatment using the application of ART, as demonstrated by reduced pain and increased functional outcomes” (Pg. 1)
Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: This relates to our discussion of tennis elbow and the active release of techniques. Although it did not mention PAMs it is still considered relevant as chiropractic management in this article is an alternative treatment for LET.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: Chiropractic treatment with LE is good to apply in which reduces pain and increases functional outcomes.

	Overview of Article
	However, it may not be the best source to use compared to others used in relation to EBP.

	Overview of Article
Type of Article	Overall Type: Conceptual or Theoretical Article Specific Type: Scientific literature review
APA Reference	Murphy, G. C. (2009). Putting a vocational focus back into rehabilitation. <i>Australian Journal of Career Development</i> , 18(1), 36–44.
Abstract	“Traditionally, rehabilitation has been closely associated with vocational potential and return to work post-injury, or the maintenance of work attendance following the onset of chronic disease. Indeed, so close was the association that the terms ‘rehabilitation’ and ‘vocational rehabilitation’ were virtually synonymous. Over the recent past there is evidence of a shift away from vocational goals in rehabilitation. The present paper briefly reviews the scientific literature on the mental and physical health benefits of employment. Having established that employment is health-promoting for most people, the paper analyses the content of recent issues of two major rehabilitation medicine journals to present a summary of the nature and extent of a vocational focus within contemporary rehabilitation research and, by implication, within evidence-based rehabilitation service delivery” (p. 36).
Author	Credentials: BA, MA, DipEd, PhD, MAPS Position and Institution: La Trobe University: Associate Professor within the School of Public Health Publication History in Peer-Reviewed Journals: Extensive; 25+ authored
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: Lean Library
Data and Citation History	Date of publication: 04/01/2009 Cited By: 12
Stated Purpose or Research Question	“The present paper briefly reviews the scientific literature on the mental and physical health benefits of employment. Having established that employment is health-promoting for most people, the paper analyses the content of recent issues of two major rehabilitation medicine journals to present a summary of the nature and extent of a vocational focus within contemporary rehabilitation research and, by implication, within evidence-based rehabilitation service delivery” (p. 36).
Author’s Conclusion	“If there is a reliable connection between rehabilitation professionals’ valuing of vocational rehabilitation and subsequent enhanced employment achievements of clients, there are a number of implications for those involved in the health and rehabilitation system” (p. 41).
Overall Relevance to you EBP Question	Overall Relevance of Article: Good

	Overview of Article
	Rationale: This source talks about the importance of keeping a vocational focus on rehabilitation and the ability for rehabilitation service delivery to be functional.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Based on the credentials and contents of the article, it could be a good addition to add because of the background information from other experts on the topic of vocational rehabilitation. The article is also very easily read, which makes it easier to identify the main points of the review.

	Overview of Article
Type of Article	Overall Type: Conceptual Manual Specific Type: Division of Federal Employees' Compensation (DFEC)
APA Reference	<i>U.S. Department of Labor</i> . (n.d.). Procedure manual. https://www.doi.gov/agencies/owcp/FECA/regs/compliance/DFECfolio/FECA-PT2/group3#2060
Abstract	Unknown
Author	Credentials: unknown Position and Institution: U.S. Department of Labor Publication History in Peer-Reviewed Journals: unknown
Publication	Type of publication: Manual Publisher: Office of Workers' Compensation Programs Other: unknown
Data and Citation History	Date of publication: 2021 Cited By: 25+
Stated Purpose or Research Question	Unknown
Author's Conclusion	Unknown
Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: Potential reference into data, policy, and processes impacting U.S. employee's compensation and/ or return to work after experiencing injury or disability due to work injury.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Established directive applicable to workforce. Reputable publisher. Publication within last 5 years

	Overview of Article
Type of Article	Overall Type: Conceptual/Theoretical Article Specific Type: Policy Information for the US Department of Labor
APA Reference	U.S. Department of Labor. (2021). <i>Stay at work/return to work</i> . https://www.dol.gov/agencies/odep/initiatives/saw-rtw
Abstract	N/A
Author	Credentials: unknown Position and Institution: U.S. Department of Labor Publication History in Peer-Reviewed Journals: n/a
Publication	Type of publication: grey literature, government publication Publisher: Office of Disability Employment Policy
Data and Citation History	Date of publication: 2021 Cited By: not available
Stated Purpose or Research Question	“Injuries and illnesses can make workers leave the labor force” (p. 1).
Author’s Conclusion	“Effective help can keep injured workers on the job” (p. 1).
Overall Relevance to you EBP Question	Overall Relevance of Article: Moderate Rationale: Provides information on current government policy on return to work. This provides a framework of the return-to-work process in the US, which relates to the EBP question related to work rehabilitation.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Published by the US Department of Labor, which is reputable because it is a government website.

	Overview of Article
Type of Article	Overall Type: Conceptual or Theoretical Article Specific Type: Supplemental research article
APA Reference	Occupational Therapy Services in Facilitating Work Performance. (2011). <i>The American Journal of Occupational Therapy</i> , 65(6_Supplement). https://doi.org/10.5014/ajot.2011.65s55
Abstract	“The purpose of this statement is to describe for external audiences the role of occupational therapists and occupational therapy assistants in facilitating successful engagement of people in their chosen work activities and in meaningful work roles. The overarching goal of occupational therapy is to support people’s “health and participation in life through engagement in occupation” (American Occupational Therapy Association [AOTA], 2008, p. 626). Work is one of eight areas of occupation ² categorized with the domain of occupational therapy practice (AOTA, 2008). The Occupational Therapy Practice Framework: Domain and Process, 2nd Edition defines work as “activities needed for engaging in remunerative employ seeking and acquisition tasks, job performance issues, retirement preparation and adjustment, volunteer exploration and volunteer participation” (AOTA, 2008, p. 632). Work performance supports meaningful participation and attainable productivity, which are essential for people’s health and well-being” (p. S55).
Author	Credentials: MBA, OTR/L, FAOTA Position and Institution: Associate Professor of occupational therapy at Governors State University Publication History in Peer-Reviewed Journals: moderate
Publication	Type of publication: scholarly peer-reviewed journal (AJOT) Publisher: AOTS Other: supplemental material for the journal issue
Data and Citation History	Date of publication: 11/2011 Cited By: 13
Stated Purpose or Research Question	“The purpose of this statement is to describe for external audiences the role of occupational therapists and occupational therapy assistants in facilitating successful engagement of people in their chosen work activities and in meaningful work roles” (p. S55)
Author’s Conclusion	“Occupational therapy practitioners provide services to develop or increase the ability of the client to participate in and manage productive work, maintain health, adhere to safe work practices, and prevent work related disability” (p. S56).
Overall Relevance to you EBP Question	Overall Relevance of Article: moderate Rationale: This article relates to the part of the EBP question that references that work rehabilitation should be occupation-based in order for the PAMs usage to be considered OT.
Overall Quality of Article	Overall Quality of Article: Good

	Overview of Article
	Rationale: The author(s) are credible because of their OT credentials and extensive research background. Published in AJOT, which is a trusted and reputable source.

	Overview of Article
Type of Article	Overall Type: Conceptual or Theoretical Article Specific Type: guideline for hand therapists
APA Reference	Bachman, S. (2016). Evidence-based approach to treating lateral epicondylitis using the occupational adaptation model. <i>American Journal of Occupational Therapy</i> , 70(2), p1–p5. https://doi.org/10.5014/ajot.2016.016972
Abstract	“The occupational therapy Centennial Vision reinforces the importance of informing consumers about the benefits of occupational therapy and continuing to advocate for the unique client-centered role of occupational therapy. Occupational therapy practitioners working in hand therapy have traditionally found it difficult to combine the biomechanical foundations of hand therapy with the fundamental client-centered tenets of occupational therapy. Embracing our historical roots will become more important as health care evolves and third-party payers continue to scrutinize the need for the profession of occupational therapy. This article outlines a client-centered approach for hand therapists for the treatment of lateral epicondylitis using the Occupational Adaptation Model” (p.1).
Author	Credentials: OTD, OTR/L, CHT Position and Institution: Program Director and Clinical Assistant Professor of Occupational Therapy, Walsh University, North Canton, OH Publication History in Peer-Reviewed Journals: moderate
Publication	Type of publication: scholarly peer-reviewed journal Publisher: AOTA
Data and Citation History	Date of publication: 1/14/2016 Cited By: 10
Stated Purpose or Research Question	“This article outlines a client-centered approach for hand therapists for the treatment of lateral epicondylitis using the Occupational Adaptation Model” (p. 1).
Author’s Conclusion	“...there is an inherent challenge to bridge the mechanical skill expectations of insurers, physicians, and clients with the holistic, client-centered care that is the heart of occupational therapy. Therefore, in line with the AOTA (2007) Centennial Vision, practitioners must educate these parties about the importance of using occupation, the unique contribution that occupational therapy brings to rehabilitation, and the differences between occupational therapy and other professions” (p. 4).
Overall Relevance to you EBP Question	Overall Relevance of Article: Good Rationale: Discusses use of PAMs for LE for function/engagement in occupation. This relates to our original question of how PAMs can be occupation-based, for the PAMs to be considered occupational therapy.

	Overview of Article
Overall Quality of Article	Overall Quality of Article: Good Rationale: Reputable source and author who is a licensed OT and hand therapist. This article is a conceptual article that uses the occupational adaptation model to outline a client-centered model for hand therapists to use for treatment of LE. This study design is appropriate for the purposes of the article, since it uses evidence from multiple sources and is not a single experiment.

Appendix B. Critical Appraisals

Primary Research

	Summary
APA Reference	Hsu, C.-Y., Lee, K.-H., Huang, H.-C., Chang, Z.-Y., Chen, H.-Y., & Yang, T.-H. (2016). Manipulation therapy relieved pain more rapidly than acupuncture among lateral epicondylalgia (tennis elbow) patients: A randomized controlled trial with 8-week follow-up. <i>Evidence-Based Complementary & Alternative Medicine</i> , 2016, 1–7. https://doi.org/10.1155/2016/3079247
Abstract	“Radial bone adjustment manipulation treatment may be effective to reduce pain rapidly in lateral epicondylalgia patients and the pathological tension in the biceps brachii muscle is highly concerning. To prove this hypothesis, we conducted a randomized controlled trial and included 35 patients with lateral epicondylalgia for more than 2 months. Either manipulation treatment (n=16) or acupuncture (n=19) was given to these patients for 2 weeks and all patients’ symptoms were followed up for 8 weeks after treatment. Both groups demonstrated changes in pain VAS score, grip strength, and DASH questionnaire. Lateral epicondylalgia patients who received manipulation treatment felt pain relief sooner than those who had acupuncture treatments during the first few treatments. However, both acupuncture and manipulation are effective, while the difference has no significance at the 8-week follow-up. The trial was registered with Current Controlled Trials” (p.1).
Your Focused Question and Clinical Bottom Line	<i>Question:</i> Between acupuncture and manipulation technique, which one is more efficient at treating lateral epicondylitis for the adult population? <i>Clinical Bottom Line:</i> The applied manipulation technique improved pain in patients with lateral epicondylalgia (tennis elbow) during the first few treatments till 8-week follow-up. This method is more apt to relieve pain immediately. More so than acupuncture, according to this study.
Your Lay Summary	In the study done by Hsu et al. (2016) they looked at the effects that manual manipulation on the lower arm and acupuncture would have on tennis elbow pain and grip strength. They had two groups, one that received manual therapy on the arm, the other received acupuncture treatment. For two weeks, each group got their treatment twice a week. The study started off by measuring the initial pain levels, grip strength, and functional levels of their arm. They followed up with two other measurements, one that was done at 2 weeks after the treatment and the other that was done at the 8-weeks after the treatment.

