Minimizing Sports Injuries



partner *in*health

Bio - Dr. Ryan Deniz



- Geneva native and Doctor of Chiropractic (DC) from NUHS in Lombard.
- Certified Active Release Technique (ART) provider.

nhealth

- Continued education in functional evaluation, rehabilitation, strength and conditioning.
- Owner of Partner in Health, located in Geneva. Only office in the tri-cities that combines chiropractic, acupuncture, ART, therapeutic exercise, nutrition and massage together.

At Partner in Health, we are **more than just adjustments**!

Agenda



- Common injuries and why they occur
- Prevention of injuries (release, activate & exercise)
- The role of the diaphragm in core stability
- Proper nutrition
- Benefits of having a sports healthcare practitioner as part of your team

Common Running Injuries

- The most common running injuries include:
 - Shin splints/stress fracture
 - Hamstring or other muscle pulls/tears
 - Plantar fasciitis/heel pain
 - Patellar tendonitis/knee pain
 - IT Band Syndrome
 - Low back stiffness/pain
- What are other injuries that plague your program?



Main Culprit of Injuries

- In General: OVERUSE (of a bad motor strategy)
- Examples:
 - IT Band Syndrome weak core/glutes muscles
 - Shin splints more complex (will cover in depth later)
 - Patellar tendonitis weak glutes muscles, poor core/pelvic stability, weak tibialis anterior and dominant quads/hip flexors
 - Plantar fasciitis weak foot intrinsic, weak tibialis anterior and poor hip extension
 - Low back pain weak core/glutes muscles and improper motor patterns.





What is Active Release Technique?

- Active Release Technique (ART) is a hands-on treatment modality and diagnostic tool that allows a practitioner to diagnose and treat soft-tissue injuries.
- Soft tissue refers primarily to muscle, tendon, ligament, fascia, and nerves.

Active Release Technique

- Headaches, back pain, carpal tunnel syndrome, shin splints, shoulder pain, sciatica, plantar fasciitis, knee problems, and tennis elbow are just a few of the many conditions that can be treated quickly and permanently with ART.
- These conditions all have one important thing in common; they are a result of overused muscles, which leads to the buildup of scar tissue. The scar tissue makes regular motion within these soft tissues difficult, which ART can drastically improve.



How do Overuse Conditions Occur?



Over-used muscles (and other soft tissues) can result in the following:

- acute conditions (pulls, tears, etc.)
- accumulation of small tears (microtrauma)
- not getting enough oxygen (hypoxia)

How do Overuse Conditions Occur?



Each of these conditions can cause your body to produce tough, dense scar tissue in the affected area. This scar tissue binds up and ties down tissues that need to move freely. As scar tissue builds up, muscles become shorter and weaker, tension on tendons causes tendonitis, and nerves can become trapped.

What Can be Expected From Treatment?



- Abnormal tissues are treated by combining precisely directed tension with very specific movements. These treatment protocols - over 500 specific moves - are unique to ART providers, and help identify and correct the specific problems that are affecting each individual patient.
- Once the cause of the pain is located, Dr. Deniz does a series of treatments in order to break up the scar tissue and free up the body to work as it naturally should.

Is Treatment Painful?



ART goes right after the sites of adhesion in order to break up the scar tissue creating the pain and dysfunction. Since these sites are very sensitive to begin with, ART may create some discomfort. This is typically described by many patients as a "good hurt," however, pressure is never applied beyond the patient's tolerance.

Who Can Benefit From ART?

- Athletes are some of the most devoted supporters of ART.
 Active Release Techniques are widely practiced in the NFL,
 NBA, Olympics, and many other professional sports.
- ART can be used for all sorts of overuse injuries, you don't need to be an athlete to benefit from ART.

Why ART?

