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## OBJECTIVES FOR ANKLE SPRAIN

### FUNCTIONAL GUIDE

- To assimilate up-to-date information and knowledge about ankle sprains. To learn how to apply effective functional techniques when testing and training for ankle sprains.

- To understand and appreciate the tri-plane **Chain Reaction** principles as they apply to ankle sprains.

### HOW TO USE THIS FUNCTIONAL GUIDE

This *functional guide* can be used as a convenient summary of the program’s contents to take with you after viewing. You can also use this guide as a notebook; space has been provided so that you can make notes on relevant tracts as you watch them.

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STRATEGY 1

Strategically appreciating Chain Reaction™ integration between the ankle and the rest of the body.

STRATEGY 2

Strategically realizing the relative significance of proprioception and strength with respect to ankle function.

STRATEGY 3

Strategically taking advantage of the design and purpose of the BAPS™.

STRATEGY 4

Strategically understanding the function of all muscles that cross the ankle joint.

STRATEGY 5

Strategically determining the interplay between the ankle joint and the subtalar joint.

STRATEGY 6

Strategically analyzing the stability status of an ankle sprain.
STRATEGY 7
Strategically comparing traditional versus functional ankle rehabilitation.

STRATEGY 8
Strategically progressing through the functional rehabilitation spectrum.

STRATEGY 9
Strategically training the ankle from the bottom up and from top down.

STRATEGY 10
Strategically transforming ankle function into enhanced body function through controlled instability.

STRATEGY 11
Strategically appreciating the reliability and validity of functional balance reach tests.
Ankle sprains are real common, real painful, and quite disabling.

The importance of understanding the ankle and its relationship to the rest of the body.

Appreciating the sagittal plane, frontal plane and transverse plane function of the ankle and subtalar as well as midtarsal joints.

Description of the lateral ankle ligamentous structures and the medial ankle ligamentous structures.

The medial ligamentous structures are more substantial than the lateral ligamentous structures . . . understanding the functional reasons.

Loading consistently into the end range of eversion and not so much into inversion.

Understanding the importance of the anterior and posterior mortise ligaments.

There are twelve multi-joint muscles in the lower leg that send their tendons across at least the ankle and subtalar joints into the foot.

The interplay between the ankle joint and the subtalar joint.

Econcentric muscle function allows a muscle, through the use of gravity, momentum, and ground reaction force, to use its eccentric load to produce a concentric function in another plane or at another joint . . . most all of the lower leg muscles biomechanically function econcentrically.

Functionally understanding the peroneus longus . . . traditionally known as an everter . . . functionally it is NOT an everter. The peroneus longus eccentrically loads as the forefoot enters into the ground. It decelerates dorsiflexion of the first ray, decelerates midtarsal joint inversion, decelerates subtalar joint eversion, decelerates ankle dorsiflexion, decelerates midtarsal joint inversion, accelerates plantar flexion of the first ray and eversion of the midtarsal joint, accelerates knee extension.

Fully understanding how to train and condition the peroneus longus functionally . . . if the foot does not get smashed into the ground the peroneus longus does not get turned on and cannot provide functional stability for the ankle.
Functionally understanding the gastroc and achilles along with the posterior tib.

The posterior tib decelerates calcaneal eversion, decelerates ankle dorsiflexion, decelerates lower leg internal rotation, accelerates calcaneal inversion, and accelerates knee extension.

Further emphasis of proprioceptively and eccentrically turning on the muscles of the foot, ankle and lower leg.

The ankle is a “dumb joint” that needs to be fed subconscious information.

Description of the ankles relationship to the shoulder and abdominal muscles.

The ankle depends upon eccentric loading before a concentric production of force . . . we can’t get that backwards.

Understanding and restoring calcaneal eversion, ankle dorsiflexion and midtarsal joint inversion.

Realizing the importance of restoring internal rotation to the hip to allow for sufficient ankle and subtalar joint loading.

