

The elbow, wrist & hand

Dr Henry Pollard

Sport & Exercise Chiropractor

BSc, Grad Dip Chiro, Grad Dip AppSc, MSportSc, PhD, ICSC, FAICE (2019)

Email: hpollard@optushome.com.au

Web: www.sportschiro.com.au

Chair, FICS Research Commission

International Federation of Sports Chiropractic

Web: <https://fics.sport>



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

[HTTP://FICS.SPORT](http://fics.sport)

Acknowledgement

- This course is presented for educational purposes
- I acknowledge that the pictures and videos used in this presentation are owned by their respective copyright owners.
- I particularly acknowledge:
 - Physiottutors (www.youtube.com/user/Physiottutors)
 - OrthoEvalPal (<https://orthoevalpal.com>)
 - Clinically relevant ([Clinically relevant.com](https://clinicallyrelevant.com))
 - Michigan Residency Program (<https://www.residencyprogramslist.com/in-Michigan>)



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

[HTTP://FICS.SPORT](http://fics.sport)

Course Objectives

- The learner will:
 - Gain skills in the evaluation of the elbow, wrist & hand.
 - Understand common mechanisms of injury and how they relate to the diagnosis of a elbow, wrist & hand injury
 - Gain knowledge of the most common elbow, wrist & hand injuries in sport
 - Gain knowledge of acute care, subacute and chronic care in elbow, wrist & hand injuries in sport
 - Gain an overview of rehabilitation protocols in elbow, wrist & hand injuries.



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

[HTTP://FICS.SPORT](http://fics.sport)

Key concepts



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

[HTTP://FICS.SPORT](http://fics.sport)

Your physical exam process

- Central to peripheral
- Examine bilaterally
- Check painful area 1st, then do routine
 - Functional assessment (whole body screen: FMS etc)
 - Spinal assessment
- Extremity assessment
 - Inspection: Look, feel, move
 - Palpation INCLUDING MOPAL
 - ROM, muscle test
 - Stress/ortho tests
 - Neuro (if needed)
 - Other special tests (if needed)
 - High performance testing
 - Referral



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

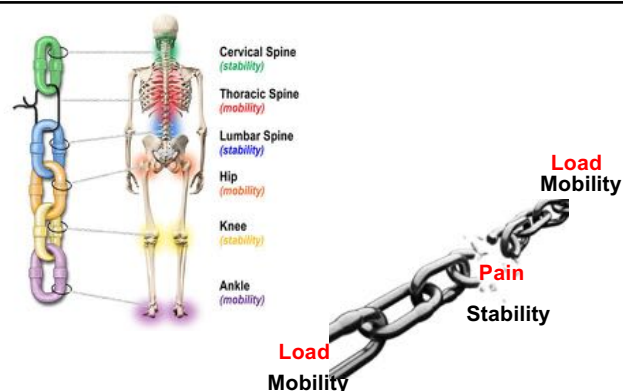
HTTP://FICS.SPORT

Look at the whole body



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT



Boyle Michael, "A Joint-by-Joint Approach to Training," T Nation, 20 Jun 2007, <https://www.tnation.com/training/joint-by-joint-approach-to-training/>



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Kinetic Chain: Ripple Effect

