MASTERING THE EXTREMITIES AND SPINE

"THE WONG WAY"

HELLO
my name is
Dr. Wong

YOUR FL REP:
Rebecca Hamby

When our feet hurt, we hurt all over.
~ Socrates
Start with the foundation

With weight bearing, the spine is supported by one leg at a time.

Every biomechanical imbalance is transmitted to the spine.

Different surfaces effect forces on the LE and body.

LE has significant relationship to the body & clinical conditions in practice.
Patient Awareness Demo (makes Foot-Spine-NS Connection)

- Pronate extremely, supinate extremely with hands on greater trochanters.
- Patients **SEE** and **FEEL** connection between feet, knees, hips, pelvis and spine.

How many bones in each foot?

PALPATE YOUR FEET!

Joint Movements

- Inversion and Eversion of the foot at the ankle
- Dorsiflexion and Plantar flexion of the foot at the ankle

ANKLE & FOOT JOINT - MUSCLES INVOLVED

- Dorsi flexion: - Tibialis , Extensor Digitorum longus.
- Planter Flexion: - Gastrocnemius or soleus.
- Inversion: - Tibialis Anterior.
- Eversion: - extensor Digitorum
How many arches under each foot?

Ankle

How many arches do patients think we have?

USE YOUR HANDS!

What do you see? Feel?
THE ARCHES

- Plantar vault
- Not present at birth

Arches of Foot

- **Medial longitudinal arch**
  - Is formed of calcaneum, talus, navicular, 3 cuneiform bones, and first medial 3 metatarsal bones.
- **Lateral longitudinal arch**
  - Is formed of calcaneum, cuboid & lateral 4th & 5th metatarsal bones
- **Transverse arch**
  - Lies at the level of tarsometatarsal joints, formed of bases of metatarsal bones, cuboid & 3 cuneiform bones.

Lateral longitudinal Arch

- Flatter than medial longitudinal arch.
- Rests on the ground during standing.
- It is made up of – calcaneus, cuboid, 2 lateral metatarsals.

- Keystone?
Arches of the Foot

A-B Anterior Transverse Arch
B-C Lateral Longitudinal Arch
A-C Medial Longitudinal Arch

ARCH STABILITY

- The highest relative contribution to arch stability was provided by the plantar fascia, followed by the plantar ligaments and spring ligament.
- Plantar fascia was a major factor in maintenance of the medial longitudinal arch.


ARCH SUPPORT

- “The first line of defense of the arches is ligamentous.”
- “...muscles did not come into play until a force greater than 400 pounds was exerted.”


WHAT NORMALLY HAPPENS TO THE 3 ARCHES WHEN YOU STAND UP?

ARCH FUNCTIONS

- Shock absorption
- Support body weight
- Propel body
Heel strike force sends a shock wave up the leg to the pelvis, spine and skull.

FORCE

5 G's of force on the foot/ankle becomes .5 G's at the skull (TMJ) within 10 ms.

- Unlocks foot
- Absorbs ground shock (30%),

- Conforms foot to grip the ground
- Then re-stiffens (supinates) for leverage as leg propels forward to next step.
**Pronation** is necessary for correct foot biomechanics.

Elastic vs. Plastic Deformation

Permanent elongation of tissue after application of prolonged, non-disruptive mechanical force.

**Plastic Deformation takes over!**

**Extreme Foot Pronation**

- Excessive pronation ~ 80-87%
- Supination ~ 3-5%
- Healthy WB ~10%

**Supination (3-5%)**

- Flat lateral longitudinal, transverse arches
- Pressure on lateral ankle, knee, hip, LB
LOWER EXTREMITY ASSESSMENT - TOOLS

- Static postural indicators
- Dynamic gait analysis
- Manual Muscle Testing

WHAT DO YOU SEE?

- Feet/Arches - dropped or high
- Ankles – rolling in/out
- Knees – bowed/knock knees
- Hips – high hip on one side
- Pelvis – un-level, tilted back/forward

WHAT DO YOU SEE?