- Sprains or strains are one of the most common types of injury to athletes. Professional treatment for these types of injuries usually includes muscle relaxers, antiinflammatories, and pain relievers. Other than temporary pain relief, these do nothing to improve the outcome of injured tissue and are just a Band-Aid instead of a cure.
- Putting motion into healing soft tissue is perhaps the most important piece of the puzzle when treating these injuries and is why ART is so beneficial.

Muscle Activation

- Methodology of muscle activation is simple. We first access a structure or a function, if it is not performing its function we then bring in an intervention (ACTIVATION) and then we re-test.
- Very important that both you and your athlete need to see and feel the measurable changes to know you are being effective.

| Changes Can Include |
|---------------------|
| Strength/Power |
| Flexibility |
| Balance |

Muscle Activation

- How often can we activate?
 - As often as one likes, but my recommendation to my patients is that they do their activations at least once a day and definitely before any physical activities.
 - Activation can also reduce the stiffness/soreness associated with training.







Gluteus Medius



oartner

Gluteus Minimus

The Role of The Diaphragm

- Is it just for breathing?
- Let's take a closer look at the design of the diaphragm
- In my clinic diaphragm function is tested on day one and diaphragm rehab starts right away



One Muscle, Two Amazing Functions

- Breathing function
 - Diaphragm contracts/drops
 - Decreased pressure in thoracic cavity
 - Air rushes in thoracic cavity
 - O2/CO2 exchange happens
 - Diaphragm relaxes
 - Elasticity of ribs and lung tissue forces air out

- Postural function
 - Diaphragm contracts/drops
 - Pelvic floor contracts, stiffens

nhealth

- Abdominal muscles reflexively contract transverse abdominis, obliques and rectus abdominis
- Intra-abdominal pressure increases greatly
- Punctum fixum is now created.

Creating the Punctum Fixum

- What's the big deal? Why the diaphragm?
- Punctum Fixum FIXED POINT
 - i.e. Intra-abdominal pressure stabilizes the anterior hip capsule is the glute medius attaches to the hip and pelvis is stable hip increases glute med firing/stability
 - i.e. Intra-abdominal pressure stiffens the abdominal fascia,
 T/L fascia and stabilizes the rib cage is created solid basis for the obliques to pull up and over
- Need an example?

Role of the Ribcage Position

- Intra-abdominal pressure is compromised by poor posture
- This will cause buckling of the lumbar spine and poor core stability, poor base for the oblique systems





Testing

• Here are a couple of tests:



Seated Diaphragm Test



Intra-Abdominal Pressure (IAP) Test



How to Destabilize the Core

• Sit-ups, crunches, v-ups, supine toe-touches

• THROW THEM OUT THE DOOR!!

- "The spine only has so many bends before a disc will herniate."
 Stu McGill University of Waterloo
- 3,350 newtons of compressive force in the disc with them

Basic Exercises for Stabilizing the Core

- Use (some of the tests) as the exercises
 - Have athletes gain awareness/ability to use the diaphragm first as a muscle of respiration
 - Have them start to gain awareness/ability of the postural/stabilization function

• Other exercises

- Side bridges/planks progression
- Dead bug progression
- Bird dogs
- 4-way bench planks (prone, sides and supine)

 MUST MAINTAIN PROPER STABILIZATION STRATEGY OF THE CORE AND KEEP BREATHING!

Example of Glute Shut Down

- Have you seen weak glute muscles before?
- Here you see a weak or paralyzed abductor muscles of the hip, namely gluteus medius and gluteus minimus.
 - Right internal rotation of the hip
 - Knock knees (Genu valgum)
 - Right foot pronation
- NOW WE HAVE MULTIPLE JOINTS BEING IMPACTED!