	<p>What they found was that manual arm therapy helped decrease elbow pain in patients within those first sessions of treatment. They also had improvement in the function of the lower arm and had pain-free grip strength by the end of the 8-week follow-up. They found that the acupuncture group didn't show improvement in pain levels but showed improvement in grip strength.</p>
Your Professional Summary	<p>In the study done by Hsu et al., 2016, they analyzed the effects of manipulation therapy vs. acupuncture therapy for the effectiveness of treating lateral epicondylalgia. They did this by conducting a randomized control trial that consisted of 35 individuals who all had lateral epicondylitis for more than 2 months. They divided the participants into two groups: manipulation technique - containing 16 people - and the acupuncture treatment - containing 19 people. The conclusion of the study found that the manipulation technique was more efficient at treating the pain of lateral epicondylalgia within those first few treatment sessions up until 8-week follow-up. The acupuncture group was more successful at maximizing grip strength than the manipulation group.</p> <p>The article's strengths were in the readability, clear study design and statistically significant data results. There was clear evidence indicating that one treatment method was more apt to treat the pain and one to treat functional grip.</p> <p>The limitations of the study relied on the patient's subjective response to the stimuli, which, could have been related to the quality of activities they were being scored on for pain. They found noticeable improvement in pain rather than grip strength for daily activities under the manual manipulation group, however, given the subjectivity of daily activities, it would be difficult to conclude how much pain was associated per activity, per group. Additionally, a lack of larger male identifying participants could be a limitation in the study as well, given that there could be differences in pain management based on hormonal differences. The implications of this study will help to further investigate effective techniques for reducing and investigating pain sources for lateral epicondylalgia.</p>
	Critical Appraisal
Stated Purpose or Research Question	<p>"We hypothesized that pathological tension in the biceps brachii muscle is related to lateral epicondylalgia according to our clinical experience and physio pathological association. To test this hypothesis, we conducted a clinical trial and investigated the effect of radial bone adjustment therapy on pain relief during rest, daily activity, and work in patients with lateral epicondylalgia. In addition, we evaluated functional improvement and grip force change in this study and all assessments were measured in acupuncture too" (p.1.).</p>
Background Literature	<p><i>Key points of the intro section:</i> Most effective methods for treating lateral epicondylalgia are controversial. Which is surprising</p>

	<p>considering how prevalent the condition is. Only until recently did they agree that the condition is not due to inflammation, as the name epicondylitis once alluded to, but rather, it is thought to be attributed to tension or positional faults in in the joints. “In Traditional Chinese Medicine, manipulation and acupuncture are greatly used in treatment [...] Similar to manipulation therapy, correcting positional faults by using Mulligan’s mobilization with movement (MWM) or cervical spine manipulation is beneficial in pain relief for tennis elbow” (p.2).</p> <p><i>Theoretical perspective:</i> ‘not reported’</p>
Research Design	<p><i>Research design:</i> Single-center, prospective, randomized controlled trial.</p> <p><i>Rationale for the design:</i> The researchers likely chose the randomized control trial method because it is considered a highly reliable method for collecting evidence. It’s a method that reduces the risk of confounding factors that could influence results. The treatment groups are treated in an identical way, apart from the interventions, and therefore, any differences in outcomes can be attributed to the treatment method.</p> <p><i>For quantitative primary research, AOTA Level of Evidence:</i> Level II</p>
Sampling	<p><i>Sampling method used and the rationale (if given):</i> “The enrolled patients with lateral epicondylalgia were either transferred by other doctors in Chinese medicine department or those who saw the information on the bulletin board in Chang Gung Memorial Hospital. These patients were screened for eligibility on the basis of the diagnostic criteria including (1) aggravation of the lateral elbow pain during wrist extension and relief at rest, (2) tenderness of the lateral epicondyle, and (3) positive Cozens test” (p.2).</p> <p><i>Inclusion criteria:</i> “(1) elbow pain for >2 months, (2) unilateral elbow pain, (3) no improvement in the condition despite receiving treatment in previous 4 weeks, and (4) visual analog scale (VAS) score >30 millimeters” (p.2).</p> <p><i>Exclusion criteria:</i> “excluded patients who had central or peripheral nervous system diseases, radial nerve entrapment, inflammatory rheumatic disease, gout, or radio-capitellar osteoarthritis, underwent operation for lateral epicondylalgia, or were pregnant” (p.2).</p> <p><i>Power/sample size estimate:</i> not reported</p>
Sample	<p><i>Number of Participants (Total and Subgroups):</i> n=35</p> <p><i>Characteristics of the Sample (Gender, Race/Ethnicity, Diagnosis/Disability):</i> Diagnosed with lateral epicondylalgia for at least 2 months; Female (26) and Male (9); Age: midlife 38-51; moderate weight BMI</p> <p><i>Dropouts:</i> 2 dropouts from the acupuncture group</p>

Groups	<p>Patients were randomly assigned into two groups: acupuncture and manipulation group.</p> <p>Group one description: Manipulation Group; n=16; 11 female, 5 male; Age: 44.81 ± 7.30; BMI: 22.83 ± 3.21</p> <p>Group two description: Acupuncture Group; n=19; 15 female, 4 male; Age: 45.89 ± 5.99; BMI: 23.41 ± 2.75</p>
Method	<p>“Primary method to answer research study is through intervention. Patients in the manipulation group received bone adjustment to reverse positional fault and relieve the biceps brachii muscle tension [...] the physician rotated the radial bone internally and extended the biceps brachii muscle simultaneously. The physician performed the manipulation procedure twice in 1 minute with an interval of 30 seconds. The acupuncture group received six acupoints, one Ashi point, LI10, LI11, LU5, L14, and SJ5 [...] The needle was inserted into the muscle layer and twisted until the de qi sensation was felt. The needle remained for 25 minutes. Both the manipulation and acupuncture groups received the treatments <i>twice per week</i> for 2 weeks” (p. 2).</p>
Measurement and Outcomes	<p>Pain relief was the primary outcome for the study, with a secondary outcome of improving functional impairment and grip strength.</p> <p>“For pain assessment, we used the VAS scores for recording changes each time before treatment procedure in three states, <i>rest, daily activity, and work situations</i>, from the beginning of the study up to 8 weeks following” (p.2).</p> <p><i>Measure: Pain assessment scale VAS (0 – most satisfactory, to 100 – poor), measured each time before treatment of three states, rest, daily activity, and work. Evaluated at beginning for baseline, and then 2 and 8 weeks after the end of treatments. Test-retest reliability</i></p> <p><i>Measure: Functional impairment measured through Disability of Arm, Shoulder, and Hand (DASH) questionnaire. Evaluated at beginning for baseline, and then 2 and 8 weeks after the end of treatments. Test-retest reliability.</i></p> <p><i>Measure: Grip strength measured using the Jamar Hand Dynamometer. Evaluated each time before treatment procedure and at 2 and 8 weeks after the end of treatment. Test-retest reliability</i></p> <p>Analysis: The Wilcoxon Signed Rank test was used to measure comparisons within primary and secondary endpoints; The Mann-Whitney <i>U</i> test was used to measure between-group comparisons of primary and secondary endpoints. P-values were two-sided and less than 0.05.</p>
Results	<p>Sample size of 35, <i>diagnosed with lateral epicondylalgia for at least 2 months; Female (26) and Male (9); Age: midlife 38-51; moderate weight BMI.</i></p> <p><i>Visual Analog Scale (VAS): to measure pain rating; measured VAS scale for both daily activity and during work for both groups (manipulation and acupuncture). Significant difference in the third</i></p>

	<p>treatment (within the second week) for the manipulation group than acupuncture. More immediate effects. No significant changes in VAS score during rest in the acupuncture group during the total 10-week period, whereas significant changes were seen in the manipulation group.</p> <p>Disability of Arm, Shoulder, and Hand (DASH) questionnaire: measuring functional impairments; found significant difference in DASH questionnaire at 8-week follow up for both groups. The manipulation group showed rapid improvement in functional impairment at the end of the two-week treatment. Again, a more rapid result than acupuncture. A significant difference was observed in grip strength (pain-free) at the 8 week-follow up for both groups, whereas only a significant difference was observed in acupuncture group for maximum grip strength.</p>
<p>Authors' Discussion and Conclusion</p>	<p>Idea one: "According to studies on Mulligan's mobilization with movement (MWM), positional faults and subluxations are the main causes of pain, and reversal of positional faults can rapidly alleviate pain and improve functional impairment. The reason to the result may come from direct force that was applied to the correct positional faults, whereas acupuncture attempts to release the tension in the extensor muscles [...] internal rotation of radial bone in our manipulation can reverse the positional faults and the least biceps brachii muscle tension is also in this position" (p.5).</p> <p>Idea two: "Acupuncture is more impressive than manipulation in grip strength changes, especially in maximum grip strength" (p.6); acupuncture works to increase collagen type 1 synthesis which helps with anti-inflammatory mechanisms</p> <p>Idea three: "the patients who received manipulation treatment showed faster improvement than the acupuncture group during treatment period, but both were effective at the 8-week follow up." (p.6).</p>
<p>Authors' Limitations</p>	<p>Limitations of the study included a smaller sample size (35) and predominantly female participants rather than male. They did not list their demographic considerations as far as race, ethnicity, and cultural backgrounds, which would have been helpful to know what the assortment of subjects were like. Given the limited number of subjects in each treatment group, it is hard to say how effective it will be for the larger population.</p>
<p>Authors' Implications for Practice and Future Research</p>	<p>Compared to other invasive reports, the total cost of their procedure was less, making further techniques possible to carry out in future studies. They also concluded that there needs to be additional studies done using ultrasonographic assessment for showing the changes in the histology and pathology after treatment for this condition.</p>

	Summary
APA Reference	Baptista, M., Kugel, J., Javaherian, H., & Krpalek, D. (2018). Functional outcomes of a community occupation-based hand therapy class for older adults. <i>Physical & Occupational Therapy In Geriatrics, 36</i> (4), 380–398. https://doi.org/10.1080/02703181.2018.1556230
Abstract	<p>“<i>Aim:</i> This mixed methods study examined the functional outcomes of an occupation-based educational program for older adults with hand and wrist pain. A pretest–posttest design was used to understand changes in occupational performance, hand function, pain, grip and pinch strength, dexterity. <i>Method:</i> Two groups of classes met once a week for one hour, for four consecutive weeks. A total of 18 participants attended both weekly classes. Each class addressed functional activities, symptom management, exercises, questions, and sharing. Class content was determined based on pre-assessments of the Canadian occupational performance measure (COPM), tests of grip and pinch strength, hand dexterity, and open-ended semi-structured interviews. <i>Results:</i> All participants reported improvements in function, and significant improvements in COPM performance and satisfaction. Additionally, reported levels of pain significantly decreased from pre- to posttest. <i>Conclusion:</i> This study demonstrated that a community occupation-based hand therapy program is effective in improving occupational performance for older adults.” (p. 380)</p>
Your Focused Question and Clinical Bottom Line	<p><i>Question:</i> Can occupational therapists use education to improve functional performance in people with upper extremity pain? <i>Clinical Bottom Line:</i> Education is a powerful tool that occupational therapists can use to help people manage symptoms, improve function, improve self-efficacy, and improve quality of life for those with upper extremity pain.</p>
Your Lay Summary	This study investigated the physical and emotional effects of a class for older adults with hand pain. This class was led by an occupational therapist that specializes in hand therapy and included practical tips and hand exercises. The participants were tested on functional measures and were interviewed both before and after the class in order to measure the effects of the class. The participants showed improvement in some of the functional measures and reported increased ability to participate in activities and increased satisfaction. This intervention could be used broadly to help older adults maintain independence and good quality of life as they age.
Your Professional Summary	The objective of this study was to determine if an educational program could improve functional ability and quality of life in older adults with hand pain. Eighteen participants were recruited from a senior center; were at least 60 years old; and had

	<p>experienced hand, wrist, or arm pain for at least a year. Semi-structured interviews were conducted before and after the intervention to gather qualitative information about the experience and effects of the intervention. Other pre and posttests included the COPM, the Jamar dynamometer, the Jamar pinch gauge, and the nine-hole peg test. The interviews revealed that participants felt they had benefited from the program and that their ability to participate had increased. Functional ability as measured by the COPM increased. No changes were seen in the Jamar dynamometer, the Jamar pinch gauge, or the nine-hole peg test. The mixed-methods design was a major strength of the study, as the subjective experiences of the participants was able to inform the interpretation of the quantitative data. The small and largely homogenous sample, which was mostly Caucasian females, was the studies biggest limitation. Further studies are needed to determine if this promising intervention can be applied to diverse populations.</p>
	<p>Critical Appraisal</p>
<p>Stated Purpose or Research Question</p>	<p>“Therefore, the purpose of this study was to determine (1) the outcomes of an educational program for older adults with hand and wrist pain and (2) the nature and extent of the effects on functional ability and hand pain. The program was offered at a senior center and was designed to improve hand function and occupational performance.” (p. 382)</p>
<p>Background Literature</p>	<p><i>Key points of the intro section:</i> “Current demands and restrictions in healthcare, pose a pressing need to develop comprehensive community-based approaches to introduce interventions to prevent declines in function for older adults.” (p. 380) “A loss of hand function is an important predictor of a reduction in activities of daily living (ADL), performance, and quality of life of older adults.” (p. 381) “To date, no studies have addressed either qualitative or quantitative outcomes of a community-based program focused specifically on improving hand function to facilitate occupational engagement. There is an opportunity to employ a mixed methods design to capture both objective functional changes and individual subjective experiences, strengthening the understanding of the research problem or question.” (p. 381)</p> <p><i>Theoretical perspective:</i> not reported</p>
<p>Research Design</p>	<p><i>Research Design:</i> “This research study utilized a convergent mixed methods design merging qualitative and quantitative data to analyze the research problem.¹¹ Qualitative and quantitative data were collected pre and post participation in an educational program to understand changes in daily function, grip and pinch strength, finger dexterity, and pain.” (p. 382)</p>

	<p><i>Rationale for the design:</i> “Applying a mixed methods design captures both objective functional changes and individual subjective experiences. Exploring individuals’ experiences provides an in depth understanding of what intrinsically motivates each and every person and how they are affected by experiences in their world.” (p. 382)</p> <p><i>For quantitative primary research, AOTA Level of Evidence:</i> Level IV</p>
Sampling	<p><i>Sampling method used and the rationale (if given):</i> “Purposive sampling was utilized to recruit older adults attending a senior center.” (p. 382)</p> <p><i>Inclusion criteria:</i> “Inclusion criteria were male and female individuals aged 60 years and older who attended a senior center in Northern California, had the ability to use their hands for basic activities ADL and IADL based on the participant’s subjective report, speak and understand the English language, and have pain or discomfort in their hands, wrist, or forearms.” (p. 382-383)</p> <p><i>Exclusion criteria:</i> “There were no exclusion criteria.” (p. 383)</p> <p><i>Power/sample size estimate:</i> not reported</p>
Sample	<p><i>Number of Participants (Total and Subgroups):</i> “Nineteen individuals agreed to participate in the study (see Table 2). One participant, however, was not able to attend the classes due to an unexpected surgery.” (p. 383)</p> <p><i>Characteristics of the Sample (Gender, Race/Ethnicity, Diagnosis/Disability):</i> “Data from both groups were combined for analysis (N¼ 19). Female participants comprised 84.2% (n¼ 16) of the program and male 15.8% (n¼ 3). The majority of the participants (n ¼ 19) were 71–80 years of age. Participants reported a wide range of time living with hand and wrist pain from 1 year to more than 10 years with a mean of 3.38 years. Half of the participants (n ¼ 9) had seen a health care professional for their hand and wrist pain though only 2 participants had received a diagnosis for their hand pain” (p. 386)</p> <p><i>Dropouts:</i> no dropouts</p>
Groups	<p><i>Types of groups: (e.g., intervention, sample characteristic):</i> Intervention only</p> <p><i>Group one description:</i> Single group design</p>
Method	<ul style="list-style-type: none"> • 1:1 in-person interviews were conducted by a researcher before and after the intervention to collect qualitative information about the experience and the outcome. • Physical pre and post tests were performed to measure the quantitative results of the intervention. • The intervention was a four-week class on exercises for hand pain, functional activities, and symptom management led by a hand therapist OT.