- Spine – lateral curvature?
- Shoulders – high shoulder or forward?
- Head – Tilt, ant./post. translation?

4 Global Postural Distortions caused by Excessive Pronation

1. Bilateral asymmetrical pronation
2. Anterior Pelvic tilt
3. Anterior translation of the pelvis
4. Forward translation of the head
"THE 2 SECOND EXAM"

Asymmetrical, bilateral, over-pronation
- Achilles tendons bowing inward or outward?
- Medial Arches dropping or high?

WHY AM I OVER PRONATING?
- Joint Fixation
- Hypermobility/Instability
- Muscle Imbalance
- Acute and Chronic Injuries

GAIT ANALYSIS

STANCE PHASE – 60% OF GAIT

HEEL STRIKE
- Calcaneus inverts
- Foot supinates
- Force goes from heel to ankle

FOOT FLAT
- Foot pronates at subtalar joint
- Medial rotation of tibia/femur
- Foot supinates
- MTP’s dorsiflex
- Plantar fascia tightens
- Leg externally rotates

The force impact on the body created by heel strike equals:
- 3.5 x a person’s body weight while running
- 2.5 x a person’s body weight while walking
- .5 x a person’s body weight in the neck

Swing Phase

- Pelvis rotates forward, hip flexes
- Leg accelerates
- Knee/ankle flex, then extend for touchdown

Foot Levelers orthotics help improve pelvic movements and gait patterns as well as reducing the effects of fatigue from walking.

Journal of Manipulative & Physiological Therapeutics, 2001 Vol. 24 #4, May

Foot conditions by age
- 99% of feet are normal at birth
- 8% of feet develop trouble by age 1
- 41% of feet develop trouble by age 5
- 80% of feet develop trouble by age 20
- Nearly everyone has foot trouble by age 40
WHAT ELSE DO YOU SEE?

- Knee pain, Injury, DJD
- Ankle Sprains, Plantar Fasciitis, Heel Spurs

Don't Overlook the Lower Extremities!

OVER-PRONATION EFFECTS

- Abnormal spinal rotational stress
- Chronic SI joint stress

OVER-PRONATION EFFECTS

- Excessive shock transmission
- Pelvic unleveling due to LLI
Factors of Pronation

SX’S OF EXCESSIVE PRONATION
- History or chronicity of symptoms.
- Spinal/extremity symptoms worse with WB
- Short-term response to Chiro.

The Feet misalign the spine!

HOW ARE THE SEXES DIFFERENT?

Biomechanical, forefoot conditions in women > men
(Bunions, hammer toes, calluses, neuromas, metatarsalgia)

- MT arch support is key!

Are Female Feet Different?

Narrower heel/midfoot with a wider forefoot
Biomechanical forces are distributed differently!

Footwear

- Some cram feet into shoes that don’t fit.
- Many don’t update their shoe size as they age.
- Trace each foot while standing then trace the shoe. Any significant discrepancy means foot is cramped when standing and restricted during gait.

A ¾ inch heel will increase forefoot pressure by 22%
VISUAL/PALPATORY FINDINGS

- Corns
- Bunions
- Callouses
- Hammer toes
- Hallux Valgus

THE CURSE OF FASHION

Body weight is displaced on to toes and delicate mid-foot bones that are not designed for such stresses.

Joints under intense stress and accessed into narrow space may become rigid and arthritic.

Big toe bones pushed out of alignment; may develop bunions.

Sesamoid bones at base of big toe are particularly prone to stress injuries.

VISUAL FINDINGS

- Collapsed arches
- Morton’s Foot
- Past foot/ankle injuries
- Fat/callous pads under arches

MILD MODERATE LARGE SEVERE
HAMMER TOES

*Postoperative X-ray shows fusion surgery and extensor exostosis of the lateral Navicular bone.
3 PRIMARY FOOT TYPES IN NORTH AMERICA
- Squared Foot 9%
- Morton's Foot 22%
- Egyptian Foot 69%

Morton's Foot/Toe

Hammer Toes
Structural stress produces muscle imbalances.
Prevalence of Excessive Pronation

- Light (0-30): 8%
- Moderate (31-64): 23%
- Severe (65-95): 54%
- Optimal (96-100): 15%

Sample Size: 445 patients

Consequences of EP

OPTIMAL, MILD, MODERATE OR SEVERE?