Two Bads and One Good







partner *in*health

One or both knees rotate internally

Both knees remain on an imaginary line drawn from hip-joint to the foot

One or both knees rotate externally

Psoas-Glut-Hamstring

- These muscles have been put together because they have their own release points, but is a system that works together.
 - Psoas is a hip flexor
 - Glute maximus is a hip extender
 - Hamstring does knee flexion and hip extension
- Hip flexor shuts down then the glute on the same side will shut down too.
- Since the glute shuts down the only way we can remain upright is if the hamstring now takes over. Now the hamstring has to tighten up.
- Tight hamstrings that won't stretch out...(WE HAVE SEEN THIS BEFORE!) Until we release the psoas and glute to fire correctly, then the problem won't be resolved.

Activation Test

Psoas Test

- Lying down on their back, then taking the leg into a position of about 45 degrees and turning the foot out. This take the quadricep muscles out of the game.
- Now support the pelvis on the other side and ask the athlete to hold as we exert pressure.
- Compare to the other side



Psoas Activate & Release

- Athlete is supine (on their back), find the ASIS of the involved side and the umbilicus. Follow the line between the two until it intersects with the outside of the rectus abdominis. Using a flat finger, slowly apply a downward pressure at this point, only matching the resistance applied back from the tissues.
- Make sure the athlete continues breathing normally and slowly sink deeper towards the psoas as the athlete exhales.
- Massage for 30 seconds. Repeat on the other side.
- Active Release version of the release.



Glute Muscles

- Most common reason the glutes shut down is due to reciprocal inhibition.
 - A tight muscle causes a decreased neural input in its functional antagonist muscle.
 - It will limit the range of movement of the antagonist muscle.
 - A tight muscle will also be overactive and be firing at times it should not, disturbing the function of the antagonist muscle.
 - IN THIS CASE OF THE GLUTES, A TIGHT ILIOPSOAS MUSCLE WILL MECHANICALLY CAUSE A DECREASE IN HIP EXTENSION AS WELL AS CAUSING A DECREASED NEURAL DRIVE TO THE GLUTE MUSCLES.
 - When this happens, the glutes will no longer produce the same amount of force and the correct timing that goes with the firing patterns. In order to maintain the productivity of a given muscle pattern the synergists muscles (hamstrings, adductor magnus and erector spinae) must take up the slack.

partner *in* health

Activation Test

• Glut Test

- Athlete is lying face down, have the athlete flex their knee to 90 degrees to limit hamstring involvement. Then extend the athletes hip until their ASIS lifts off the table, have them hold this position.
- Place one hand on the athlete's lower back, and the other hand on the involved leg, over the belly of the hamstring muscle. Apply downward pressure on the belly of the hamstring.
- Look for compensations of the back, knee, ankles and toes.



Glute Activate & Release

- With the athlete supine, hold their head in your hands, with the tips of your fingers on the occiput of the skull. Find the tougher tissues by comparing the left and the right sides along the base of the skull. Massage this area for 30 seconds.
- Active Release version of the release.



Shin Splints

- Medial Tibial Stress Syndrome (aka Shin Splints)
 - Studies suggest a greater drop in the Navicular bone tend to have a greater change of leg pain.

oartner *in*health

- History of shin splints in the last month 12x more likely to re-develop
- Prolonged pronation will lead to longer lasting stress on the soleus, which in turn can facilitate the development of MTSS (stronger antagonist muscles).
- Less eccentric power/strength/endurance of the soleus, can facilitate the development of MTSS.



Shin Splints Treatment Option

- If they need orthotics—send them, this will help with navicular drop velocity and depth.
 - Still—orthotics are not the final solution, but one piece of the puzzle.
 - Should be combined with "short foot" training, glute medius training. Less contralateral hip drop, less internal rotation of the lower leg, less pronation of the midfoot.
- Eccentric strengthening of the external rotators (i.e. Glute medius and minimus) is the driving force behind decreasing overpronation in the foot.
- Exercises that get the soleus to adapt rapidly from the an eccentric muscle to a concentric one should be implemented (i.e. Plyometrics, blind box drops, tri-planar burnouts).
- Correct tissue pathology. Ice, rest does not heal fibrotic, tight, painful scar tissue.
 Send them to a me.

