

# Rehabilitation & Return to Sport:

*Optimal Ankle and Foot Performance*

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HELPING ATHLETES ACHIEVE THEIR OPTIMAL PERFORMANCE NATURALLY

HTTP://FICS.SPORT

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## What are we going to be discussing?

1. What is the "Joint-by-Joint" Approach
2. How to Evaluate Proper Mobility Needs of the Ankle
3. Mobilization Techniques to Improve Ankle Mobility
4. How to Evaluate the Stability of the Foot
5. Demonstrate a Variety of Stability Exercises for the Foot

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## I. Who Am I?



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## The “Joint-by-Joint” Approach



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## The “Joint-by-Joint” Approach

Who Developed It?

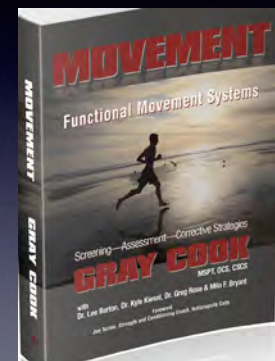


Mike Boyle

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## The “Joint-by-Joint” Approach

- Expanded on by Gray Cook
- Physical Therapist
- Known for the FMS/SFMA



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# The “Joint-by-Joint” Approach

## What Is It?

- Our modern bodies have started to develop tendencies
- We migrate to a group of similar mobility & stability problems



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Joint	Primary Need
Big Toe	Mobility
Foot	Stability
Ankle	Mobility (sagittal plane)
Knee	Stability
Hip	Mobility (multi-planar)
Lumbar Spine	Stability
Thoracic Spine	Mobility
Scapula	Stability
Gleno-Humeral	Mobility
Cervical Spine (low/mid)	Stability
Cervical Spine (upper)	Mobility



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# Foot

- Tendency toward SLOPPINESS
- Could benefit from more stability and motor control
- Blame poor footwear, weak feet, etc..
- But, most feet could be more stable!



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# Foot

- The muscular role in the foot should be **STABILITY**.
- why we have so many intrinsic foot muscles...



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# Ankle

- Tendency toward **STIFFNESS**
- Could benefit from more mobility & flexibility *in the sagittal plane*
  - particularly dorsiflexion!
- Don't think of "ankle sprains" ....



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# Joint-by-Joint Approach

Conclusion:

*"Joint-by-Joint is an excellent template to get you past that entry-level thinking that Kinesiology 101 is going to save the day."*

- "Movement", page 329



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# The "Joint-by-Joint" Approach



So, loss of function in a joint will affect the joints ABOVE and BELOW!

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## The “Joint-by-Joint” Approach

When the intended MOBILE joint becomes immobile, the stable joints are FORCED to move as compensation.

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## The “Joint-by-Joint” Approach

When the intended STABLE joint becomes too mobile, the mobile joints are FORCED to become stiff as compensation.

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## The “Joint-by-Joint” Approach

You **MUST** look at the joints above and below the source of the pain!



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## The “Joint-by-Joint” Approach

- Direct connection between the stiffness of the basketball shoe and ankle taping

and....

- Increased incidence of patella-femoral syndrome in basketball players



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## The “Joint-by-Joint” Approach



*“Our response to injury is like hearing the smoke detector go off and running to pull out the battery.”*

-“UltraPrevention,” by Hyman & Liponis

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## The “Joint-by-Joint” Approach

- *“...the pain, like the sound, is a warning of some other problem. Icing a knee without looking at the ankle or hip is like pulling out the battery... the relief is only short-lived.”*



-“UltraPrevention,” by Hyman & Liponis

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## The “Joint-by-Joint” Approach

- This approach is NOT set in stone!
- There will be exceptions to the “rules”
- The point is to create a SYSTEMATIC approach to clear the joints above & below the problem area

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Any questions so far?....

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Now let's work on improving joint mobility

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Joint	Primary Need
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Cervical Spine (upper)	Mobility

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## The Ankle



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## Ankle & Foot Dysfunctions

The most common issue you will see is a *lack of normal ankle dorsiflexion*.

