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LONDON HAND THERAPY

The Musicians Hand

The Working Hand Workshop

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Original article

Retrospective case review of time taken for 130 professional musicians to fully return to playing their instruments following hand surgery

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Abstract

Background. Surgery on musicians must be entered into cautiously and should be the only treatment option indicated after trialling all other appropriate ones. There are four main principles that must be carefully considered when operating on musicians: the exact location of incisions, anatomic repair and reconstruction, adjustment of any anticipated anatomic compromise to the musician's specific musical needs and the need for an early return to limited playing. The purpose of this case review was to identify which instrument and what medical condition require the most time for the musician to fully return to playing. This in turn can assist in realistic goal setting with individual patients according to these two categories.

Methods. A retrospective review of a single surgeon's case series of 130 professional musicians was undertaken. Data regarding their medical condition, instrument played, length of time off the instrument following surgery and the time taken to return to full normal professional playing were recorded and analysed.

Results. A total of 97.7 percent of the patients returned to full time playing and there was a 2.3% 'failure' rate. The results indicate that piano players appear to initially take the most time to return to their instrument and string players take the most time to fully rehabilitate. Trauma appears to be the most difficult condition from which to initially recover however, nerve decompressions (with the exception of carpal tunnel releases) take the most time to fully rehabilitate. The most common medical condition requiring surgical intervention was nerve compressions and the piano was the most common instrument played in the series.

Conclusions. This case series highlights the importance of early return to playing and utilizing the musical instrument as a therapeutic tool in the rehabilitation programme of musicians.

Keywords: Professional musicians, hand surgery, case review

Introduction

Musicians' hands are vital to their musical performance. Musicians often have to perform to the limit of their abilities physically, emotionally and spiritually. They utilize rapid, complex, coordinated movements. Sometimes they are required to play in less than ideal environments and usually they do not have a medical team to support them in the way sports medicine

Surgery

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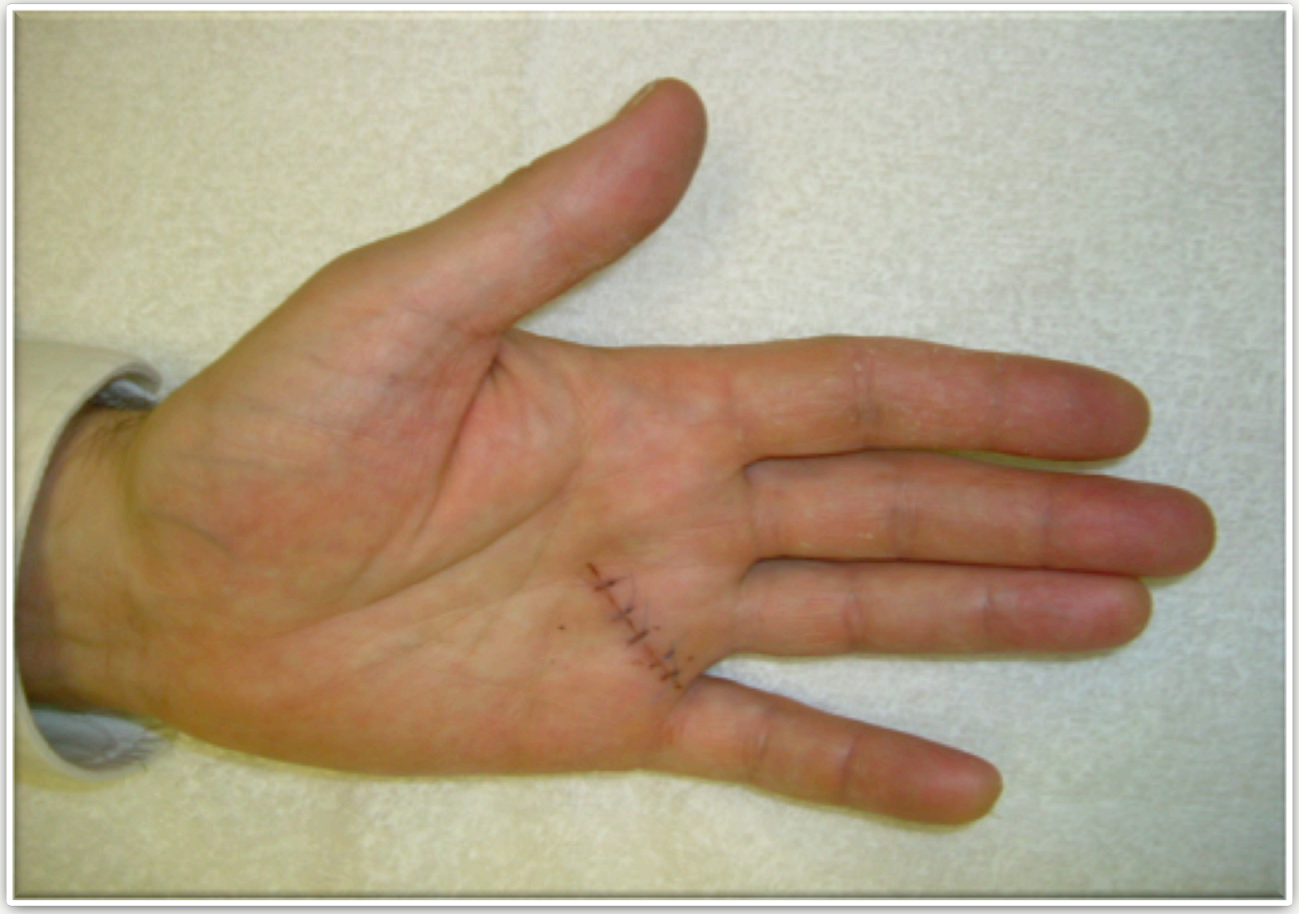
- 130 professional musicians
- Procedures performed by single surgeon
- Four surgical principles for musicians*
  1. Exact location of incision
  2. Anatomic repair and reconstruction
  3. Adjustment of any anticipated anatomic compromise to musician's specific needs
  4. Need for an early return to limited playing