Shin Splints Release



Tibialis Anterior

 Begin with the athlete seated or laying on back. Start with the ankle in dorsiflexion and inversion.

oartner *in* healt

- Place your contact on the portion of the muscle to be treated and draw tension proximally.
- Maintain or increase tension and move the ankle into plantar flexion and eversion.

Shin Splints Release



partner *in*health

Extensor Digitorum Longus

- Begin with the athlete seated or laying on back. Start with the ankle in dorsiflexion and the four toes in extension.
- Place your contact on the portion of the muscle to be treated and draw tension proximally.
- Maintain or increase tension and move the ankle into plantar flexion and toes into flexion.

Shin Splints Release



Flexor Digitorum Longus

 Begin with the athlete side lying, the toes in flexion and the ankle in plantar flexion.

nheal

- Place the contact on the portion of the muscle to be treated, press through the soleus and draw tension proximally.
- Maintain or increase tension and move the ankle into dorsiflexion and the toes into extension.





Gastrocnemius & Soleus (Calf Muscles) – Option 1

- Begin with the athlete on their stomach and the ankle in plantar flexion.
- Place the contact proximal to the achilles tendon and fascia and draw tension proximally. Work your way up to the knee.
- Maintain or increase tension and move the ankle into dorsiflexion.





Gastrocnemius & Soleus (Calf Muscles) – Option 2

- Begin with the athlete on their stomach, the knee flexed and the ankle in plantar flexion.
- Place the contact proximal to the achilles tendon and fascia and draw tension proximally. Work your way up to the knee.
- Maintain or increase tension and move the knee into extension and the ankle into dorsiflexion.



Hamstring Muscles (Medial Side)

- Begin with the athlete side lying, involved side up, hip slightly flexed and knee relaxed.
- Place the contacts (two handed, double thumb) on the area to be treated (medial side) and draw tension proximally.
- Maintain or increase tension and move the hip into flexion and the knee into extension.



Biceps Femoris Muscles (Lateral Muscles)

- Begin with the athlete side lying, involved side up, hip slightly flexed and knee relaxed.
- Place the contacts (two handed, double thumb) on the area to be treated (lateral side) and draw tension proximally.
- Maintain or increase tension and move the hip into flexion and the knee into extension

Other Solutions

- Train multiple planes of motion
 - Sagittal
 - Horizontal/transverse
 - Frontal/coronal
- Exercise for stability and for movement
- Use dumbells or (better yet) kettlebells
- Tri-planar plyos exercises
- Examples
 - Squats
 - Lunges
 - Single-leg RDL
 - Jumping lunges
 - Tri-planar box jumps
 - Tri-planar lunges/squats





Other Solutions

- Proper nutrition
- Decrease the inflammatory cascade
 - Omega-6 foods (Trans fats)
 - Corn and soybean oils
 - Pasteurized dairy
 - Refined carbohydrates
 - Conventional meat
 - Sugars
- Let's talk about some nutrition tips!



INFLAMMATION at the *Root* of Most Diseases





oartner

Key Phases of Exercise

- Fueling get energy 15-30 mins before
- Re-Fueling- 30 minute window after
- Repair 90- 120 minutes window
- Recovery 48-72 hours (anti-oxidants) nutrients MUST reach cells in time to have desired effect.

Fueling Up for Exercise

- Before carbohydrate drink in juice or water and protein snack or meal.
- During water or mixed carbohydrate
- After protein in juice for recovery and repair (within 30 minutes) mixture of carbs and protein.
- Antioxidants healthy smoothies (low sugar) or vitamins A,C,E

Don't Miss the Window

- 30 minutes need to restore muscle carbohydrates and glycogen
 refuel
- 90-120 minutes need to get quality protein to reach cells in order to repair and recovery
- 1 to 2 grams per kilogram of bodyweight 80kg (176 pounds) = 160 grams of protein