The Biggest impact on the joints is closest to it's origin

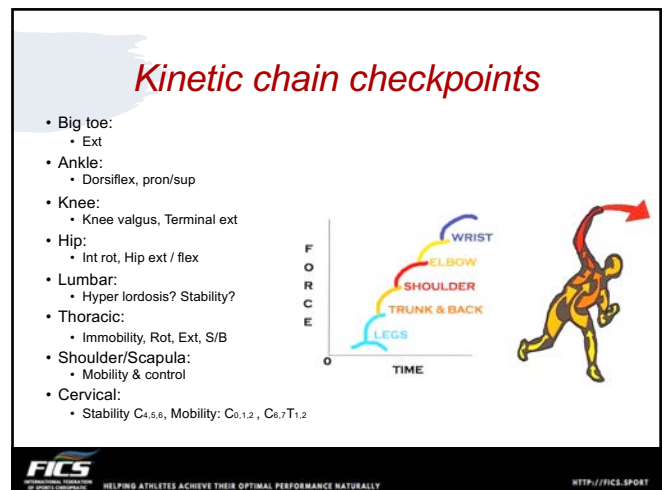
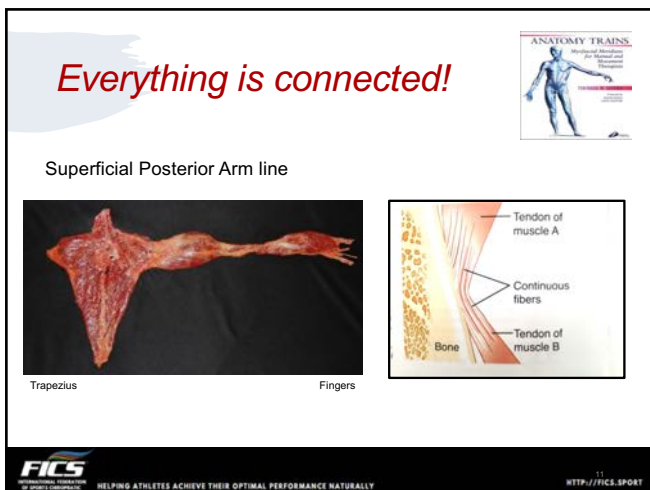
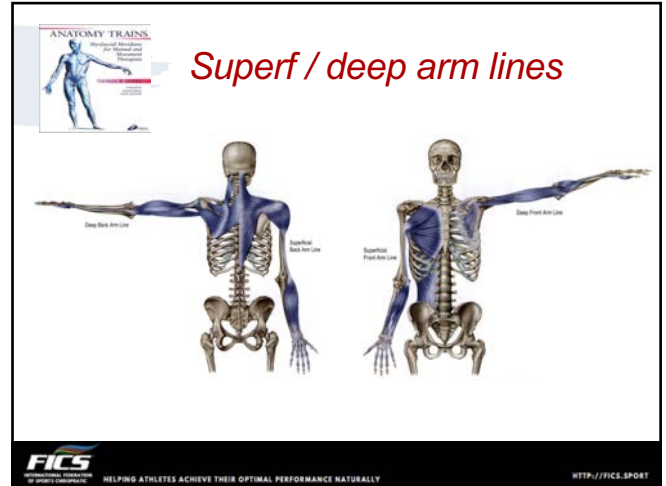
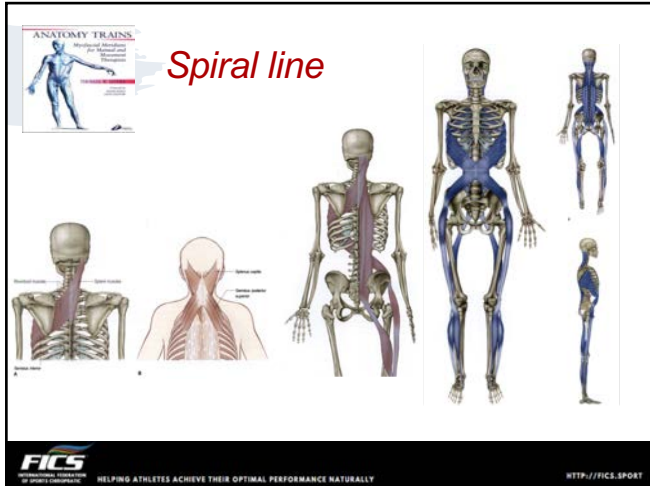