- Well-Balanced
- Mild Pronation
- Moderate Pronation
- Severe Pronation

Foot Imbalances Cause Serial Distortions

<table>
<thead>
<tr>
<th>Medial Arch</th>
<th>Lateral Arch</th>
<th>Transverse Arch</th>
</tr>
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<tbody>
<tr>
<td>Excessive Pronation</td>
<td></td>
<td>SUPINATION</td>
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RADIOGRAPHIC FINDINGS

- Without Orthotics:
  - a. Pelvic torque or obliquity
  - b. Uneven femoral heads

- With Foot Levelers Orthotics:
  - c. Postural scoliosis
  - d. Disc degeneration/spondylosis
LEG LENGTH INEQUALITY

ANATOMICAL (Bone Discrepancy)  FUNCTIONAL (Rotational Patterns)
Trauma          Pelvis
Degeneration    Hips
Congenital      Knees
Systemic        Ankles
Neoplasms       Feet

TREATMENT - ASR PRINCIPLE
1. Adjust
2. Stabilize
3. Rehab

According to the ACA, the most frequently used techniques by DC’s are Diversified 95.9%, Activator Methods 62.8%, Gonstead 58.5%, C

TYPES OF ADJUSTING
- Manual/Diversified
- Drop table
- Spring Loaded Instrument
**DROP TABLE**

- Tension
- Inhale/exhale
- Spinal contours

**ACTIVATOR**

- Proper tension
- Appropriate #s of thrusts
- Patient comfort!
THE “WONG WAY” TO ADJUST THE FOOT

• Comfortable body position = correct LOD
• Forget how the bones misaligned? Stand up and pronate/supinate

NAVICULAR BONE

Misaligns inferior and medial (down and in)

“Push” superior and lateral (up and out)

NAVICULAR

• Supine: CP – index, thenar, hypothenar, pisiform
• Prone: CP - double thumb, pisiform
• Drop table: CP - pisiform, double thumb (prone)
• Adjusting instrument:
**CUBOID**

Misaligns superior and lateral (**up and out**)

“Pull” cuboid inferior and medial (**down and in**)

- Supine: CP-double thumb web, double index finger
- Drop table: foot dorsal, lateral side up. CP-Pisiform, double thumb w/foot slightly dorsiflexed for tension.
- Spring loaded instrument: watch LOD

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**TALUS**

Misaligns **anterior and lateral**

“Scoop” talus **posterior and medial**

- **Supine:** CP - double middle or index finger
- **Drop table:** foot dorsal side up. CP is Pisiform or double thumb with foot slightly dorsiflexed
- **Spring loaded instrument:** watch LOD
**CALCANEUS**

Misaligns in **plantarflexion (superior and posterior)** and in **inversion/eversion**.

“**Tug**” the calcaneus into **dorsiflexion (inferior)** with an **eversion/inversion pre-stress**.

**CALCANEUS BONE**

- Supine: CP – palm of hand
- Prone: CP - thumb web with foot over edge of table
- Drop table: foot plantar side up. CP is thumb web
- Spring loaded instrument: watch LOD

**CUNEIFORMS**

Cuneiforms, MT heads 2,3,4 go inferior (**drop to the floor**).

“**Bicycle**” the foot

**METATARSALS**

MT head #1 misaligns superior and medial
MT head #5 misaligns superior and lateral
CUNEIFORMS, MT’S

- Supine: CP- palms and fingertips
- Prone: CP- double thumb and palms
- Drop table: foot plantar side up. CP is double thumbs
- Spring loaded instrument: watch LOD

PHALANGES

Proximal and distal phalanxes get compressed.
“Distract” each of the phalanges.