<p>Measurement and Outcomes</p>	<p><i>Measure: COPM, "...individualized, client-centered measure designed for use by occupational therapists to detect change in a client's self-perception of occupational performance over time."</i> (p. 384), <i>"The COPM has been demonstrated to be well above the acceptable range, exceeding .80 for test-retest reliability. Results from most studies indicate that the COPM is responsive and that differences in scores over two points are typically clinically important changes."</i> (p. 384), <i>pre and post-test Measure: Jamar dynamometer, grip strength, "The Jamar was found to be highly reliable (ICC [3,1] = 0.98) and valid (ICC (2, K) = 0.99)"</i> (Bellace et al, 2000, p. 1), <i>pre and post-test Measure: Jamar pinch gauge, finger and thumb strength, shown to be reliable and valid (Mathiowetz et al, 1984), pre and post-test Measure: Nine-Hole Peg Test, finger dexterity, "high inter-rater reliability, and moderate to high test-retest reliability"</i> (p. 385), <i>pre and post-test Measure: Pre assessment interview with semi-structured, open-ended questions, "Questions were developed by the researchers based upon review of the literature and guided by the Canadian model of occupational performance... The purpose of this interview was to identify occupations that are impacted by hand pain and to construct content areas for the program."</i> (p. 385) <i>Measure: Post assessment interview with semi-structured, open-ended questions, "...sought to understand the participants' experiences throughout the class and how it affected their occupational performance, as well as how they felt physically, emotionally, and socially before, during, and after the program."</i> (p. 385)</p>
<p>Results</p>	<p><i>Description of the sample:</i> "Data from both groups were combined for analysis (N= 19). Female participants comprised 84.2% (n= 16) of the program and male 15.8% (n= 3). The majority of the participants (n = 19) were 71–80 years of age. Participants reported a wide range of time living with hand and wrist pain from 1 year to more than 10 years with a mean of 3.38 years. Half of the participants (n = 9) had seen a health care professional for their hand and wrist pain though only 2 participants had received a diagnosis for their hand pain." (p. 386)</p> <p><i>Analysis/theme one:</i> "The Wilcoxon Signed Rank Test showed that participants reported significantly higher levels of performance at Posttest of the COPM (Mdn= 7.15) than at pretest (Mdn= 6.25) (p< 0.001)." (p. 386)</p> <p><i>Analysis/theme two:</i> "Participants also reported higher levels of satisfaction at posttest on the COPM (Mdn= 7.10) than at pretest (Mdn= 5.25). Results were significant (p< 0.001)" (p. 386)</p>

	<p><i>Analysis/theme four:</i> “Overall, participants across both groups, meeting once weekly for four consecutive weeks, reported less pain at class 4 (Mdn= 2.00) than at class 1 (Mdn= 3.00) showing a significant difference ($p < 0.05$)” (p. 386)</p> <p><i>Analysis/theme five:</i> “There were no significant changes in the participants’ pre- and posttest scores for grip, lateral pinch and palmer pinch strength, and scores obtained on the Nine-Hole Peg Test” (p. 386)</p> <p><i>Analysis/theme six:</i> “The participants shared activities that became less difficult and painful for them after incorporating exercises and techniques from the class into their daily lives.” (p. 387)</p> <p><i>Analysis/theme seven:</i> “All the participants felt that they benefitted in some way from the program. There were several comments regarding increased awareness and how the class changed the participants’ attitudes about using and caring for their hands.” (p. 390)</p> <p><i>Analysis/theme eight:</i> “Several participants felt that the exercises improved flexibility, strength, and function... Many participants were participating in exercise classes at the Senior Center and incorporated the new exercises into their routines. Others creatively fit the exercises into their day.” (p. 391)</p>
<p>Authors’ Discussion and Conclusion</p>	<p>Idea one: “While there were no significant changes in grip and pinch strength, all participants reported functional improvement as well as decreased pain in their hands.” (p. 393)</p> <p>Idea two: “Outcomes from this study support this finding in that participants felt that they benefitted from improved occupational performance, awareness, and reduced symptoms” (p.393)</p> <p>Idea three: “Findings from this study may indicate the effectiveness of holistic hand programing that not only incorporates hand strengthening exercises, but also includes client education, symptom management, and collaborative problem solving to support occupational performance.” (p.393)</p>
<p>Authors’ Limitations</p>	<ul style="list-style-type: none"> • Small sample size • Sample skewed female and Caucasian • No follow-up to assess long term effects • Bias may be present because the researcher who administered the pre and posttests also taught the intervention class.

<p>Authors' Implications for Practice and Future Research</p>	<p><i>Practice:</i> “Outcomes from this study indicate the potential of a community occupation-based hand therapy program to improve occupational performance in older adults, notably when the program is conducted by an occupational therapy practitioner with knowledge and skill to provide meaningful activities and modifications to maximize function.” (p. 395)</p> <p><i>Future Research:</i> “Thus, it is suggested that such a program be carried out in other settings with different populations that might provide more diversification and valuable data related to socio-economic and cultural components.” (p. 395)</p>
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	Summary
APA Reference	<p>Tran, T., Harris, C., & Ciccarelli, M. (2021). The impact of a hand therapy workplace-based educational approach on the management of lateral elbow tendinopathy: A randomized controlled study. <i>Journal of Hand Therapy</i>. 15(4), 1-14. https://doi.org/10.1016/j.jht.2021.09.004</p>
Abstract	<p>“Background: Lateral elbow tendinopathy (LET) is one of the most prevalent work-related musculoskeletal conditions. Management strategies for LET rarely consider patients’ work environments and have limited focus on education regarding occupational risk factors. Workplace-based rehabilitation has shown benefits in the return-to-work processes for injured workers with other health conditions, but no studies have investigated the impact of a workplace-based educational approach in the management of LET. Purposes: First, to identify the impact of an additional workplace-based educational intervention to standard hand therapy care on the outcomes of pain, grip strength, and function. Second, to identify the effectiveness of standard hand therapy on the same clinical outcomes. Study Design: A randomized controlled trial. Methods: Forty-nine participants were randomized to the control group (n = 25) or intervention group (n = 24). The control group received standard hand therapy for 12 weeks. The intervention group received standard hand therapy for the first 12 weeks plus an additional workplace-based educational intervention, “Working Hands-ED,” delivered by a hand therapist. Pain levels for provocative tests, grip strength, and function were measured using a Numeric Rating Scale, Jamar Dynamometer, and the Patient-Rated Tennis Elbow Evaluation questionnaire at baseline, weeks 6 and 12. The Patient-Specific Functional Scale was also used for the intervention group. Results: There were no statistical differences between both groups for all clinical outcomes by 12 weeks ($P > .05$). Pain levels for all provocative tests and Patient-Rated Tennis Elbow Evaluation scores statistically improved within both groups ($P < .05$), however with small effect sizes observed. The Patient-Specific Functional Scale scores statistically improved for the intervention group by 12 weeks ($P < .05$). Conclusion: The addition of a hand therapy workplace-based intervention did not result in superior clinical outcomes for pain, grip strength, and function. The study identified that a multimodal self-management approach used by hand therapists improved their patients’ pain and function regardless of whether the education was given in the clinic or the workplace.” (p.1)</p>

Your Focused Question and Clinical Bottom Line	<p><i>Question:</i> Are workplace-based interventions for LET successful for return to work in adults?</p> <p><i>Clinical Bottom Line:</i> Although no statistical differences were found during this study between the two groups the 18 participants who participated in the PSFS showed statistical differences and clinical relevance by the 12-week mark. Since the study showed no significant outcomes compared to standard hand therapy, it is still unknown if and how workplace-based education provided impacted on work outcomes, in this case return to work.</p>
Your Lay Summary	<p>The injury most likely to happen at work is lateral elbow tendinopathy (LET). This study included 49 people with LET. They were all randomly assigned to one of two groups. One group of 25 people received standard hand therapy for 12 weeks. The other 24 received standard hand therapy for 12 weeks and 2 additional workplace education interventions. This group had 18 people participate in a Patient-Specific Functional Scale (PSFS). This scale helped determine what the 18 individuals were able to do at work and what they could not due to their injury. This helped individualize the 2 additional interventions for education in the work setting. The results showed no significant differences between the two groups with pain, strength, and grip. If the study conducted had all people in the second group receive the PSFS, there might have been a difference between the two groups.</p>
Your Professional Summary	<p>The study wished to find if workplace-based education interventions were more effective than standard hand therapy on the outcomes of pain, grip, and strength. The randomized controlled trial recruited patients referred by their medical practitioners. A power calculation was conducted to find the sample size needed for the study. The study called for 50 participants for a power of 80% and a moderate effect size of 0.8. With 49 participants meeting the inclusion criteria, with no between-group differences for demographic characteristics. Each participant was randomly assigned to a control group or intervention group. The control group (n=25) received standard hand therapy for 12 weeks. The intervention group (n=24) received standard hand therapy for 12 weeks with two additional workplace-based education interventions. Eighteen participants in the intervention group received a Patient-Specific Functional Scale (PSFS) which concluded to have significant differences between baseline and week 12. The overall results determined that there were no significant differences between the control group and the intervention group. The strengths of this study were the use of a multimodal approach which helped LET patients increase their self-management of the condition. The</p>

	study had a small sample size due to the strict inclusion and exclusion criteria and the reliance of referrals.
	Critical Appraisal
Stated Purpose or Research Question	“The primary aim of this study was to identify the impact of an additional workplace-based educational intervention to standard hand therapy care on the outcomes of pain, grip strength, and function. The secondary aim was to identify the effectiveness of standard hand therapy on the same clinical outcomes.” (p. 2)
Background Literature	<p><i>Key points of the intro section:</i></p> <p>Lateral elbow tendinopathy - prevalent work-related musculoskeletal condition affecting approximately 1-3% of the general population and is equally common among men and women aged 35-55.</p> <p>Current treatment methods - “research literature focus primarily on the physiological management of pain, strength and function; and typically include provision of orthoses, exercise programs, use of electrical stimulation technologies, corticosteroid injections, blood injections, pain medications, manual therapy, joint mobilization, and surgical options” (p.2).</p> <p>Occupational risk factors - “work-related and psychosocial factors were 2 of the factors influencing the prognosis of LET and that the modification of physical factors could reduce the risk or improve the prognosis of the condition” (p.2).</p> <p>Application of the International Classification of Function, Disability, and Health Framework - “The ICF is a useful framework that can be used to describe how education in body functional biomechanics and activity modification may assist in the treatment of patients with LET and facilitate their return to pre-injury work roles” (p.2).</p> <p>Benefits of workplace-based interventions and significance of research - “workplace-based rehabilitation offers many benefits in the return-to-work process for injured workers for other health conditions, but to our knowledge, no studies have investigated the effectiveness of this intervention approach for the management of work-related LET” (p.2). “A hand therapist’s specialized knowledge and experience in upper limb rehabilitation combined with a biopsychosocial approach that considers the injured worker’s social and physical environments may provide a more holistic approach to managing work-related LET aligned with the ICF framework” (p.2).</p> <p><i>Theoretical perspective:</i> International Classification of Function, Disability, and Health Framework</p>
Research Design	<p><i>Research design:</i> Randomized Controlled Trial</p> <p><i>Rationale for the design:</i> Using a randomized control trial will help find the efficacy of workplace-based interventions with LET.</p>