<https://mikereinold.com/the-kinetic-chain-ripple-effect/>

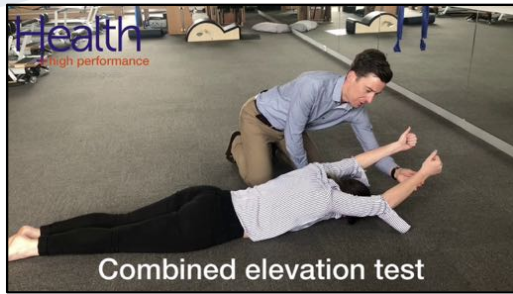


HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT



Combined elevation test



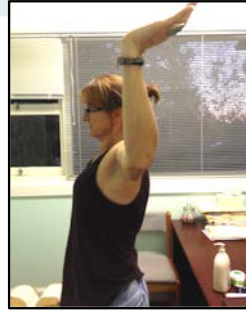
Combined elevation test



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Global ROM: An integration



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT



Functional Movement Screen (2006)



Score	Criteria
0	Pain, regardless of performance
1	Unable to perform
2	Performed with compensation
3	Performed as directed



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

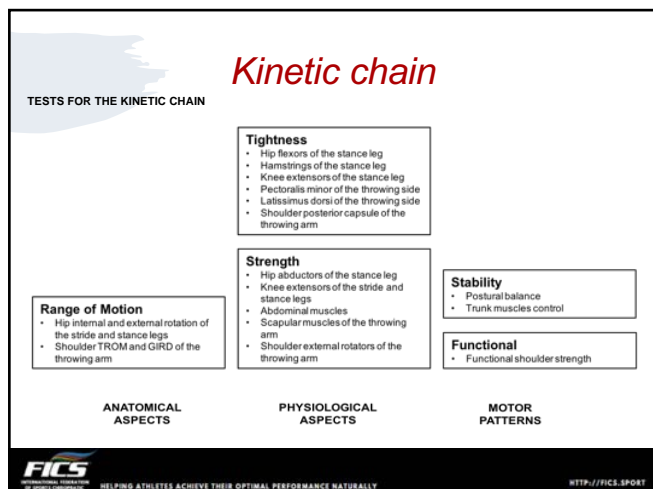
HTTP://FICS.SPORT

Overhead squat



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT



Weakness / relative weakness

- Relative weakness
 - Muscle spasm
 - Eccentric loading
 - Injury
- Eccentric loading & deceleration of limb
 - Rotator Cuff
 - [Eccentric training as a new approach for rotator cuff tendinopathy: Review and perspectives.](#) Camargo PR, Albuquerque-Sendin F, Salvini TF. World J Orthop. 2014 Nov 18;5(5):634-44.
 - Elbow / wrist
 - [Does effectiveness of exercise therapy and mobilisation techniques offer guidance for the treatment of lateral and medial epicondylitis? A systematic review.](#) Hoogvliet P, Randsdorp MS, Dingemans R, Koes BW, Huisstede BM. Br J Sports Med. 2013 Nov;47(17):1112-9.
 - [An exercise programme for the management of lateral elbow tendinopathy.](#) Stasinopoulos D, Stasinopoulos K, Johnson MI. Br J Sports Med. 2005 Dec;39(12):944-7.
 - [Distal Biceps and Triceps Injuries.](#) Beazley JC, Lawrence TM, Drew SJ, Modi CS. Open Orthop J. 2017 Nov 30;11:1364-1372.

FICS HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY [HTTP://FICS.SPORT](http://fics.sport)

Kinetic chain: Manipulation + exercise

- Manipulation + exercise better than exercise alone
 - Moderate evidence for short-term and mid-term effectiveness for the manip cervical and thoracic spine as add-on therapy to concentric and eccentric stretching plus mobilisation of wrist and forearm.
 - [Does effectiveness of exercise therapy and mobilisation techniques offer guidance for the treatment of lateral and medial epicondylitis? A systematic review.](#) Hoogvliet P, Randsdorp MS, Dingemans R, Koes BW, Huisstede BM. Br J Sports Med. 2013 Nov;47(17):1112-9.
 - [The effectiveness of passive physical modalities for the management of soft tissue injuries and neuropathies of the wrist and hand: a systematic review by the Ontario Protocol for Traffic Injury Management \(OPTIM\) collaboration.](#) D'Angelo K, Sutton D, Odeh P, Dion S, Wong JJ, Yu H, Randhawa K, Southerst D, Varatharajan S, Cox Dresser J, Brown C, Menta R, Nordin M, Shearer HM, Arneis A, Slupar M, Carroll LJ, Taylor-Vaisey A. J Manipulative Physiol Ther. 2015 Sep;38(7):493-506.
 - [Manipulation of the wrist for management of lateral epicondylitis: a randomized pilot study.](#) Struijs PA, Damen PJ, Bakker EW, Blankevoort L, Assendelft WJ, van Dijk CN. Phys Ther. 2003 Jul;83(7):608-16.