*Winspur, I. Special operative considerations in musicians. In: Winspur, I & Tubiana, R (Ed.), Hand Clinics, The Musician's Hand, 2003 (19:2), 247-258.



Incision site for guitarist with trigger finger – ulnar slip of FDS was removed to allow more space under A2 Pulley

Musicians Undergoing Hand Surgery

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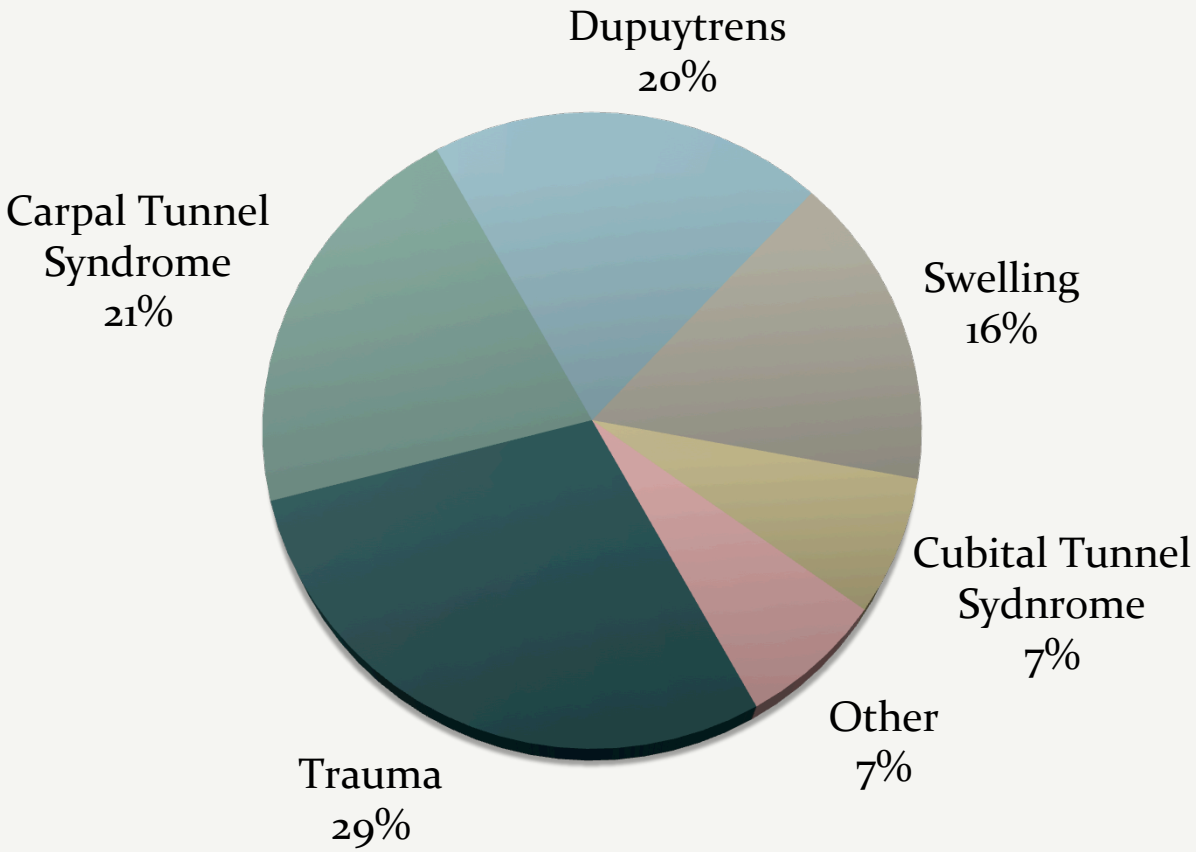
Medical Condition



