Hand Rehabilitation

Evidence Update

February 2018

(Bimonthly)
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**Training Calendar 2018**

**February (12.00-13.00)**
- 1st (Thu) Literature Searching
- 9th (Fri) Critical Appraisal
- 12th (Mon) Statistics
- 20th (Tue) Literature Searching
- 28th (Wed) Critical Appraisal

**March (13.00-14.00)**
- 8th (Thu) Statistics
- 12th (Mon) Literature Searching
- 20th (Tue) Critical Appraisal
- 28th (Wed) Statistics
Library Clinic

Stop by and find out more about our services. We will be here to answer any questions you may have!

March 7th: Canteen (Level 9, BRI) 12.00-14.00
March 19th: Welcome Centre, BRI 10.00-16.00
April 4th: Foyer, Education Centre 12.00-14.00
April 11th: Foyer, St Michael’s Hospital 12.00-14.00
May 2nd: Canteen (Level 9, BRI) 12.00-14.00
June 6th: Terrace (Level 4, Education Centre) 12.00-14.00
June 19th: Welcome Centre, BRI 10.00-16.00
July 3rd: Welcome Centre, BRI 10.00-16.00
July 4th: Canteen (Level 9, BRI) 12.00-14.00
August 8th: Foyer, Education Centre 12.00-14.00
August 29th: Foyer, St Michael’s Hospital 12.00-14.00
September 5th: Canteen (Level 9, BRI) 12.00-14.00
September 11th: Welcome Centre, BRI 10.00-16.00
October 3rd: Terrace (Level 4, Education Centre) 12.00-14.00
November 7th: Canteen (Level 9, BRI) 12.00-14.00
December 5th: Foyer, Education Centre 12.00-14.00
December 11th: Welcome Centre, BRI 10.00-16.00
Latest Evidence

NICE
National Institute for Health and Care Excellence

Standards of hand therapy practice in the rehabilitation of flexor tendon injuries

01 September 2015 - Publisher: British Association of Hand Therapists

These standards relate to the treatment of all flexor tendon injuries of the hand, wrist and forearm in all age groups.

Cochrane Library

Resource searched but nothing relevant to add

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OpenAthens login required. Register here: https://openathens.nice.org.uk/

Resource searched but nothing relevant to add
Journal Tables of Contents

Click on the journal title (+ Ctrl) for the most recent tables of contents.

If you would like any of the papers in full text then please email the library: library@uhbristol.nhs.uk

**Journal of Hand Surgery (British and European)**
Volume 43, Issue 2, February 2018

**Journal of Hand Surgery (America)**
Volume 43, Issue 2, February 2018

**Journal of Hand Therapy**
Volume 30, Issue 4, Oct-Dec 2017
Below is a selection of articles that were recently added to the healthcare databases. If you would like any of the following articles in full text, or if you would like a more focused search on your own topic, then get in touch: library@uhbristol.nhs.uk

**Operative versus nonoperative treatment for the management of full-thickness rotator cuff tears: a systematic review and meta-analysis.**

J Shoulder Elbow Surg

**Median nerve mobilization techniques in the treatment of carpal tunnel syndrome: A systematic review.**


[The aim of this review was to describe the types and effectiveness of median nerve mobilization techniques studied in the CTS literature.]

Contact the library for a copy of this article

**Distal Biceps Tendon Injuries: Treatment of Partial and Complete Tears.**

Author(s) Wylie, James D.; Wolf, Megan R.; DiVenere, Jessica; Mazzocca, Augustus D.

