

## ***RUNNING INJURIES***

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### ***Incidence***

- Injuries and running go together like kids and dirt!
- 90% of all runners report an injury that made them stop running in a one year period
- Incidence is increasing due to the new running boom! "Anyone Can Run a Marathon" Charity Programs

### ***Why?***

- Acute trauma
- Chronic repetitive trauma from
  - Improper training techniques
  - Too much, too soon, too fast
  - Improper shoe gear

### ***Wide Range of Injuries***

- Acute trauma
  - Foot and ankle sprains and fractures
- Overuse
  - Biomechanical strain on lower back all the way down to your toes
  - Don't forget skin and toenail troubles!

### ***Biomechanical Origins***

- Most common etiology is improper biomechanics
- Biomechanical abnormalities place increased stress on the soft tissues
    - Excessive subtalar joint pronation
    - Ankle equinus
    - Cavus foot type
    - Excessive midtarsal joint pronation
    - Functional Hallux Limitis
    - Leg length Discrepancy
    - Muscular Imbalances

### ***Top Ten List***

- Plantar fasciitis
- IT Band Syndrome
- Patellofemoral syndrome
- Metatarsal stress fractures
- Achilles tendonitis

## Top Ten List

- Medial stress syndrome (shin splints)
- Piriformis syndrome
- Posterior tibial tendonitis
- Peroneal tendonitis
- Intermetatarsal neuroma

## Complete Biomechanical Exam

- Static Exam
- Dynamic Exam
  - Barefoot
  - In Running Shoes

## Static Exam

- HIPS
  - Internal/external rotation
  - Flexion
- KNEES
  - Flexion/extension
  - Instability
  - Patella position, crepitus
  - Relationship with knees and ankles

## Static Exam

- Anterior tibial crest tenderness
- Tibial/malleolar torsion
- ANKLE
  - Dorsiflexion/plantarflexion
    - With knees flexed and extended
  - Instability/anterior draw
- SUBTALAR JOINT
  - Position(varus/valgus)
  - ROM

## Static Exam

- Midtarsal joint
  - Axis
  - ROM
  - Forefoot to rearfoot relationship
- Forefoot/Digital
  - First ray axis
  - ROM
  - Symmetry

## Static Exam

- POSTURE
  - Scoliosis
  - Leg length discrepancy
  - Relaxed calcaneal stance position
  - Neutral calcaneal stance position
  - Relationship of shoulders, back, pelvis, hips, thighs, knees, legs, ankles, and calcaneus at rest.

## Dynamic Exam

- GAIT ANALYSIS
  - Barefoot
  - Walking
  - Running
  - Kinetic chain while performing sport activity (video capture and playback on treadmill)

## Treatment Protocols

- Gaining a true understanding of the underlying kinetic chain dysfunction is the key to injury rehabilitation and recurrence prevention

## Treatment

- Relative Rest
- Anti-inflammatories
- Treat underlying biomechanical problems
  - Physical therapy
    - Stretching
    - Strengthening (core as well)
    - Manipulation
  - Orthotics
  - Shoes
- Specific Return to Sport Protocol

## Do Shoes Really Matter?

- “Barefoot running” – Vibrams
- Minimalist – Newtons, light flats
- Maximalist – well constructed running shoes
  - Neutral
  - Moderate Stability
  - Motion control

## Does Everyone Need Functional Foot Orthotics?

- **No!**
- 70-80% of runners have some kind of biomechanical weakness
- Not all need orthotics!
- Proper shoes can control 50% of these abnormalities
- Nagging, recurring injuries usually need orthotics
- Orthotics are not a substitute for a stretching and strengthening programs as well as proper shoes!

## Functional Foot Orthotics

- Orthotics are prescribed to:
  - 1) Reduce pain
  - 2) Provide support
  - 3) Prevent or slow down the development of a foot deformity
  - 4) Provide better positioning of the foot, knee and hips
  - 5) Improve the overall biomechanical function of the body

### **Bottom Line = Biomechanics**

Evaluation of the complete dynamic runner will lead to proper diagnosis, effective realistic treatment and rehabilitation, and a return to running in better condition than they came into your office!

### **Running Should Be Fun!**



If your running feet could talk.



A Rx for surviving and avoiding injuries on the run

By Dr. Margaret Cole

Thank  
You!

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