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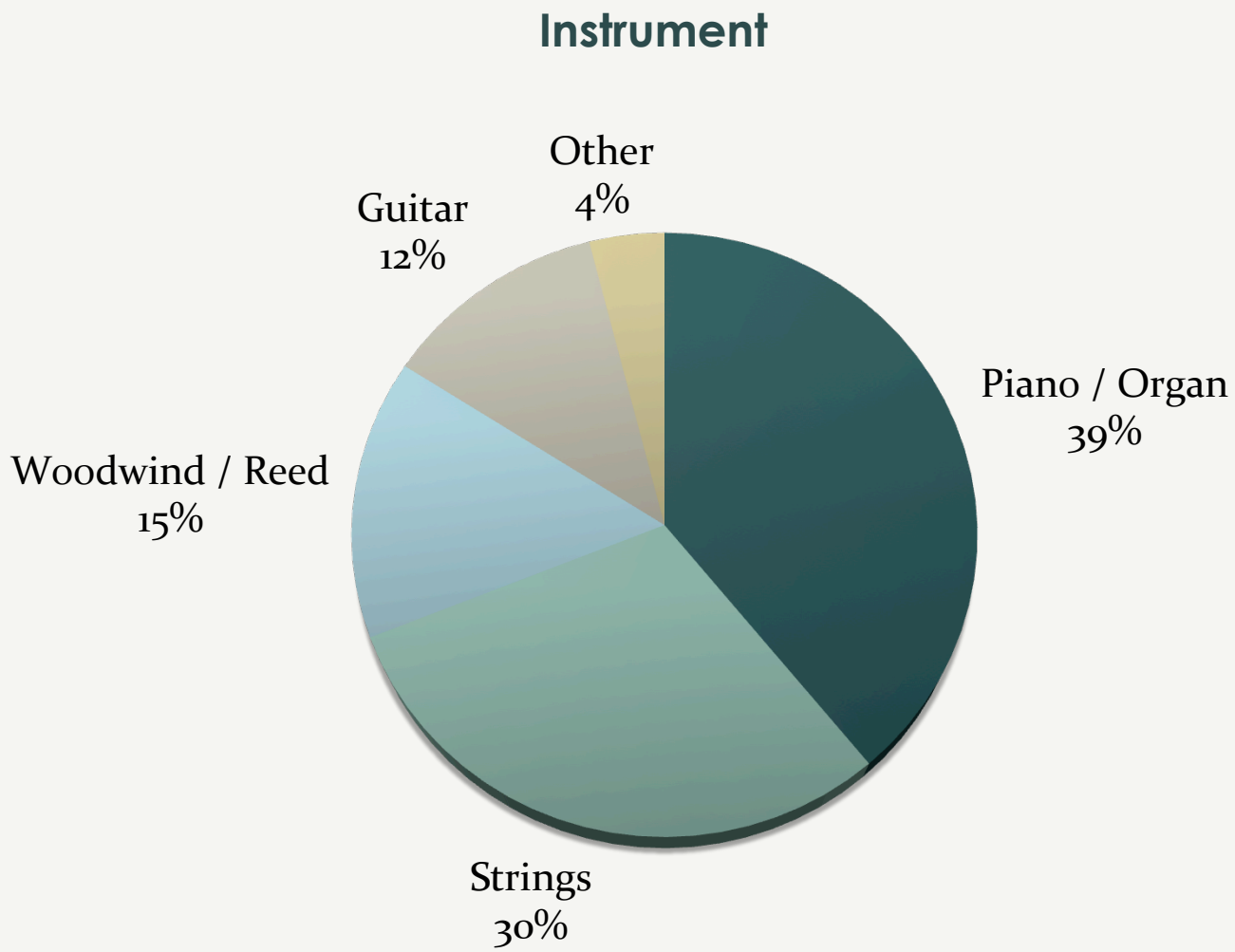
Musicians Undergoing Hand Surgery