FICS HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY [HTTP://FICS.SPORT](http://fics.sport)

Elbow

ICSC SEMINARS
WWW.FICS.SPORT/SHOP/COURSE/

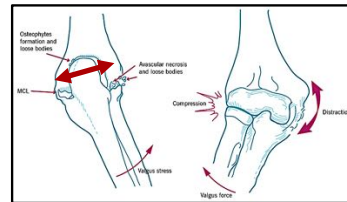
FICS HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY [HTTP://FICS.SPORT](http://fics.sport)

Elbow: Inspection

- Observe
 - Posture of the elbow
 - Gross deformity
 - Cubital creases
 - Areas of cuts / scars
 - Swelling
- Compare bilaterally
- Check
 - Wrist, Shoulder, Spine



Elbow: Traction & compression



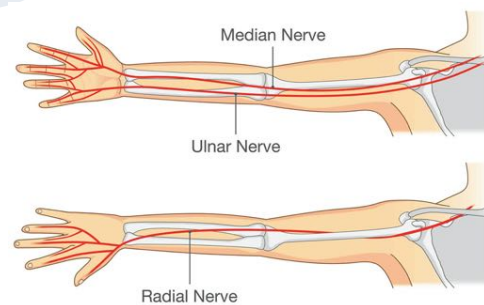
1. Med = Traction
 - UCL
 - Ulnar n
2. Lat = Compression
 - OCD
 - Radial neck/head fracture
3. Post = Shear
 - Epiphyseal Stress fracture

Distal bicep rupture: Hook test



<https://www.youtube.com/watch?v=7ICDs0H3-xo>

Nerve distributions



<https://healthjade.net/ulnar-nerve/>

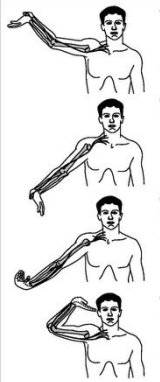
ULTT

Upper Limb Tension Tests

Assessment

Nonoperative Management of Cervical Radiculopathy: Childress MA, Becker BA, Am Fam Physician. 2016 May 1;93(9):746-54.

<https://www.youtube.com/watch?v=rir6x6ilqo4>
<https://www.pinterest.com.au/pin/511580838923603884/>



ULTT₁ test

- Shoulder girdle stabilization
- Shoulder abduction
- Wrist flexion
- Forearm supination
- Shoulder external rotation
- Elbow extension
- Structural differentiation
- Cervical sidebending
- Release wrist extension

ULTT₂ test

- Shoulder girdle depression
- Elbow extension
- Shoulder external rotation and forearm pronation
- Wrist flexion
- Shoulder abduction
- Structural differentiation
- Cervical sidebending
- Release shoulder girdle depression
- Release wrist extension

ULTT₃ test

- Shoulder girdle depression
- Elbow extension
- Shoulder internal rotation and forearm pronation
- Wrist flexion
- Shoulder abduction
- Structural differentiation
- Cervical sidebending
- Release shoulder girdle depression
- Release wrist flexion

ULTT₄ test

- Wrist flexion
- Forearm pronation
- Elbow flexion
- Shoulder external rotation
- Shoulder girdle depression
- Structural differentiation
- Cervical sidebending
- Release shoulder girdle depression
- Release wrist flexion

FICS HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY [HTTP://FICS.SPORT](http://fics.sport)