Source Operative Techniques in Sports Medicine; Dec 2017; vol. 25 (no. 4); p. 304-309

Distal biceps ruptures predominantly affect males in their third to fifth decade of life who are involved in heavy lifting or manual labor activities. This includes athletes from those in the professional ranks to weekend warriors. They commonly describe a tearing event with the elbow in flexion and undergoing an eccentric load. The hook test is highly sensitive and specific in diagnosis. In the setting of partial-thickness tears, the hook test can be negative but can elicit pain. Magnetic resonance imaging is the imaging modality of choice to determine partial vs full-thickness tears and the degree of proximal migration of the tendon stump. Operative intervention is recommended for most athletes and people in need of elbow flexion and supination strength and endurance. Operative repair techniques have improved and now allow early range of motion and strengthening for return of patients to their sports or activities of choice with good clinical outcomes reported using multiple techniques. The authors preferred technique is the use of a suture button and interference screw construct that has been validated in both biomechanical testing and clinical outcomes studies.

((upper limb*).ti,ab OR (arm).ti,ab) AND ((Altered Neurodynamic*)

**The Effectiveness of Neural Mobilization for Neuromusculoskeletal Conditions: A Systematic Review and Meta-analysis.**

Author(s) BASSON, ANNALIE; OLIVIER, BENITA; ELLIS, RICHARD; COPPIETERS, MICHEL; STEWART, AIMEE et al.

Source Journal of Orthopaedic & Sports Physical Therapy; Sep 2017; vol. 47 (no. 9); p. 593-615
* STUDY DESIGN: Systematic review with metaanalysis. * OBJECTIVES: To determine the efficacy of neural mobilization (NM) for musculoskeletal conditions with a neuropathic component. * BACKGROUND: Neural mobilization, or neurodynamics, is a movement-based intervention aimed at restoring the homeostasis in and around the nervous system. The current level of evidence for NM is largely unknown. * METHODS: A database search for randomized trials investigating the effect of NM on neuromusculoskeletal conditions was conducted, using standard methods for article identification, selection, and quality appraisal. Where possible, studies were pooled for meta-analysis, with pain, disability, and function as the primary outcomes. * RESULTS: Forty studies were included in this review, of which 17 had a low risk of bias. Metaanalyses could only be performed on self-reported outcomes. For chronic low back pain, disability (Oswestry Disability Questionnaire [0-50]: mean difference, -9.26; 95% confidence interval [CI]: -14.50, -4.01; P<.001) and pain (intensity [0-10]: mean difference, -1.78; 95% CI: -2.55, -1.01; P<.001) improved following NM. For chronic neck-arm pain, pain improved (intensity: mean difference, -1.89; 95% CI: -3.14, -0.64; P<.001) following NM. For most of the clinical outcomes in individuals with carpal tunnel syndrome, NM was not effective (P>.11) but showed some positive neurophysiological effects (eg, reduced intraneural edema). Due to a scarcity of studies or conflicting results, the effect of NM remains uncertain for various conditions, such as postoperative low back pain, cubital tunnel syndrome, and lateral epicondylalgia. * CONCLUSION: This review reveals benefits of NM for back and neck pain, but the effect of NM on other conditions remains unclear. Due to the limited evidence and varying methodological quality, conclusions may change over time. * LEVEL OF EVIDENCE: Therapy, level 1a.

**HAND REHAB → Dupuytrens (fasciectomy)**

Safety and Effectiveness of Percutaneous Needle Fasciotomy for Dupuytren's Disease in the Palm.

Author(s) Mansha, Muhammad; Flynn, Darren; Stothard, John

Source Journal of hand and microsurgery; Dec 2017; vol. 9 (no. 3); p. 115-119

Purpose Percutaneous needle fasciotomy is performed in the authors' department to treat Dupuytren's contracture at metacarpophalangeal joints. This study aimed to establish its safety and efficacy, compared with standard fasciectomy. Materials and Methods All patients who had this procedure performed over the study period were sent the validated British Society for Surgery of the Hand (BSSH) postal questionnaire assessing surgical outcome. Hand function and disability were assessed using the Patient Evaluation Measure (PEM). Results Statistically significant improvement was achieved in Dupuytren's contracture at the mean follow-up of 15 months (SD +/- 10). Approximately 97% of the fingers fully corrected at surgery remain straight. Recurrence rate was 2.2% among fully corrected fingers. However, 2 (40%) out of 5 partially corrected fingers had recurrence. No complication of any kind was noted and no antibiotics used. Hand function was measured using PEM score correlated well with the residual contracture. Conclusion Percutaneous needle fasciotomy is safe, effective, has very low complication rates, and yields comparable results to standard fasciectomy.
HAND REHAB ⚫ Wrist and Finger fractures (distal radius/scaphoid)

1. Classification systems for distal radius fractures: Does the reliability improve using additional computed tomography?