“All In One” Foot Adjustment

Supinated Foot

- The lateral longitudinal and transverse arches are flatter
- NAVICULAR has gone superior/lateral
- Adjust inferior/medial with double index/middle finger contact.
**FOOT TAPING PROTOCOL**

- 1" pieces (2)
- Medial/lateral arches
- Transverse arch
- Not tight!

**TAPE CARE:**

- Water is fine
- Roll socks on/off carefully
- Avoid bare feet (carpet, pet hair)
- Lasts ~ 1-5 days

- Stretch structure, not tape
- Cut/shape but do not stretch ends
- Stretch tape < 25-50%
- Warn about adhesive (no latex)
CLINICAL GEMS
* Patients buy tape from you
* Evaluate their shoes
* Tape educates for you

ORDERING TAPE
* Your professional pricing will give you 40% off retail.
* Call: 408-912-ROCK
* Tell them you were at a “Dr. Kevin Wong Seminar” and get set up to place your initial order.
* You can order from rocktape.com on subsequent orders. Your discount will be in place.

PLANTAR FASCITIS: TREATMENT
Support:
Stabilizing Orthotics
Shoe types

MORTON’S FOOT
* 2nd toe longer than first
* Present 22% of time
* Present in ~ 80% of pts. seeking care for musculoskeletal problems

MORTON’S FOOT
* 2nd toe alters toe off phase.
* Patient must externally rotate foot in order to place the 1st toe in position to toe off.
MORTON’S FOOT
• Hypermobility of first and second toes
• Callousing of the 2nd MT head along with hammering of toes 2-3
• Leads to excessive pronation due to foot flare.

MORTON’S NEUROMA
• Neuralgic radiating pain on plantar surface of foot
• Between the 3rd and 4th MT’s.
• Begins as interdigital neuritis
• Progresses to an overgrowth or benign tumor.

MORTON’S ETIOLOGY
• Increased pressure on forefoot and interdigital nerves
• Results in swelling, overgrowth or benign tumor of nerve

MORTON’S NEUROMA: TX
Physiotherapy modalities
Adjustments: Basic Foot (MT’s, toes)

Support:
Stabilizing Orthotics
Elastic Taping
Shoe Types

“Basic 4” Thera-Ciser Exercises
Towel scrunch exercises
Foot wheel/Golf/tennis ball exercises
Calf Stretches
SEVER’S DISEASE
(Calcaneal Apophysitis)

- Inflammation of growth plate in heel of growing children, typically adolescents.
- Pain in heel due to repetitive stress to and is common in active children.

SEVER’S DISEASE: TX

• Physiotherapy modalities (NO laser, US)
• Orthotics
• Elastic Taping
• Stretching/strengthening exercises

Sprained Ankle

• Inversion vs. Eversion
• Acute vs. chronic
• Arthritis present?
• End feel (soft or bony?)
SPRAINED ANKLE – TX.
- Physiotherapy modalities
- Adjust foot/ankle
- Elastic Tape
- Stabilizing Orthotics

ACHILLES TENDONITIS
- Excessive Foot Pronation flattens the arches and drops the feet medially.
- Stress on the achilles tendon and they bow inward

REMEMBER PRONATION PATTERNS! (>85% OF PATIENTS)
- Feet excessively pronate
- Ankles turn in/drop
- Tibia/femur internally over-rotate
- Medial knee stress due to torsion and compression of the tibia, femur bones.

Hip anatomy
The hip is a ball and socket joint that allows the upper leg to move smoothly. It is surrounded by cartilage, muscles and ligaments. The hip is the largest weight bearing joint in the body.
Hip Joint

- Stable anatomy. Deep socket, thick joint capsule; strong spiral ligaments; several powerful stabilizing muscles.
- Joint rarely injured. Most injuries are secondary to biomechanical dysfunctions.