Ulnar nerve

Elbow Flexion Test

Assessment

Tinel Sign

Assessment

Scratch Collapse Test

Assessment

Shoulder Internal Rotation Test

Assessment

FICS HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY [HTTP://FICS.SPORT](http://fics.sport)

Cubital tunnel: Ulnar nerve

Scratch collapse test



FICS HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY [HTTP://FICS.SPORT](http://fics.sport)

Elbow: Epicondylopathy

Cozen's Test

Maudsley's Test

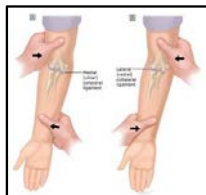
Medial Epicondylitis Test

Mill's Test

FICS HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY [HTTP://FICS.SPORT](http://fics.sport)

Elbow: collaterals

0° & 30°



Valgus Stress Test



Modified Milking Maneuver

FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Elbow: Instability (Driscoll's test)



FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Fracture Assessment

1. Trauma
2. Older than 55
3. 4 step test
4. Dark, black bruising?
5. Percussion, light palpation
6. Squeeze test
7. Resisted isometrics
8. Limited ROM

Wrist: <https://www.youtube.com/watch?v=exM8hki7aV4>

Humerus: <https://www.youtube.com/watch?v=IC69jy510UM>

FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Elbow extension test: Fracture



FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT



Wrist / Hand: Inspection

- Observe
 - Posture of the hand
 - Gross deformity
 - Palmar creases
 - Areas of cuts / scars
 - Swelling
- Compare bilaterally
- Check
 - ELBOW, Shoulder, Spine




2007: Dr H Pollard
FICS
HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY
34
HTTP://FICS.SPORT

Vascular injuries: Ball sports



FICS
HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY
HTTP://FICS.SPORT

Finger vascularisation



FICS
HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY
HTTP://FICS.SPORT

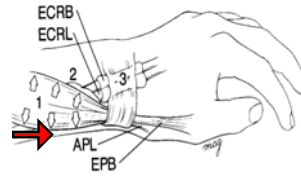
Hand vasculature: Allen's test



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

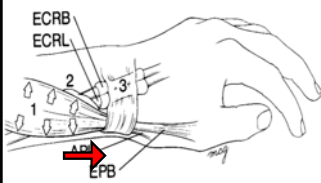
Intersection Syndrome



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

De Quervain's tenosynovitis



The Finkelstein's Test



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Wrist Instability: Watson's test

Removal of the thumb causes a "click" or "thud" indicating instability



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Wrist: TFCC



FICS
FEDERATION OF
INTEGRATED CHiropractic
SOCIETIES

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Piano Key Sign & Examination of DRUJ Instability



<https://www.youtube.com/watch?v=E6XOqS-YL3Q>

FICS
FEDERATION OF
INTEGRATED CHiropractic
SOCIETIES

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Lunotriquetral Ballottement Test _ Shuck Test



FICS
FEDERATION OF
INTEGRATED CHiropractic
SOCIETIES

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Scaphoid fracture



FICS
FEDERATION OF
INTEGRATED CHiropractic
SOCIETIES

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Wrist: Carpal tunnel syndrome



