Pilates Fore: Improving Mobility and Flexibility in a Golfer's Swing

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Abstract

Golf has long been hailed as one of the most challenging and physically demanding sports. While there isn’t the physical contact or impact of other sports (such as rugby and football), it is essential every golfer have solid stability, rotation and balance. A proper golf swing utilizes almost all the muscles of the body, making Pilates a useful training tool for golfers of any kind. Golfers often suffer muscle imbalances in the legs, hips, arms, shoulders and low back. Using the Basi Block system, all the various muscles of the body can be addressed and strengthened, improving any golfer's game.
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The Anatomy of the Golf Swing

Golf requires repeating the same essential movements. As a result, some muscles become overused and others weaken, causing an imbalance\(^1\). Improving one’s golf swing involves more than just upper body strength. While the forearms do transmit all the force into the club, the movement must come from both upper and lower body muscles, keeping the lower body grounded and stable while the upper body rotates and swings around to hit the ball.
As a golfer moves through his or her swing, it requires great coordination by the athlete and an ability to separate the lower body and pelvis from the upper body. The transition between these two phases of the swing is initiated by the golfer moving the lower body into position to allow for the greatest muscular efficiency\textsuperscript{2}. Research has shown that the key lower body muscle that helps your swing is the gluteus maximus, being responsible for hip external and internal rotation on the backswing and downswing, as well as hip extension which helps you complete your swing with a solid balanced posture\textsuperscript{3}. However, the gluteus maximus doesn’t act alone. Strong quadriceps, adductor longus, gastrocnemius, and gluteus medius are also vitally important to the golfer’s swing.

Moving into the upper body muscles, we start with the importance of the obliques and abdominals. The transverse abdominis, the deepest layer of the abdominal muscles, is responsible for not only increasing the speed and distance of a swing, but also is essential in protecting the lower back. The internal and external obliques work together to rotate the torso. Strengthening the internal and external obliques gives the golfer a wider range of motion. The rectus abdominis works to flex the spinal column, narrowing the space between the pelvis and ribs during the movement of the golf swing\textsuperscript{2}.

With so many muscles in the upper body being utilized, it is necessary to focus in on the biggest contributors. The pectoralis major is vital in the golf swing as it helps the shoulder flex and the arm extend, as well as providing rotation. Working with the pectoralis major is the latissimus dorsi. This large muscle is responsible for adduction, extension, horizontal abduction, and medial internal rotation of the shoulder joint\textsuperscript{4}. The
latissimus dorsi also aids in extension and lateral flexion of the lumbar spine. Lastly, the forearm must be mentioned as it is the muscle which allows the golfer to have a proper grip on his or her club. The major forearm muscles used in a golf grip include the flexor digitorum superficialis, which are top-level muscles found in the forearm, as well as deeper muscles such as the flexor digitorum profundus and the flexor pollicis longus\textsuperscript{4}.
Case Study

Paul is a 36 year old amateur golfer. He started playing golf at 20 years old, trying to play at least two to four times per month. Paul is in good athletic shape, engaging in regular cardiovascular activities such as running. He had heard that Pilates has been used by many professional golfers, such as Tiger Woods, to help with flexibility, core muscle strength, as well as protecting against injuries. Protecting himself from injury is especially important to Paul. 10 years ago he fell while playing soccer with friends and family. His arm had been extended when he fell, dislocating his shoulder, and ultimately he was diagnosed with a SLAP (Superior Labrum from Anterior to Posterior) tear. He had his shoulder surgically repaired, and then underwent six months of physical therapy after his surgery. While he was able to resume his golf game, he has suffered some limitations with his shoulder since his injury. He also admits to being very stiff and wanting to work on increasing his flexibility. Paul’s job requires him to be sitting most of the day, using a computer which has resulted in poor posture and some minor back pain.

When designing Paul's Basi workout, I kept his goals in mind but also his limitations. We started with foundation work to build up his strength, as well as increasing his flexibility. Paul is in good physical shape overall, but does report feeling weak in his core. While the workout I designed is a total body workout using the Basi Block System, I did put some additional focus on his abdominals.
# Basi Block System

<table>
<thead>
<tr>
<th>Warm Up</th>
<th>Mat: Roll down, pelvic curl, spine twist supine, chest lift, chest lift with rotation, criss cross, spine twist</th>
<th>Main goal is to warm up the entire body, but special attention is paid to warming up and working the abdominals and obliques. Focus is also put on rotation with the last three exercises, imitating the rotation used in a golf swing.</th>
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<tbody>
<tr>
<td>Footwork</td>
<td>Cadillac: parallel heels, parallel toes, V position toes, open V heels, open V toes, calf raises, prances, single leg heel, single leg toe, hip opener</td>
<td>I chose the Cadillac for footwork to focus on hamstring strength and stretch as well as focusing on pelvic lumbar stabilization which is needed in the golf swing. The hip opener is also key, working on hip external rotator control.</td>
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<tr>
<td>Abdominal Work</td>
<td>Reformer: Hundred prep, Short box series: round back, flat back, tilt, twist, round about</td>
<td>The short box series is excellent for focusing on all the abdominal muscles and layers. Rotation using the oblique muscles helps Paul gain a wider range of motion in his swing.</td>
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<tr>
<td>Hip Work</td>
<td>Cadillac: Basic leg springs: Frog, circles (down/up), walking, bicycles.</td>
<td>Doing hip work on the Cadillac allows us to continue focusing on hip joint mobility and hamstring flexibility. Focus was also put on keeping the abs engaged to stabilize the pelvis. Walking and bicycle also works on posture, keeping the spine in neutral as the legs move.</td>
</tr>
<tr>
<td>Spinal Articulation</td>
<td>Reformer: Bottom lift <strong>while an important block, it would not be used in the first 1-2 sessions.</strong></td>
<td>With the muscle focus of this exercise being abdominals and hamstrings, it will increase strength in these areas which is one of Paul’s goals. It also helps with hip extensor strength.</td>
</tr>
<tr>
<td>Stretches</td>
<td>Reformer: Standing lunge</td>
<td>This exercise does an excellent job in stretching both the hamstrings and hip flexors, helping with mobility in his golf swing.</td>
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### Full Body Integration

| **Reformer**: Up stretch 1, elephant, Knee stretch series: round back, flat back, scooter | With the knee stretch series the abdominals are the focus, but also works on pelvic lumbar stabilization, hip & knee extensor control/strength and trunk stabilization. Elephant continues to use the abdominals but also focuses on the back extensors, while stretching the shoulders and hamstrings. **Full Body Integration A/M will not be integrated until after 20 sessions.** |

### Arm Work

| **Cadillac**: Arms standing series: chest expansion, hug a tree, circles (up/down), punches, biceps. | Using the springs on the Cadillac allowed Paul to not only control the tension in the springs, but also allows for observation of any differing strength/range of motion in his surgically repaired shoulder. This arm series also focuses on trunk stabilization and posture while working the arms which is perfect for a golfer. The arm circles are especially important as they work on range of motion and shoulder mobility. With Paul’s shoulder injury, he can work to loosen and strengthen his shoulder at his own pace. |

### Leg Work

| **Reformer**: Hamstring curls | While the hamstrings is the focus of this exercise, the abdominals must stay engaged with the spine staying extended. Focus is also put on hip extensor strength and knee flexor strength, protecting the lower body during a golf swing. |

### Lateral Flexion

| **Reformer**: Mermaid | This exercise focuses on the obliques and also works on the arm moving freely from the trunk, needed in a proper golf swing. |

### Back Extension

| **Reformer**: Breaststroke prep | This move may be basic, but starts working on better posture for Paul not only in his golf swing but also in day to day life. The back extensors are strengthened as they stay engaged throughout the exercise. |
Conclusion

The popularity of Pilates amongst golfers continues to gain popularity. Regular Pilates workouts will make the golfer not only stronger, but more attuned to their body, as they use efficient muscle recruitment. The hope is for Pilates to help the golfer initiate their swing from their abdominals, adding control and distance to their swing. Strengthening the back extensors and hamstrings, works towards proper posture for the golfer. Stretching the hamstrings and hip extensors aides with improved mobility during the golf swing. As the golfer utilizes the lessons learned in their Pilates practice, the risk for injury is lowered – as will be the score on their scorecard.
Bibliography

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Image source:

1. Golf Swing Figure:  
   https://www.google.com/search?q=anatomy+of+golf+swing