	<i>For quantitative primary research, AOTA Level of Evidence: Level II</i>
Sampling	<p><i>Sampling method used and the rationale (if given):</i> "recruited from patients referred by their medical practitioners to a multi-centered hand and upper limb clinic for the management of LET" (p. 2).</p> <p><i>Inclusion criteria:</i> "Participants had to report pain reproduced on at least 2 of the following clinical assessments: (i) palpation over the lateral epicondyle, (ii) palpation over the common extensor tendon ordin, (iii) resisted wrist extension, (iv) resisted middle finger test, and (v) resisted supination. The diagnosis must have been confirmed via ultrasound or magnetic resonance imaging by a radiographer" (p. 2-3).</p> <p><i>Exclusion criteria:</i> have/had undergone surgery; other elbow injuries; had blood injections within 6 months, or if they have received a corticosteroid injection or engaged in PT within 3 months.</p> <p><i>Power/sample size estimate:</i> Power calculation conducted with the G power tool using a 5% significance level; 80% power and a moderate effect size 0.8; 50 participants needed</p>
Sample	<p><i>Number of Participants (Total and Subgroups):</i> 50 participants were assessed for eligibility; 49 met the inclusion criteria; randomly allocated to one of two groups (control group n = 25) (intervention group n = 24)</p> <p><i>Characteristics of the Sample (Gender, Race/Ethnicity, Diagnosis/Disability):</i> No between-group differences for demographic characteristics; "Main cause of LET in both control and intervention groups was repetitive movements. Manual workers accounted for 76% of participants in the control group and 88% in the intervention group. Participants worked in a variety of workplaces including retail shops, cafes, supermarkets, factories, and offices. Most participants in both groups presented with a first occurrence of LET symptoms" (p.5).</p> <p><i>Dropouts:</i> n/a</p>
Groups	<p><i>Types of groups: (e.g., intervention, sample characteristic):</i></p> <p><i>Control group (n=25) -- standard therapy</i></p> <p><i>Intervention group (n=24) -- standard therapy + an additional workplace-based education intervention (Working Hands - ED)</i></p> <p><i>Group one description: Control --</i> "provided in the standard usual care in the clinic were prescription of orthoses, application of a heat pack, soft tissue massage to the dorsal extensor muscles, static wrist flexion and extension passive stretches, and an eccentric strengthening exercise program (pain-free) using weighted dumbbells" (p.3) Generally, first 2 weeks, participants used wrist orthosis, by week 2 participants were in a soft tissue</p>

	<p>therapy program, and by the 4th week the participants were in the eccentric strengthening program.</p> <p><i>Group two description: Intervention group</i> -- “provide specific and individualized education and work recommendations about a participant’s occupational risk factors in the context of their work environment... workplace-based education delivered by hand therapists within the context of the specific work environments provided an opportunity for workers with LET to adapt and modify the way they performed their current activities” (pp. 3-4).</p>
Method	<p><i>Primary methods to answer research question (e.g., intervention, interview, survey, chart review)</i></p> <p>“Participants allocated to the control group received the standard hand therapy program for LET delivered at the clinic. The standard hand therapy program consisted of 10 x 1-hour sessions over a 12-week period (weekly for the first 8 weeks, then every 2 weeks until the 12-week mark). Those allocated to the intervention group received the same standard hand therapy care; however, they also received 2 additional appointments. First, they received an additional 30-minute session within the first 2 weeks of the initial hand appointment at the clinic to complete the Patient-Specific Functional Scale (PSFS). Second, these participants received an additional once-off workplace-based educational intervention called <i>Working Hands-ED</i> within the first 4 weeks after their initial hand therapy appointment” (p. 3).</p>
Measurement and Outcomes	<p><i>Measure:</i> “Patient-Specific Functional Scale; identify any work duties that they were having difficulty completing due to their LET; valid, reliable, and responsive outcome measure of function for people with upper extremity injuries; completed prior to the worksite visit (baseline) and again at 12 weeks after initial hand therapy appointment” (p. 5)</p> <p><i>Measure:</i> “Patient-Rated Tennis Elbow Evaluation (PRTEE); questionnaire includes pain and function subscales that are combined to give one overall score; identified as one of the superior standardized patient outcome measures for LET, with excellent validity, reliability, and internal consistency; completed prior to the worksite visit (baseline) and again at 12 weeks after initial hand therapy appointment.” (p. 5)</p> <p><i>Measure:</i> “The clinical outcomes measured were pain level, pain-free grip strength with the elbow in standard (flexion) position and in extension, and function; measured at the initial appointment (T1), and at 6 (T2) and 12 (T3) weeks after the initial hand therapy appointment” (p.4).</p> <p>Pain -- measured during the 5 provocative clinical assessments using an 11-point Numeric Rating Scale with scores ranging from “no pain” (= 0) to “worst imaginable pain” (= 10); administered verbally and is a reliable and valid tool suitable for pain</p>

	<p>assessment in clinical practice” (p.4). “Minimal clinical change of 1.1 was found for all pain outcomes in both groups” (p.5). Grip strength -- “... measured using a calibrated Jamar Hydraulic Hand Dynamometer (200 lb; 90 kg) and in extension (0 degrees). Testing pain-free grip strength in the standard position is a reliable and valid measure that is more sensitive to change than testing for maximal grip strength” (p.4). “There were no significant differences in the mean grip strengths within and between the control and intervention groups over time ($P > .05$), indicating that both groups improved similarly for both grip strength outcomes” (p. 5).</p>
Results	<p><i>Description of the sample:</i> 50 participants were assessed for eligibility, of which 49 met the inclusion criteria. All 49 participants were randomly assigned to the intervention group or the control group. There were no between-group differences for demographic characteristics observed at baseline.</p> <p><i>Analysis/theme one:</i> PSFS -- 18 participants in the intervention group completed this assessment. Between the 2 time-points the mean changed and was found to be statistically significant and clinically relevant.</p> <p><i>Analysis/theme two:</i> intervention effects on clinical outcomes: Pain levels -- minimal change found in both groups for all pain outcomes. Both groups behaved similarly with pain over the 12 weeks despite the additional workplace-based education intervention.</p> <p><i>Analysis/theme three:</i> Intervention effects on clinical outcomes: Grip Strength -- both groups had a higher mean grip strength score after the 12 week process, however, the changes were not significantly significant.</p> <p><i>Analysis/theme four:</i> Intervention effects on clinical outcomes: Function -- The changes in mean scores from the PRTEE were not statistically significant between groups. The significant improvement within each group with a minimal change of more points, indicated that the improvement in PRTEE scores were also clinically relevant within each group.</p>
Authors’ Discussion and Conclusion	<p><i>Idea one:</i> Main findings -- found that “(i) the addition of a workplace-based education intervention delivered by the treating hand therapist did not negatively or positively impact on the clinical outcomes of pain, grip strength, or function at 12 weeks, and (ii) a multimodal standard hand therapy program improved the patient’s pain and function regardless of whether the education component was delivered in the clinic or the patients’ workplace” (p. 6)</p> <p><i>Idea two:</i> Workplace-based intervention for LET -- “The study did not identify statistical differences between the 2 groups, the results from the PSFS demonstrated a statistical difference and</p>

	<p>clinical relevance by the 12-week mark for the 18 participants that received the novel intervention. This suggests that the addition of <i>Working Hands-ED</i> may be beneficial for some injured workers with LET” (p.6)</p> <p><i>Idea three:</i> Efficacy of a multimodal approach -- Adopted an approach that is consistent with the ICF guidelines; inclusion of eccentric exercises using weights within a multimodal program improved pain and function but did not affect grip strength; education about occupational risk factors within the clinic setting provided similar clinical outcomes to providing them within the workplace.</p> <p><i>Idea four:</i> Education about occupational risk factors -- “education about LET pathology, healing time frames, positions to avoid, and activity modification principles discussed within the clinic setting are as effective in reducing participant’s pain and improving function than having an additional workplace-based educational intervention” (p. 9)</p>
<p>Authors’ Limitations</p>	<ul style="list-style-type: none"> - Small sample due to the strict inclusion criteria and exclusion criteria, and reliance on physician referrals to the hand therapy practice of injured workers with LET who were in receipt of workers’ compensation - PSFS was used only for participants in the intervention group to identify work duties appropriate for the worksite visit and not as an outcome measure for both groups - No formal outcome measures to evaluate adherence or compliance to workplace modifications made for those in the intervention group - Study only measured short-term outcomes - Funding constraints -- the workplace-based intervention was delivered in two visits
<p>Authors’ Implications for Practice and Future Research</p>	<ul style="list-style-type: none"> - “A larger randomized controlled trials with at least 2 worksite visits, a longer follow-up period, and inclusion of work-related outcome measures is recommended to confirm the results of the present trial” (p. 9) - Focus on individuals with LET working in high-risk occupations such as painters, plumbers, carpenters, auto workers, cooks, and butchers

	Summary
APA Reference	Tran, T., Falkmer, T., & Ciccarelli, M. (2020). Do hand therapists have a role in workplace-based education to manage tennis elbow? Beliefs about effective treatments among Australian hand therapists and medical practitioners. <i>Work</i> , 66(3), 539–549. https://doi.org/10.3233/WOR-203196
Abstract	<p>“Background: Lateral elbow tendinopathy (LET), commonly known as tennis elbow, is a prevalent work-related upper extremity musculoskeletal disorder. Medical practitioners and hand therapists manage LET with commonly available clinic-based treatments, despite no sound evidence to suggest long-term relief and functional restoration for workers with LET. Workplace-based rehabilitation is effective for injured workers with other health conditions, but no studies have investigated this rehabilitation approach in the management of LET. Objectives: (i) Identify, compare, and contrast Australian hand therapists' and medical practitioners' perceptions about the effectiveness of common treatments for LET, and (ii) obtain their views towards a hand therapist delivered workplace-based education approach. Methods: In this cross-sectional study, 38 medical practitioners from Western Australia and 104 hand therapists around Australia completed online surveys. Independent t-tests were used to identify between-group differences in responses. Results: Despite some between-group differences regarding the perceived effectiveness of common LET treatments, both groups believed education about LET pathology, activity modification, postures, and workplace recommendations were most effective. Most medical practitioners (81%) and hand therapists (71%) believed workplace-based education delivered by a hand therapist would be beneficial for patients with acute and chronic LET. Conclusion: Australian hand therapists and medical practitioners believed educational approaches were the most important component in the management of LET, and supported workplace-based educational interventions provided by hand therapists in the management of LET.” (Pg. 1)</p>
Your Focused Question and Clinical Bottom Line	<p><i>Question:</i> How do occupational therapists play a role in the treatment and management of lateral elbow tendinopathy?</p> <p><i>Clinical Bottom Line:</i> Occupational therapist - particularly hand therapists play a vital role in the intervention of tennis elbow. They provide workplace-based education interventions that are a part of the holistic approach to the management of LET.</p>
Your Lay Summary	The title of the study is: Do hand therapists have a role in workplace-based education to manage tennis elbow? Beliefs about effective treatments among Australian hand therapists and medical practitioners.

	<p>This study's participants were 104 hand therapists and 38 medical practitioners in Australia. The focus of the study was to find how effective certain treatments are for tennis elbow and to understand what these professionals thought about a hand therapist delivered workplace-based education approach. The study was conducted using an online survey. The results of the study found that all participants from both disciplines thought education on activity modification, work recommendations, positions to avoid, and the anatomy of tennis elbow were the best interventions. These findings suggest that workplace-based education interventions given by hand therapists are a part of the total approach when it comes to treating tennis elbow.</p>
Your Professional Summary	<p>The study; do hand therapists have a role in workplace-based education to manage tennis elbow? Beliefs about effective treatments among Australian hand therapists and medical practitioners, was a cross sectional survey with a convenience sample using online surveys. This study was conducted on 104 hand therapists from around Australia and 38 medical practitioners from Western Australia. The aim of this study was to gain insight from these two professions on the effectiveness of common treatments for LET, and to understand their views towards a hand therapist delivered workplace-based education approach. Results show that respondents from both disciplines believed education on activity modification, work recommendations, positions to avoid, and pathology of LET were the most effective interventions. A strength of this study includes the unbiased sampling method used by researchers to gather the data for this study, in order to ensure valid and reliable results. A limitation of this study is that the medical practitioners surveyed were recruited from Western Australia, so their responses may not be representative of medical practitioners from all States and Territories. Overall implications of this study are that the majority of hand therapists and medical practitioners believe education to be the most effective treatment for injured workers with acute and chronic LET.</p>
	Critical Appraisal
Stated Purpose or Research Question	<p>"This cross-sectional study aimed to (i) identify, compare, and contrast Australian hand therapists' and medical practitioners' perceptions about the effectiveness of common treatments for LET, and (ii) obtain their views towards a hand therapist delivered workplace-based education approach." (p. 4)</p>
Background Literature	<p><i>Key points of the intro section:</i> In Australia, medical practitioners and hand therapists are two groups of health professionals commonly involved in the assessment and management of patients with LET. (p. 4)</p>