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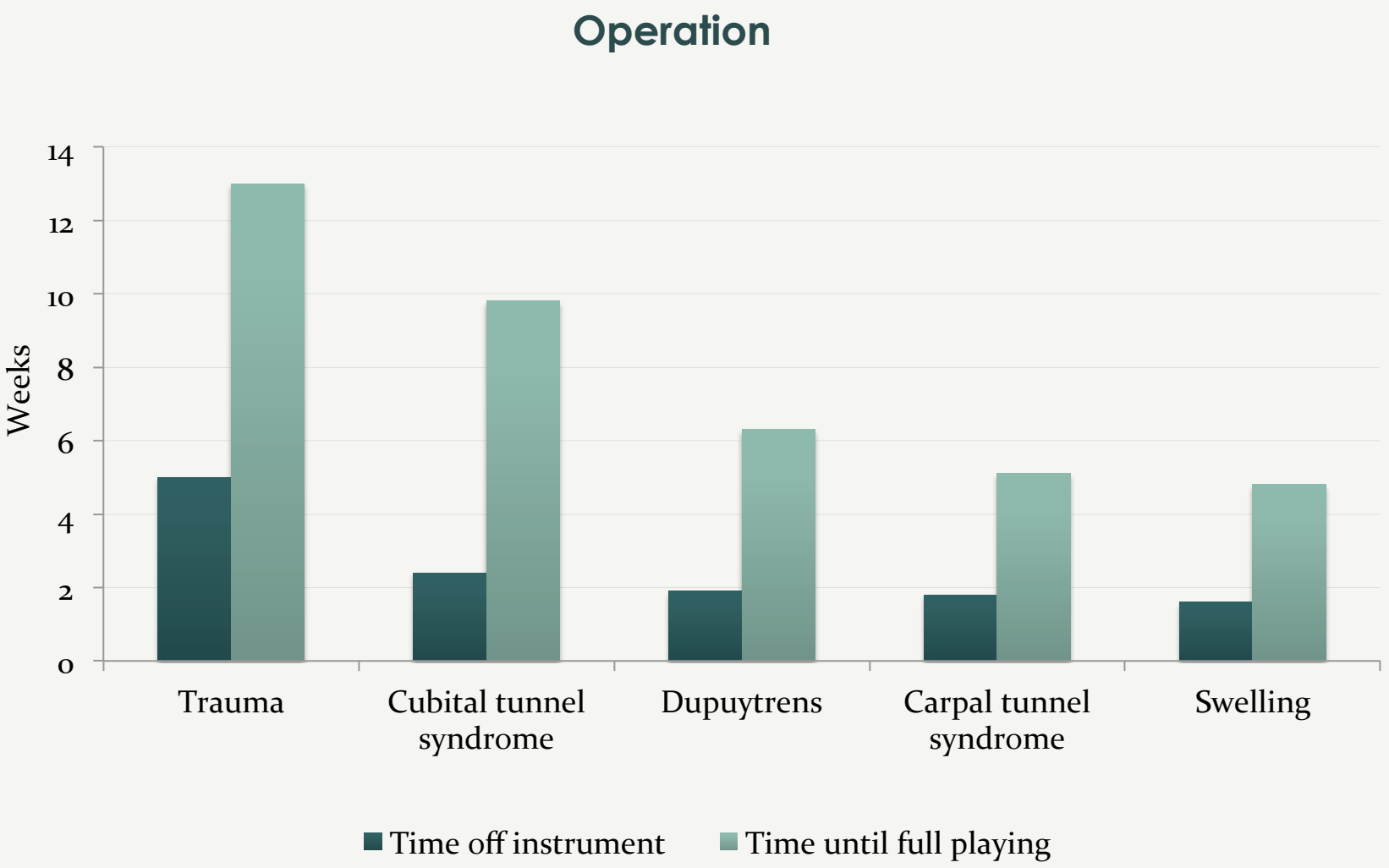
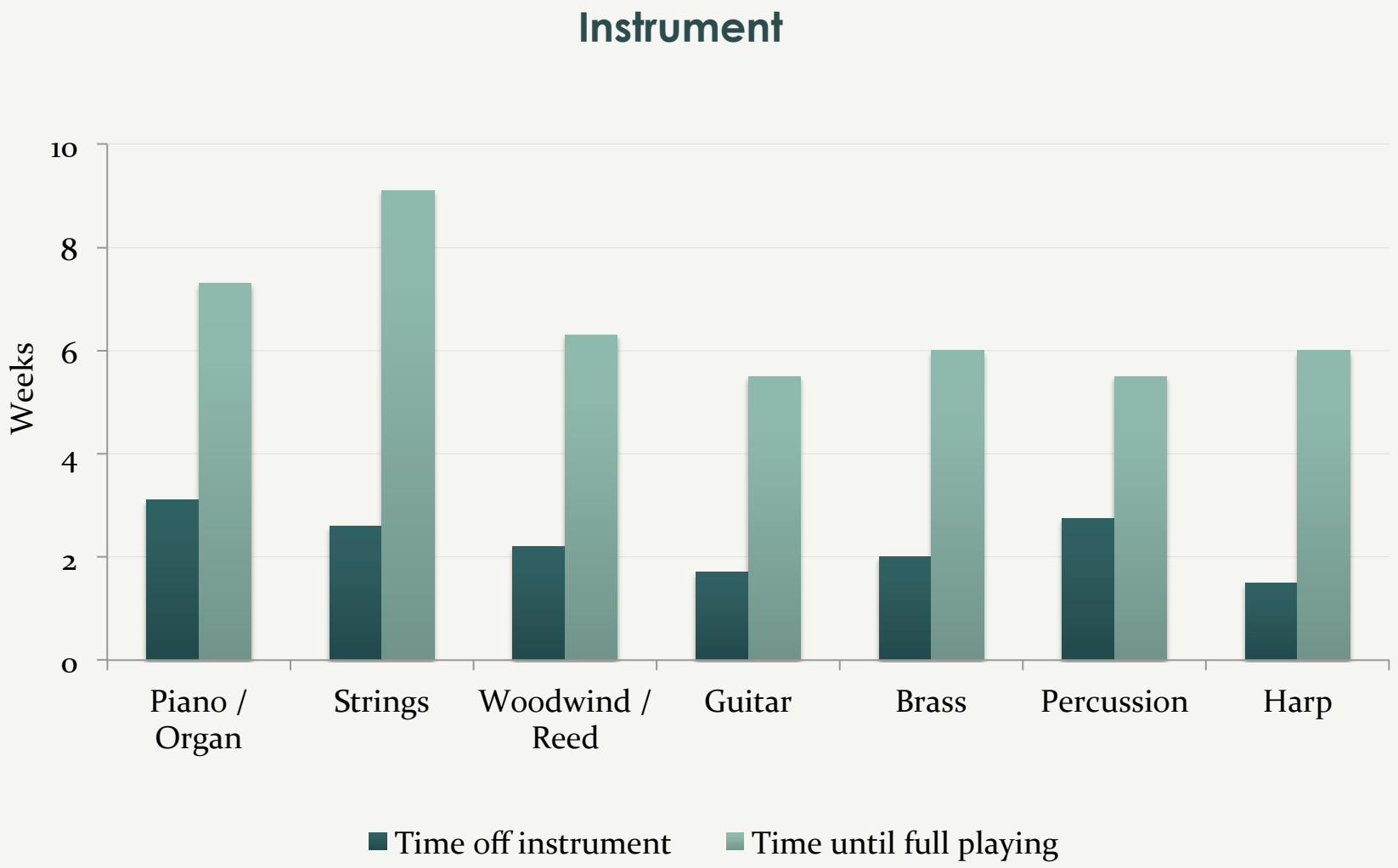
Time Off Instrument