Author(s): KLEINLUGTENBELT, Ydo V.; GROEN, Sylvester R.; HAM, S. John; KLOEN, Peter; HAVERLAG, Robert; SIMONS, Maarten P.; SCHOLTES, Vanessa A. B.; BHANDARI, Mohit; GOSLINGS, J. Carel; POOLMAN, Rudolf W.

Source: Acta Orthopaedica; Dec 2017; vol. 88 (no. 6); p. 681-687

Available at Acta orthopaedica - from Europe PubMed Central - Open Access
Available at Acta orthopaedica - from EBSCO (CINAHL with Full Text)
Available at Acta orthopaedica - from EBSCO (MEDLINE Complete)

Abstract: Background and purpose -- The reliability of conventional radiography when classifying distal radius fractures (DRF) is fair to moderate. We investigated whether reliability increases when additional computed tomography scans (CT) are used. Patients and methods -- In this prospective study, we performed pre- and postreduction posterior-anterior and lateral radiographs of 51 patients presenting with a displaced DRF. The case was included when there was a (questionable) indication for surgical treatment and an additional CT was conducted within 5 days. 4 observers assessed the cases using the Frykman, Fernández, Universal, and AO classification systems. The first 2 assessments were performed using conventional radiography alone; the following 2 assessments were performed with an additional CT. We used the intraclass correlation coefficient (ICC) to evaluate reliability. The CT was used as a reference standard to determine the accuracy. Results -- The intraobserver ICC for conventional radiography alone versus radiography and an additional CT was: Frykman 0.57 vs. 0.51; Fernández 0.53 vs. 0.66; Universal 0.57 vs. 0.64; AO 0.59 vs. 0.71. The interobserver ICC was: Frykman: 0.45 vs. 0.28; Fernández: 0.38 vs. 0.44; Universal: 0.32 vs. 0.43; AO: 0.46 vs. 0.40. Interpretation -- The intraobserver reliability of the classification systems was fair but improved when an additional CT was used, except for the Frykman classification. The interobserver reliability ranged from poor to fair and did not improve when using an additional CT. Additional CT scanning has implications for the accuracy of scoring the fracture types, especially for simple fracture types.

Database: CINAHL

2. Does socioeconomic status influence the epidemiology and outcome of distal radial fractures in adults?

Author(s): Clement, N.; Duckworth, A.; Wickramasinghe, N.; Court-Brown, C.; McQueen, M.

Source: European Journal of Orthopaedic Surgery & Traumatology; Dec 2017; vol. 27 (no. 8); p. 1075-1082

Publication Date: Dec 2017

Publication Type(s): Academic Journal
Abstract: Purpose: The aim of this study in adult patients with a distal radial fracture was to determine whether socioeconomic status influenced the epidemiology, mechanism of injury, fracture severity, or the outcome according to function, radiographic assessment, and rate of associated complications. Methods: We identified 3983 distal radial fractures over a 7-year period. Socioeconomic status was assigned using the Carstairs score, and the population was divided into quintiles depending on deprivation. Patient demographics, mechanism of injury, fracture severity, and radiographic assessment at time of injury were assessed for epidemiological differences according to social quintile. Functional outcome was assessed using grip strength, Moberg pickup test, return to normal use of the hand, and range of movement. Radiographs were assessed at 1 week, 6 weeks, and 1 year. Complications were defined as malunion, carpal tunnel syndrome, complex regional pain syndrome (CRPS), persistent pain, and subjective cosmetic deformity of the wrist. Results: Socioeconomically deprived patients were significantly younger (p < 0.001) and more likely to be male (p = 0.017); after adjusting for confounding factors, deprived patients were 3.1 (95% CI 1.4-4.7) years younger than the most affluent patients (p < 0.001). Deprived patients were more likely to sustain their fracture by a high-energy mechanism (p = 0.004). There were no significant differences between quintiles in outcome. There was a significantly greater prevalence of CRPS in more affluent patients (p = 0.004). Conclusions: Socioeconomically deprived patients sustaining a distal radial fracture are more likely to be younger and male. Outcome is not influenced by socioeconomic status, but the prevalence of CRPS is greater in more affluent patients.