Hip joint Imbalance Syndromes

- Iliotibial band (ITB) syndrome
- Tensor fascia lata strain
- Trochanteric bursitis
- Hip joint capsulitis
- Hip flexor muscle strain
- Hip adductor muscle strain
- Anterior pelvic tilt
- DJD

Iliotibial Band (ITB) Syndrome

TENSOR FASCIA LATA (TFL)

Trochanteric Bursitis

Trochanteric Bursitis Rehabilitation Exercises
Hip Joint Capsulitis

Snapping Hip Syndrome (Outer)

Hip Flexor Strain

Medial Compartment
main function = adduction
- Obturator externus
- Adductor brevis
- Adductor longus
- Adductor magnus
- Gracilis

Most innervated by: Obturator nerve (L2-L4) (lumbar plexus)

Exception: -Hamstring component of adductor magnus (extensor) (tibial division of sciatic nerve)

Adduction of thigh
Muscles originate medial to hip joint
- Gracilis
- Adductor magnus
- Adductor longus
- Adductor brevis
- Pectineus
Excessive pronation tilts the pelvis which puts extra stress on the lateral hip.
Effects of Stabilizing Orthotics on hips

- Medial rotational forces are reduced by supporting the medial arches and calcaneus.
- Correction of functional or anatomical short leg reduces the ground reaction forces being sent through the joint on the side of the longer leg.
- Viscoelastic materials ease impact forces at heel strike.

Hip Treatment

- Physiotherapy modalities
- Adjustments
- Stabilizing Orthotics
- Elastic Taping
- Strengthen with Theraciser
- Stretch/Floor exercises

POSTERIOR AND/OR LATERAL HIP

Patient prone on the drop table

INTERNAL/EXTERNALLY ROTATED FEMUR

LATERAL FEMUR

Side-lying Position

ANTERIOR FEMUR
SCIATICA:

- Peripheral nerve compression
- IVD herniation
- DJD
- Over-pronation
- Injuries
- Spondylolisthesis

SCIATICA SIGNS & SYMPTOMS

a. Increased pain and paresthesia along dermatomal pattern of sciatic nerve roots. (posterolateral leg, possibly below knee)
b. Motor weakness
c. Diminished reflexes
d. Sensory loss
e. Muscle atrophy

SCIATICA NEURALGIA:

- 80% of the time sciatica is present to some degree, the piriformis muscle is in spasm or hypertonic

8/2/2019
PIRIFORMIS SYNDROME

Spasm of the piriformis muscle due to non traumatic injury. This causes anywhere from simple buttock pain to sciatica.

PIRIFORMIS SYNDROME: ETIOLOGY

1. Prolonged sitting with hip flexion, adduction and internal rotation.
2. Pelvic rotation
3. Foot pronation
4. Anatomically short leg

PIRIFORMIS: S & S’S

Pain can be present in any of the following:

a. Low back
b. Buttock
c. Hip
d. Posterior thigh, leg, foot
e. Groin, perineum

Over pronation pulls the piriformis muscle over the sciatic nerve.

Physiotherapy Modalities:

Adjust: Hip Knee Lower back

Support:

Elastic Taping: Orthotics

Over pronation pulls the piriformis muscle over the sciatic nerve.
1. Lie down with hips stretched. Anchor tape at top of glutes and run hip area above ankle. No stretch.
2. Optional: Apply decompression strap on leg over pants. Stretch tape 50% in midline, no stretch in ends.
PELVIC ANATOMY

• SI joint - involved side up or down
• Sacrum (rotation, base posterior, inferior)
• Lumbar (side posture, anterior)
• Pubic bone

LUMBOPELVIC ADJUSTMENTS
LUMBOPELVIC - CONDITIONS

- Sacroiliac joint dysfunction
- Disc degeneration/problems
- Pubic Symphysis pain

PELVIS: TREATMENT

Physiotherapy modalities:

Adjust:
- SI joint - Lumbars
- Ilium - Pubic Bone
- Sacrum - Coccyx

Support:
- Elastic Taping
- L/S support belt
- Stabilizing Orthotics

Let's Beat the Sitting Disease

Get moving! Few minutes of functional exercises help keep you supported and pain-free throughout your physical activities. For a fit and healthy life.
LUMBOPELVIS: TREATMENT

Rehabilitation:

Stretches

Back.Sys exercises System
LOW BACK PAIN - CLINICAL PROTOCOL

**Adjust** - Lower Extremity Misalignment Pattern/subluxations

**Support** - custom-made flexible orthotics
  - lumbar support cushion

**Rehab** - 4 sets of 6 reps Extension (slouch-arch)
  - 3 sets of 6 reps Flexion (hip flexors)
  - 3 sets of 6 reps Lat. Flex. to the side of convexity

Well placed support will help maintain correct seated posture.
Birth to 2 years: Bow legs and toeing in are common.

Age 3 to 5: Knock knees and toeing out is common.

Age 6 to 7--Knees and feet (arches) should resemble adult positioning.

“Because (hyper-pronation) becomes established by age six, functional foot orthoses after that age may be invaluable in maintaining a normal medial longitudinal arch until the foot reaches skeletal maturity during the early teens.”


Lumbar Vertebrae, L1-L5
- **Body** - L1 to L5 progressive increase in mass
- **Pedicles** - longer and wider than thoracic; oval shaped
- **Spinous processes** - horizontal, square shaped
- **Transverse processes** - smaller than in thoracic region
- **Intervertebral foramen** - large, but with increased incidence of nerve root compression
LUMBAR AILMENTS

- Spondylolysis
- Spondylolisthesis
- Spinal stenosis
- Degenerative Disk Disease
SPONDYLOSIS, ARTHRITIS, DDD

Examples of Disc Problems

- Normal Disc
- Degenerated Disc
- Slipped Disc
- Herniated Disc
- Thinning Disc
- Disc Impregnation with Osteophytes Formation

TALK ABOUT PRESSURE...

1. Sitting hunched over a desk - 200 lbs
2. Sitting leaning back on chair with low back rounded - 150 lbs.
3. Sitting upright with feet elevated - 100 lbs.
4. Standing with leaning forward posture - 200 lbs.
5. Standing in proper alignment - 100 lbs.
7. Laying flat on back with knees elevated - 25 lbs.

THORACO-LUMBAR JUNCTION

Common referral site for L/S spine.
(check hips, knees, ankles, feet)

Adjusting options: Manual
- side posture (involved side up or down)
- prone (watch LOD)
- anterior

ANTERIOR THORACIC

1. Lower T-Spine
2. Middle T-Spine
3. Upper T-Spine

THORACO-LUMBAR JUNCTION

- Standing anterior
- Drop Table
- Instrument
  Adjusting
  Watch LOD!
**SIDE POSTURE**
- Pre-stress (sacrum-mid thoracic)
- Stabilizing hand
- Inhale/exhale
- Stick out stomach
- Breathing
- Forearm to roll patient

**ANTEROIOR ADJUSTING OPTIONS**
- Flat or fist hand contact
- Chest/Arm stabilization
- Hugging pillow/bolster
- Head supported?
- Anterior device?

**PRONE THORACIC**
- Double hypothenar (Carver bridge)
- Pisiform contacts with single/double hands
- Head of the table moves

**DROP TABLE**
- Watch tension!
- Inhale/exhale for comfort
- Mind spinal contours

**INSTRUMENT ADJUSTING**
- Set proper tension
- Appropriate #s of thrusts
- Watch patient comfort!

**Thoracic Vertebrae**
- **Body** - progressive increase in mass from T1 to T12
- **Pedicles** - small diameter
- **Laminae** - vertical, with “roof tile” arrangement
- **Spinous processes** - long, overlapping, projected downward
- **Intervertebral foramen** - larger, less incidence of nerve compression
What do we look for in a posture exam?