	<p>“Combining a hand therapist’s specialized knowledge and skills in upper limb rehabilitation with an approach that considers the injured worker’s social and physical environments provides a more holistic approach to the management of work-related LET.” (p. 4)</p> <p><i>Theoretical perspective:</i> Framework - International Classification of Functioning, Disability and Health (ICF). (p. 2)</p>
Research Design	<p><i>Research design:</i> This was a cross-sectional study with a convenience sample using online surveys.</p> <p><i>Rationale for the design:</i> Not reported.</p> <p><i>For quantitative primary research, AOTA Level of Evidence:</i> Level II.</p>
Sampling	<p><i>Sampling method used and the rationale (if given):</i> “The hand therapists were recruited via an email containing the study information and the online survey link. The email was sent by the first author to the secretariat of the AHTA, who forwarded the email to all associate and full members in Australia (N= 599). Of those, 336 (56%) opened and read the email information about the study, and 104 completed the survey (i.e. 30% response rate based on the 336 hand therapists who opened the email). The researchers were unable to recruit medical practitioners across Australia in a similar manner through the Australian Medical Association. Instead, the first author emailed the study information and survey link to the Practice Managers of 231 medical clinics across metropolitan Perth, Western Australia and asked them to forward the email to the medical practitioners at their respective clinics.” (p. 4)</p> <p><i>Inclusion criteria:</i> “Australian hand therapists who were qualified occupational therapists or physiotherapists, registered as full or associate members of the Australian Hand Therapy Association (AHTA), and had clinical experience practicing hand therapy within the past five years, were invited to participate in this study.” (p.4)</p> <p>“Medical practitioners recruited to this study included general practitioners and sports physicians. They were required to have treated upper limb conditions in the past five years, to be eligible for inclusion in the study.” (p.4)</p> <p><i>Exclusion criteria:</i> Not reported. (Must meet inclusion criteria requirements.)</p> <p><i>Power/sample size estimate:</i> Not reported.</p>
Sample	<p><i>Number of Participants (Total and Subgroups):</i> Online surveys were completed by 104 hand therapists from around Australia and 38 medical practitioners from Western Australia. (pg. 5)</p> <p><i>Characteristics of the Sample (Gender, Race/Ethnicity, Diagnosis/Disability):</i> Demographic questions included the respondent’s professional discipline; years of experience treating</p>

	<p>upper 249 extremity disorders; and information about their LET patients including gender, estimated number of LET cases treated each month, number of work-related cases of LET treated under the Western Australian workers' compensation insurance scheme, and if their LET patients were treated in a private or public health service. (See table below for #'s) (pg. 4)</p> <p><i>Dropouts:</i> None Reported.</p>
Groups	<p><i>Types of groups: (e.g., intervention, sample characteristic):</i> Demographic Group, Hand therapist's vs medical practitioners.</p> <p><i>Group one description: Hand Therapists -</i> Australian hand therapists who were qualified occupational therapists or physiotherapists, registered as full or associate members of the Australian 194 Hand Therapy Association (AHTA), and had clinical experience practicing hand therapy within the past five years, were invited to participate in this study. (p. 4)</p> <p><i>Group two description: Medical Practitioners -</i> The first author emailed the study information and survey link to the Practice Managers of 231 medical clinics across metropolitan Perth, Western Australia and asked them to forward the email to the medical practitioners at their respective clinics. At the time of the survey, these medical practices referred patients to the private hand therapy practice (comprised of seven practice locations) where the first author worked. (p. 4)</p>
Method	<p><i>Primary methods to answer research question (e.g., intervention, interview, survey, chart review)</i> This was a cross-sectional study with a convenience sample using online surveys.</p> <p>“Demographic questions were common to both surveys. Questions about common treatments for LET were presented separately for the acute and chronic stages of the condition, respectively in both surveys.</p> <p>Hand therapists and medical practitioners were asked about their attitudes towards having hand therapists conduct workplace-based interventions for injured workers in the acute and chronic stages of LET.” (p. 5)</p>
Measurement and Outcomes	<p><i>Measure:</i> The Human Research Ethics Committee at Curtin 304 University in Western Australia provided approval for the study (Name).</p> <p>“On the first screen of the online survey, participants were provided with information about the study purpose; perceived benefits and risks; the estimated time required to complete the survey; the voluntary nature of their participation; and the contact details of the researchers if they had any questions. Immediately following presentation of the study information, participants were</p>

	<p>asked to respond to a question asking for their consent to participate.” (p. 5)</p> <p><i>Measure:</i> All survey data were imported into the Statistical Package for the Social Sciences (SPSS, version 22).</p> <p>“Between-group differences for questions common to both surveys were determined using independent t-tests. The non-parametric Mann-Whitney U test was also used on the data and produced similar results. A critical alpha of .05 was used to determine statistical significance. Free text responses reporting any pros and cons of having a hand therapist complete a workplace-based intervention were grouped using content analysis.</p> <p>Frequencies of responses were calculated to summarize categorical data and multiple-choice response options. Multiple responses were allowed for some questions and so totals of these frequencies may exceed 100 percent.” (p. 5)</p> <p>All surveys were pilot tested for face and content validity by a panel of experts. (p. 5)</p>
Results	<p><i>Description of the sample:</i> “Online surveys were completed by 104 hand therapists from around Australia and 38 medical practitioners from Western Australia.” (p. 5)</p> <p><i>Analysis/theme one:</i> “Respondents from both disciplines believed education on activity modification, work recommendations, positions to avoid, and pathology of LET were among the most effective interventions.” (p. 5)</p> <p><i>Analysis/theme two:</i> “Hand therapists strongly agreed (mean agreement rating of 9.5 out of 10) that they routinely educated patients with LET on pathology, postures to avoid, and provided recommendations for activity modification specific to work and leisure activities.” (p. 7)</p> <p><i>Analysis/theme three:</i> “A majority of hand therapists’ respondents (71%) reported that they felt it would be valuable for a hand therapist to complete a workplace-based intervention in the acute and chronic stages of LET; however, 74% of hand therapists surveyed reported that they had never conducted a workplace-based intervention.” (p. 7)</p>
Authors’ Discussion and Conclusion	<p><i>Idea one:</i> “Given that occupational risk factors have been identified as contributing to LET pathology, we believe that treatments to manage LET across all stages of pathology should address the activity and environmental factors of the ICF.” (p. 8)</p> <p><i>Idea two:</i> “Our survey results indicated that medical practitioners and hand therapists rated educational approaches as the most effective treatment method for injured workers with acute and chronic stage LET.” (p. 8)</p> <p><i>Idea three:</i> “The majority of hand therapists (71%) and medical practitioners (81%) in our study agreed that having a hand</p>

	therapist complete a workplace-based education intervention would be valuable in the acute and chronic stages of LET.” (p. 9)
Authors’ Limitations	“The limitations of this study include small sample size and low and undefined response rates across the two samples. Not all treatments included in the survey were selected by respondents; therefore, the survey items may not include all the different types of treatments used to manage LET. The medical practitioners surveyed were recruited from Western Australia only and so their responses may not be representative of medical practitioners from all States and Territories. These methodological issues should be considered when interpreting the findings of this study.” (p. 9)
Authors’ Implications for Practice and Future Research	“Based on these findings, we propose future research to determine the effectiveness of workplace-based education interventions delivered by hand therapists as part of a holistic approach to the management of work-related LET.” (p. 10)

	Summary
APA Reference	Kim, L.J., Hyunsu, C., & Donguchul, M. (2012). Improvement of pain and functional activities in patients with lateral epicondylitis of the elbow by mobilization with movement: A randomized, placebo-controlled pilot study. <i>Journal of Physical Therapy, 24(9): 787-790.</i> https://doi.org/10.1589/jpts.24.787
Abstract	[Purpose] There is little known about mobilization with movement (MWM) which is used to treat lateral epicondylitis of the elbow and its effects on functional activities. The purpose of this study was to investigate the effects of the mobilization-with-movement technique on elbow pain and functional activities of subjects with lateral epicondylitis. [Methods] Ten subjects with lateral epicondylitis of the elbow were randomly divided into an experimental group (n=5) and a placebo control group (n=5). Therapeutic intervention for both groups included general therapy such as hot packs, transcutaneous electrical nerve stimulation, ultrasound therapy, and deep friction massage. The experimental group received MWM, whereas the placebo control group received sham MWM after general therapy. All subjects received therapeutic intervention every other day for 10 days. Pain and functional activities were assessed before and after the interventions using the patient-rated tennis elbow evaluation scale (PRTEE). [Results] Significant and clinically meaningful improvements in pain, special activity, and usual activity sub-domains were found post-intervention in the experimental group. [Conclusion] The results indicate that mobilization-with-movement has a positive effect on both pain and functional activities of patients with lateral epicondylitis.
Your Focused Question and Clinical Bottom Line	<i>Question:</i> In individuals with lateral epicondylitis, what is the efficacy of using Mobilization with Movement (MWM) versus the traditional use of PAMs and other therapies for reducing pain and improving functional abilities? <i>Clinical Bottom Line:</i> MWM may potentially be an effective approach for reducing pain and improving function for people with lateral epicondylitis.
Your Lay Summary	Tennis elbow (lateral epicondylitis) is often painful and can cause a decrease in function. It is normally treated with things like hot packs, ultrasound electrotherapy, and deep tissue massage. In this study, researchers use a newer physical therapy intervention known as Mobilization with Movement (MWM) with people who have tennis elbow. In MWM, a physical therapist puts force onto the elbow joint in a certain way to stretch and relax the muscle. The first group in the experiment only received the normal interventions of hot packs, ultrasound, and massage. The other

	<p>group also received those interventions, plus the MWM treatment. The people who got MWM treatment rated their elbow pain to be much lower afterwards. They were also able to do things like turn a doorknob, open a jar, or do their work more efficiently. This study is small but show promise for MWM being a good way to reduce pain for people who have tennis elbow. In the future, physical therapists and occupational therapists could work together to help treat tennis elbow in the best way possible.</p>
Your Professional Summary	<p>The purpose of this pilot study is to determine the effectiveness of the Mobilization with Movement (MWM) intervention on reducing pain due to lateral epicondylitis in order to improve ability to perform functional activities. The study includes a sample size of 10 patients who were diagnosed with lateral epicondylitis who were randomly assigned into an experimental group and a placebo control group. Both groups received interventions that are traditionally used to treat LE, including hot packs, ultrasound electrotherapy, and deep friction massage. The experimental group received MWM in addition to this, while the placebo control group received sham MWM. The participants received interventions during 5 treatment sessions. The patients rated their level of pain on a scale of 1-10 using the Patient-Rated Tennis Elbow Evaluation scale (PRTEE) before and after the treatments. The experimental group had a significant reduction in their level of pain and in certain functional tasks, including work, while the control group had a lesser and insignificant reduction in pain. A strength of this study is that the participants were randomly assigned to groups and the control group received a placebo MWM treatment to reduce possible bias. The results hold promise for possible use of this intervention in clinical settings, however the results are not generalizable because of the small sample size. Further research should be conducted using larger sample sizes.</p>
	Critical Appraisal
Stated Purpose or Research Question	<p>“The purpose of this study was to investigate the effects of the mobilization-with-movement technique on elbow pain and functional activities of subjects with lateral epicondylitis” (p. 787).</p>
Background Literature	<p><i>Key points of the intro section:</i> “Lateral epicondylitis of the elbow is a condition characterized by aggravation of pain in the outer part of the elbow during active wrist extension, and presentation of pain on direct palpation of the lateral epicondyle, humeroradial joint, or proximal muscle belly” (p. 787). “More than 40 different therapeutic methods are recommended for treatment... [including] ultrasound treatment, laser treatment,</p>

	<p>electrical agents, therapeutic exercise, deep friction massage, manipulation, and joint mobilization” (p. 787).</p> <p>This study is conducted by physical therapists and the intervention being used is considered a physical therapy intervention. However, the study focuses on functional outcomes, so it is connected to occupational therapy. Potentially this study could determine how physical therapists and occupational therapists could co-treat lateral epicondylitis. Mobilization with movement (MWM) was developed by Brian Mulligan and recently has been widely used for treatment of lateral epicondylitis by physical therapists (p. 787). In MWM, a “continuous gliding force by a physical therapist and active osteokinematic movement by the patient are made together” and “the therapist applies a laterally directed glide to the radial side while the patient actively makes a fist” (p. 787).</p> <p><i>Theoretical perspective:</i> not reported</p>
Research Design	<p><i>Research design:</i> Pilot study, randomized and placebo-controlled experimental trial (RCT trial)</p> <p><i>Rationale for the design:</i></p> <p>This is an experimental design pilot study with a small sample. “There is little known about mobilization with movement (MWM) which is used to treat lateral epicondylitis of the elbow and its effects on functional activities” (p. 787).</p> <p>The experimental design was used to learn more about the effect of MWM treatment on lateral epicondylitis for functional activities. They used a pre/posttest experimental design using a patient-rated pain scale. This is a pilot study that used a small sample size. The authors of this study recognize that more research should be conducted on this topic with larger sample sizes, since this study has promising evidence.</p> <p><i>For quantitative primary research, AOTA Level of Evidence:</i> 2B. This meets RCT criteria, but it is a pilot study with a small sample size.</p>
Sampling	<p><i>Sampling method used and the rationale (if given).</i> Rationale for sampling was not given. The purpose of the study is to determine the effects of an intervention on lateral epicondylitis, so people who are diagnosed with that condition were used for the sample.</p> <p><i>Inclusion criteria:</i> Participants of the study only included patients with lateral epicondylitis of the elbow. Lateral epicondylitis must have been diagnosed within the last 3 months by an orthopedic surgeon who specialized in shoulder, elbow, and wrist surgery (p. 787).</p> <p><i>Exclusion criteria:</i> Participants were excluded if they had a history of orthopedic disorders that affect the elbow, neurological disorders, rheumatoid arthritis, or osteoarthritis, or recent steroid</p>