Database: CINAHL


Author(s): Irie, Keisuke; Iseki, Hirokatsu; Okamoto, Satomi; Nishimura, Seiji; Kobe, Akio; Kagechika, Kenji

Source: Hand Therapy; Dec 2017; vol. 22 (no. 4); p. 133-140

Abstract: Introduction Despite widespread use of the Simple Test for Evaluating Hand Function, we were unable to find studies to affirm the validity and responsiveness in patients with trauma and inflammatory diseases. The aim of this study was to demonstrate the criterion validity and responsiveness of the Simple Test for Evaluating Hand Function, a tool which is widely used in Japan. Methods Thirty patients between the ages of 20 and 82 years with distal radius fracture (n = 10), and cervical spondylosis myelopathy (n = 20) were included in this study. Concurrent validity was tested by examining the correlation between Simple Test for Evaluating Hand Function, the Purdue Pegboard Test, and the Disabilities of the Arm, Shoulder and Hand questionnaire. In addition, standardized response means were calculated to compare the responsiveness of the Simple Test for Evaluating Hand Function with Purdue Pegboard Test and Disabilities of the Arm, Shoulder and Hand. Results The correlation coefficient between Simple Test for Evaluating Hand Function and Purdue Pegboard Test was 0.70, and the correlation between Simple Test for Evaluating Hand Function and Disabilities of the Arm, Shoulder and Hand was −0.55 (p < 0.05). Standardized response mean shows that the Simple Test for Evaluating Hand Function (0.69) is more responsive than the Purdue Pegboard Test (0.53), and less responsive than Disabilities of the Arm, Shoulder and Hand (0.97). Conclusions The Simple Test for Evaluating Hand Function demonstrates concurrent validity and responsiveness as a performance based assessment of dexterity in patients with distal radius fracture and cervical spondylosis. We conclude that the Simple Test for Evaluating Hand Function
could be used as a measure of dexterity or clinical change after therapy intervention. The Purdue Pegboard Test may be used for patients with an occupation that requires integrated fine motor skills and bimanual activity, whereas the Simple Test for Evaluating Hand Function may be more suitable for patients who use a variety of unilateral grips such as pinch and span. The Simple Test for Evaluating Hand Function and Disabilities of the Arm, Shoulder and Hand can complement each other when measuring someone’s activity and participation level.

Database: CINAHL


Author(s): Hiroyuki Hayashi; Daiki Nakashima; Hiroka Matsuoka; Midori Iwai; Shugo Nakamura; Ayumi Kubo; Naoki Tomiyama

Source: Journal of Back & Musculoskeletal Rehabilitation; Nov 2017; vol. 30 (no. 6); p. 1231-1236

Abstract:BACKGROUND: Upper-limb function is important in patients with hip fracture so they can perform activities of daily living and participate in leisure activities. Upper-limb function of these patients, however, has not been thoroughly investigated. OBJECTIVE: The aim of this study was to evaluate the upper-limb motor and sensory functions in patients with hip fracture by comparing these functions with those of community-dwelling older adults (control group). METHODS: We compared the results of motor and sensory function tests of upper-limb function - range of motion, strength, sensibility, finger dexterity, comprehensive hand function - between patients with hip fracture (n = 32) and the control group (n = 32). RESULTS: Patients with hip fracture had significantly reduced grip strength, pinch strength, finger dexterity, and comprehensive hand function compared with the control group. CONCLUSIONS: Most upper-limb functions are impaired in the patients with hip fracture. Thus, upper-limb function of patients with hip fracture should be considered during treatment.