Time Off Instrument



Important Points to Consider

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- All other treatment options must be trialed first
- Surgery is only considered when the condition interferes with playing
- Surgery must be strongly indicated and carefully discussed with the patient
- A specialised, multidisciplinary and instrument focused approach is advantageous when rehabilitating musicians*

*Warrington, J. Hand Therapy for the musician: instrument-focused rehabilitation. In: Winspur, I & Tubiana, R (Ed.), Hand Clinics, The Musician's Hand, 2003 (19:2), 287-301.

Results

- 127/130 patients (97.7%) returned to full time professional
- Piano players take longest time to initially return to instrument (3.3/52) whilst string players take the most time to fully rehabilitate (11/52)
- 46/130 patients (35.4%) played the piano or organ as their primary instrument
- Trauma is most difficult condition from which to initially recover to part time playing (average 5.2/52)
- Full return to playing took the nerve release group an average of 17/52
- Most common medical condition requiring surgery = nerve compressions 42/130 (32.3%)

Tendonopathies in Musicians

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Refers to symptomatic primary tendon disorder

Tendonopathy **not** tendonitis

Instrinsic

- Age
- Nutrition
- Anatomical variations
- Joint laxity
- Gender
- Systemic disease

Extrinsic

- Occupation
- Sport / hobby
- Physical load
- Equipment
- Rapid ↑ work load
- Environment

(Riley, 2004)

Patient Education

Length of healing process months rather than weeks

- Ergonomic advice
- Activity modification
- Is this the predisposing factor for the condition?