How to Reduce Recovery Time

- Must get rid of LACTIC ACID quicker (Anti-oxidants, vitamin C)
- Putting carbohydrates and glycogen back into the muscles quicker

Benefits

- Creates better performance + feel good factor
- Benefit- less soreness and less injuries

Sugar Drinks/Sports Drinks

- Avoid carbonated drinks body does not respond well to carbon dioxide and slows absorption.
- Sugar is unhealthy. It triggers a hormonal response which releases insulin. This stores the sugar. The body is put in storage mode at a time when the body needs to be in release model.
- Our body needs to be in the mode of making energy available for your sport/activity.
- Sugar slows hydration of the cells/muscles which need rehydrating. Artificial colors/flavors and other toxins in the drink detract the body from putting all its resources in running faster/longer.

Great Protein Sources

- Chicken/turkey
- Wild caught salmon
- Red meat lean cut lamb/beef/liver
- Milk/eggs
- Cheese
- Tofu
- Bone broth protein/hemp protein/P-protein
- Protein bars



Starchy Vegetables Sources

- Beets (1 cup)
- Carrots (1 cup)
- Corn (1/2 cup or 1 medium cob)
- Green Peas (1/2 cup)
- Parsnips (1/2 cup)
- Plantains (1/2 cup)
- Pumpkin (1 cup)
- Sweet potatoes (1/2 cup)
- White potatoes (1 small or 1/2 cup mashed, 1/2 cup roasted or 10 to 15 french fries)
- Winter squash, such as acorn or butternut squash (3/4 cup)
- Yams (1/2 cup)

Antioxidant Fruits & Vegetables

partner *in*health

- Blueberries
- Strawberries
- Plums
- Oranges
- Grapes
- Cherries
- Mangos
- Kale
- Spinach
- Broccoli
- Beets

Who Should Get Screened?

- All athletes wanting to perform at a high level.
 - The screen identify imbalances side to side
 - The screen identify the weak link in the chain
 - The screen create a baseline that will demonstrate the effectiveness of the forthcoming exercises/corrective strategies
 - The screen point to corrective exercise strategies to help optimize later training and prevent injuries
 - Lastly the athlete who experiences pain with the screen should be referred to a healthcare provider.
- The screen should always be used as a follow-up tool to monitor progress, and to clear athletes for more complex exercises/training

Summary

- Basic Mobility Corrections when mobility is limited in one segment or another, there will be a compensation somewhere!
 - i.e. A lot of low back pain isn't due to movement restriction in the low back, but in the hips and mid-back
 - Self-mobilization example: foam rolling
 - Manual techniques (instrument assisted soft tissue mobilization)
 - Graston
 - Active mobility corrections
 - Dynamic stretching
 - Active release technique
 - PNF stretching
 - Assistive mobility corrections
 - Helping an individual squat by squatted with a heel lift (i.e. using a wood 2X4 beam)
 - Wall squats

Summary

- Pre-season screening by a certified Functional Movement
 specialist. (I will come onsite work with you and your program preseason, in-season or off-season).
- Develop categories for athletes with different types of dysfunction to fit into.
- Develop strengthening programs for those athletes and add it to their strengthening and conditioning programs.
- Be careful about what full-body lifts to use with athletes who have poor dynamic function. Ease them into once their base functions are corrected/core is strengthened.
- When an athlete has pain-send them for a professional evaluation RIGHT AWAY.
 - Don't let the injury progress to a season-ending situation!



THANK YOU!

How to Reach Me

- Dr. Ryan Deniz, DC, ART & FMS
- Email: Dr. <u>Deniz@PIHgeneva.com</u>
- Office: 630-232-7611
- Website: <u>www.PIHgeneva.com</u>
- Location:

Partner in Health 524 W State Street, Unit 1 (Route 38) Geneva, IL 60134





<u>https://goo.gl/forms/sDF5RUXOZ3Qufe</u> <u>xi2</u>