THORACOLUMBAR JUNCTION

THORACO-LUMBAR JUNCTION

Manual, Drop, instrument adjusting

I to S LOD

LOWER TO MID THORACIC

• Manual, Drop, Instrument

• I to S LOD - Lower
• P to A LOD - Mid

• Ribs

TYPES OF ADJUSTING

• Manual/Diversified
• Drop table
• Spring Loaded Instrument

INSTRUMENT ADJUSTING

• Set proper tension
• Appropriate #s of thrusts
• Watch patient comfort!
**Glenohumeral joint**

- Articular surface
- Synovial ball and socket articulation
- Hyaline cartilage
- Joint stability is provided by:
  - rotator cuff muscles,
  - long head of biceps brachii
  - extracapsular ligaments.
- Movements: flexion, extension, abduction, adduction, medial rotation, lateral rotation, and circumduction.

**CLAVICLE**

**ACROMIOCLAVICULAR JOINT**

**AC JOINT MISALIGNMENT**

- Distal Clavicle moves superior

**STERNOCLAVICULAR JOINT**
SC JOINT INJURIES

- **Superior, Anterior, Medial (SAM)**
- **Adjust:** Posterior, Inferior, Lateral (PIL)

SC JOINT MISALIGNMENT

- **Adjust:** Posterior, Inferior, Lateral (PIL)

SCAPULAR MOVEMENT

- **Elevation**
- **Depression**
- **Protraction**
- **Retraction**
- **Upward Rotation**
- **Downward Rotation**

Rotator Cuff

- **Supraspinatus**
- **Subscapularis**
- **Infraspinatus**
- **Teres Minor**
- **Humerus**
- **Biceps Brachii**
- **Subclavius**
- **Coracobrachialis**
- **Pectoralis Major**
- **Deltoid**
- **Triceps Brachii**
- **Brachialis**
- **Biceps Brachii**
- **Brachioradialis**
- **Anterior View**
- **Posterior View**
**SCAPULAR MISALIGNMENT**
- Rotation pattern
- External vs. Internal

**RIBS AND STERNUM**

**RIBS**
- Ribs go out of alignment regularly
- Ribs rarely go right back without any help
- When ribs go out, you may or may not notice them.

**“RIBS OUT OF PLACE”**
- Why do ribs misalign?
- Most common direction ribs subluxate?
- Location and quality of pain?
- Worse/better?

**RIB TREATMENT**
- Physiotherapy modalities
- Adjustments
- Support (specific taping for rib heads)
- Rehabilitation (shoulders)
**SHOULDER CONDITIONS**
- Dislocation
- Separation
- Tendonitis
- Bursitis
- Capsulitis
- Impingement
- Rotator cuff tear
- Labrum tear
- Frozen Shoulder (adhesive capsulitis)
- Arthritis

**BURSITIS**
Inflammation or irritation due to rubbing of tendons on the bursae.
Supraspinatus tendon, biceps tendon, subacromial bursa are irritated/inflamed as they pass thru the subacromial space.

Subacromial spurs, AC jt. Spurs, acromial shape, coracoacromial ligament thickening, weakness of SITS muscles, subacromial bursitis are causes.

ADHESIVE CAPSULITIS (FROZEN SHOULDER)

- Inflammation, scarring, thickening, and shrinkage of the capsule that surrounds the normal shoulder joint.
- Any injury to the shoulder can lead to a frozen shoulder, including tendonitis, bursitis, and rotator cuff strains or tears.

Frozen shoulder thru an arthroscope
LABRUM TEARS
- Degenerative fraying, tearing, separating of the superior glenoid labrum. (overhead, throwing activities)
- Bucket handle tear, Bankart lesions, flap tears

SHOULDER TREATMENT
- Physiotherapy
- Adjustments
- Elastic Taping
- Rehabilitation

SHOULDER ADJUSTMENTS
- Manual, drop, instrument
- Get all of the joints/ribs!
- Dr. Wong’s shoulder protocol