Stretching

Myofascial Release

Electrotherapy and Acupuncture

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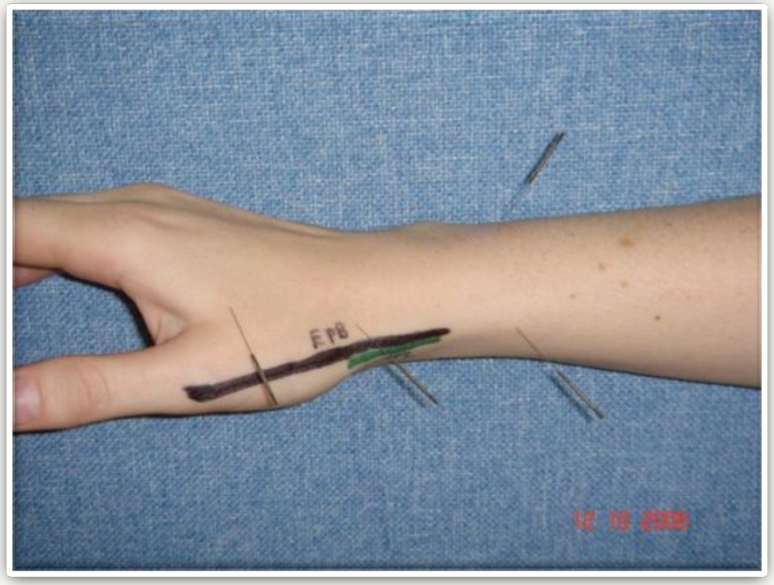
Electrotherapy

Ultrasound increases collagen synthesis and tensile strength of healing tendon*

Acupuncture

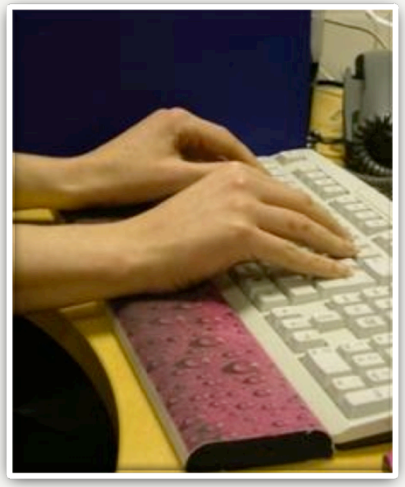
Decreases pain†



* Ng et al, 2003; Enwemeks, 1989
† Fink et al, 1998 & 2000; Molsberger, 1994; Murray, 1995

