



INTRODUCTION TO: Golf Performance Fitness Training:

Improving *Your* Longevity in the Game, Consistency, and Distance

While Reducing Injury Risk

Including:

A *Two-Week foundational exercise program* including: Exercises that specifically *AKTIVATE* core muscle groups, *INCREASE* mobility, *INCREASE* stability, and *IMPROVE* muscular health.



Since the rise of Tiger Woods and his start in 1996 on the PGA tour, to his dominance from 2000 -2010 and then some, fitness has become increasingly a part of the game of golf. From power development to building an injury resistant body, the champions of today's professional tour including Cameron Smith (top left), Lexi Thompson (bottom right), Justin Thomas (bottom left), and Dustin Johnson (top right) to name a few are all proponents of golf fitness and can be seen in the gym working on their golf performance specific routines.



As we walk the line of performance goals through fitness, it is of the utmost importance to adapt safe exercise techniques, nutritional support, and regeneration.

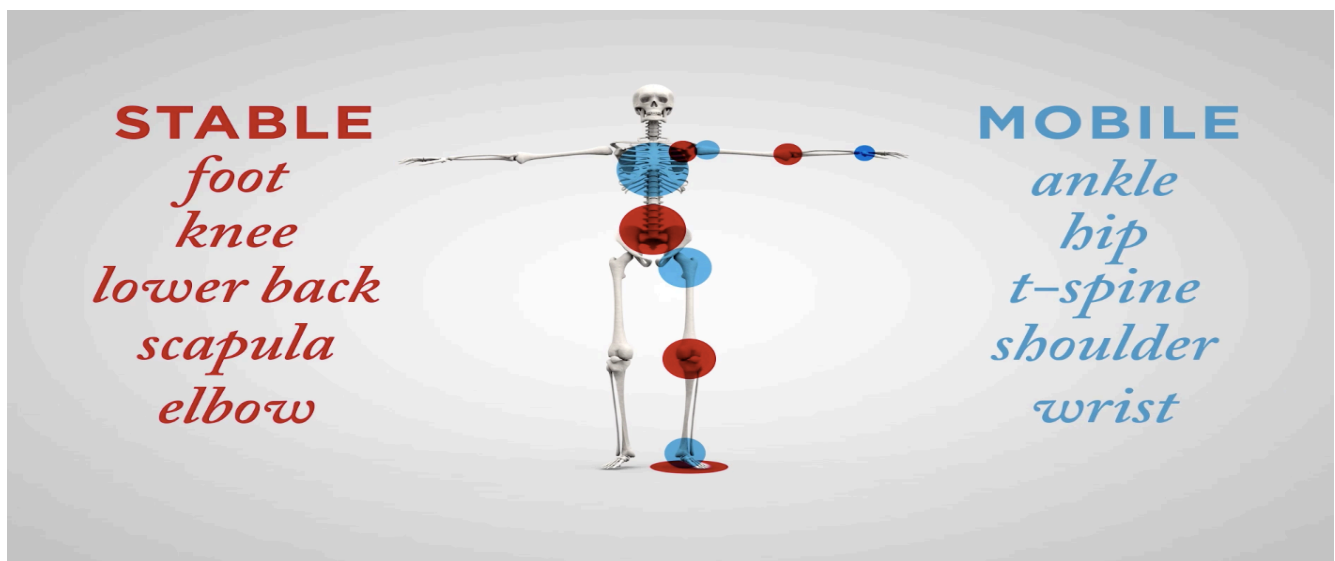
My career as a Nationally Certified Athletic Trainer started in 2004 and I have been immersed in the elements of day to day management of injury risk reduction, injury assessment, and injury rehabilitation.

What remains a constant in injury risk reduction, is optimizing the body to withstand external forces or forces that are created by the individual themselves (ie, swinging the golf club with too much force when certain physical capabilities, mobility, stability and symmetry are missing in the golfer's body).