	<p>injection or prolotherapy because these conditions could have an effect on the participant's elbow joint (p. 787).</p> <p><i>Power/sample size estimate:</i> not reported</p>
Sample	<p><i>Number of Participants (Total and Subgroups):</i> n = 10</p> <p>Each participant was randomly assigned and equally divided into an experimental group (EG) and a placebo control group (PCG). Participants were assigned into groups by blindly choosing a card from a box. The cards were numbered 1-10. Those who chose an even numbered card were assigned to the control group and those who chose an odd numbered card were assigned to the experimental group (p. 788).</p> <p>EG: 5 participants PCB: 5 participants</p> <p><i>Characteristics of the Sample (Gender, Race/Ethnicity, Diagnosis/Disability):</i> The researchers do not specify the gender, race, or ethnicity of the participants.</p> <p>The average age of the participants in the EG was 49.4 ± 2.88 years. The average height of the participants was 155.6 ± 6.18 cm. The average weight of the participants was 55.6 ± 3.78 kg. The average age of the participants in the PCG were 49.2 ± 5.89 years. The average height was 157.8 ± 5.35 cm, and the average weight was 54.8 ± 6.49 kg (p. 788).</p> <p><i>Dropouts:</i> No dropouts.</p>
Groups	<p><i>Types of groups: (e.g., intervention, sample characteristic):</i> The group of 10 is divided into 2 groups. The groups receive the same interventions of ultrasound, hot packs, and deep tissue massage. After these interventions, the experimental group received MWM interventions, and the placebo group received sham MWM interventions (p. 788). The group was not divided into demographic or diagnostic groups.</p> <p><i>Group one description:</i> The experimental group (EG). This group received interventions of a hot pack, electrotherapy, and deep friction massage. This group received MWM treatment (p. 788). Hot packs and electrotherapy are PAMs, which is the focus of the EBP question, while deep friction massage and the MWM intervention are not considered PAMs.</p> <p><i>Group two description:</i> The placebo control group (PCG). This control group received the same interventions, except this group received sham MWM.</p>
Method	<p><i>Primary methods to answer research question (e.g., intervention, interview, survey, chart review)</i></p> <p>Methods used in this study include therapeutic interventions and a pre and posttest for rating of pain during functional activities. The experimental group (EG) received interventions of a hot pack being applied for 10 minutes, electrotherapy for 10 minutes, and deep friction massage for 10 minutes to the patients' regions of</p>

	<p>pain. The electrotherapy was administered using an electrical stimulator that delivered sinusoidal wave ultrasound at a frequency of 1 MHz and intensity of 0.3W/cm² and transcutaneous nerve electrical stimulation at a pulse rate of 50 pps and 0.8 mA intensity. After these interventions, the physical therapists administered MWM treatment in 2 sets of 10 repetitions (p. 788).</p> <p>Mobilization with movement (MWM) interventions consist of the therapist applying lateral gliding force to the elbow and then applying passive lateral gliding force to the elbow as the patient makes a fist with their hand (p. 789).</p> <p>The placebo control group (PCG) received the exact same interventions using hot packs, electrotherapy, and deep friction massage. However, this group received “sham” MWM, which consisted of passive elbow flexion for 2 sets of 10 repetitions. This sham MWM acted as a placebo for the group in order to reduce possible bias.</p> <p>The interventions were administered 5 times total for each participant. The treatment sessions occurred at intervals of every 48 hours.</p>
Measurement and Outcomes	<p>The Patient-Rated Tennis Elbow Evaluation scale (PRTEE) was used as the instrument of measuring pain. The PRTEE is a self-administered questionnaire. The PRTEE has 3 subdomains of questions including pain, special activities, and usual activities (p. 788). This scale was used in order to determine functional changes related to ADLs after the experimental interventions (p. 788). The scale ranges from 0-10 at 1 point intervals. A score of 0 means there is no pain or difficulty in performing motions and a score of 10 means that there is extreme pain and there is an inability to perform motions (p. 788).</p> <p><i>Measure:</i> PRTEE scale</p> <p><i>Construct:</i> PRTEE scale is a questionnaire that is self-administered by the participants of the study. The data was analyzed using SPSS for Windows and a p-value ≤ 0.05 was considered to be statistically significant (p. 788). A paired t-test was used to compare the pre-test and post-test scores (p. 788).</p> <p><i>Reliability/validity:</i> The reliability of this study ranges from 0.85 to 0.94 and “...it is known as a very reliable evaluation method” (p. 788).</p> <p><i>Frequency:</i> This measure was administered once before the interventions and once after the interventions.</p>
Results	<p><i>Description of the sample:</i> The final sample size includes 10 participants and there were no dropouts during the study. All participants had a diagnosis of lateral epicondylitis within the past 3 months and an average age of about 49 years.</p>

	<p><i>Analysis/theme one:</i> The group that received MWM intervention showed significant improvement in pain while the control group did not show any significant improvement. This indicates that the experimental intervention decreases pain of lateral epicondylitis. The average pretest score for the EG was 5.52 ± 0.62 and the average score after the intervention was 3.12 ± 1.82. For individual items, significant improvements were made particularly on ratings of “when doing a task with repeated arm movement” and for “when your pain was at its worst” (p. 788). The PCG pretest score was 5.44 ± 2.14 and 4.88 ± 2.81 posttest. There were no significant differences after the interventions and there were no significant improvements or changes for any of the individual items on the PRTEE for those who did not receive MWM treatment (p. 788).</p> <p><i>Analysis/theme two:</i> The group that received MWM had improved function in performing usual activities including work, while the control group did not. This indicates that the experimental intervention helps to improve performance of functional activities while having the diagnosis of lateral epicondylitis. The EG’s average pretest score was 6.4 ± 1.82 and 3.4 ± 2.56 post-intervention. There was significant improvement in the item of “Work (your job or everyday work).” There were no significant changes for the PCG group and no significant changes for any individual item on the questionnaire (p. 788).</p> <p><i>Analysis/theme three:</i> The group that received MWM had improved function in performing special functional activities while the control group did not. This indicates that the experimental intervention improves the ability for those with lateral epicondylitis to perform special functional activities. The PRTEE measured pain during performance of functional activities. For the EG, the average pretest score for performing special activities was 6.6 ± 1.1 and the average posttest score was 3.33 ± 2.85, which is a significant improvement. Significant improvements were made in the items “turn a doorknob or key,” “wring out a washcloth or wet towel,” and “open a jar” (p. 788). The PCG group’s scores did not show a significant difference in their scores and did not show a significant difference for and of the items individually either (p. 788).</p>
<p>Authors’ Discussion and Conclusion</p>	<p><i>Idea one:</i> MWM treatment focuses on correcting a positional fault in a patient, which is the condition of the joint surface being in an unnatural position that causes damage and/or strain. Correcting a positional fault improves joint motion and joint fluid flow in order to improve recovery for the patient (p. 788).</p> <p><i>Idea two:</i> This study and previous studies show that MWM reduces pain in patients with lateral epicondylitis. The EG’s pain level decreased significantly by 25 - 48.57% and the PCG’s pain</p>

	<p>level decreased only by 8.69 - 14.81% (p. 788). In studies from Kochar and Dogra and from Radpasand and Owens, there were significant improvements within their similar experiments (p. 788).</p> <p><i>Idea three:</i> The muscle stretching of the MWM treatment is determined to have the ability to relax muscles and decompress capillaries, which induces repair of the damaged tissue in the elbow (p. 789). This ability for the intervention to induce reparation of the tissue means that MWM could potentially be a viable option for co-treating lateral epicondylitis with occupational therapy and physical therapy.</p>
<p>Authors' Limitations</p>	<p>A major limitation of this study is that it is a small pilot study with a small sample size. This means that the results cannot be generalized to all patients who have lateral epicondylitis (p. 789). In terms of the EBP question, the controlled interventions use the PAMs of ultrasound and applying heat, but also uses deep tissue massage which is not a PAM.</p>
<p>Authors' Implications for Practice and Future Research</p>	<p>The authors state that further research should determine the effect of MWM on a larger sample size and without the use of general therapy modalities (p. 789). Further research with larger RCTs will provide stronger evidence for this intervention to be used in practice.</p>

	Summary
APA Reference	Voss, M. R., Homa, J. K., Singh, M., Seidl, J. A., & Griffitt, W. E. (2019). Outcomes of an interdisciplinary work rehabilitation program. <i>Work, 64</i> (3), 507–514. https://doi.org/10.3233/WOR-193012
Abstract	<p>“BACKGROUND: Work rehabilitation programs were developed to help workers with an injury return to work (RTW). While studies have examined intervention characteristics, prognostic factors, and disability level, there is little or no research examining interdisciplinary interventions, lifting capacity/strength and the level of a patient’s RTW status (e.g., not working, new job, or ongoing restrictions) at the time of discharge.</p> <p>OBJECTIVE: To evaluate outcomes (RTW status and lifting capacity/strength changes) of an interdisciplinary work rehabilitation program and examine whether time off work prior to the program and type of injury were related to RTW status and strength changes.</p> <p>METHODS: A retrospective database analysis was conducted with a sample of 495 participants (Mage = 44.44 years, SD = 10.13) of which 375 (76%) were male. Participants were workers with injuries who participated in an interdisciplinary work rehabilitation program from 2006 to 2010.</p> <p>RESULTS: A significantly higher number of participants were working at the end of the program than at the beginning (83.9% vs. 31.6%, $p < 0.0001$). Mean strength was higher at the time of discharge compared to at admission ($p < 0.0001$). The participants that did not RTW had significantly more days off work prior to the program ($U = 11757, z = -3.152, p = 0.002$). The type of injury was not related to strength at the time of discharge.</p> <p>CONCLUSIONS: Findings suggest the interdisciplinary program is associated with positive outcomes and early intervention may be an important factor when treating patients with work-related injuries” (p. 507).</p>
Your Focused Question and Clinical Bottom Line	<p>Question: How can a work rehabilitation program assist with an individual getting back to working after lateral elbow tendinopathy?</p> <p>Clinical Bottom Line: Using an interdisciplinary, comprehensive work rehabilitation program, individuals can increase their strength and self-confidence and prevent future injuries when returning to work settings.</p>
Your Lay Summary	Returning to work is an important thing to do for individuals who are injured and want to do their job as well as they did before they were hurt. Programs that focus on helping these individuals function better and return to work are needed because they are able

	<p>to help identify how the worker can recover and be effective as an employee again. Understanding the way in which these rehabilitation programs worked in the past can help to determine how they can help workers in the future that get injured. This study looks at how work rehabilitation programs can assist individuals who are injured return to their work settings, while also identifying what weaknesses and strengths can help them get there. This study is helpful for future research about work rehabilitation because it allows researchers to understand how to keep workers in their jobs for longer and how workers can get back to their jobs faster.</p>
<p>Your Professional Summary</p>	<p>Work rehabilitation programs are useful for many reasons. In this particular retrospective database review, the researchers investigate how effective these programs can be for measuring strength and lifting capacity, the worker's RTW statuses, and how interdisciplinary teams allow for more of a diverse treatment plan for helping workers after injury. The objective of this study is to review and understand these outcomes to determine whether having time off from their jobs before entering a work-focused rehabilitation program and the type of injury sustained affects how the workers returned to their job settings, along with how their physical strength changed. This study was very thorough in its results, using tables and testing to clearly identify and specify how their results can be used in future settings. This study used a sample size of 495 participants, with 375 of those individuals being men. This is a larger sample size, which can be seen as a strength, especially since the characteristics of the participants are diverse in many ways. This can also be seen as a weakness to the study because it has a very uneven variation of sex/genders. Other limitations within this study include having very little exclusion and inclusion criteria, as well as having ethical concerns because of the study's retrospective design, which does not allow for group comparisons between those that have been through these work rehabilitation programs and those who have not. The implications from this study follow the understanding on how to better address complications from injury for workers in the future and how to use preventative measures to make the transitions to work settings more efficient and faster.</p>
	<p>Critical Appraisal</p>
<p>Stated Purpose or Research Question</p>	<p>“This study further attempted to examine whether days off work prior to starting the program and type of injury were related to strength changes and RTW status. The following research questions guided the study: (1) Does a comprehensive work rehabilitation program affect a patient's final RTW status?</p>