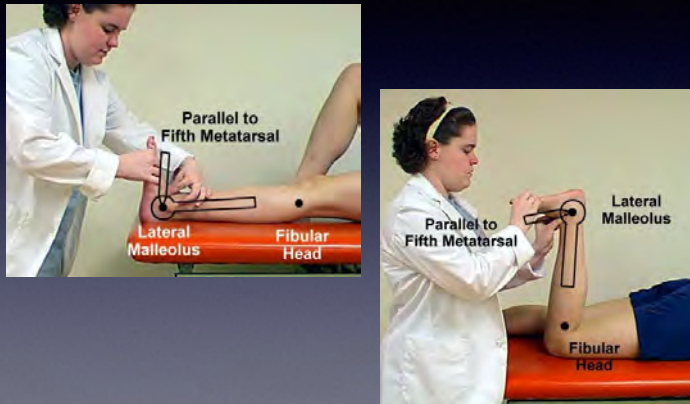
WHY?

combination of soft-tissue and joint issues....



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## How to Measure Ankle Dorsiflexion?



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## I prefer to do it this way.....



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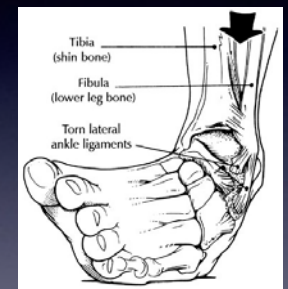
Ask them where it feels restricted!!!

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## Limited Ankle Dorsiflexion

### Joint "Positional" Faults:

- Mulligan's theory with ankle inversion sprains
- the fibula gets 'wrenched' forward on the tibia
  - causing a positional fault
  - need to 'glide' it posteriorly!



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Remember....  
For proper ankle dorsiflexion you need:

- Talus to glide POSTERIOR
- INTERNAL rotation of the tibia
- Distal fibula to glide POSTERIOR
- Proximal fibula to glide ANTERIOR

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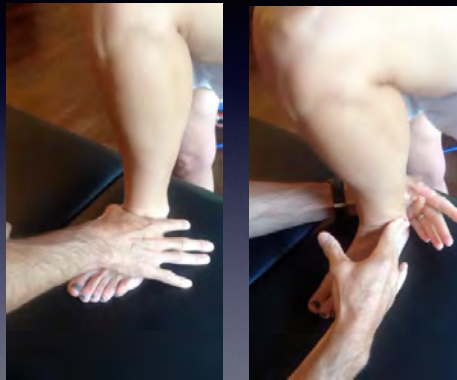
So how do we FIX it?

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## Top Ways to Increase Ankle Dorsiflexion

### I. Mobs with Movement of:

- a. Talus (ant. to post.)
- b. Tibial Internal Rotation
- c. Distal Fibula (ant. to post.)
- d. Proximal Fibula (post. to ant.)



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## Additional Ankle/Foot Strategies...

### 2. "Knee-to-Wall" Drill



[www.corvallisclinic.com](http://www.corvallisclinic.com)

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## Top Ways to Increase Ankle Dorsiflexion

### 3. Dorsiflexion Matrix:

- integrates end ROM in DF, while involving entire body
- works all 3 planes of motion



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## Top Ways to Increase Ankle Dorsiflexion

### 4. “Self” Mobs with Movement:

- patient performs at home
- with own hands, with bands, or combination.....
- talar glide, tibial IR, fibular glide, etc...



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## Additional Ankle/Foot Strategies...

### Ankle Dorsiflexion Drill (with Dowel)



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## Additional Ankle/Foot Strategies...

### Ankle Dorsiflexion Drill (with Dowel & Band)



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# Ball / Stick / Roller to Calves



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# Self-Massage to Post.Tibialis

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# Ball / Roller to Peroneals

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# Ankle Sprains and Balance?



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# Progression of Balance Training

1. Eyes Open on Firm Ground
2. Eyes Open on Soft Surface
3. Eyes Closed on Firm Ground
4. Eyes Closed on Soft Surface
5. Dynamic Activity (i.e., playing catch with yourself)



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Now let's work on creating some stability and getting them to move better...