In 2003, Titleist Performance Institute (TPI) began studying the body mechanics related to the golf swing from professional tour players to the weekend amateur. They collected data on players of all shapes and sizes to determine how a properly functioning body will allow a player to swing the golf club in the most efficient manner to optimize consistency, accuracy, and power. In addition, TPI had found significant correlation with physical limitations adversely affecting the golf swing quality and potentially leading to significant injuries

TPI's philosophy of human body movement as stated best by Mike Boyle and Gray Cook is that:

" The body works in an alternating pattern of stable segments connected by mobile joints. If the pattern is altered, dysfunction and compensation will occur."



Normal Movement Pattern:

To understand the importance of the body maintaining an alternating pattern of mobility and stability, we look at a commonly injured body part with golfers, the low back or lumbar spine. It is important for the low back (lumbar spine) to maintain stability through movement patterns. If the thoracic spine joints above the low back and/or the hip joint below the low back are lacking the required mobility, the lumbar spine will need to compensate to obtain more motion. This compensatory pattern can lead to muscular strain, disc, and facet injuries in the lumbar spine that can put a major halt in the enjoyment of the game of golf.

As we look at the joints above and below as a potential cause of pain or injury, we also look to the joints above and below those joints and not conclude that all low back injuries are a product of dysfunction in the thoracic spine or hip but, can be the end result of dysfunction along the movement chain.

What *alters* Normal Movement Patterns?

1. Trauma's: Accidents, Posture, and Repetitive Injuries
2. Thought: Stress, Anxiety, and Mental Collapse
3. Toxins: What you eat, breathe, and drink
4. Technique: Poor learned skills and muscle patterns.

Poor mobility can lead to muscle imbalances.

There are three neuro-muscular phenomenon's that cause muscular imbalances. This means that the functioning state of one muscle will affect the state of other muscles that are related or involved in the movement pattern or supporting the movement pattern.

Reciprocal inhibition- When a tight muscle decreases neural drive to the functional antagonist (muscle opposite of the working muscle, think bicep agonist and triceps antagonist). With decreased neural drive, the antagonist muscle is stimulated less, becomes weak and thus depending on its primary responsibility and function the increased risk for musculoskeletal dysfunction and injury is inevitable.

Synergistic Dominance- Synergists, stabilizers, and neutralizers take over function when a primary mover is weak or inhibited (think rotator cuff as stabilizer and deltoid as primary movers or hip rotators vs. gluteal muscles as the primary movers.) This puts lower power producing muscles in the primary power role leaving them susceptible to injury and increasing risk to musculoskeletal structures involved in the movement.

Arthrokinetic Inhibition- Joint or joint capsule dysfunction can lead to muscle inhibition.

Sedentary lifestyles that lack variable movements coupled with prolonged static postures of sitting, standing, or walking in a straight line will cause muscular imbalances. On the other hand, overuse can shorten and tighten muscles. A lack of physical activity or disuse leads to weakening and inhibition of phasic muscles or muscles that are primarily used for movement. It our responsibility to find the right balance of physical activity to maintain muscular skeletal health. The TPI screen is the best place to start to understand and assess the current quality of movement directly related to the golf swing. With the results, a customized correction and activation exercise program can be developed and implemented.

The TPI Screen

Titleist Performance Institute along with 50 expert board members from the fields of Athletic Training, Physical Therapy, Kinesiology, Chiropractic, Exercise Physiology, and Orthopedics created a criteria to perform the 15 physical screen tests correctly. Each individual is scored as a pass or fail with specific details as to what their body would need to complete in order to pass the test. Once all tests have been completed, an assessment is created and corrective exercises are prescribed to specifically address the musculoskeletal components that are limiting the player's ability to pass the tests. The corrective exercises consist of exercises designed specifically to target and improve mobility, stability, and core activation.

The screen consists of 15 tests that are designed to assess 5 areas necessary for an efficient, effective, and safe golf swing.

- Core Control—The ability to have the core muscles of the shoulders, spine, and hip activate appropriately to help stabilize joints and allow your arms and legs to transfer power.
- Lower Body Dissociation- The ability to stabilize the upper body and consciously move the lower body.
- Upper body Disassociation – The ability to stabilize the lower body and consciously move the upper body.
- Maintain Posture with hands Overhead- The ability to keep a neutral and stable spine while the hands move above the head as in the backswing and follow through.
- Ability to set and release the golf club—the ability to control the golf club properly in the backswing, downswing, and follow through.

The Titleist Performance Institute Physical Screen



CERTIFIED

 <p>Pelvic Tilt</p>	 <p>Pelvic Rotation</p>	 <p>Torso Rotation</p>	 <p>Overhead Deep Squat</p>
 <p>Toe Touch</p>	 <p>90/90</p>	 <p>Single Leg Balance</p>	 <p>Lat Length Test</p>
 <p>Lower Quarter Rotation</p>	 <p>Seated Trunk Rotation</p>	 <p>Bridge with Leg Extension</p>	 <p>Cervical Rotation</p>
 <p>Forearm Rotation</p>	 <p>Wrist Hinge</p>	 <p>Wrist Flexion / Extension</p>	 <p><i>Optional</i> Reach Roll & Lift</p>

The potential musculoskeletal (MSK) limitations that are brought to light through the TPI screen are each associated with what TPI has determined the 12 most common swing characteristics. Some MSK limitations are seen in all 12 common swing characteristics while other limitations correlate with a few select swing characteristics. The goal is to 1.) find the MSK limitation through the screening process 2.) correct the limitation and improve our swing mechanics with corrective exercise. Through this corrective process, the body is less prone to injury while the player also develops a swing plane that can improve distance, accuracy, and consistency. See the 12 most common swing characteristic below. Source : TPI training manual.

THE 12 MOST COMMON SWING CHARACTERISTICS

As seen from the down-the-line camera view

1. S-Posture
2. C-Posture
3. Loss of Posture
4. Flat Shoulder Plane
5. Early Extension
6. Over-the-Top



As seen from the face-on camera view

1. Sway
2. Slide
3. Reverse Spine Angle
4. Hanging Back
5. Casting/Early Release/Scooping
6. Chicken Winging (can be seen from the down-the-line view as well)



The Titleist Performance Institute has created an educational program around what they have called the **“Body- Swing Connection.”** With a TPI physical screen and a corrective exercise routine, we can gain a deeper awareness or proprioception (awareness of our joints in space) of our individual musculoskeletal systems and improve dysfunctions.

At this point, you may be thinking that all this is great for improving our power and reducing the risk of injury, but how does it improve accuracy and consistency? The answer to that lies in the effect of improved musculo -skeletal movement mechanics on the player’s kinematic sequence during the golf swing.

The Kinematic Sequence

The kinematic sequence in the golf swing refers to a player’s physical timing sequence throughout their swing. The kinematic sequence of a player’s motion is measured through motion capture sensors placed on the player’s body that measures the speed of the golf club, the arm, thorax, and pelvis of the golfer at certain points during the swing. Through research on thousands of golf swings, including PGA tour professionals and amateurs, it was found that there is a sequence that is most efficient in transferring speed and energy from the golfer’s swing to the club head. TPI also found that all great ball strikers generate speed and energy from the lower body and transfer the speed to the torso, then the arm and then into the golf club.

Below in image 1 (Source : TPI training manual) you can identify the body parts in which the sensor are placed. The graph shows the relation of the body parts to each other across time and speed. The vertical lines in the graph identify certain points in the swing such as the top of the backswing, the “transition” into the downswing, the downswing sequence including when contact is made with the ball. As mentioned above, all great ball strikers have very similar firing sequences. This predicts the movement quality and energy transfer from the lower body through the pelvis, into the thorax , into the arms, and finally into the golf club.

IMAGE 1

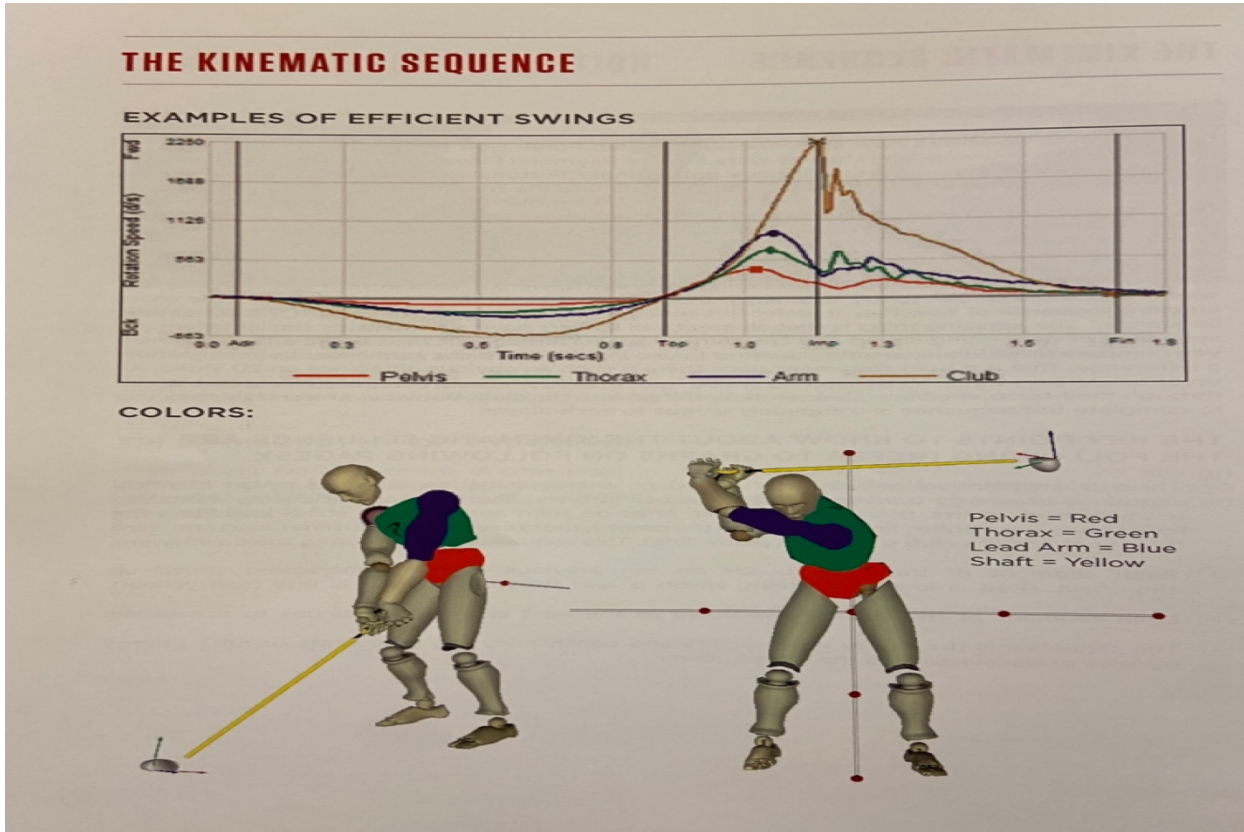
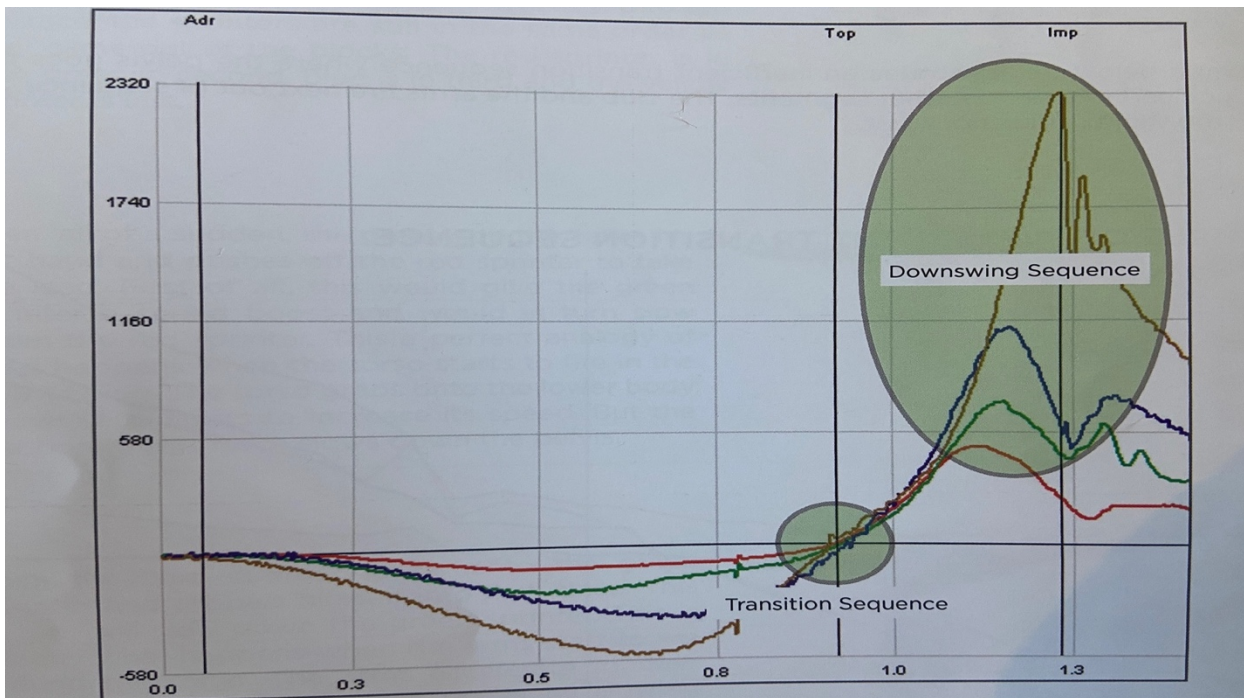


IMAGE 2



It is important to note that part of the **TPI philosophy**” is that there is not one specific way to swing the club but, infinite ways to swing the club. “ They do believe that there is one *efficient* way to swing the club and that is directly related to what the player can physically do.”

So, although great players have very unique looking swings, John Daly, Jim Furyk, Matthew Wolff, Ernie Els, Adam Scott, *their kinematic sequence is very similar* in that they initiate the generation of power in the low body, transfer through the torso into the arms and then into the club which brings the club to the top of the backswing. During the downswing there is lower body deceleration, then the thorax deceleration, followed by lead arm deceleration, and finally the golf club.

Key points to the kinematic sequence are:

*From the top of the downswing leading to the impact with the ball, there is an identical sequence of speed or energy initiation and transfer in all great ball strikers.

*As the downswing initiates, each segment of the body builds on the previous segment, increasing speed up the chain. For example, the thorax builds on the pelvis, the arms build on the thorax, and the club build speed from the arms.

*At impact each segment of the chain slows down as it transfers energy to the segment above. Energy transfers follows Pelvis – Thorax - Lead Arm – and Golf Club.

*This sequence is a key to repeatability and consistency. When musculoskeletal deficiencies are improved, the players’ kinematic sequence and thus better ball striking.

IN SUMMARY

I help individuals improve their body -swing connection. Step 1. Address the golfer with the TPI Physical Screen identifying how a golfer’s body moves in regards to mobility, stability, and symmetry. With improved movement efficiency, the golfer’s kinematic sequence can be improved leading to better ball striking.

2 Week foundational Program to improve mobility, stability and symmetry

building a foundation for Power, Strength, and Speed training.

Before starting any Fitness program please consult your physician for clearance.

Week 1:

STEP 1



STEP 2



Thoracic Mobilization with Hands Behind Head on Foam Roll

REPS: 10 | SETS: 1 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying on your back with your knees bent, resting your mid back on a foam roll with your hands behind your head.

Movement

Slowly roll back and forth over the foam roller.

Tip

Make sure to use your hands to only support your head and do not let your low back arch during the exercise.

STEP 1



STEP 2



Supine Lower Trunk Rotation

REPS: 10 | SETS: 1 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying on your back with your knees bent and feet resting on the floor.

Movement

Keeping your back flat, slowly rotate your knees down towards the floor until you feel a stretch in your trunk and hold.

Tip

Make sure that your back and shoulders stay in contact with the floor.

STEP 1



STEP 2



STEP 3



Sidelying Thoracic Rotation with Open Book

REPS: 10 | SETS: 1 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying on your side with your legs bent at a 75 degree angle and your arms together straight in front of you on the ground.

Movement

Slide your top hand back and forth over your bottom hand 5 times, rotating your shoulders. Then, lift your top arm straight up and over to the floor on your other side.

Tip

Make sure to keep your knees together and only rotate your back and upper arm. Your hips should stay facing forward.

STEP 1



Supine Piriformis Stretch with Foot on Ground

REPS: 10 | SETS: 1 | DAILY: 1 | WEEKLY: 3

Setup

Begin by lying on your back with both knees bent and feet resting flat on the ground. Cross one leg over the other so your foot is resting on your knee.

Movement

Grab your leg just below the knee and slowly draw it towards your opposite shoulder until you feel a stretch in your buttocks.

Tip

Do not allow your back to twist or bend excessively during the stretch.

STEP 1



STEP 2



Gastroc Stretch on Wall

REPS: 10 | SETS: 1 | DAILY: 1 | WEEKLY: 3

Setup

Begin in a standing upright position in front of a wall.

Movement

Place your hands on the wall and extend one leg straight backward, bending your front leg, until you feel a stretch in the calf of your back leg and hold.

Tip

Make sure to keep your heels on the ground and back knee straight during the stretch.

WEEK 1 Continued

STEP 1



Supine Transversus Abdominis Bracing - Hands on Stomach

REPS: 10 | SETS: 2 | HOLD: 2 S | DAILY: 1 | WEEKLY: 3

Setup

Begin lying on your back with your knees bent, feet resting on the floor, and your fingers resting on your stomach just above your hip bones.

Movement

Tighten your abdominals, pulling your navel in toward your spine and up. You should feel your muscles contract under your fingers. Hold this position, then relax and repeat.

Tip

Make sure to keep your back flat against the floor and do not hold your breath as you tighten your muscles.

STEP 1



STEP 2



Full Superman on Table

REPS: 10 | SETS: 2 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying on your front on a table with your arms straight overhead.

Movement

Engaging your back and core muscles, slowly raise your arms, upper body, and legs off the surface. Hold briefly, then relax and repeat.

Tip

Make sure to keep your core engaged and avoid excess tension in your neck and shoulders during the exercise.

STEP 1



STEP 2



Supine Bridge

REPS: 10 | SETS: 2 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying on your back with your arms resting at your sides, your legs bent at the knees and your feet flat on the ground.

Movement

Tighten your abdominals and slowly lift your hips off the floor into a bridge position, keeping your back straight.

Tip

Make sure to keep your trunk stiff throughout the exercise and your arms flat on the floor.

STEP 1



STEP 2



Sidelying Hip Abduction

REPS: 10 | SETS: 2 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying on your side with your top leg straight and your bottom leg bent.

Movement

Lift your top leg up toward the ceiling, then slowly lower it back down and repeat.

Tip

Make sure to keep your leg straight and do not let your hips roll backward or forward during the exercise.

STEP 1



STEP 2



Supine Active Straight Leg Raise

REPS: 10 | SETS: 2 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying on your back with one knee bent and your other leg straight.

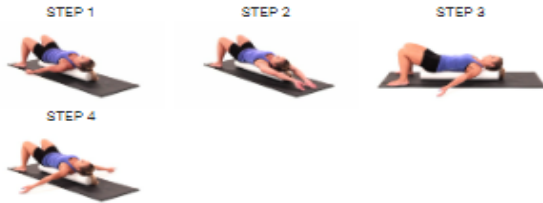
Movement

Engaging your thigh muscles, slowly lift your straight leg until it is parallel with your other thigh, then lower it back to the starting position and repeat.

Tip

Make sure to keep your leg straight and do not let your back arch during the exercise.

WEEK 2



Snow Angels on Foam Roll

REPS: 10 | SETS: 1 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying with a foam roll vertically along the middle of your back, knees bent, and your arms resting on the ground.

Movement

Spread your arms straight out to your sides, then up overhead, as if you were making a snow angel, then bring them back down to your sides, and repeat. Your fingertips should stay in contact with the ground.

Tip

Make sure not to arch your back as you raise your arms overhead.



Prone Shoulder External Rotation

REPS: 10 | SETS: 1 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying face down on a table or bed with one arm bent at 90 degrees, holding a dumbbell and hanging toward the floor.

Movement

Rotate your arm upward so it is parallel with your body. Next, rotate it back down and repeat.

Tip

Make sure to keep your elbow bent at a right angle.



Standing Ankle Dorsiflexion Stretch on Chair

REPS: 10 | SETS: 1 | DAILY: 1 | WEEKLY: 3

Setup

Begin in a standing upright position facing a chair.

Movement

Place your affected foot on the seat of the chair and slowly lean forward over your foot, bending your ankle. Hold, then relax and repeat.

Tip

Make sure to maintain your balance and do not let your heel lift off the seat of the chair.



Quadruped Thoracic Spine Extension

REPS: 10 | SETS: 1 | DAILY: 1 | WEEKLY: 3

Setup

Begin on all fours.

Movement

Move your hands out in front of your body while keeping your legs in the same position and bend your chest down toward the floor until you feel a stretch in your upper back and hold.

Tip

Make sure your hips don't move backward during the stretch.



Supine Transversus Abdominis Bracing with Leg Extension

REPS: 10 | SETS: 2 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying on your back with your knees bent, feet resting on the floor, and your fingers resting on your stomach just above your hip bones.

Movement

Tighten your abdominals, pulling your navel in toward your spine and up. You should feel your muscles contract under your fingers. Hold this position, then straighten one knee, holding your leg a few inches off the ground. Bring it back to the starting position and repeat with your other leg.

Tip

Make sure to keep your abdominals tight as you extend your legs. Do not hold your breath during the exercise.

WEEK 2 continued

STEP 1



STEP 2



STEP 3



Marching Bridge

REPS: 10 | SETS: 2 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying on your back with your arms laying straight to your sides, knees bent, and feet flat on the ground.

Movement

Tighten your abdominals and slowly lift your hips off the floor into a bridge position. Lift one leg off the ground, keeping your knee bent. Lower it back down and repeat, alternating between each leg.

Tip

Make sure to keep your back straight throughout the exercise and your arms flat on the floor.

STEP 1



STEP 2



Side Stepping with Resistance at Ankles

REPS: 10 | SETS: 2 | DAILY: 1 | WEEKLY: 3

Setup

Begin standing upright with a resistance band looped around your ankles. Bend your knees slightly so you are in a mini squat position.

Movement

Slowly step sideways, maintaining tension in the band.

Tip

Make sure to keep your feet pointing straight forward and do not let your knees collapse inward during the exercise.

STEP 1



STEP 2



Standard Plank

REPS: 10 | SETS: 2 | DAILY: 1 | WEEKLY: 3

Setup

Begin lying on your front, propped up on your elbows.

Movement

Engage your abdominal muscles and lift your hips and legs up into a plank position, keeping your elbows directly under your shoulders. Hold this position.

Tip

Make sure to keep your back straight and maintain a gentle chin tuck during the exercise.

STEP 1



STEP 2



Shoulder External Rotation Reactive Isometrics

REPS: 10 | SETS: 2 | DAILY: 1 | WEEKLY: 3

Setup

Begin standing upright with your elbow bent at a 90-degree angle and a towel roll tucked under your upper arm, holding a resistance band that is anchored out to your side across your body.

Movement

Slowly step to the side, away from the band, without letting your arm change position. Step back to the starting position and repeat.

Tip

Make sure to keep your hips and shoulders facing forward and do not shrug your shoulders during the exercise.

STEP 1



STEP 2



Wall Squat

REPS: 10 | SETS: 2 | DAILY: 1 | WEEKLY: 3

Setup

Begin in a standing upright position in front of a wall with your feet slightly wider than shoulder width apart.

Movement

Lean back into a squat against the wall with your knees bent to 90 degrees, and hold this position.

Tip

Make sure your knees are not bent forward past your toes and keep your back flat against the wall during the exercise.

In review: The first step is a TPI screen followed by a corrective exercise program. As the limitations are improved and function has been renewed, we increase work load to improve overall strength while not sacrificing optimal movement mechanics. When work load is safely increased, strength and power result.

References:

Phillips, Dave, and Rose, Dr. Greg, Titleist Performance Institute (2019) Level 1 Seminar Manual.

MedBridge. 2022 (n.d.).[Exercise builder]. <https://www.medbridgeeducation.com/>