If tradition does not match function then we are being misled.

Strategies to prevent ankle sprains . . . it may be due to a lack of proprioceptive reaction and not pure strength, that leads to ankles sprains.

Proprioceptive input needs to come from the entire chain including the trunk and the opposite lower extremity.

Rehabilitating an ankle sprain requires a biomechanical understanding of the entire body in order to quickly and safely restore normalized motion, proprioceptive input, functional stability of the entire chain, and the safe return to all desired functions.
A special thanks to Scott Glaser for his valuable assistance as a patient.

Understanding day one ankle rehabilitation, utilizing the strategy of building upon our functional progressions as long as the patient is safe and successful.

First concern day one is “do we have a structurally stable or unstable ankle sprain?”

Determining the suspicion of a potential fracture and getting a quick x-ray.

Description of the ankle mortise and the anterior and posterior tibial fibular ligamentous structures.

Looking at the other ankle first.

Start palpation examination away from the injured ankle.

Palpation of the entire fibula and fibular head and checking out the rest of the chain into the upper body.

Description and demonstration of the “spring test” to determine the stability of the ankle mortise.

Description and demonstration of the “anterior drawer test” in the supine as well as the prone position.
  • Looking for an end range to inversion
  • Checking calcaneal eversion
  • Biomechanical examination of the foot
  • Callus pattern examination of the foot
  • Examining prone rotation of the hip
  • Checking for leg length
With a stable inversion ankle sprain, our initial goal is to restore eversion and dorsiflexion with a slight tweak into inversion and plantar flexion.

Proper early motion along with ice chases away swelling.

Description of standing in cold whirlpool to begin to restore ankle dorsiflexion.

Progress to the Tri-Stretch™ to facilitate dorsiflexion and eversion by driving with the opposite side leg.

Progress to the BAPSTM... geometrically and biomechanically understanding the design and purpose of the BAPSTM.

Starting with level two. “Turning the BAPSTM around” to facilitate more eversion than inversion and more dorsiflexion than plantar flexion, which is desired by the injured ankle.

Progress to partial weight bearing jumping in the sagittal, frontal and transverse planes.

(continued on next page)
Progress to the “head BAPS™” with unilateral full weight bearing.

Progress to sagittal plane head drivers
Progress to frontal plane head drivers
Progress to transverse plane head drivers with rotation to the opposite side

Progress to sagittal plane hand drivers
Progress to frontal plane hand drivers
Progress to transverse plane hand drivers with rotation to the opposite side

Progress to sagittal plane opposite leg drivers
Progress to frontal plane opposite leg drivers
Progress to transverse plane opposite leg drivers with medial reach

Progress to opposite leg lunge matrix
  Anterior lunge
  Lateral lunge
  Posterior lateral rotational lunge

Progress to unilateral shoulder to overhead matrix with mini-squat in the sagittal, frontal and transverse plane, driving only to the opposite side.

Progress to the Body Blade™ in unilateral stance with frontal plane drive, sagittal plane drive and transverse plane drive.

Progress to retro ambulation.

Progress to partial weight bearing jumping in sagittal plane, frontal plane and transverse plane.

Description of the open reinforced basket weave to provide ongoing compression.

Description of the home exercise program based on our clinical exercise program.

Progress based on functional success.

Lateral ankle stability first of all requires medial ankle mobility and stability.
The best modality for healing, the best modality to decrease swelling, the best modality to get rid of pain, the best modality to enhance function is logical, biomechanical, consistent exercise.

Combining biomechanical understanding with prayer to prevent ankle sprains.

Debrief with Bob Wiersma, Executive Director, Accelerated Functional Rehabilitation Network

• Callus patterns of the first MP and the fifth MP with a forefoot valgus with a plantar flexed first ray.

• Callus pattern of an uncompensated varus foot structure with lateral border callus and callus and the second MP.