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# The Foot



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# The Foot

## I. Standing Tripod Exercise:

- Stand on *both* foot tripods
  - center of calcaneus, head of 1st metatarsal, head of 5th metatarsal
- Then have patient lift one leg and remain on the other tripod
- Toes up and keep pressure evenly throughout all 3 points of tripod



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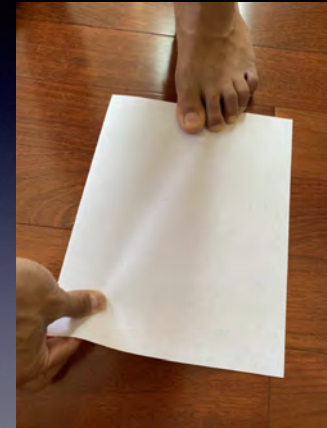
# Alternative Ways to Test Strength of the Intrinsic Toe Flexors??

1. "Paper Pull Test"

2. Toe Strength Dynamometer

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# I. "Paper Pull Test"



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# 2. Toe Strength Dynamometer

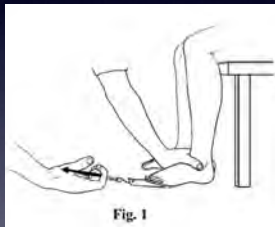


Fig. 1

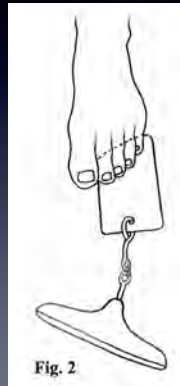
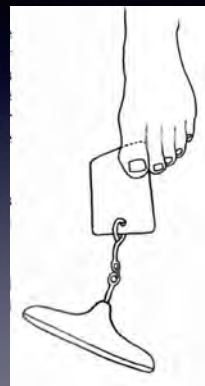


Fig. 2



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# 2. Toe Strength Dynamometer



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So HOW do we best strengthen the intrinsic toe flexors?

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## The Foot

### 3. Banded Toe Flexor Strengthening

- Crucial that you start from a fully stretched position!
- Slow eccentric phase
- Work the big toe separate from toes 2-5

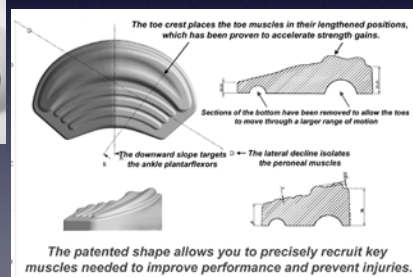


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## The Foot

### 4. Dr. Michaud's "TOE PRO" Device



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### 4. Dr. Michaud's "TOE PRO" Device



www.gaihhappens.com

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## Toe Flexor Strength & the Elderly

- In any given year, 40% of people 70+ years old will fall at least once
- Healthcare costs in the US for seniors who fall is approx. 30 **BILLION** / year



Mickle, K, et al., ISB Clinical Biomechanics Award 2009: Toe weakness and deformity increase the risk of falls in older people. *Clinical Biomechanics*. 2009;24:787-791

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## Toe Flexor Strength & the Elderly

- Single best predictor of seniors falling was toe flexor strength!
- Every 1% increase in body weight generated by 1st toe = 7% decrease in risk of falling



Mickle, K, et al., ISB Clinical Biomechanics Award 2009: Toe weakness and deformity increase the risk of falls in older people. *Clinical Biomechanics*. 2009;24:787-791

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## Vele Forward Lean Maneuver

- Hold forward lean for 5 seconds
- Push through the toes to stand back upright
- Repeat 20 x per day
- Progress to “Toe Pro” when able



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## IN CONCLUSION....

1. Consider Using the “Joint-by-Joint” Approach for your Assessment
2. Importance of Ankle Dorsiflexion Mobility
3. Mulligan’s Mobilizations with Movement
4. Role of Balance in the Rehab of Ankle Sprains
5. Importance of Proper Strength & Endurance of the Intrinsic Foot Muscles
6. How to BEST Improve Strength/Endurance in the Intrinsic Foot Muscles

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Any questions?



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