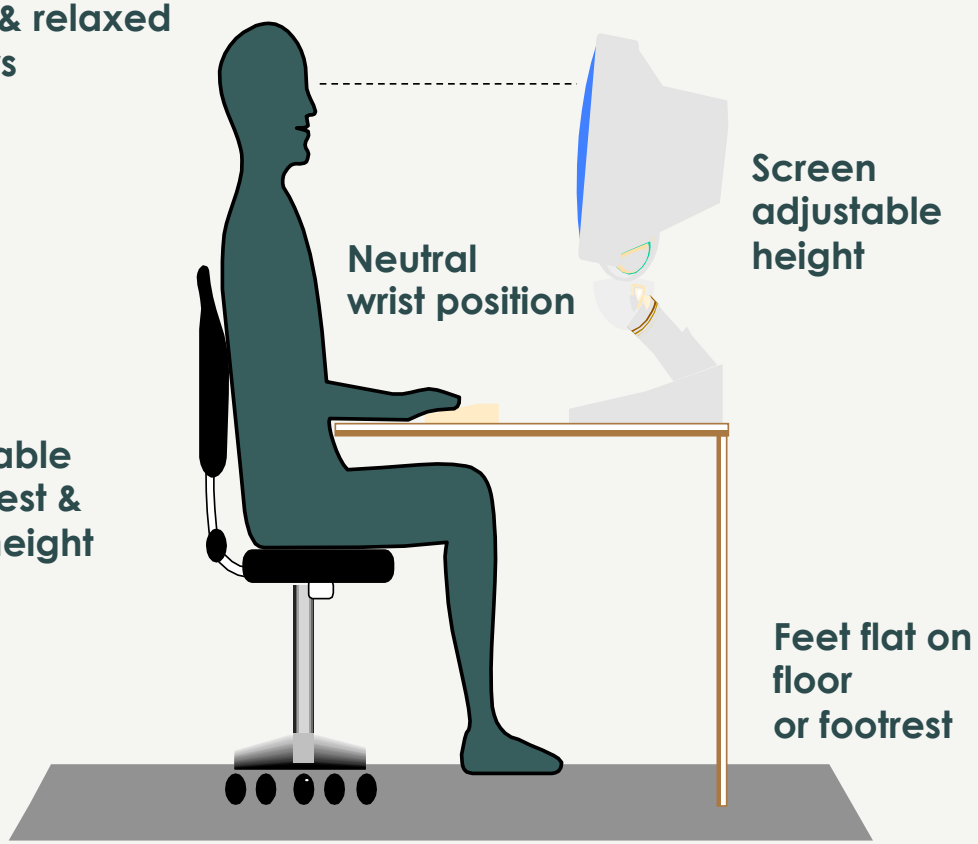
Ergonomic Considerations

- Keep fingers relaxed and use light touch
- Elbows between 70°-90° flexion*
- Neutral floating wrists rather than anchored
- Keyboard short cuts
- Short finger nails†
- Mouse near keyboard
- Use alternate sides or adapted mouse such as quill or pen
- Knees & hips at 90° flexion
- Break or change tasks after each hour of work for 5-10 mins
- Rest & refocus eyes periodically



* Basmajin, 2005
† Stegink-Jansen, Patterson and Viegas, 2000

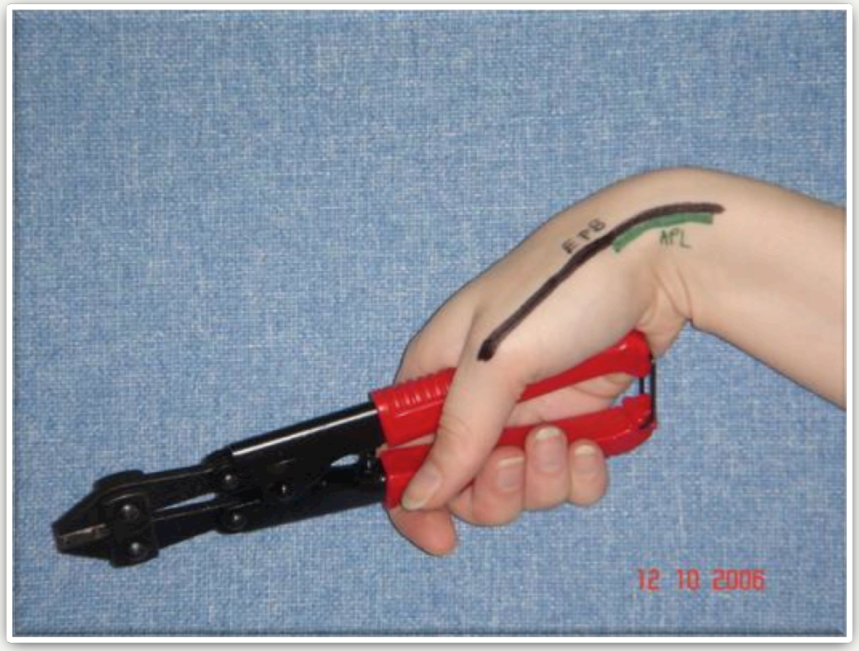
Computer Workstation



Ergonomic considerations for musicians

Activity Modification

Consider size, weight, resistance and servicing of target tools

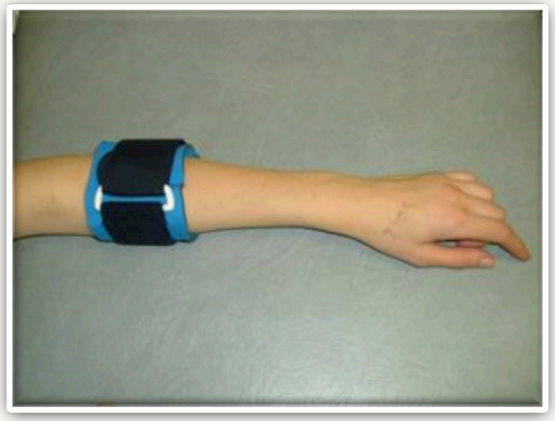


Poor working posture

Corrected position to minimise APL/EPB friction

Correct Biomechanical Issues





- Offload affected tendon through biomechanical correction
- Splints may alter muscle mechanics*
- For patients with lateral elbow pain clasps should be worn 6-10cm below elbow joint†
- Optimum support & wearing schedule not known