• Restoration of eversion, dorsiflexion and butt function.

• Description of controlling the talus through the hip.

• The hate of swelling . . . exercise is the best modality to reduce swelling.

• The use of compression, ice, restorative care and early exercise.

• Diligent neglect . . . “just an ankle sprain” is a bad diagnosis.

• Strategy for support around the ankle.

• Contributing to the enhanced function of the individual.

• The story of Doug.
GARY’S OPPORTUNITY TO TRAIN AND CONDITION WITH SCOTT

Ankle Dominant Training

Right BAPS™ level 2
Right BAPS™ level 2 with med. ball reaction
Left BAPS™ level 2
Left BAPS™ level 2 with med. ball reaction

Smart Hurdle™ jumps
  • Frontal plane
  • Frontal plane with cervical rotation
  • Sagittal plane
  • Sagittal plane with cervical rotation
  • Transverse plane
  • Frontal plane with med. ball reaction
  • Sagittal plane with med. ball reaction
  • Transverse plane with med. ball reaction

Smart Hurdle™ hops
  • Frontal plane left and right
  • Sagittal plane left and right
  • Transverse plane left and right

Smart Hurdle™ variable height jumps
  • Frontal plane
  • Sagittal plane
  • Transverse plane
Med. Ball Backboard Tips
• Right hops, right tip sagittal plane
• Right hops, left tip sagittal plane
• Left hops, left tip sagittal plane
• Left hops, right tip sagittal plane
• Right hops, left tip frontal plane
• Left hops, left tip frontal plane
• Left hops, right tip frontal plane
• Right hops, right tip frontal plane

Drop Step Two Handed Dunk

Drop Step Left Handed Dunk

Drop Step Two Handed Dunk

Drop Step Right Handed Dunk

A special thanks to Scott for his excellent effort and attitude.
The ankle can set us up good in function or it can set us up bad in function.

In golf the ankle can set us up good or bad in all phases of the golf swing.

Ankle dorsiflexion with rotation along with subtalar joint frontal plane motions are critical motions in the golf swing.

The need for functional dorsiflexion and eversion for the address posture, back-swing, down swing and follow through.

Transformational drill with the Tri-Stretch™ and a heavy golf club.

Not turning on the posterior calf and posterior ankle muscles causes the butt to bail out in the golf swing.

The use of controlled instability.
With Dual Tri-Stretch™ and Heavy Golf Club Swing

- Normal golf angulation
- Toed in
- Toed out
- Toed out with changing the plane of motion with the club driver
- Narrow base
- Wide base
- Right stride
- Left stride
- Back to normal golf stance

The proof of the pudding... do the ankles do a better job of turning on the rest of the body for an effective golf swing?

Understanding the power of transformation.
RESEARCH ROUNDTABLE WITH DR. DAVID TIBERIO

Functional testing with Team Reaction.

Appreciating what we were being taught by Team Reaction.


These functional balance reach tests are proven to be highly reliable.

One of the most reliable things in life is function.

Discussion of reliability and validity.


The balance reach functional tests revealed a high degree of validity.

Anterior medial and posterior medial balance reach tests revealed the most significance.

The significance of ankle dorsiflexion and calcaneal eversion with ankle functional loading and balance.

Connecting the right elbow to the right subtalar joint.

“Opening early” secondary to the lack of calcaneal eversion and ankle dorsiflexion.

Getting to the simple side of complexity.

With ankle rehabilitation we need to subconsciously turn on all of the locomotor muscles that control the ankles.

All the muscles of the locomotor system are synergistic and control loading and facilitate unloading of the ankle.

A concert of synergy is needed to protect the ankles.

Load in all three planes, unload in all three planes, and then load again in all three planes.

The front end load, loads the back end load through effective transformation.

The back butt feeds the front butt feeds the back butt.

The feeding system is the miracle of motion.

A special thanks to Dr. David Tiberio for sharing such relevant research articles.