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

ICSC SEMINARS

WWW.FICS.SPORT/SHOP/COURSE/

Thumb

FICS



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

ROM: Thumb



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Thumb: Radial Collateral



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Thumb: Ulna collateral

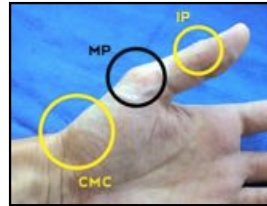


FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

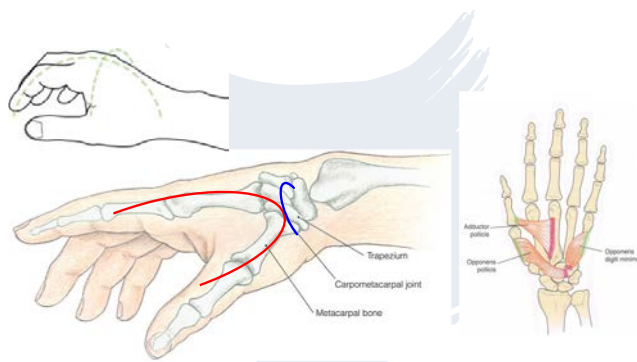
Immobility: Arthritis



FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT



FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Fingers

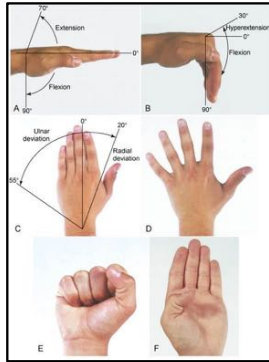
FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

ROM & Collaterals Hand / fingers

Be specific

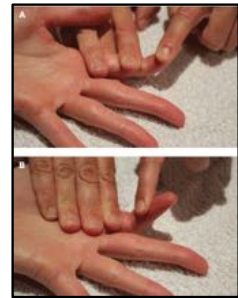


FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Finger exam: Specificity

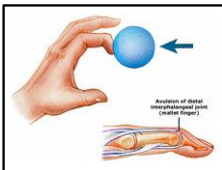


FICS

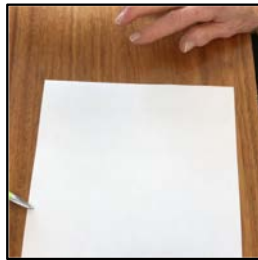
HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Finger: Mallet finger



1. Fixed flexion deformity
2. Extensor lag
3. Xray: for avulsion



FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Finger: FDL avulsion / Jersey finger

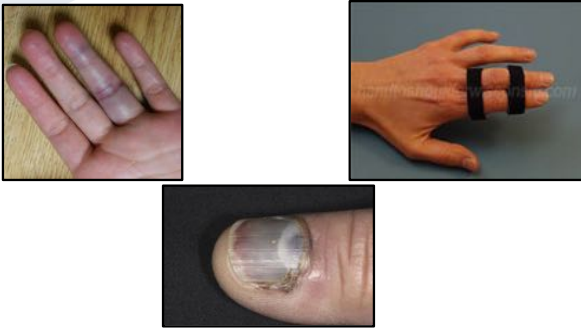


FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Finger fracture: Extension



FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Finger fracture: Flexion



FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Thank you!



FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Outcome measures

Shoulder	Constant Shoulder Score	Oxford Shoulder Score
	UCLA Shoulder rating scale	DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
Shoulder (instability)	Rowe Score for Instability	Oxford Instability Score
		NEW WOSI (Western Ontario Shoulder Instability Index)
Elbow	MAYO Elbow Score	Oxford Elbow Score
		DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
Wrist	MAYO Wrist Score	DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
		NEW Michigan Hand Outcomes Questionnaire
Hand		DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
		NEW Michigan Hand Outcomes Questionnaire

FICS

HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Outcome measures

Shoulder	Constant Shoulder Score	Oxford Shoulder Score
	UCLA Shoulder rating scale	DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
Shoulder (instability)	Rowe Score for Instability	Oxford Instability Score
		NEW WOSI (Western Ontario Shoulder Instability Index)
Elbow	MAYO Elbow Score	Oxford Elbow Score
		DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
Wrist	MAYO Wrist Score	DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
Hand		DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
		NEW Michigan Hand Outcomes Questionnaire



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

Outcome measures

Shoulder	Constant Shoulder Score	Oxford Shoulder Score
	UCLA Shoulder rating scale	DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
Shoulder (instability)	Rowe Score for Instability	Oxford Instability Score
		NEW WOSI (Western Ontario Shoulder Instability Index)
Elbow	MAYO Elbow Score	Oxford Elbow Score
		DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
Wrist	MAYO Wrist Score	DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
Hand		DASH (disabilities of arm, shoulder & hand) Score: Quick-DASH Score
		NEW Michigan Hand Outcomes Questionnaire



HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT