Stay Young, Healthy, And Pass It On
Preventing and Managing Running Injuries

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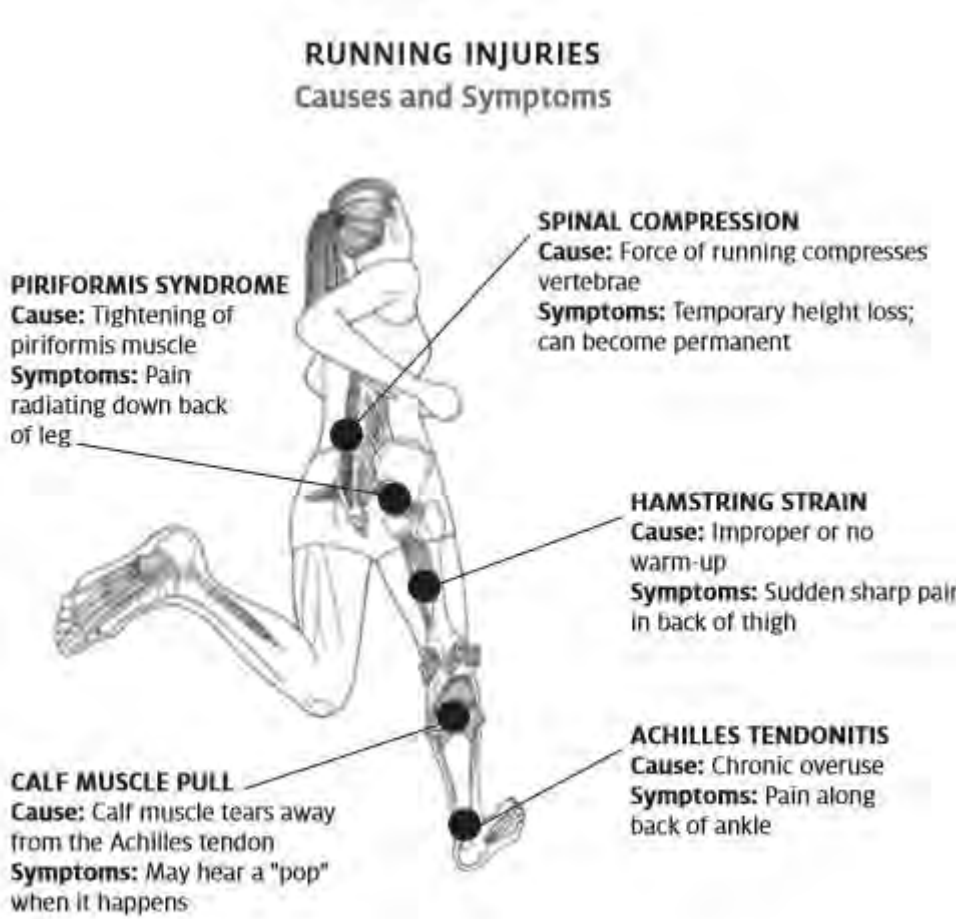
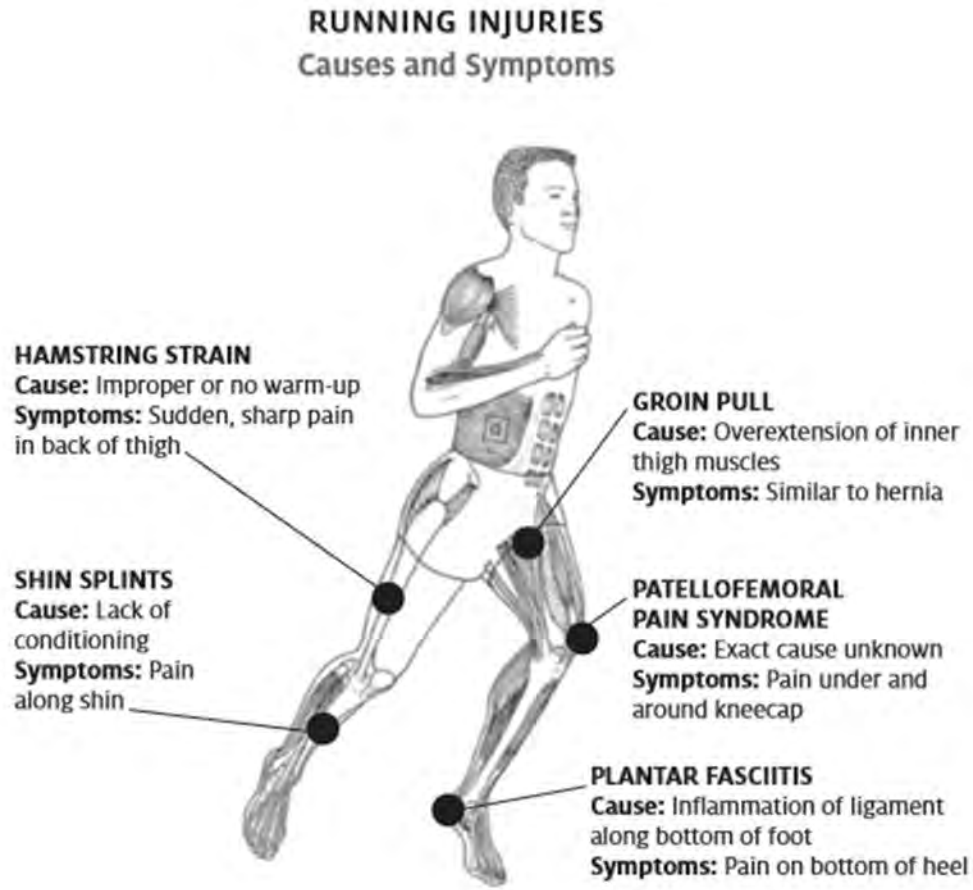
Objectives Of This Module

- **10 Principles Of Lifelong Healthy Running**
- **Posture And Breathing**
- **Balance**
- **The Foot Is The Foundation**
- **Just Don’t Sit There**
- **Walk Right Before You Run**
- **Mobility And Stability Basics**
- **Of The Little On Gait Training**
- **Strong Matters**
- **Food Matters Too**
- **Stress Recovery And Injury**

Our Primary Goal Is To *Prevent* These Injuries In All Honesty You Can't Really *Treat* Them





The Ten Essentials Of Healthy Running
Imagine Moving Pain-free For A Lifetime
It's Easy If You Try

John Lennon "Imagine" Mosiac

1. Pre-assess Yourself And Your Runners

- Do you have cardiac risk?
- A medical condition?
- Are taking medications?
- Injured?

Develop relationships with health professionals you trust before you embark on or escalate physical activity

2. Follow The General Principles Of Natural And Healthy Running

- Train the endurance engine
- Have fun
- Move your whole body
- Sprint a little
- Progress gradually
- Occasionally go barefoot or minimal with your footwear
- Eat real food

Set the intention of doing this for the rest of your life!

3. Give Yourself Positive Affirmations

- Activate the power of the mind through repetition of positive statements
- You can use “I” or “you.” I prefer “you.”
- Create your own affirmations— those are the best— and repeat them daily.
- For example say to yourself:
  - *You are powerful and springy. You love the hills*
  - *You are getting stronger and healthier every day*

4. Warm Up Properly

- Give yourself ten minutes to warm up the muscles and fascia
- Go at an easy, comfortable pace
- Become springy and bouncy and loose
- Listen to your body— it will tell you when you are ready

5. Start Day With Movement And Keep It Going All Day

- Develop Your Personal Daily Mobility Routine, And Keep Doing It
- Have A Morning Routine- Need Not Take More Than Five Minutes Every Morning
- A Good Morning Routine Is The Perfect Launch Pad For An Energetic, Productive Day

6. Prevent Injury And Illness

- Be aware of a tendency to build endurance prior to gaining structural strength in muscles, ligaments, bones, and tendons
- The body will adapt to stresses, as long as the load is not greater than its capacity to adapt.
- So include strength and mobility in your endurance building
- Healthy diet and sleep help the immune system to prevent illness

7. Recover and Sleep

- Balancing stress and allowing time for recovery is essential.
- Running should fit into the relaxing part of the day, not add to daily stress.
- Prioritize your sleep. Without good sleep you cannot recover or improve.
- Sleep is the Swiss Army Knife of health

8. Monitor The Signs Of Improving Fitness And Health

- How are you feeling?
- What do the simple measurements say?
- If your waistline, blood glucose level, and blood pressure are improving, and your level of vigor, too— you're on the right track.
- Try a heart rate monitor— a form of biofeedback that helps in listening to your body.
- Learn the language of your physiology.

9. You Can’t Outrun A Bad Diet

- Avoid eating crap
- Eat real food
- Junk food and excess sugar will sabotage every effort to become and remain healthy and stay young
- Just say no to sweetened drinks

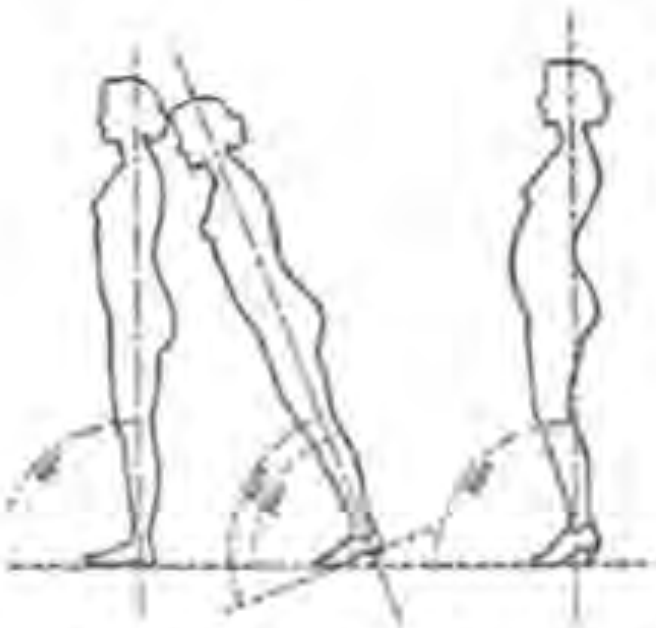
10. Set A Goal Of Discovery

- Where are you now?
- Where do you want to be?
- Why have you set this goal?
- Once you achieve your short- term goals with comfort and confidence, work toward sustainable, longer- term goals.
- Most important- a primary goal is *discovering something new* every time you head out the door and every time you reach for a goal

posture and breathing

Pay Attention To Your Posture All Day

The Effects of Heel's on the Body's Posture



Introducing high heels causes the body to make adjustments to posture that misalign the entire kinetic chain.

Without Good Posture It All Falls Apart

Incorrect and Correct Posture

At left, head and shoulders are slumped forward in "texting position." The spine is displaced from its natural, tall, straight architecture. Texting or desktop posture is hard on the joints and requires static muscle strength to maintain. On the right: straight, strong, and stable posture.

Good Posture Activates The Diaphragm And Stabilizes Your Core

Pressurized Can

As you inhale and fill your lower abdomen with air, your torso stiffens like a pressurized soda can, stabilizing your core and allowing better oxygenation.

Breathe Right!
Learn To Breathe From The Diaphragm

Reset Breathing

Lengthen your spine, tuck your shoulder blades, and breathe through the belly. Or, you can lie on a long foam roller and move your arms as if making a snow angel while deep breathing.

balance

Balance - Essential Exercise To Do Any Time

One-legged balance

Advance To Single Leg Squat

One-legged Squat

Master This One For Strength And Balance

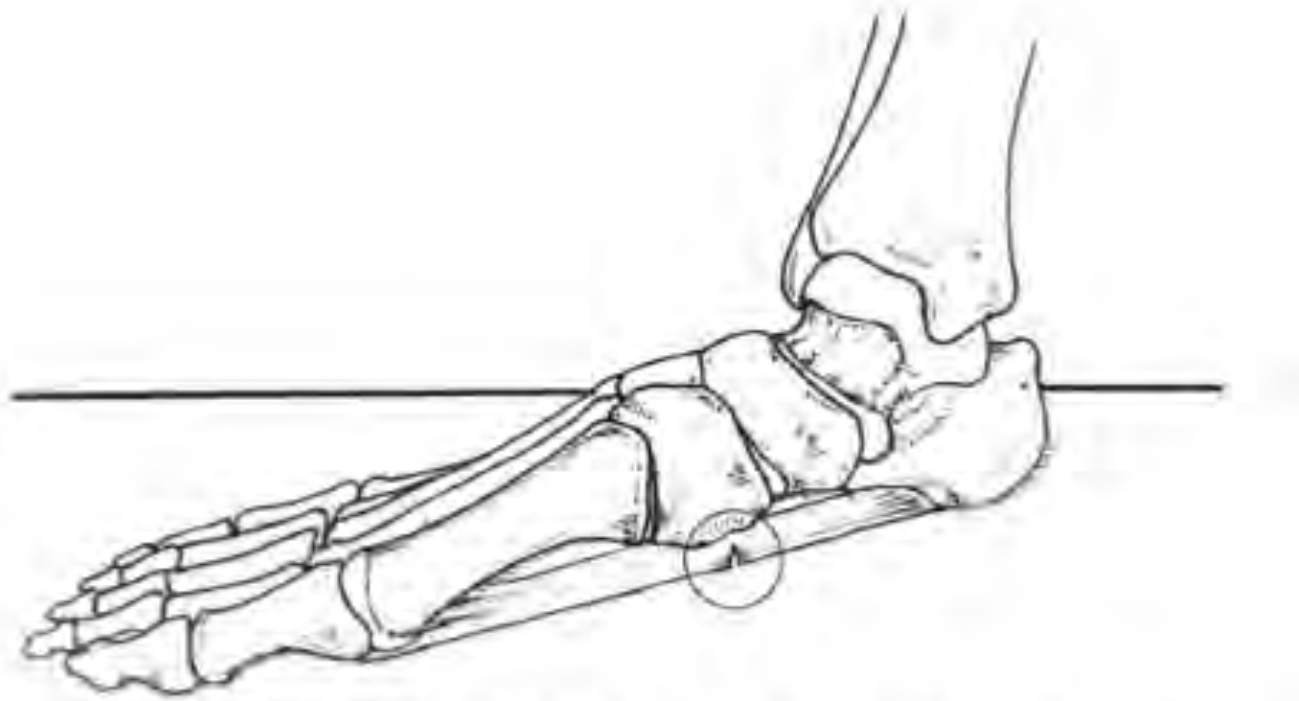
Golfer's pickup (or single-leg dead lift)

the foot

Your Feet Are Your Foundation
Get To Know Them

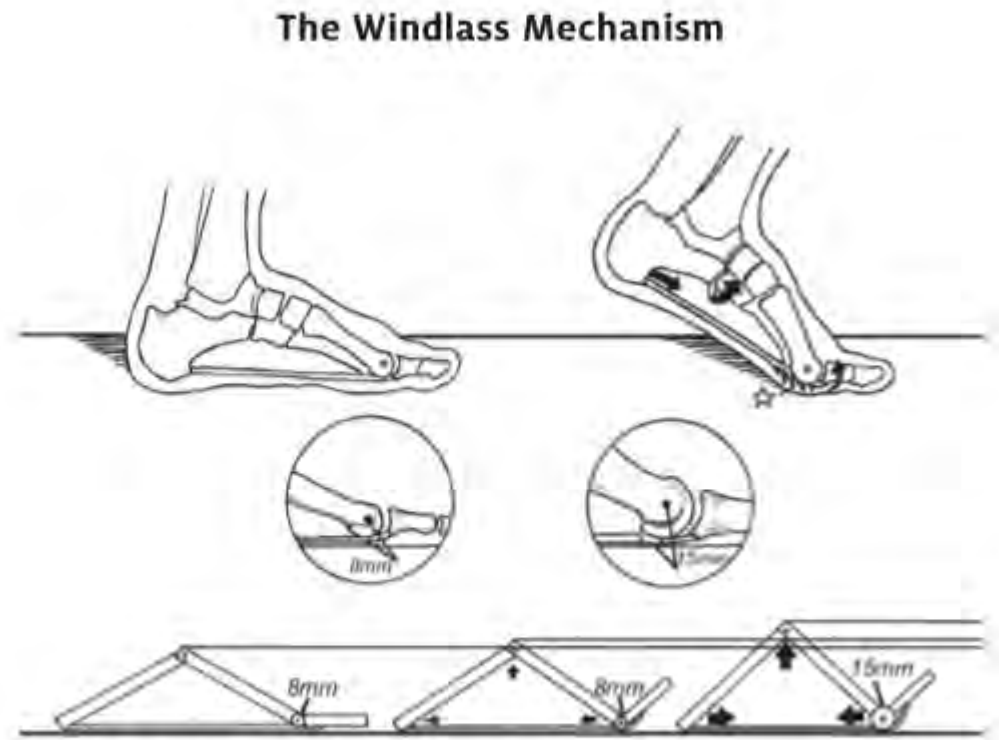
Avoid This Grief With Strong And Stable Feet

Image of Plantar Fasciosis



A collapsed foot creates strain and microtears of the plantar fascia.

You Need The Big Toe To Bend For The Arch To Function Properly



Picture the arch as a triangle. The plantar fascia ligament is at the bottom, and acts like a springy high-tension cable. At the completion of the stride, when the toes are bent upward, the plantar fascia shortens and tightens as it wraps beneath the metatarsal bones, elevating the arch.

The Big Toe Is The Captain Of The Ship And It Needs To Be In Alignment

Proper Alignment of the Big Toe

Correct alignment of the big toe (stable foot). Note the position of the sesamoids indicated by the fingers.

Alignment of the big toe with hallux valgus (unstable foot). Note the shift of the sesamoids.

If Your Toes Are Out Of Alignment Try “Correct Toes”

Correct Toes And Toe Alignment

My foot. Note the inward angle of the large toe.

My foot with Correct Toes. Note that the big toe is properly aligned, in a straight line with the foot.

The Effect Of A Strong Aligned Foot On The Knees And Hips

Strong Versus Weak Feet

Weak, flattened feet (left) versus strong, springy feet (right).
Note the effect on the alignment of the knees.

The Magic Of Toe Yoga

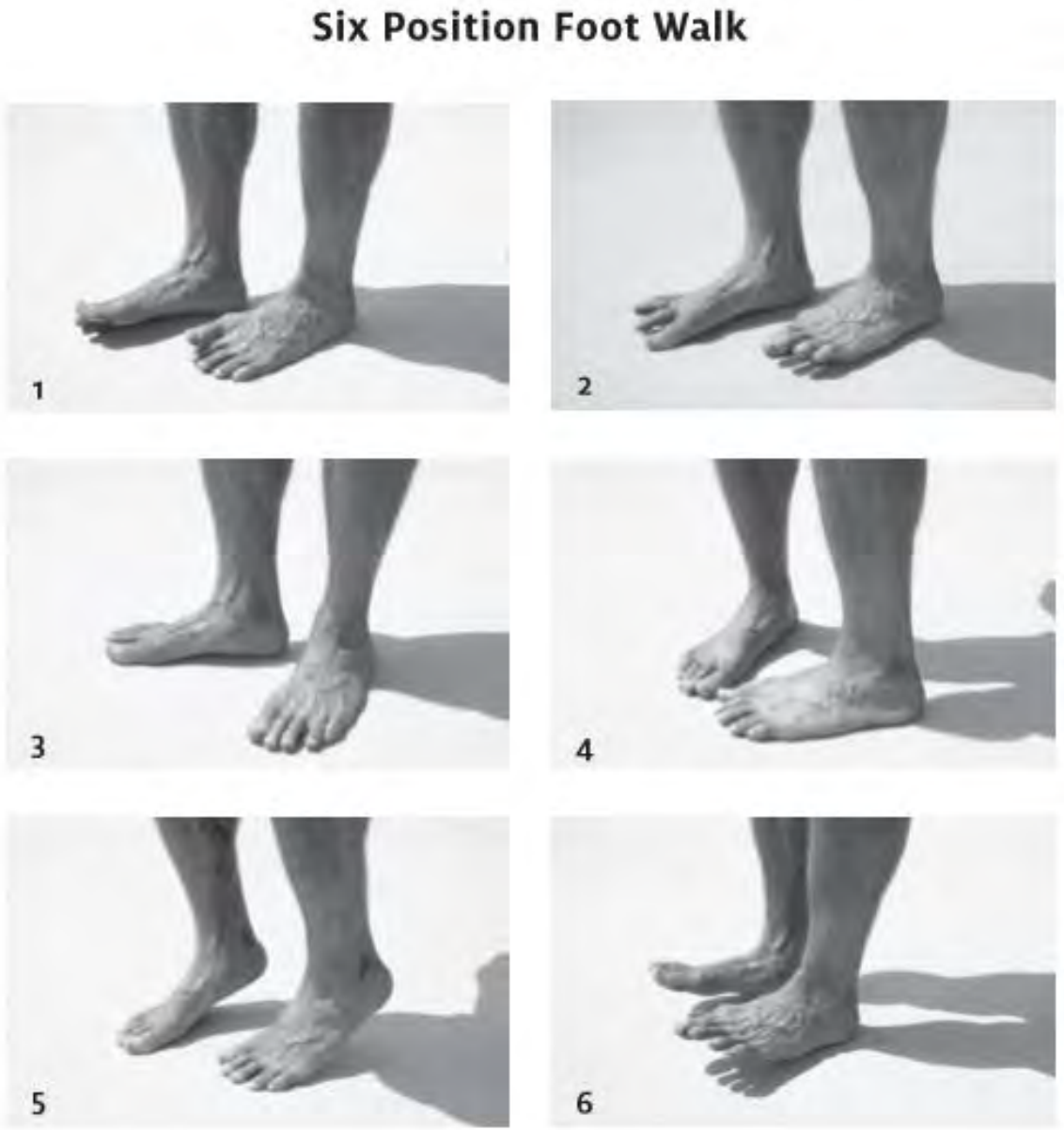
Magic Foot Exercise #2
Short Foot Posture

Short Foot Posture

To realign your feet, repeat the foot posture exercises above whenever you can throughout the day—at work, in class, while standing in line, even while brushing your teeth. Within a few weeks, your base of stability will improve.

Explore Your Feet Some More

Do This While Walking The Dog, Walking Around The Kitchen, Or Really Anywhere You Want With Or Without Shoes



A Little Barefoot Activity Can Go A Long Way To Strengthening The Muscles In Your Feet

Barefoot on Ground

A partial view of the foot and lower leg. Every foot has twenty-six bones, thirty-three joints, and more than a hundred muscles, tendons, and ligaments, including the body's strongest, the Achilles tendon. There are four layers of muscles in the soles of our feet alone.

Look Ma No Shoes

- caution do not try this at home unless you have lots of practice ☺

Ultra in Sandals

The 2016 JFK 50 Mile run, in Shamma Sandals and Correct Toes

sitting

Do Not Sit Too Much….. Don’t Do It!

The iliacus and psoas are dominant hip flexors.
These major muscles shorten with prolonged sitting.

Comma Hips

The "comma," or tilted pelvis, at left, is an artifact
of prolonged sitting—compared to a flat, neutral pelvis, at right.

If You Must Sit…. Sit Like This

Yoga Ball

The back does not need "support" when sitting correctly.
Sitting erect will alleviate back pain and promote overall health.

.....Or Try One Of These Positions

Sitting Positions

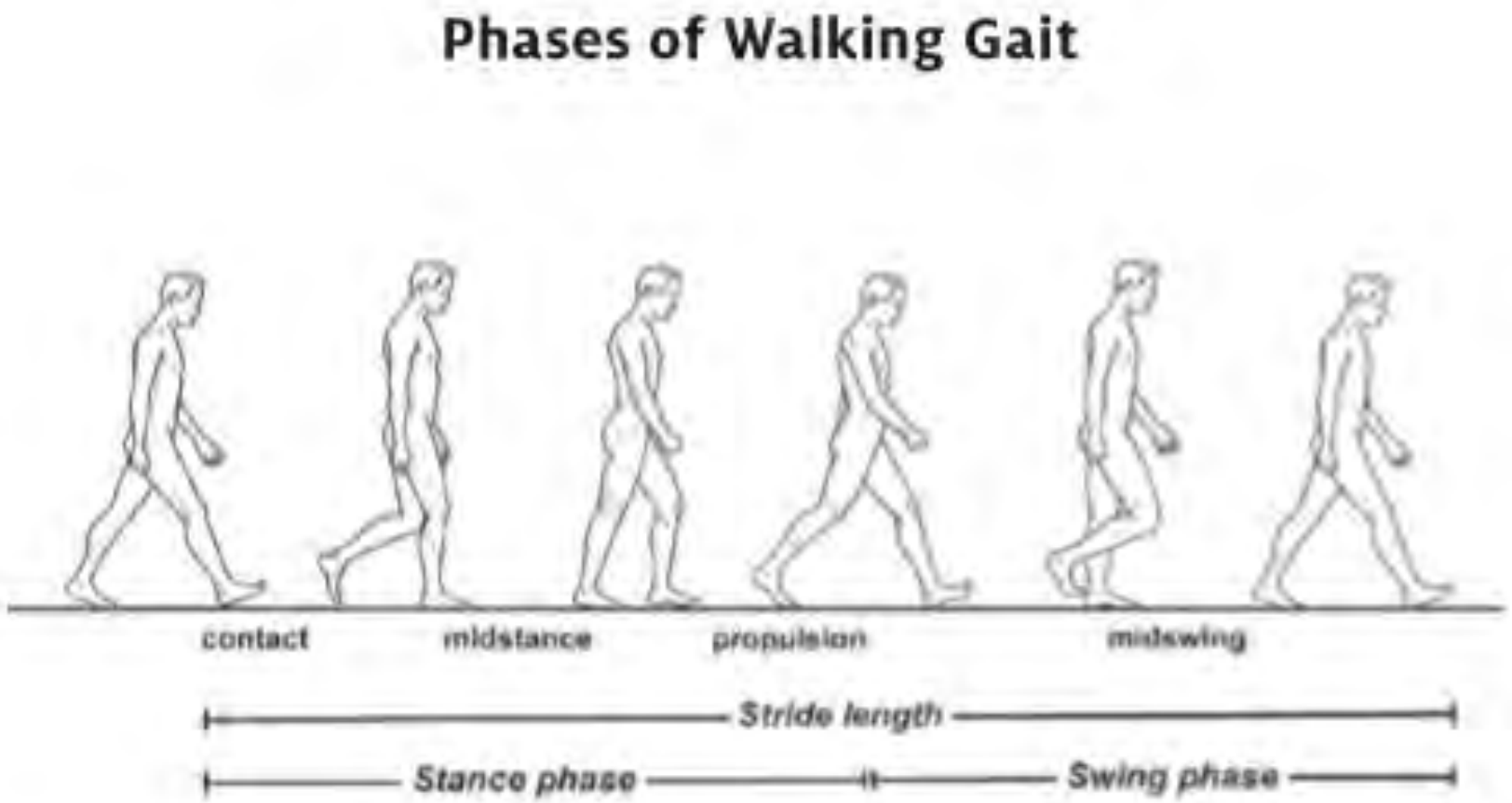
Here are some of the numerous positions—"sitting yoga,"
if you will—for sitting on the floor. (Kids naturally use many of these.)

Unlock The Hips And Improve Internal And External Rotation By Side Sitting On Alternate Sides

Side Sitting

walking

Walk Before Your Run And Do It Correctly



As Aerosmith Would Say… *Walk This Way*

The Walking Stride

Tight hip flexors + stiff ball of foot + stiff shoes = short stride
Good mobility at hip and forefoot + flexible shoes = long stride

Keep On Truckin' And Lengthen The Stride

A short stride + minimal counter-rotation of the shoulders and pelvis + little hip extension = weak spring

A long stride + good counter-rotation of the shoulders and pelvis + good hip extension = powerful spring

Unless You Have A Severe Structural Foot Problem Donate These Bricks

Remember these footwear bricks from a generation ago?
It's best to avoid hiking boots like these that don't allow a natural, foot-to-ground connection.

Try Some Minimal Shoes For Walking
Your Feet Can Get Stronger
Break Into This Gradually

Shoes with wide toe boxes, and with no arch support or heel lift, are ideal for walking. Elevated heels, common in modern "cushy" running shoes, compromise foot balance and posture,

Transitioning To Thinner Shoes Is A Process .....Not An Event

Practice Fast Walking This Is Your Secret Weapon On Long Training Runs And Races

Fast Versus Slow Walking

Fast walk versus slow walk

tensegrity

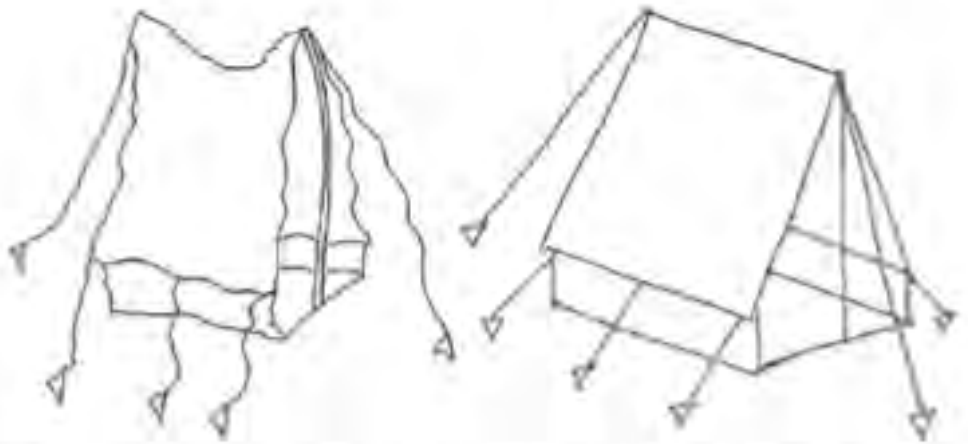
Optimize Your Tensegrity

Note: For A More Detailed Description Of Tensegrity Refer To Our RCAA "Anatomy For Runners" Module

Golden Gate Bridge-Tensegrity

Tensegrity structures gain their strength through the dynamic interplay of tension and compression. The Golden Gate Bridge

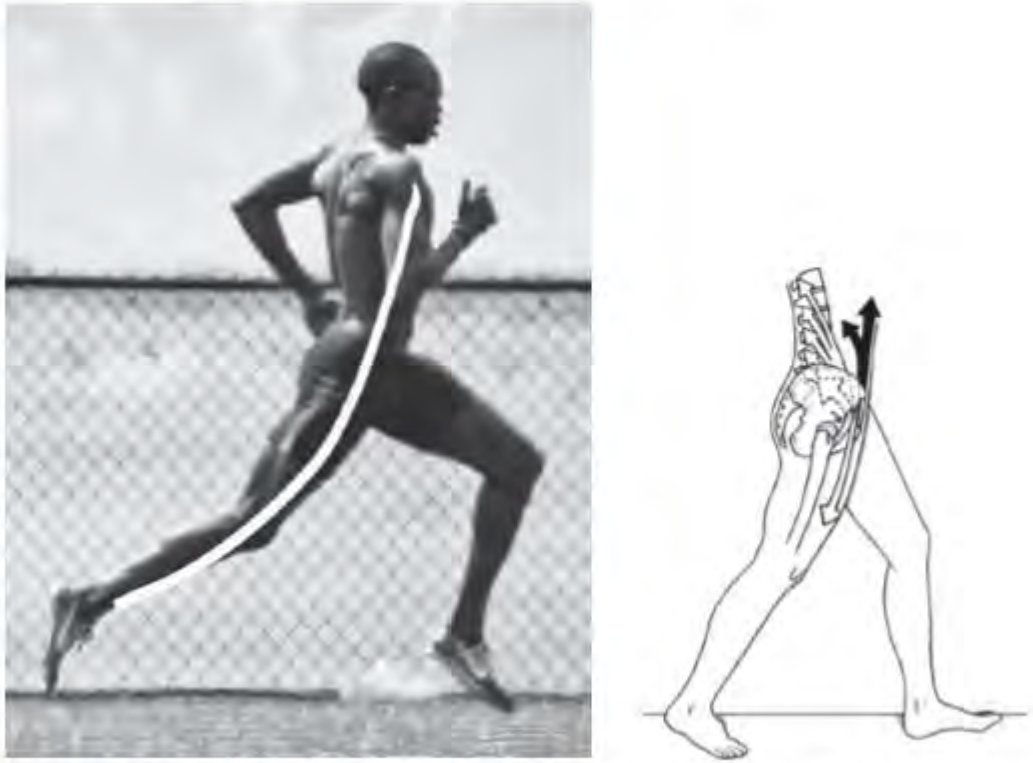
Tensegrity-Still And In Motion



Like a tent, the fascia brings optimal integrity to the structure only when it is fully tensioned.

Optimum Tensegrity Is Free Elastic Energy

Tensegrity-Still And In Motion



Olympian Lopez Lomong loads his hip flexor fascia (traced by the line). The more tension he creates through powerful propulsion and hip extension, the swifter his leg springs forward.

some mobility and stability basics

Roll Where You Need It And In Most People That Means The Hips

Foam Rolling Of The Hips

Rolling the ASIS (anterior superior iliac spine)

Rolling the PSIS (posterior superior iliac spine)

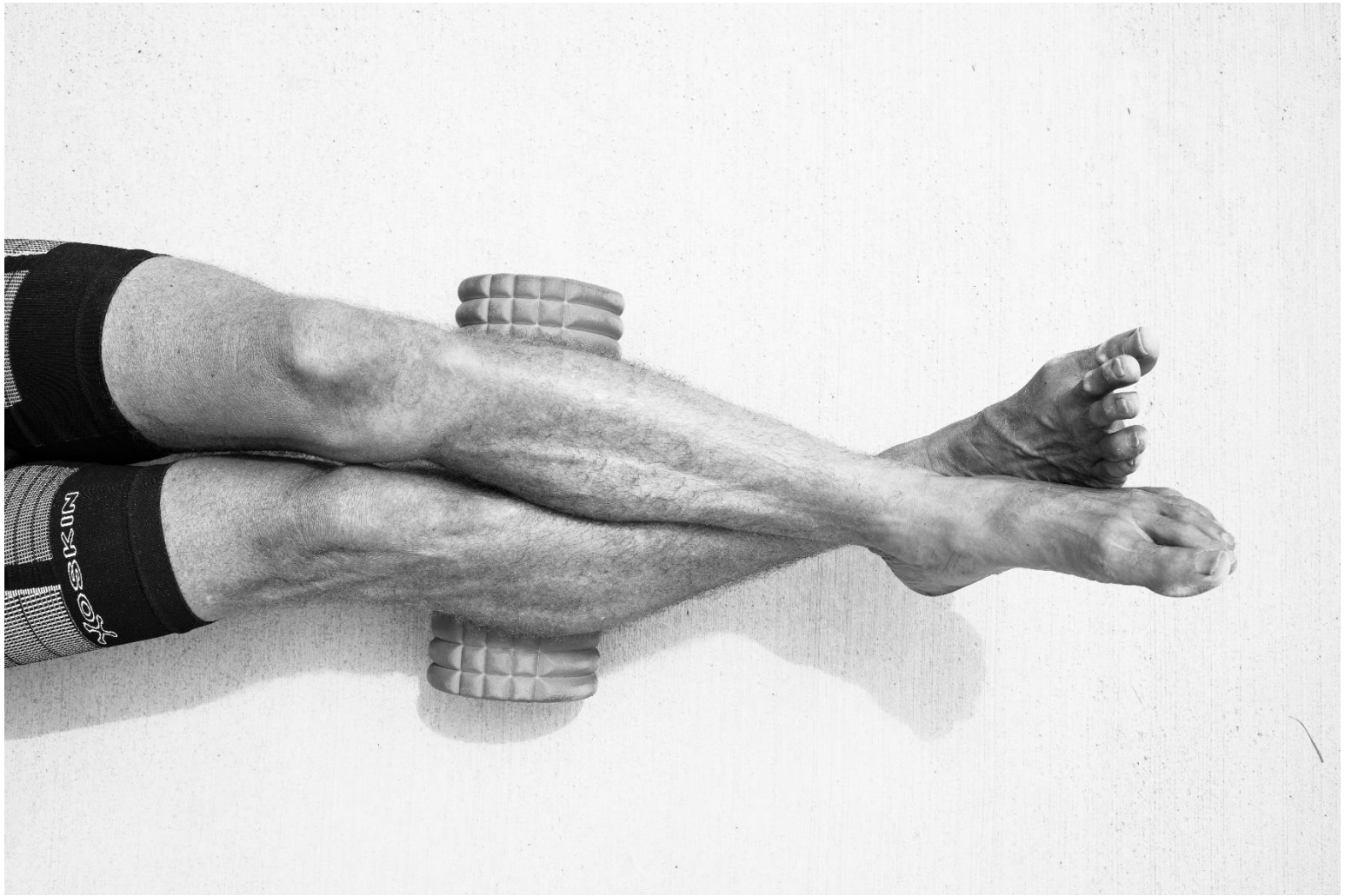
Swing The Legs To Increase Mobility

Ankle Mobility- Can You Get Your Knee To The Wall With Your Foot A Couple Inches Behind The Wall

Hip Extension- Knee To Chest
Is Opposite Leg Still On The Table?

Hip Extension Assessment

Foam Rolling The Calves For Greater Mobility



Assessing Mobility In The Quads
Can You Bring Your Ankle To Your Bum?

Quad Length Test

Prone

Upright

Can Use Still Squat This Perfectly?

The Squat

Looks perfect! Just do your best to rediscover this.

Correct and Incorrect Squats

Which does your squat look like? Aim for the picture on the left.

A Kettle Bell Can Aid You In Proper Technique

Kettle Bell Squat

Or load yourself with a kettlebell, in an exercise called the goblet squat.

Testing Thoracic Mobility- The Wall Squat

Wall Squat

By working on upper body, hip, and ankle mobility, you'll be able to do a wall squat.

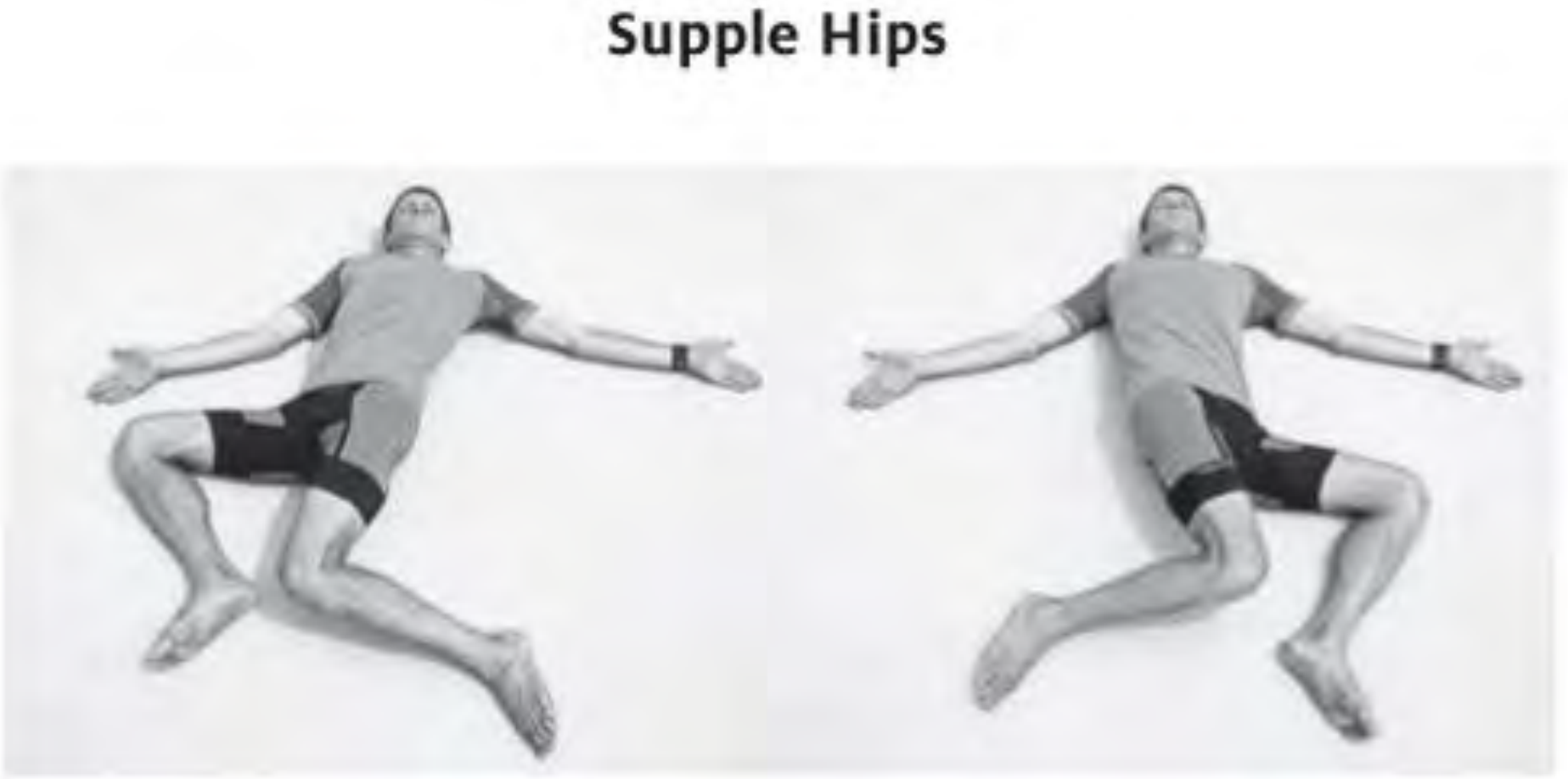
Improve Your Thoracic Posture And Mobility

T-Spine Foam Roll

Move slowly up and down each segment, while deep breathing.

Move shoulders and arms as if making a snow angel

Part of My Morning Routine -Maintains Internal And External Rotation Of The Hip



Repeat After Me:
I Will Do My Mountain Climbers Every Day

The Mountain Climber

The Mountain Climber: Sink the hip by engaging the glute.
Feel the spring from the hip flexors.

Extra Credit For Those Who Want To Be Awesome

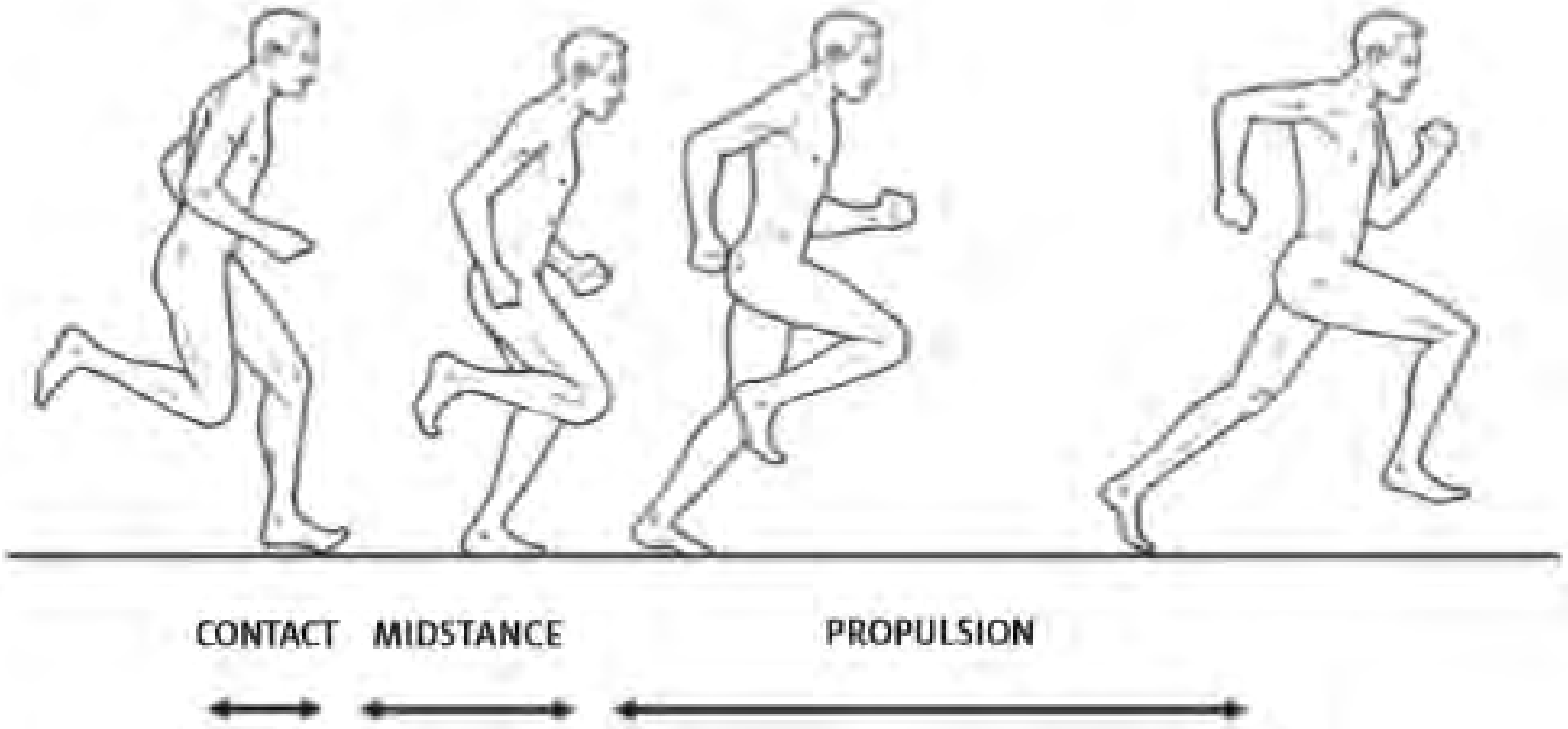
The Awesomizer

Magic For The Hips….
And You Do Not Need A Couch

The Couch Stretch

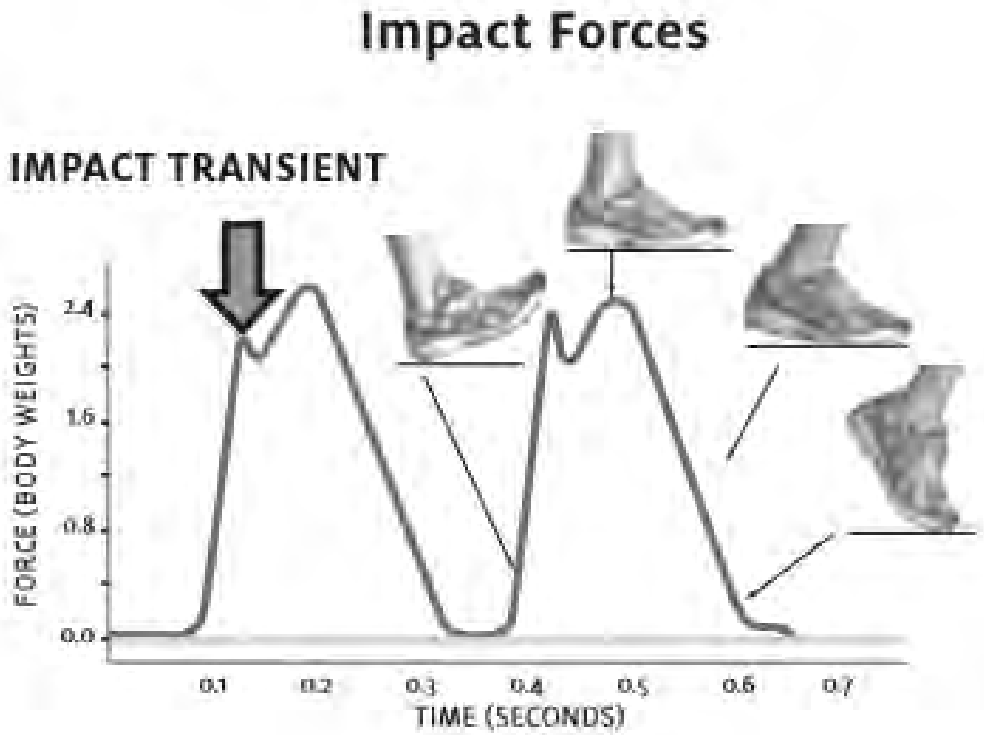
gait retraining - land soft and stable

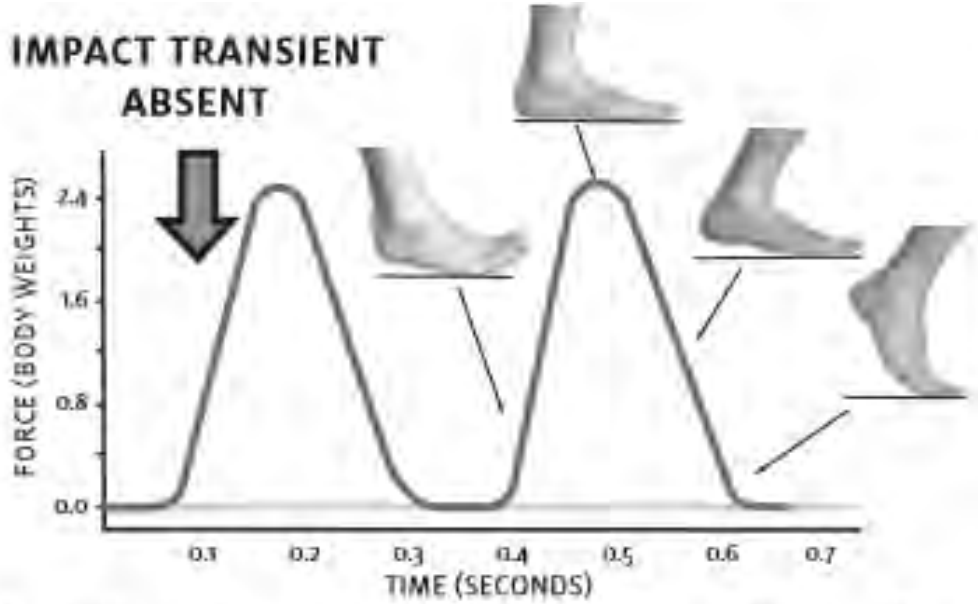
Phases Of The Running Gait



Contact, pronation at midstance, supination at propulsion, and toe-off

Soften The Impact- Do Not Land With A *THUD*





Ground impact forces. Note the impact transient (the tiny, sharp peak of the curve on the top), showing the hard impact caused by rear-foot striking. The figure on the bottom shows a flatter, "softer" impact curve typical of forefoot strikers.

Elements of Style- The Abdominals

Abdominals Awake

Are the abdominals, legs, and glutes awake and activated? Think of propelling a skateboard forward.

Elements of Style- The Glutes

Glutes Awake

In the forward leg, the hamstring works like a spring and activates the glutes (arrows), which drive downward, all in a stretch-contraction reflex, like a bungee cord.

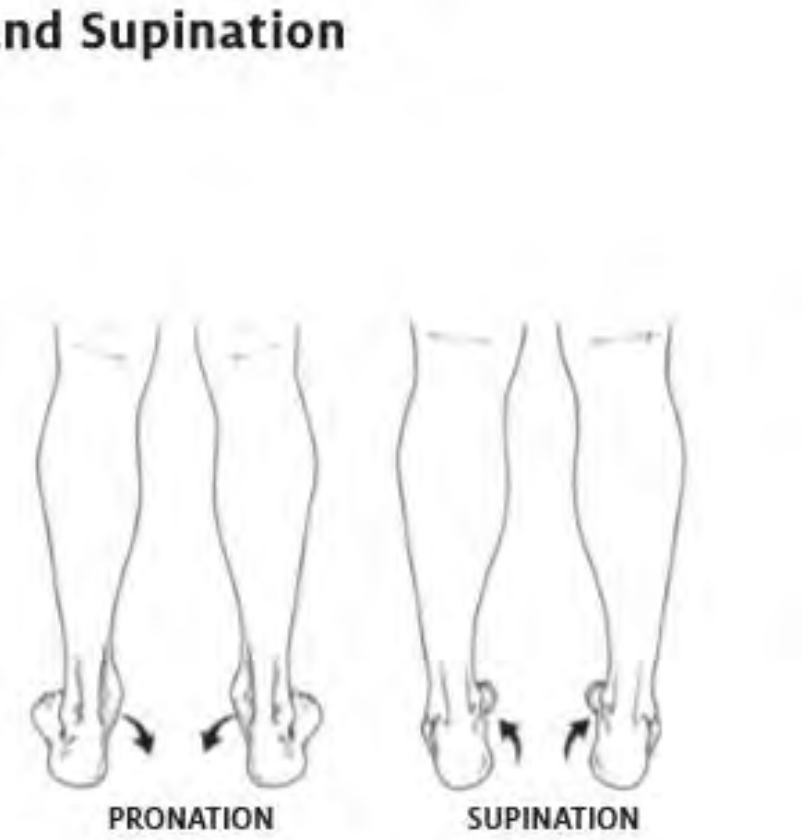
Elements of Style- the Achilles

Elements Of Running Form

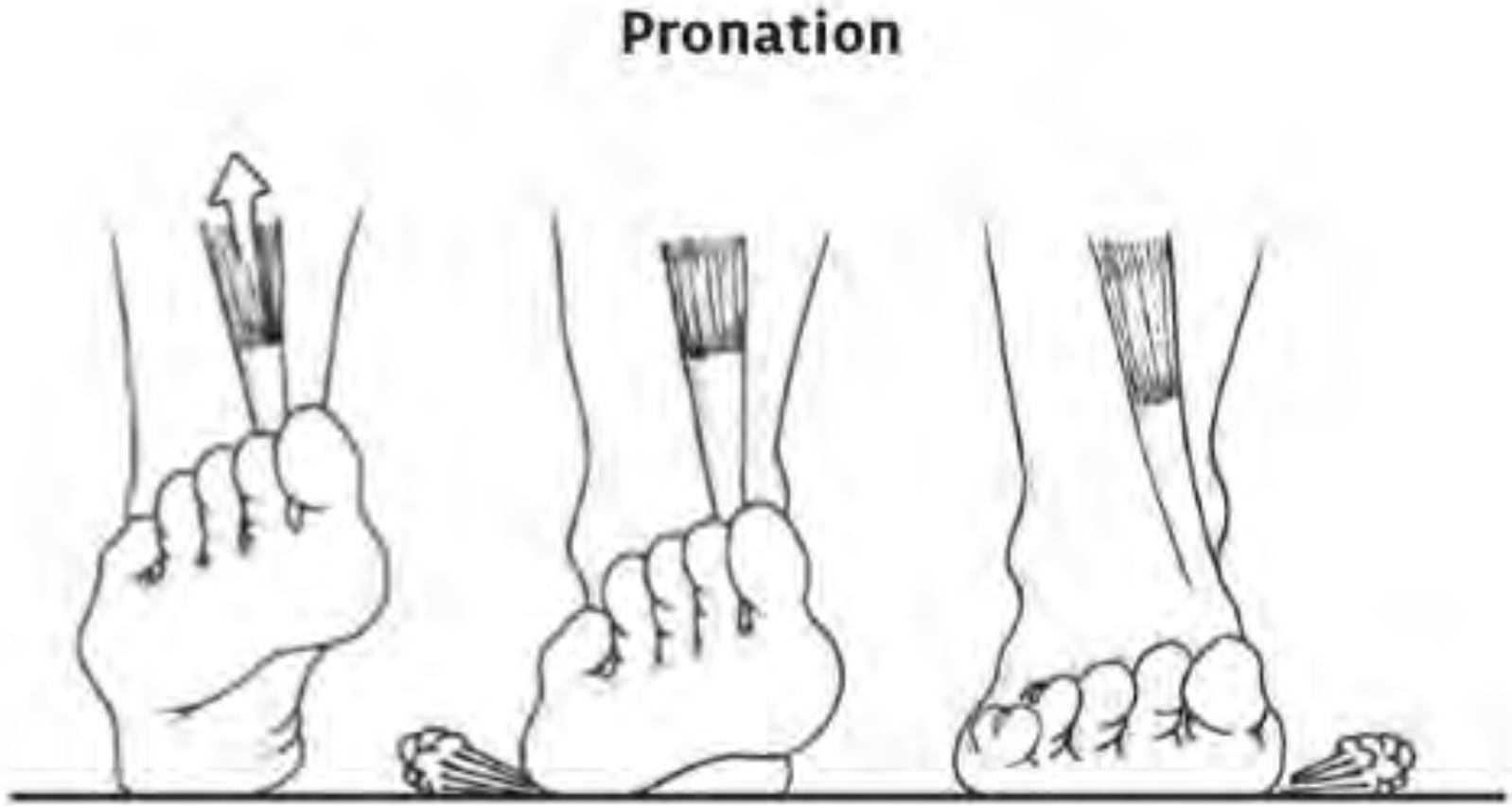
Elastic loading of the Achilles tendon and calf produces an optimal—quick and powerful—energy return.

A Healthy And Well Functioning Achilles Tendon Is Free Energy!

Elements Of Style
Adequate Pronation

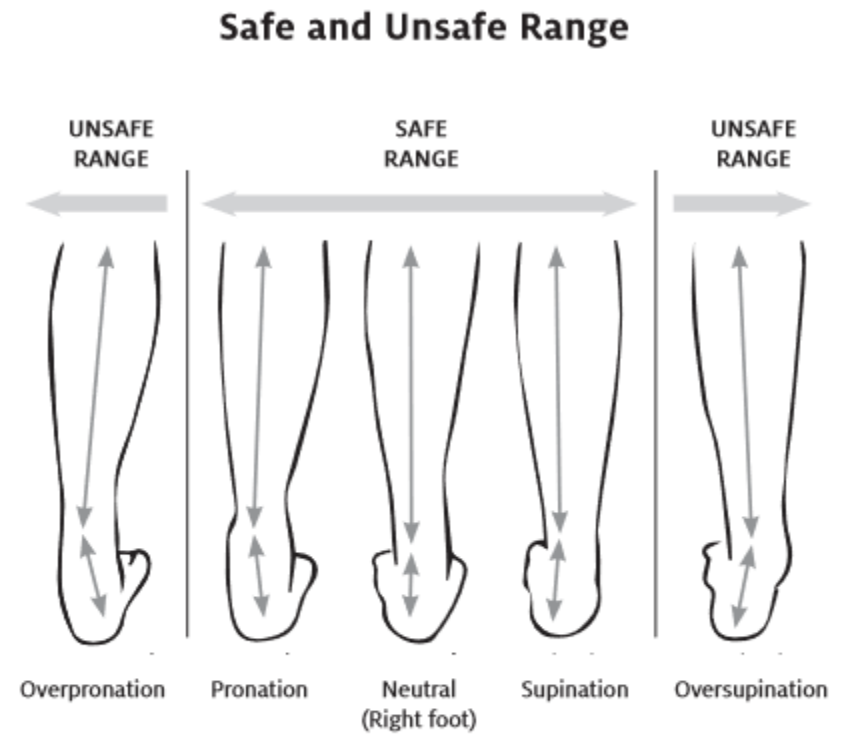


Everybody Needs A Little Pronation
It's A Good And Natural Thing ☺



Pronation: the natural rolling from outward to inward.

Pronation And Supination Have Safe And Unsafe Ranges



Pronation and supination are normal, although excessive uncontrolled motion can lead to injury. There is a wide range of "normal," however. Overpronating is less common than most people think.

Elements Of Style- Hip Extension And Forward Spring

Hip Extension and Recoil

Hip extension loads the springs of the hip flexors.
Then the trailing leg recovers with an elastic, springlike recoil.

Elements Of Style- Slight Lean At Higher Speed

Slight forward lean
at faster running speeds

Elements Of Style-
Have The Mobility
To Increase The
Stride Angle At
Higher Speed

Open Up The Stride Angle

A large stride angle. Note the arms driving back, as if chopping wood.

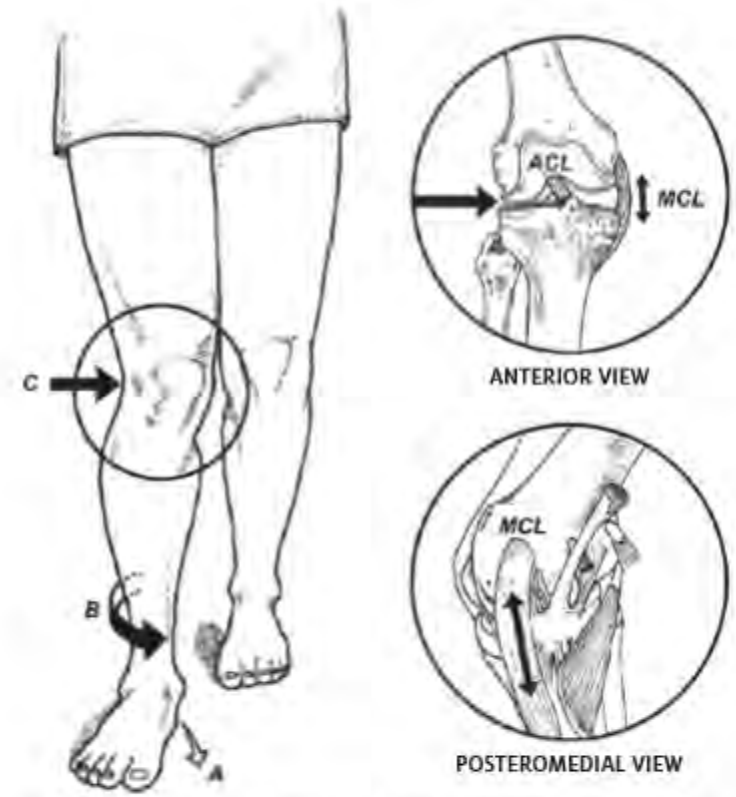
Elements Of Style- Level Pelvis And Feet Under The Hips

A level pelvis, and minimal leg crossover

Core Instability While Running

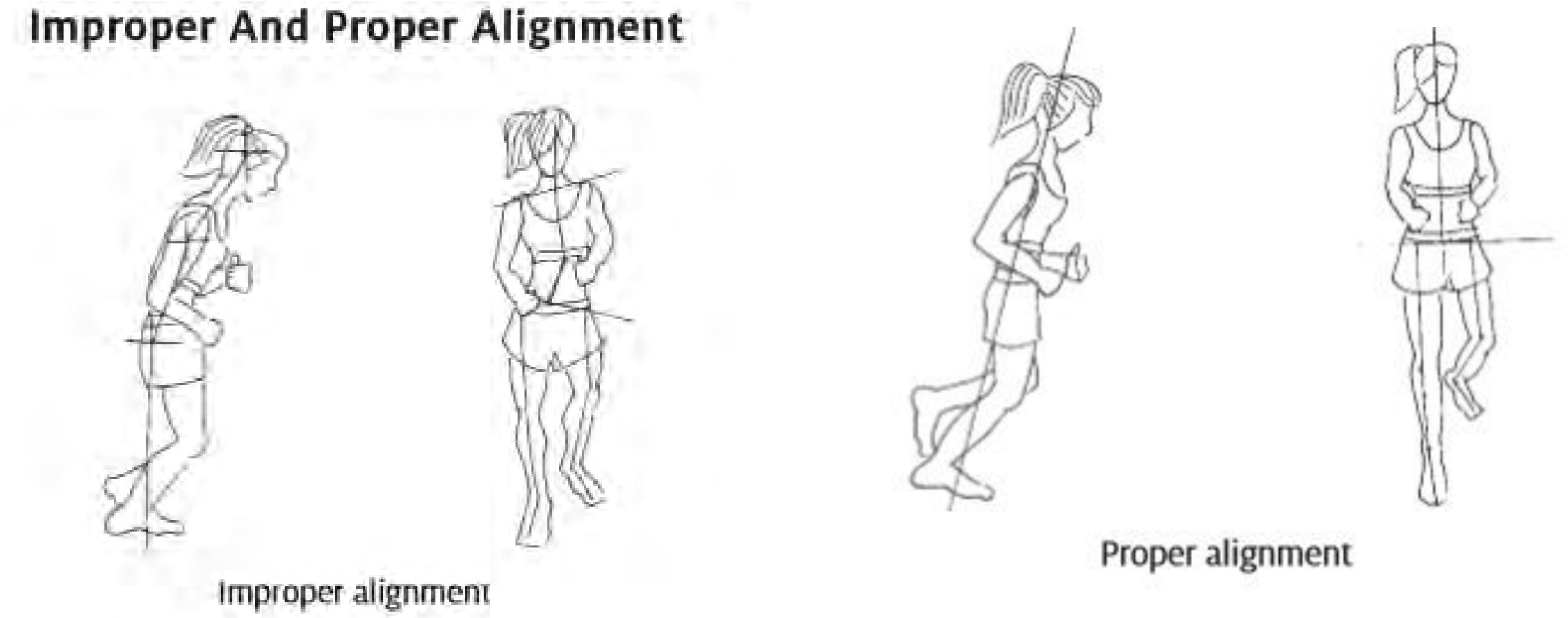
Core instability, exacerbated by fatigue, causes the right knee to dive in and left hip to drop, leading to decreased motor control and efficiency—like a tired spring.

Dynamic Knee Valgus



The image above illustrates "dynamic knee valgus," in which the knee dives inward in an "L" shape, commonly seen during high-impact movements such as jumping and landing. Movement sequence A → B → C can lead to anterior cruciate ligament (ACL) and medial collateral ligament (MCL) tears.

Feeling A Bit Wobbly?
Have Someone Check Your Alignment



Master The Art Of Running
On a TrueForm Runner www.trueformrunner.com

Running On The TrueForm Runner

The TrueForm Runner, a runner-powered treadmill

Master The Art Of Jogging Ridiculously Slow Land Soft, Stable, And Springy

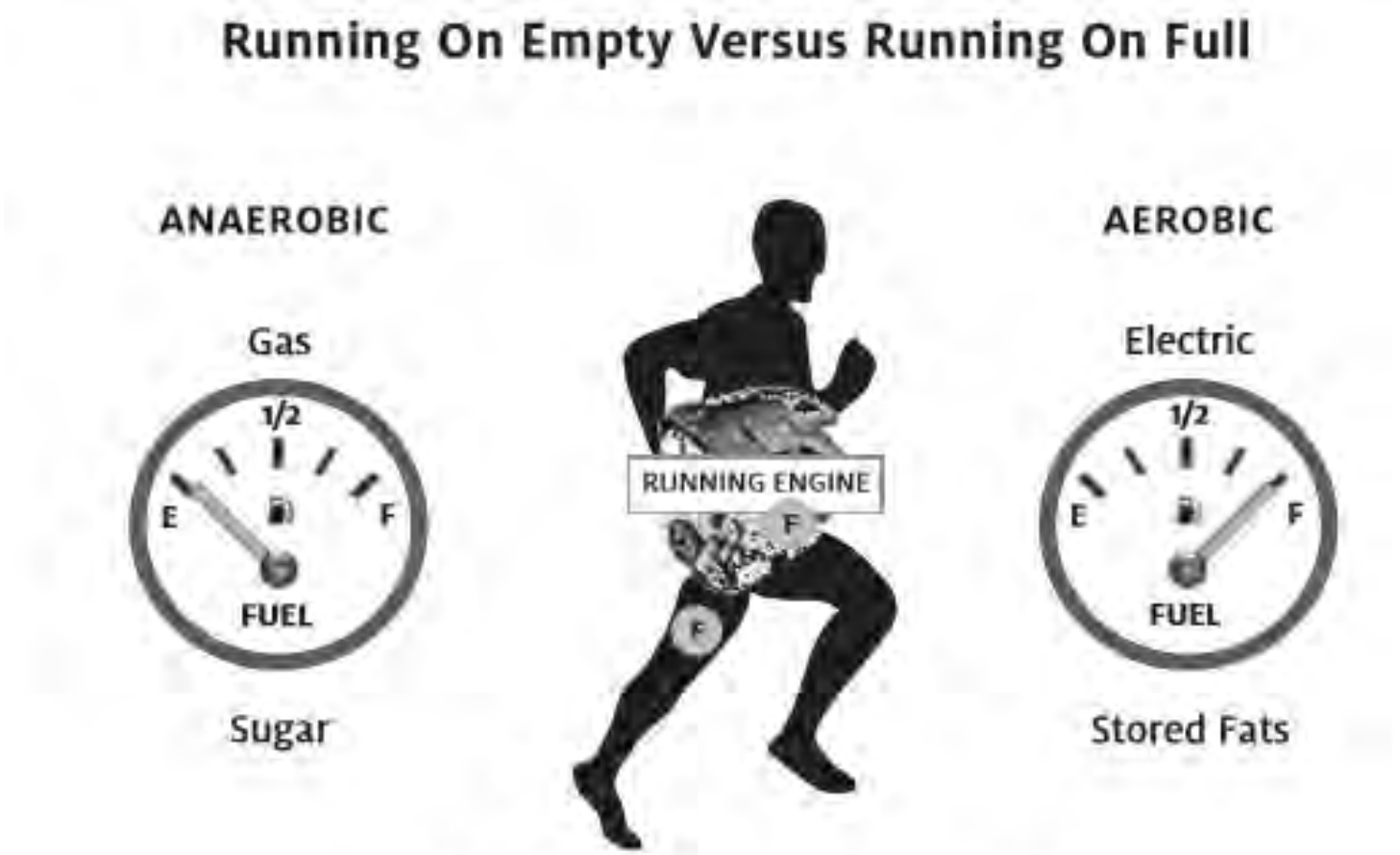
Slow Jogging-US Air Force

Teaching slow jogging at Air Force Basic Military Training, Lackland Air Force Base, Texas

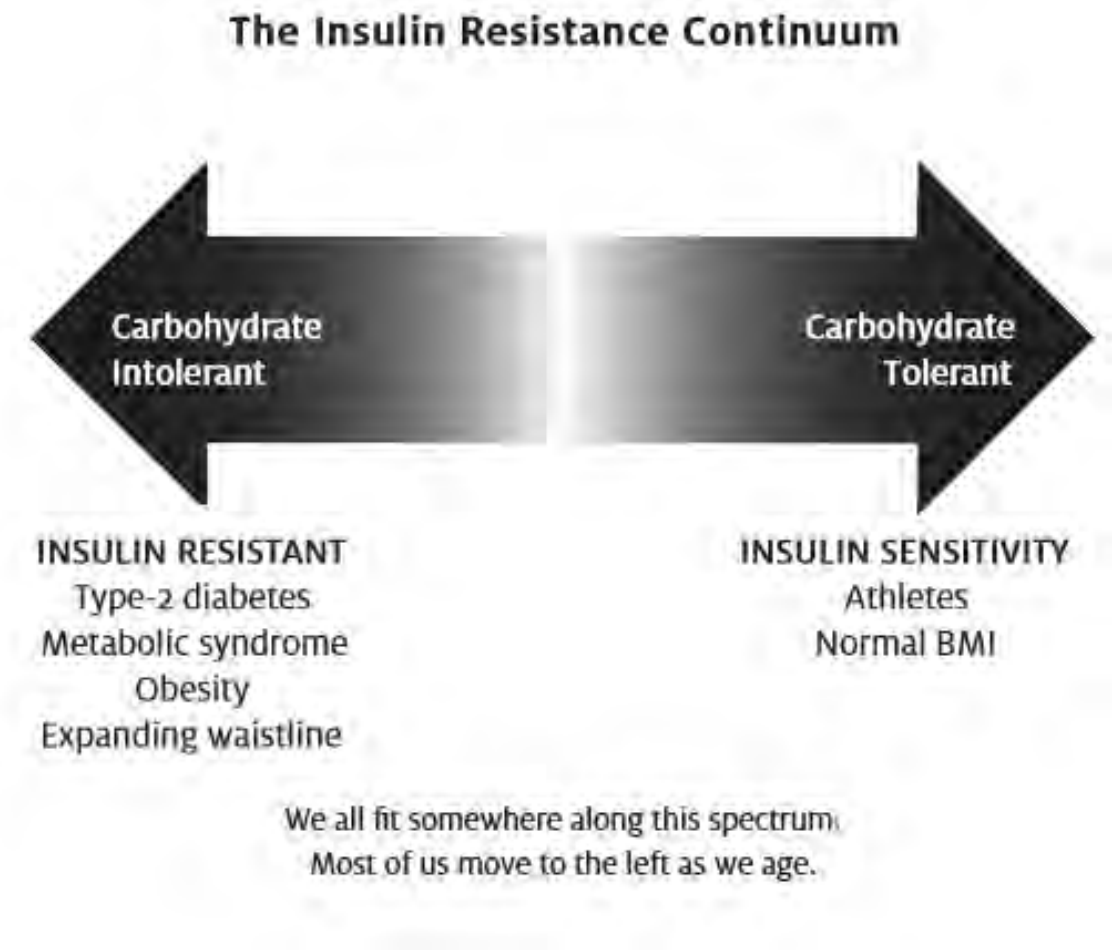
Slow And Steady Wins The Race

food matters

Slow Down And Run On Fat Not Sugar.
You Will Produce Less “Exhaust” And Feel Better Every Day With Reduced Risk Of Injury



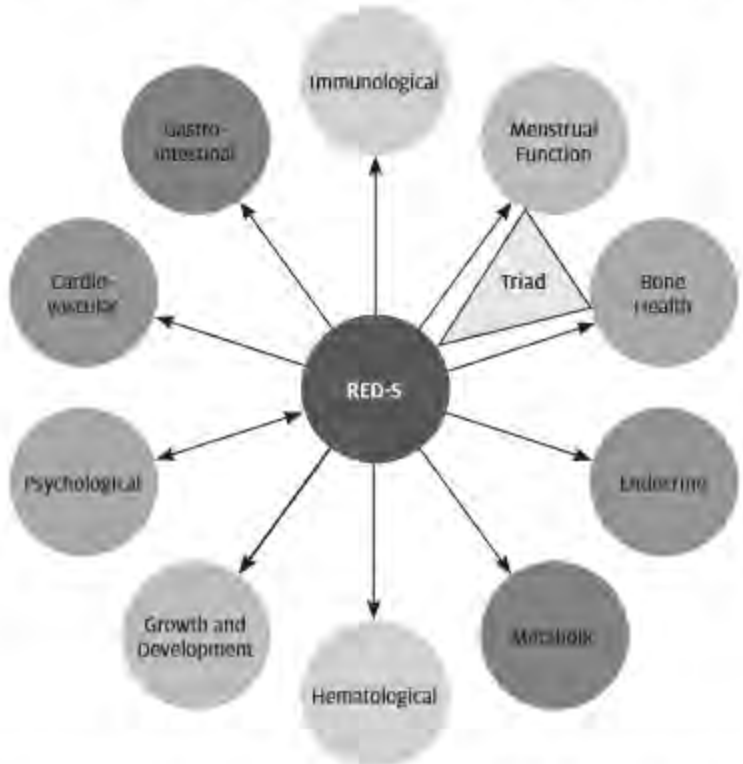
As Jack Lalane Said: *Exercise Is King Nutrition Is Queen And Together You Have A Kingdom*
Know Where You Stand On The Spectrum



RED-S Syndrome

Health consequences of relative energy deficiency in sport (RED-S) showing an expanded concept of the female athlete triad to acknowledge a wider range of outcomes and the application to male athletes.

(*Psychological consequences can either precede RED-S or be the result of RED-S.)



Relative energy deficiency in sport refers to impaired physiological function including (but not limited to) metabolic rate, menstrual function, bone health, immunity, protein synthesis, and cardiovascular health.

strength matters too

All Runners Wanting To Add Speed Work And More Intensity Need To Master This

Single-leg run (for the more advanced)

Wake Your Booty

Fire Hydrants

Single Leg Bridge

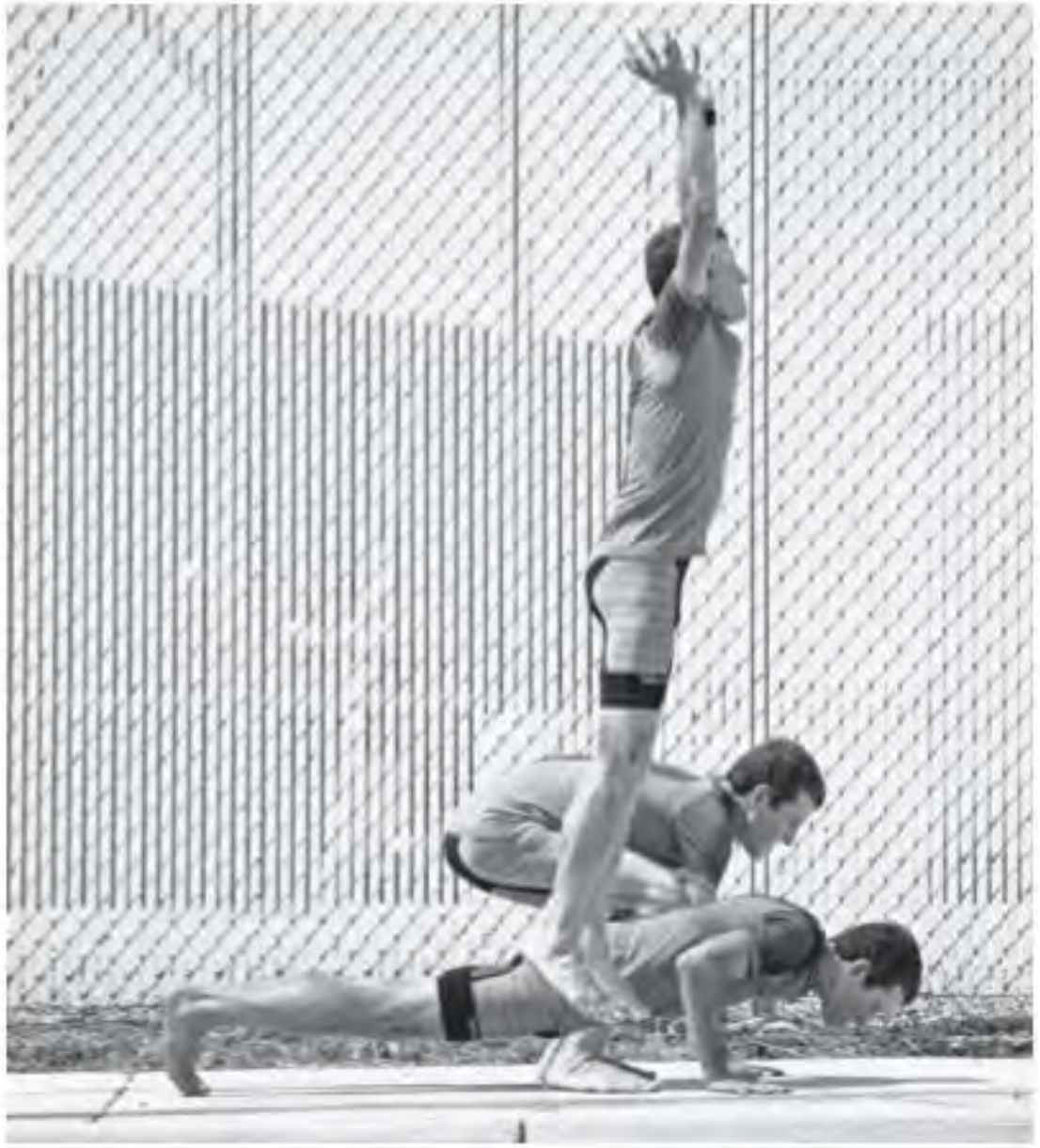
A Little More For The Core

Plank

No I Am Not Kidding
Progress To Be Able
To Do This Exercise
And When You Have
Mastered It You Will
Become Bulletproof

Just A Few Will Do

The Dynamic Burpee



If You Are Older Than 50
Lift Heavy Things To Avoid Sarcopenia

Turkish Getup

Turkish Getup
up move

Reverse to slowly
go down

Sarcopenia

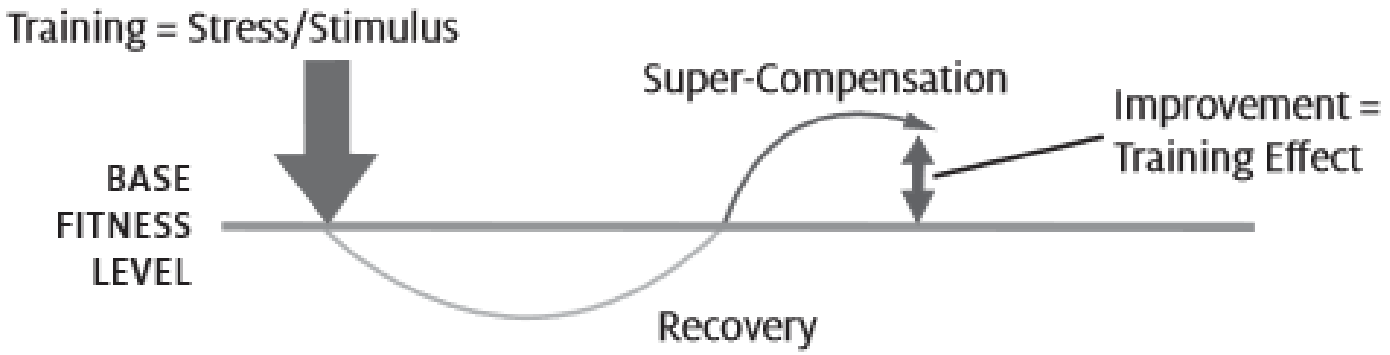
70-year-old sedentary man

74-year-old triathlete

stress, recovery, and injury

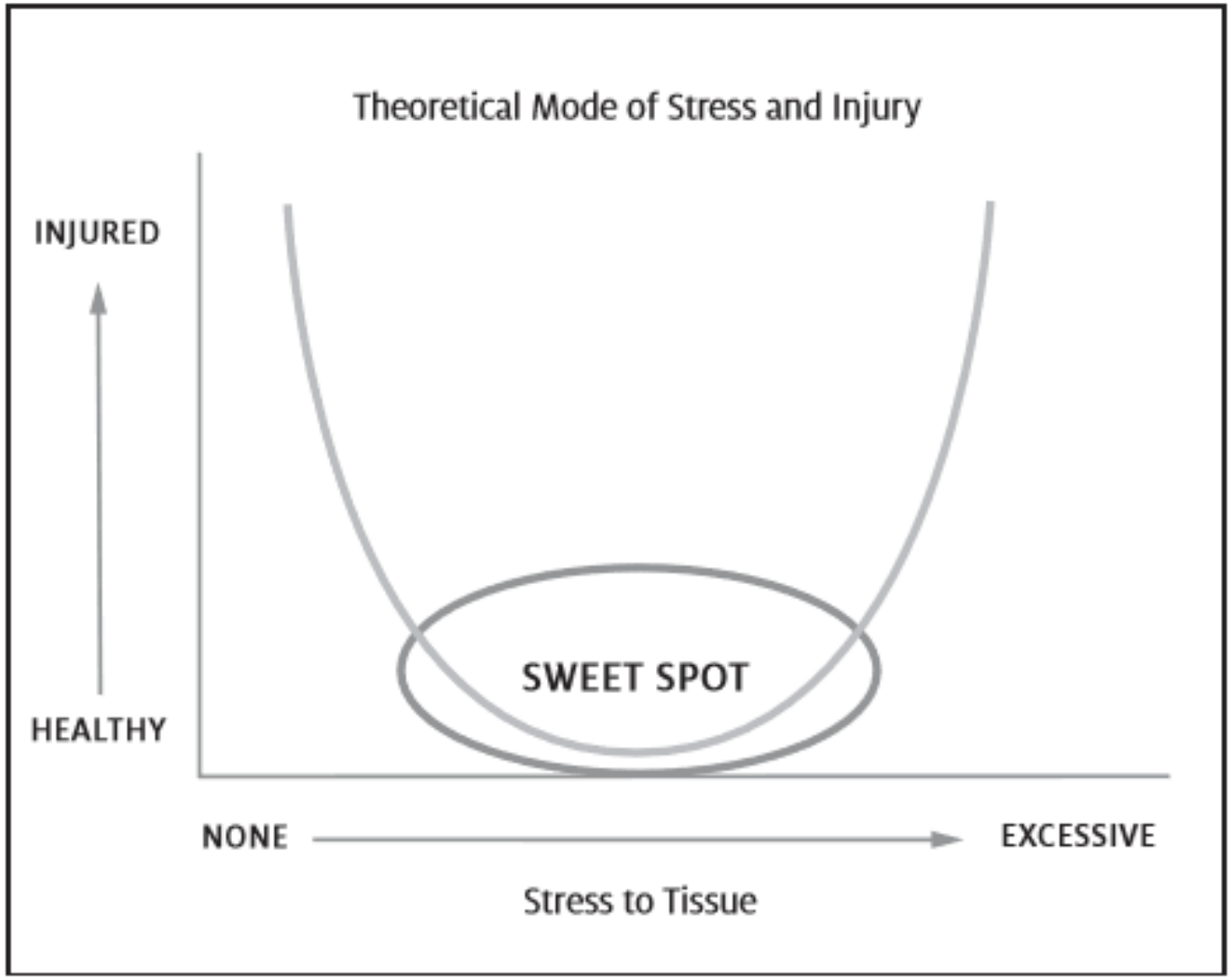
THE ADAPTATION CURVE

- When you subject your body to a training workout, your fitness level temporarily decreases
- During the subsequent recovery period your fitness level will rebound beyond the previous fitness level
- This is called Super-Compensation



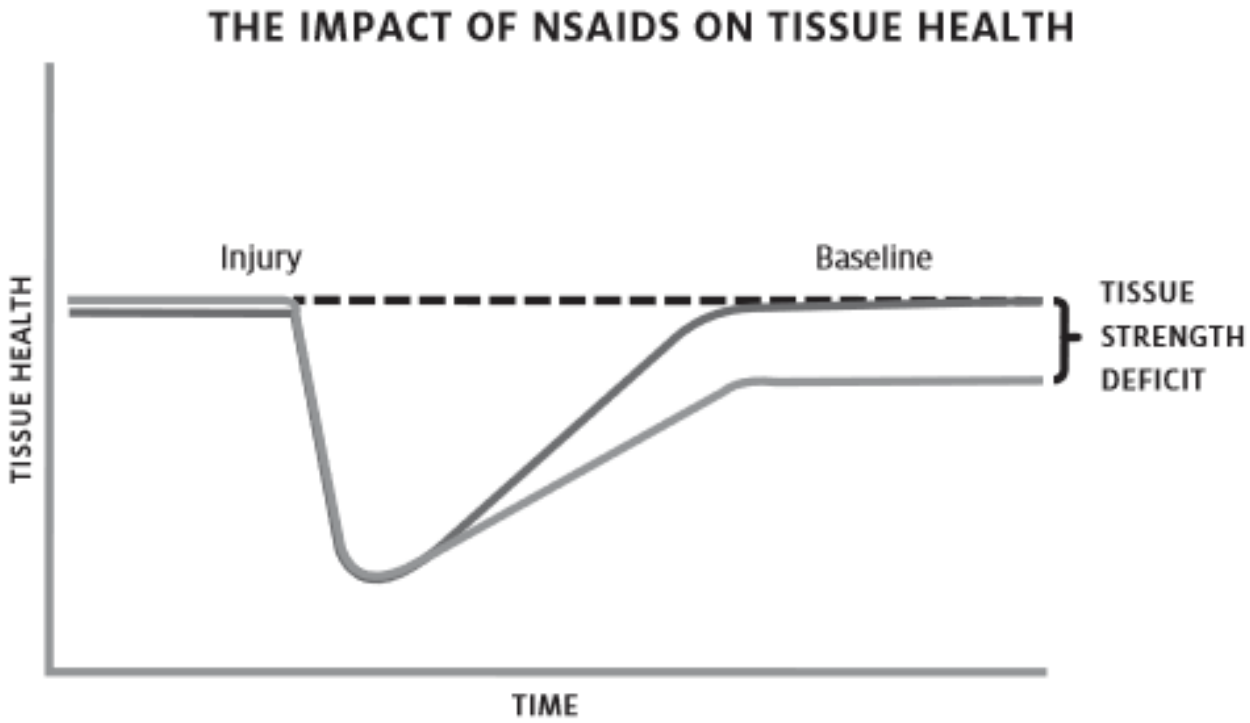
There's an old coaches' principle: *training success = moderate stress + adequate rest*. With any moderate or strenuous activity, fatigue eventually occurs and performance declines. That's followed by an adaptation/recovery phase in which super-compensation occurs, establishing a slightly higher platform of performance for the next period of exertion.

Sweet Spot Of Stress



The "sweet spot" represents the area of beneficial eustress.
Greater or lesser levels of stress don't build health or fitness.

Just Say No To NSAIDs
This Means Advil, Ibuprofen, Motrin, Aleve, And Multiple Other Code Names



The body will always try to heal. Chronic usage of NSAIDs impacts the repair process and prevents the body from healing back to baseline tissue strength. This weaker, impaired tissue is now at a greater risk for reinjury.

Have Some Fun With Recovery

Recovery—On The Kickbike

Zero Runner

Elliptical Bike

Find Your Tribe- The Power Of The Group Makes You Healthy In Ways We Do Not Fully Understand

The Power Of Running With Friends

The power of the group makes us stronger.