	<p>(2) Does a comprehensive work rehabilitation program impact strength in work simulation lifting?</p> <p>(3) Does the timing of intervention and type of injury influences the RTW status and strength of workers upon discharge?" (p. 509).</p>
Background Literature	<p><i>Key points of the intro section:</i></p> <ul style="list-style-type: none"> • Examine whether days off work prior to starting a work rehabilitation program was related to strength changes and RTW status • Completing a comprehensive, interdisciplinary work rehab program could be related to positive changes in return to work (RTW) status • Increased strength levels in works upon discharge from the program • Delayed entry into the program would have deleterious effects on RTW status upon discharge and strength levels <p><i>Theoretical perspective:</i> Discusses contemporary work rehabilitation models for RTW but does not include one specifically</p>
Research Design	<p><i>Research design:</i> Retrospective database analysis</p> <p><i>Rationale for the design:</i> Examines the outcomes of the RTW programs for spine, upper quadrant, and lower quadrant injuries. Researchers are able to identify how participants' past experiences with interdisciplinary rehabilitation programs may positively impact future employees who sustain injuries, as well as the limitations this type of intervention might bring. This study design also allows for researchers to analyze timing of work rehabilitation programs for RTW status for future programming.</p> <p><i>For quantitative primary research, AOTA Level of Evidence: Level III</i></p>
Sampling	<p><i>Sampling method used and the rationale (if given):</i> Used a work rehab program database for spine, upper, and lower quadrant injuries to find patients who had one of those injuries and were referred by a qualified provider and were admitted into a rehab program between 2006-2010 without records with erroneous database entries.</p> <p><i>Inclusion criteria:</i> Individuals were admitted into the program upon a qualified provider referral and having a work injury.</p> <p><i>Exclusion criteria:</i> Mentions that there were minimal exclusion criteria, but eluded to patients being excluded because of records with erroneous database entries</p> <p><i>Power/sample size estimate:</i> Not reported</p>
Sample	<p><i>Number of Participants (Total and Subgroups):</i> $n = 495$</p> <p><i>Characteristics of the Sample (Gender, Race/Ethnicity, Diagnosis/Disability):</i></p>

	<ul style="list-style-type: none"> • Gender <ul style="list-style-type: none"> ○ Male: 375 ○ Female: 117 • Ethnicity <ul style="list-style-type: none"> ○ African American: 99 ○ Caucasian: 321 ○ Hispanic: 62 ○ Other: 9 • Injury type <ul style="list-style-type: none"> ○ Spine: 155 ○ Upper quadrant: 246 ○ Lower quadrant: 85 • Surgery status <ul style="list-style-type: none"> ○ Non-surgical: 155 ○ Surgical: 293 • Work level upon admission <ul style="list-style-type: none"> ○ Restricted: 153 ○ No restrictions: 2 ○ Not working: 331 • Work level upon discharge <ul style="list-style-type: none"> ○ New occupation capacity: 28 ○ Restrictions: 146 ○ No restrictions: 237 ○ Not working: 77 <p><i>Dropouts:</i> No dropouts were recorded in the study</p>
Groups	<p><i>Types of groups:</i> (e.g., intervention, sample characteristic): Demographic variables that were collected included gender, ethnicity, and age. Clinical characteristics are the type of injury sustained (upper quadrant, lower quadrant, spinal), number of days off of work prior to the program, number of visits, and surgery status. Patient outcome data included work status and lifting capacity while completing work simulation tasks before and after participating in the rehabilitation.</p> <p><i>Group one description:</i> “working” RTW group: This group refers to the participants being within three levels determined by the researchers. These levels were “new occupation capacity”, “work with restrictions” and “work with no restrictions” and were examined to compare the “not working” group for relevance in having days off prior to starting the rehabilitation program. This group had a higher likelihood of returning to work earlier after rehabilitation because of less days off prior to starting the program.</p> <p><i>Group two description:</i> “not working” RTW group: This group is simply examining the group of individuals who are not working by the end of the rehabilitation program. The results of this group</p>

	show that having more days off prior to starting a rehabilitation program were not as likely to return to their job.
Method	<i>Primary methods to answer research question:</i> A system-wide retrospective analysis of a work rehabilitation program database was used to examine the outcomes of the rehabilitation programs for upper and lower quadrants and spine. Before the participants were chosen, they had to have been able to tolerate at least 1 hour of sustained, lower-level physical activity for three to five days a week, while also having records of being in a rehabilitation program. The participants' outcomes were measured to determine how they handled RTW status after being through the rehabilitation process. The records are de-identified and are compliant with the US patient confidentiality requirements.
Measurement and Outcomes	<p><i>Measure:</i> RTW status and strength are the main outcomes examined: “Work level upon admission and discharge was classified into four levels: ‘new occupation capacity’, ‘work with restrictions’, ‘work with no restrictions’, and ‘not working’. The work rehabilitation program defined ‘new occupation capacity’ as the patient being able to meet their physical job demands, but unable to return to their specific job due to extraneous factors, such as the job being eliminated. Patients’ strength was measured while completing work simulation tasks pre- and post-work rehabilitation program participation utilizing the Ergoscience methodology for lifting tasks.</p> <ul style="list-style-type: none"> • Patients with upper quadrant, cervical spine, and thoracic injuries lifted a crate loaded with weight from waist to eye level, and patients with lower quadrant and lumbar spine injuries completed floor to waist lifting. Strength was measured as the number of pounds lifted during the lifting assessment” (p. 511) <p><i>Measure:</i> McNemar’s Test: Compared the change in the work level upon admission of the participant to their job upon discharge from the program</p> <p><i>Measure:</i> Paired-samples <i>t</i>-tests: Conducted to compare strength pre- and post- program.</p> <p><i>Measure:</i> Shapiro-Wilk test: Checked normality for the distribution of the number of days off of work prior to the rehab program</p> <p><i>Measure:</i> Mann-Whitney <i>U</i> test: Since there was a non-normal distribution for the number of days off work prior to the program, this test was needed. It compared the number of days off of work prior to starting the program for the “working group” and “not working” group. There was one extreme outlier in the data set that was excluded prior to conducting this test.</p> <p><i>Measure:</i> Regression analysis: Evaluated relationship between the type of injury sustained, number of days off before the rehab</p>

	<p>program, and strength (lifting capacity) upon discharge. The statistical significance was set at $p < .05$.</p>
Results	<p><i>Description of the sample:</i> Total number of participants was consistent with the beginning of the study, which was 495 participants. Demographic characteristics still included the same number of participants in each group (gender, ethnicity, and age).</p> <p><i>Analysis/theme one:</i> Completion of comprehensive work rehabilitation program is related to improved RTW status of participants</p> <p><i>Analysis/theme two:</i> Mean strength and lifting capacity for the three types of injuries (spine, upper quadrant, lower quadrant) was higher at the time of discharge compared to the strength at admission</p> <p><i>Analysis/theme three:</i> Using more days off prior to completing a work rehabilitation program decreases the chance of returning to work compared to those that started treatment soon after injury</p>
Authors' Discussion and Conclusion	<p><i>Idea one:</i> Completing of a comprehensive, interdisciplinary work rehabilitation program was associated with improved RTW status of the worker upon discharge from the program with more patients having returned to work</p> <p><i>Idea two:</i> The completion of a comprehensive work rehabilitation program was related to significantly increased strength change reflects an improvement in lifting capacity while completing a work simulation task</p> <p><i>Idea three:</i> More days off work prior to starting the work rehabilitation program may have deleterious effects on patients' RTW status upon discharge</p>
Authors' Limitations	<ul style="list-style-type: none"> • Minimal inclusion and exclusion criteria utilized <ul style="list-style-type: none"> ○ “Individuals were admitted into the work rehab program based solely upon provider referral and having a work injury” (p. 513) ○ “Because of lack of inclusion and exclusion criteria, patients may have been inappropriate referrals and the referral nature of the program may be potential source of bias due to provider treatment preferences” (p. 513) • Ethical concerns and retrospective design <ul style="list-style-type: none"> ○ “Potential participants were not placed into control groups to determine if the individuals would increase their strength and RTW status without an intervention” (p. 513) ○ “Group comparisons cannot be made to examine differences in outcomes between the worker who completed the program and those who never received rehabilitation services” (p. 513)

<p>Authors' Implications for Practice and Future Research</p>	<ul style="list-style-type: none">• “Subsequent more robust studies (Including an evaluation of the intervention’s working mechanism)<ul style="list-style-type: none">◦ Warranted and will be helpful to determine how outcomes for workers can be improved” (p. 513)• “Longitudinal research that evaluates RTW outcomes at various intervals would be beneficial to determine long-term RTW status of those who participated in the program” (p. 513)• “Research evaluating time since surgery in relation to the initiation of the work rehab program could be beneficial for determining appropriate intervention timeframes” (p. 513)• Examine potential predictive factors of RTW
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	Summary
APA Reference	<p>Nilsson, P., Lindgren, E.-C., & Månsson, J. (2012). Lateral epicondylalgia. A quantitative and qualitative analysis of interdisciplinary cooperation and treatment choice in the Swedish health care system. <i>Scandinavian Journal of Caring Sciences</i>, 26(1), 28–37. https://doi.org/10.1111/j.1471-6712.2011.00899.x</p>
Abstract	<p>“Objective and aim: Interdisciplinary cooperation is essential to develop a broad range of knowledge and skills. The aim of this study was to describe health care professionals’ treatment choices, their cooperation with other professionals and their perceptions of potential risks regarding treatments of acute lateral epicondylalgia (LE).</p> <p>Design: A quantitative descriptive study design with a summative approach to qualitative analysis.</p> <p>Ethical issues: The ethical committee was asked verbally for approval but, as this study was performed to develop an organised way to treat LE, it did not require approval. The four ethical aspects information, consent, confidentiality, and the use of the study materials were all addressed. Subjects: All orthopaedic surgeons, general practitioners, physiotherapists, and occupational therapists in a county.</p> <p>Methods: Questionnaire with 18 dichotomous, multiple-response, multiple-choice questions and three open-ended questions were analyzed using quantitative crosstab and qualitative content analysis with summative approach.</p> <p>Results: The most common treatment choices were Non-Steroidal Anti-Inflammatory Drugs (NSAID), corticosteroid injections, training programmes, braces and ergonomics. Advantages from interdisciplinary cooperation were higher rated than disadvantages. The qualitative findings dealt with perceptions of interdisciplinary cooperation and resulted in three categories: right level of care, increased quality of care and decreased quality of care. Almost half of the physicians felt potential risks associated with their treatment methods. The qualitative findings dealt with perceptions of the potential risks and resulted in two categories: side effects and inadequate treatment” (p.28).</p> <p>Study limitations: The number of responses varied because some of the respondents did not answer all the questions.</p> <p>Conclusion: Interdisciplinary cooperation in the treatment of patients with acute LE benefits the patients by shortening the rehabilitation period and provides health care professionals the opportunity for an improved learning and exchanging experiences. These basic conditions must be met to improve health care quality” (p. 28).</p>

Your Focused Question and Clinical Bottom Line	<p><i>Question:</i> What are the implications of using an interdisciplinary approach for the treatment of lateral epicondylitis and what is the impact on the patient?</p> <p><i>Clinical Bottom Line:</i> A collaborative approach among health care providers maximizes occupational and physiological interventions per client in the treatment of LE despite the lack of consensus in overall condition treatment standard.</p>
Your Lay Summary	<p>Doctors and therapists from Holland County in Sweden were invited to participate in a survey on tennis elbow. They were asked about their treatment choices and how well they got along with each other. Three authors reviewed the feedback and 321 people responded to the questions. Most doctors agree it is good for professionals to cooperate with each other in order to help their clients.</p>
Your Professional Summary	<p>In this study, orthopaedic surgeons (OSs), general practitioners (GPs), occupational therapists (OTs), and physical therapists (PTs), were surveyed to better understand treatment methodology in relation to lateral epicondylitis. The objective was to survey all OSs, GPs, PTs, and OTs who worked in primary health care, private care settings, and hospitals to identify treatment choices, and perceptions of risk factors regarding treatment of LE, and the consensus of interdisciplinary treatment among professionals. A total population survey took place in Holland County in Southwestern Sweden. A total of 391 professionals within the fields were mailed the survey questionnaire, and all were provided with one follow up reminder for completion. Three hundred and twenty-one professionals responded to the survey. The survey was designed with 21 questions that quantified time in the profession, gender, and practice setting, as well as treatment choices for epicondylitis, perceived cooperation among professionals, and 3 open ended questions. After the survey was quantified, the authors coded the open-ended qualitative responses according to themes. This provided validity to the trustworthiness of the findings as all three authors worked together and individually to categorize and code the themes. Implications of the research include the location and possible author bias. Sweden has universal healthcare which differs from other countries' access to care. Some participants did not answer all of the questions for unknown reasons and two of the authors reviewing the survey had a vested interest in the study, while the third had no background in healthcare, thus potential bias could still exist in interpreting the results. A strength of the study was that the average amount of time a participant had in the professions was 11 years, and that most had experience working in an interdisciplinary setting.</p>
	Critical Appraisal

Stated Purpose or Research Question	“The aim of this study was to describe health care professionals’ treatment choices, their cooperation with other health care professionals and their perceptions of potential risks regarding treatments for acute LE” (p. 29).
Background Literature	<p><i>Key points of the intro section:</i> “The most common work-related disorder of the elbow amongst adults is acute lateral epicondylalgia” (p. 28). “Although this disease affects many people, there is no gold standard for treatment” (p. 28). “A rehabilitation programme that involves cooperation with other professionals could get the patient back to work more quickly than conservative treatments” (p. 29). “The Health and Medical Service Act states that all care should focus on the patient, that he/she should be provided with secure and effective treatment that is offered in a reasonable time frame and that treatment should be evidence based” (p. 29). “Patients with LE have the option to be treated by different professionals at health care centers, but there is no consensus as to where to send the patient” (p. 29). “Interdisciplinarity work is essential to achieve a broad range of knowledge and to select treatment options because no single clinician is likely to have the necessary skills to achieve the optimal results alone” (p. 29).</p> <p><i>Theoretical perspective:</i> ‘not reported’</p>
Research Design	<p><i>Research design:</i> “combined descriptive quantitative and qualitative study design as well as a summative approach to the qualitative content analysis” (p. 29).</p> <p><i>Rationale for the design:</i> A pilot questionnaire was administered to 10 PTs and OTs to ensure the questions were interpreted as intended by the constructor before the final questionnaire was sent out to the targeted population of PTs, OTs, GP, and OSs. Researchers may have chosen a population wide survey due to the already low number of combined practitioners in this specific area of Sweden.</p> <p><i>For quantitative primary research, AOTA Level of Evidence:</i> Level III</p>
Sampling	<p><i>Sampling method used and the rationale (if given).</i> <i>Inclusion criteria:</i> All general practitioners, physical/occupational therapists and orthopaedic surgeons in primary care or private care settings and hospitals from Holland County in South-western Sweden were mailed a questionnaire and invited to participate in this study.</p> <p><i>Exclusion criteria:</i> No exclusions</p> <p><i>Power/sample size estimate:</i> ‘not reported’</p>
Sample	<p><i>Number of Participants (Total and Subgroups):</i> 391 individuals in total population</p> <p><i>Characteristics of the Sample:</i> 202 women; 119 men responded</p> <p><i>Dropouts:</i> 321 of 391 responded to survey</p>

Groups	<p><i>Types of groups:</i> health professionals who treat lateral epicondylitis</p> <p><i>Group one description:</i> 144 General practitioners (nearly equal in gender)</p> <p><i>Group two description:</i> 155 Physical therapists (83% women)</p> <p><i>Group three description:</i> 62 Occupational therapists; all women</p> <p><i>Group four description:</i> 30 orthopaedic surgeons; all men</p>
Method	<p><i>Primary methods to answer research question:</i></p> <p>Participants were mailed the survey and they mailed back their completed responses. There were 21 questions on the survey including 18 dichotomous, multiple-response, multiple-choice questions, and three open-ended questions.</p>
Measurement and Outcomes	<p><i>Measure:</i> This was a 1x volunteer questionnaire with a 1x reminder to provide a response.</p> <p>4 questions described the baseline characteristics of the profession, including the gender, the number of years in practice, and practice setting (private vs. public)</p> <p><i>Measure:</i> 9 questions addressed if and in what way their LE patients were rehabilitated</p> <p><i>Measure:</i> 4 questions addressed if and in what way multidisciplinary cooperation existed</p> <p><i>Measure:</i> 3 open-ended questions; participants were asked to describe in their own words their perception of the potential risks associated with the treatment and the advantages and/or disadvantages of cooperation [among health professionals] (p. 29).</p> <p>In terms of <u>credibility</u>- “The analysis was conducted by all three authors, who worked as a multi-professional team; two of the authors have treated LE patients and understood the various treatment methods mentioned by the respondents; the third author did not work in medical care. The authors worked both individually and together as a multi-professional team during the various steps of the analysis process” (p. 35).</p> <p>In terms of <u>dependability</u>- “The answers responded to the questions in an adequate way, and because the survey was given anonymously the [authors] felt the questionnaire was interpreted correctly and there was no connection between the respondents and the individuals who analyzed their results” (p. 35).</p> <p>In terms of <u>transferability</u>- “The total eligible population had the opportunity to participate, and individuals of various ages who had differing occupations were included” (p.35).</p>
Results	<p><i>Description of the sample:</i></p> <p>A survey was sent to all (n= 321) health professionals who treat lateral epicondylitis in primary care or private care settings and hospitals from Holland County in South-western Sweden. Participants included general practitioners (n=144; equal in</p>

	<p>gender), physical therapists (n=155; 83% women), occupational therapists (n= 62; all women), and orthopaedic surgeons (n=30; all men). In the total population, 321 or 83% of people surveyed responded, including 202 women and 119 men.</p> <p><i>Analysis/theme one:</i></p> <p><u>Treatment options</u> varied among practitioners- “GPs (73%), OSs (92%) and OTs (79%) based their treatment choices on their own experience; PT’s (52%) based their choice on scientific results, and (39%) on their own experience. Corticosteroid injections are the first choice of treatment among GPs and OS’s. Almost all (87%) PTs were trained in acupuncture and (30%) preferred this method for first line therapy. OT’s first line therapy was wrist braces. All professionals used combined treatments to treat LE” (p.35).</p> <p><i>Analysis/theme two:</i></p> <p><u>Cooperation</u> among professionals in the treatment of LE has more advantages and few disadvantages including perceptions of the right level of care, quality of care options, and perceptions of treatment risks. The main advantage in cooperation among professionals is that the client is treated with broader competence. However decreased quality of care was reported when there was a lack of cooperation among the treatment team due to participant’s lack of time and knowledge.</p>
<p>Authors’ Discussion and Conclusion</p>	<p><i>Idea one:</i> “Interdisciplinary cooperation exists in primary health care in the treatment of LE and many health care professionals perceive that such cooperation [among GP, OS, PTs and OTs] increased the quality of care [for patients]” (p. 34).</p> <p><i>Idea two:</i> “Cortisone was described as a high-risk treatment but was still the most used amongst GPs and OSs despite the perceptions that PTs and OTs might be the right level of care for these patients” (p. 34).</p>
<p>Authors’ Limitations</p>	<p>The study took place in Sweden where healthcare is universal and differs in accessibility as compared to the United States.</p> <p>“A limitation of the questionnaire is that the number of responses varied because some of the respondents did not answer all of the questions, and clarification questions could not be asked” (p. 35).</p> <p>“The analysis yielded results that were proportionately close to the written text, and the contextual coherence created meaning” (p. 31).</p>
<p>Authors’ Implications for Practice and Future Research</p>	<p>“Cortisone injection, ergonomic advice and acupuncture were the three modalities that were most chosen as a first-line treatment. Participants perceived that patient treated at an adequate level of care had a greater chance of being treated with extreme competence. Interdisciplinary cooperation in the treatment of LE benefits the patient, shortens the rehabilitation period and improves the knowledge base if experiences are shared with other</p>

	professionals. The basic conditions that foster interdisciplinary care must be met to improve the quality of care” (pp. 35-36).
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Review of Research

	Summary
APA Reference	Roll, S. C., & Hardison, M. E. (2017). Effectiveness of occupational therapy interventions for adults with musculoskeletal conditions of the forearm, wrist, and hand: A systematic review. <i>The American Journal of Occupational Therapy</i> , 71(1). https://doi.org/10.5014/ajot.2017.023234
Abstract	“Occupational therapy practitioners are key health care providers for people with musculoskeletal disorders of the distal upper extremity. It is imperative that practitioners understand the most effective and efficient means for remediating impairments and supporting clients in progressing to independence in purposeful occupations. This systematic review provides an update to a previous review by summarizing articles published between 2006 and July 2014 related to the focused question, what is the evidence for the effect of occupational therapy interventions on functional outcomes for adults with musculoskeletal disorders of the forearm, wrist, and hand? A total of 59 articles were reviewed. Evidence for interventions was synthesized by condition within bone, joint, and general hand disorders; peripheral nerve disorders; and tendon disorders. The strongest evidence supports postsurgical early active motion protocols and splinting for various conditions. Very few studies have examined occupation-based interventions. Implications for occupational therapy practice and research are provided” (Pg. 1)
Your Focused Question and Clinical Bottom Line	Question: Are OT interventions in the arm and/or hands effective in tennis elbow? Clinical Bottom Line: Due to the conclusions of this study, there is short term effectiveness in OT interventions after surgical intervention, exercise, and splinting.
Your Lay Summary	In this systematic review, AOTA experts overlooked the article study examined back in 2006, and again in 2014. The article updated its effectiveness on OT interventions used from similar studies carried out by the same research process answering the same question: What is the evidence for the effect of occupational therapy interventions on functional outcomes for adults with disorders with repetitive motion injuries of the forearm, wrist, and hand? However, only 59 articles were referenced and met the criteria that focused on conditions within the bone, joints, and other hand disorders. The results proved that early intervention after post-surgery ensured the most effective treatment outcomes for individuals suffering from musculoskeletal disorders such as conditions related to tennis elbow. Moreover, this updated review is different in that it focused heavily on post-surgery intervention

	rather than the previous review focused on how several treatment options impact MSD conditions.
Your Professional Summary	In summary of this article, the systemic review that examined the effect of OT interventions on functional outcomes for adults with MSD disorders. The review primarily sought to find the most multidisciplinary scientific literature to identify occupational therapy–relevant evidence from research studies conducted in the last several years to find the most updated intervention strategies. The previous review focuses on functional interventions, this article provides an update to the review by summarizing articles published between 2006 and July 2014 and how it answers the question to conditions relevant to MSD. The strengths of this were examining literature through multiple databases and concluding that post-surgery was most beneficial as an intervention. The weaknesses that occurred were the effects of variations in dosage, provider experience, and patient demographics. As follows, the implications of this study are that early activity motion is recommended for patients, exercise is essential for recovery, and splinting is most found in OT practice.
	Critical Appraisal
Stated Purpose or Research Question	“What is the evidence for the effect of occupational therapy interventions on functional outcomes for adults with musculoskeletal disorders of the forearm, wrist, and hand?” (pg.1).
Background Literature	<p><i>Key points of the intro section:</i></p> <ul style="list-style-type: none"> - Occupational therapy practitioners frequently work with people who have MSDs of the distal upper extremity - AOTA experts used the previous research strategies into their updated review and worked with a medical research librarian on completing systematic reviews in several databases to ensure efficacy <p>The AOTA standard of evidence ranked the relevant articles; this research in particular ranked highest level of evidence, <i>Level I</i>, includes systematic reviews of the literature, meta-analyses, and randomized controlled trials</p> <ul style="list-style-type: none"> - A previous review was completed to evaluate the evidence published through 2005 for occupational therapy interventions for work-related MSDs of the forearm, wrist, and hand (<u>Amini, 2011</u>) - This article provides an update to the review by summarizing articles published between 2006 and July 2014. <p><i>Theoretical perspective:</i> not given</p>
Research Design	<p><i>Research design:</i> systematic review</p> <p><i>Rationale for the design:</i> A previous review was researched in 2005 and again in 2014. This review,</p>

	<p>published in 2016 summarizes the articles in its entirety and updated its research to answer the same question which involves how occupational therapy interventions affect the outcomes for MSD. It uses resources from the highest levels of evidence, including AOTA and several other evidence-based databases.</p> <p><i>For reviews of research, AOTA Level of Evidence: primary, level 1, systemic review</i></p>
Method	<p><i>Primary methods to answer research question</i></p> <p>What is the evidence for the effect of occupational therapy interventions on functional outcomes for adults with MSDs of the forearm, wrist, and hand? (pg. 3).</p> <p><i>Variables:</i> Multiple interventions were overlooked in the research back in 2011 on these different variables and were also measured: Massage, splinting, Techniques for increasing range of motion, low level laser therapy, thermal modalities, exercise and arthritis, gloves, ultrasound, pain control, workplace based (Amini, 2011).</p> <p><i>Keywords:</i> amputation, arthritis, athletic injuries, carpal tunnel syndrome, activities of daily living, AROM, body mechanics, adaptations, endurance, fatigue, functional work, grip strength, medical equipment, ADLS, IADLS, appraisal, best practices, clinical guidelines, clinical trial, comparative study (table 1).</p> <p><i>Databases:</i> MEDLINE, PsycINFO, CINAHL, Ergonomics Abstracts, and OTseeker, Cochrane (Pg. 3).</p> <p><i>Procedures:</i> Two reviewers gathered 115 articles that needed to follow the criteria 1-4. Once gathered, they were split into two groups of the UE, proximal and distal segments. The article mentions that “The study (1) targeted an MSD of the forearm, wrist, or hand; (2) included an intervention within the occupational therapy scope of practice; (3) measured functional outcomes, including measures of body structures with functional implications (e.g., pain, grip, pinch, motion); and (4) met minimum quality standards, which were based on level of evidence and risk of bias” (pg. 2).</p>
Filters	<p><i>Research Designs included and not included:</i> systematic review</p> <p><i>Inclusion and exclusion criteria:</i> MEDLINE, PsycINFO, CINAHL, Ergonomics Abstracts, and OTseeker, Cochrane Database of Systematic Reviews, selected journals were hand searched</p> <p><i>Total references found:</i> 115 potential articles</p> <p><i>Process for eliminating references:</i> Each of the articles had to follow the criteria and was assessed using AOTA standard level of evidence: “(1) targeted an MSD of the forearm, wrist, or hand; (2) included an intervention within the occupational therapy</p>

	scope of practice; (3) measured functional outcomes, including measures of body structures with functional implications (e.g., pain, grip, pinch, motion); and (4) met minimum quality standards, which were based on level of evidence and risk of bias” (pg. 2).
Results	<p><i>Description of the articles:</i> It was estimated that 115 articles were eligible to be used in the research study, however, only 59 articles remained effective.</p> <p><i>Analysis/theme one:</i> “A total of 59 articles met all inclusion criteria, including 51 Level I studies, 5 Level II studies, and 3 Level III studies (<u>Table 2</u>)” (pg. 3).</p> <p><i>Analysis/theme two:</i> “Risk of bias was assessed for all studies using published criteria for intervention studies” (pg. 3).</p>