Database: CINAHL

5. A Rare Complete Metacarpal Pseudoepiphysis in a Teenager With a Scaphoid Fracture.

Author(s): Geffen, Rachel B.; Colberg, Ricardo E.

Source: American Journal of Physical Medicine & Rehabilitation; Nov 2017; vol. 96 (no. 11)

Abstract:A 13-yr-old adolescent boy presented with wrist pain after falling off a scooter onto his outstretched hand. Radiographs revealed a nondisplaced hairline fracture of the scaphoid bone and an irregular radiolucent line in the proximalmetaphysis of the secondmetacarpal bone, consistent with an anomalous growth plate, or complete pseudoepiphysis. Complete pseudoepiphysis is a rare finding, with only a few cases reported. Learning about the common locations of growth plates and the radiographic differences between normal, injured, and anomalous growth plates can help decrease physician error and improve patient outcomes.

Database: CINAHL

Author(s): BARCIA, ANTHONY M.; LIANG ZHOU; COOK, JAY B.; LINDELL, KENNETH K.; GUMBOC, REY D.; DYKSTRA, AARON D.; LACHKY, ROBERT J.; SHAHA, STEVEN H.; TAYLOR, KENNETH F.; Zhou, Liang

Source: Orthopedics; Nov 2017; vol. 40 (no. 6)

Abstract: Diagnosis of occult scaphoid fractures remains a challenge. Traditional management consisting of 2 weeks of immobilization and repeat radiographs results in unnecessary immobilization of many patients without fracture. Magnetic resonance imaging (MRI) is sensitive but expensive. Digital tomography (DT) is an imaging technique that provides fine-cut visualization with minimal radiation exposure and may be used when there is high clinical suspicion despite negative findings on initial radiographs. The authors compared the ability of DT vs MRI to detect acute occult scaphoid fractures. This was an institutional review board-approved, prospective series. Adults for which clinical suspicion for acute scaphoid fracture (presenting within 96 hours of trauma) and negative findings on initial radiographs existed were included. Both a wrist tomogram and MRI were obtained. Wrists were immobilized and reevaluated at 10 to 14 days with repeat radiographs as a control. Studies were interpreted by a radiologist in a blinded fashion. Forty consecutive extremities in 39 patients met the inclusion criteria. Six (15%) of the 40 scaphoids were determined to be fractured on repeat radiographs. Digital tomogram yielded positive findings in 4 of these. Magnetic resonance imaging yielded positive findings in 8 (20%) of the 40 extremities. Sensitivities were 67% and 100% for digital tomogram and MRI, respectively (P=.0001). The positive predictive value was 100% for DT and MRI. The authors found that DT detects more occult scaphoid fractures than initial standard radiographs but is less sensitive than MRI. This is the first study to compare DT with MRI. Digital tomography can be used to augment radiographs and may increase diagnostic efficiency, minimize unnecessary immobilization, and reduce health care costs. [Orthopedics. 2017; 40(6):e1092-e1095.].

Database: CINAHL

7. Fractures of the Scaphoid.

Author(s): Shymko, Michael

Source: Radiologic Technology; Nov 2017; vol. 89 (no. 2); p. 177-181

Abstract: The article discusses some important issues to put in mind when it comes to scaphoid fractures. Topics discussed include the five metacarpal bones that form the palm, an image that shows the anatomy of the left wrist showing common fracture regions of the scaphoid, and mechanisms of scaphoid injury.

Database: CINAHL

8. Repositioning the scapula with taping following distal radius fracture: Kinematic analysis using 3-dimensional motion system.