* Levangie & Norkin, 2005; Brukner & Khan, 1998
† Brukner & Khan, 1998

Instrument Modifications and Splints

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Instrument modifications and splints to increase proprioceptive awareness

Coban & Blu-Tack bow 'build-up'

Dorsal splint to position index finger

Hypermobility in Musicians

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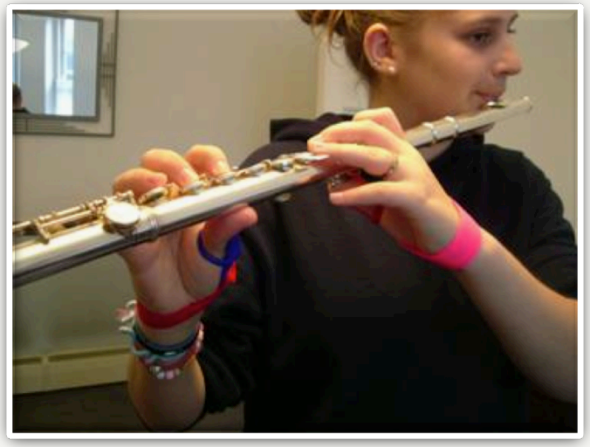
- Higher prevalence than in other populations
- Is it an advantage or not?
- Larsson et el. 1987 and 1993 studies
- Does it decrease musicians sensitivity to proprioception?
- Focus of treatment increasing proprioceptive awareness and strength

Assessment

- Evaluate all joints
- Assess on the instrument
- Correlation between hand and arm pain and hypermobility
  (Branfonbrener, 1990)
- Principles of Joint Protection



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Proprioceptive Retraining and Strengthening

Tapping exercises, finger ‘alphabet writing’ and in the later stages weight bearing exercises in the neutral position

Hypermobility Treatment Summary

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- Holistic approach
- Careful initial assessment
- Short and long term goals made with patient
- Emphasis importance of continuing exercises and/or splintage until enough muscle strength has been gained and/or until a neutral joint position can be maintained
- Be creative, and try to develop new splints and therapeutic devices to assist this patient group

Cello Specific Problems

- De Quervain syndrome
- Neck pain
- Raised shoulders
- Distal digital neuromas
- Median nerve compression - playing with flexed right wrist
- Rotator cuff lesions
- Weak muscles
- CMCJ OA - German rather than French bow?
- Transporting instrument
- Rotate humerus as much as possible, not forearm
  (Joan Dickson, personal communication with Dr Wynn Parry)
- Excess bow pressure
- Restricted movement of torso and arms

Woodwinds and Brass

- Wind instruments: divided into woodwinds and brass

- Woodwinds
  - Flute
  - Clarinet
  - Oboe
  - Saxaphone
  - Bassoon

- Brass
  - Trumpet
  - French horn
  - Trombone
  - Euphonium
  - Tuba

Brandfonbrener, 2010

Upper woodwind

Flute and piccolo

- Held against lower lip, notes, tone and range are formed by altering position of the lower and upper lips and other facial muscles. Excessive pressure of the flute on the lower lip can cause nerve compression.
- Hand problems tend to involve the left side, wrist, index finger and shoulder
- Offset keys, closing holes, curved mouthpiece, starting on piccolo and then moving to flute when older

Upper woodwind

Clarinet

- Held in mouth, with the lower lip in contact with single reed and held over lower teeth with upper teeth making firm contact with angulated side of mouth piece
- Lip position involves curling lower lip over the lower teeth (paper between teeth and lip)
- Reed must be able to vibrate and tension involved in maintaining the position may lead to TMJ problems
- Mainly suffer with right hand problems due to thumb rest that makes thumb bear static load of instrument
- Adjust thumb rests, or modify them, resting bell of instrument on chair or with device or neck strap/harness
- More than a dozen types of clarinet, with B♭ being the most common and ranging from the extremely rare BBB♭ octo-contrabass to A♭ piccolo clarinet

Practice Makes Perfect?

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- Warm up and cool down
- Short sessions
- Relaxed frame of mind
- No fear of performances
- Positive thinking
- Mirror practice
- Freedom of breathing