A TO P HUMERUS

S TO I ON THE AC JOINT
SHOULDER TAPING
- 2" Rocktape or "Big Daddy"
- 2 strips (A to P, Lat-Med)
- Pre-stress (mild)

SHOULDER EXERCISES
- Stretches
- Strengthening with elastic tubing/bands or weights
- Yoga/Pilates/TRX
ELBOW

STRUCTURES OF ELBOW JOINT (3)
- Humeroulnar joint
  Simple hinge
  Flexion & extension
- Humeroradial joint
  Ball and socket
  Pronation and supination
- Superior radoulnar joint
  Pivot
  Freely movable

ELBOW CONDITIONS
- Golfer’s elbow
- Tennis Elbow
- Olecranon Bursitis
- Cubital tunnel syndr.
- Radial tunnel syndr.
- Arthritis

Lateral Epicondylitis
(Tennis Elbow)
OLECRENON BURSITIS

CUBITAL TUNNEL SYNDROME

- Entrapment of the radial nerve at the lateral elbow
- Pain with elbow flexion or wrist pronation
- Supplies posterior hand and extensor muscles of forearm

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**Radial Tunnel Syndrome**

- Proximal / lateral arm pain
- No motor or sensory dysfunction... PAIN only
- No PIN dysfunction
- Normal EMG/NCS
- Provocative test: resisted long finger extension
- Tenderness over radial neck or supinator
- Recurrent or unresponsive lateral epicondylitis
  - Exceeds in 5%

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**Radial Tunnel**

**ELBOW TREATMENT**

- Physiotherapy modalities
- Adjustments
- Support
- Rehabilitation

**ELBOW ADJUSTMENTS**

- Radial head
  - pronated
  - supinated
- Olecranon posterior

**ELBOW EXERCISES**

- Stretch forearm flexors/extensors
- Strengthen with elastic bands/tubing, weights
CARPAL TUNNEL SYNDROME

- Physiotherapy modalities
- Adjustments
- Support
- Rehabilitation

ULNAR TUNNEL SYNDROME

- Move lateral (radial) direction.
- Distraction maneuver with a lateral to medial pre-stress and a long axis thrust or pull.
LUNATE, TRAPEZOID, CAPITATE, HAMATE DROP INFERIOR
• pre-stress from I to S with the fingers or thumbs.

TRIQUETRAL MOVES MEDIAL (ULNARWARD)
• Distraction maneuver with a M to L pre-stress, then a long axis thrust or pull.

MCP JOINTS
• Compression of the MCP’s is due to ADL’s or arthritis.
• Gentle distraction of all parts of the phalanges will gap the joints.

WRIST SUPPORT
• Wrist braces
• Elastic Taping

WRIST EXERCISES
• Stretch forearm flexors/extensors
• Stretch palmar/dorsal hand
Anatomy

- **Cervicothoracic Junction**
  - The *cervicothoracic junction* (CTJ) comprises the C7-T1 segment, although functionally it includes the seventh cervical vertebra, the first two thoracic vertebrae, the first and second ribs, and the manubrium
  - In addition, the CTJ forms the thoracic outlet, through which the neurovascular structures of the upper extremities pass
C/T PRONE MOVES
• Facing cephalad (single hand, thumb)
• Head of the table (facing caudad)
• Carver bridge (double hypothenar)
• Rib 1 move

UPPER T'S – SUPINE
• Rotary Break (supine or seated)
• Modified Rotary Break
• Thumb move

MID CERVICAL
Prone - thumb, single hand, bilateral hands
Supine – modified Rotary Break (MRB)
Seated – RB (in front) or MRB
Drop Table - cervical drop piece
Instrument adjusting

UPPER CERVICAL
• Prone occiput/Atlas – watch TMJ
• Supine occiput/Atlas – Modified MRB, thumb
• Seated – RB, MRB
• Drop – occiput (prone)
• Drop – toggle Atlas
• Instrument adjusting – low force!

TREATMENT
• Physiotherapy
• Elastic Taping
• Adjustments
• Rehab
• Sleeping Position
• Pillows