Author(s): Turgut, Elif; Ayhan, Cigdem; Baltaci, Gul
Abstract: Study Design Cross-sectional and controlled laboratory study using pretest-posttest design. Introduction Patients with distal radius fracture (DRFx) report proximal segment problems. Taping is commonly recommended because it provides improved posture and function. Purpose of the Study This study aimed to investigate the 3-dimensional scapular kinematics and the effect of taping on the kinematics in participants with DFRFx. Methods Twenty participants with a unilateral history of DFRFx and 20 healthy controls participated. Scapular kinematics was assessed using an electromagnetic system. Three separate strips of elastic taping were applied for participants with DFRFx over the arm, scapula, and middle and lower trapezius muscles through the paravertebral muscles. Afterward, the scapular kinematics was reassessed in taped condition. Results When participants with DFRFx and healthy controls compared, the scapula was more downwardly rotated at 120° of humerothoracic elevation (mean difference [MD], 9.06°) and at 120° (MD, 9.04°), 90° (MD, 5.6°) of humerothoracic lowering, more upwardly rotated at 30° of humerothoracic lowering (MD, 5.1°). Taping showed a significant effect on kinematics; specifically, the scapula was more externally rotated (38.9° untaped vs 31.1° taped) and posteriorly tilted (−9.2° untaped vs −4.8° taped) during humerothoracic elevation and lowering for participants with DFRFx. Discussion Participants with DFRFx showed different scapular kinematics and taping resulted in changes on tested kinematic parameters during humeral movements. Differences in scapular motion during elevation with taping showed a specific pattern. Conclusions Overall, taping maintained a position likely to produce optimal rotator cuff function during early rehabilitation of patients with DFRFx. Level of Evidence N/A.

Database: CINAHL

9. Prescribed exercise programs may not be effective in reducing impairments and improving activity during upper limb fracture rehabilitation: a systematic review.

Author(s): Bruder, Andrea M; Shields, Nora; Dodd, Karen J; Taylor, Nicholas F

Source: Journal of Physiotherapy (Elsevier); Oct 2017; vol. 63 (no. 4); p. 205-220

Abstract: Question What is the effect of exercise on increasing participation and activity levels and reducing impairment in the rehabilitation of people with upper limb fractures? Design Systematic review of controlled trials. Participants Adults following an upper limb fracture. Intervention Any exercise therapy program, including trials where exercise was delivered to both groups provided that the groups received different amounts of exercise. Outcome measures Impairments of body structure and function, activity limitations and participation restrictions. Results Twenty-two trials were identified that evaluated 1299 participants with an upper limb fracture. There was insufficient evidence from 13 trials to support or refute the effectiveness of home exercise therapy compared with therapist-supervised exercise or therapy that included exercise following distal radius or proximal humeral fractures. There was insufficient evidence from three trials to support or refute the effectiveness of exercise therapy compared with advice/no exercise intervention following distal radius fracture. There was moderate evidence from five trials (one examining distal radius fracture,
one radial head fracture, and three proximal humeral fracture) to support commencing exercise early and reducing immobilisation in improving activity during upper limb rehabilitation compared with delayed exercise and mobilisation. There was preliminary evidence from one trial that exercise to the non-injured arm during immobilisation might lead to short-term benefits on increasing grip strength and range of movement following distal radius fracture. Less than 40% of included trials reported adequate exercise program descriptions to allow replication according to the TIDieR checklist. Conclusion There is emerging evidence that current prescribed exercise regimens may not be effective in reducing impairments and improving activity following an upper limb fracture. Starting exercise early combined with a shorter immobilisation period is more effective than starting exercise after a longer immobilisation period. Registration CRD42016041818. [Bruder AM, Shields N, Dodd KJ, Taylor NF (2017) Prescribed exercise programs may not be effective in reducing impairments and improving activity during upper limb fracture rehabilitation: a systematic review. Journal of Physiotherapy 63: 205–220]  

Database: CINAHL
# Departmental News

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