

# A Three-Week Conditioning Program for Improved Golf Performance

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To be a successful golfer, one must perform hundreds to thousands of swings each week.<sup>1</sup> Due to the volume of repetitive training, golfers may be at risk for development of neck, shoulder, and torso injuries.<sup>2</sup> Consequences of neck injuries include pain, inflexibility,

and poor body alignment, which are factors that may influence golf swing mechanics and reduce club-head speed and ball-striking distance.<sup>3</sup> A golfer with a neck injury may not be able to keep the head still during the backswing and downswing phases. Ballard et al.<sup>4</sup> recommend that a golfer should maintain his or her head in a steady position from

the ball address, throughout the back swing and downswing, until the ball is hit. This “head still” technique is essential to keep the eyes on the ball until club-head impact,<sup>5</sup> which enhances swing control.<sup>6,7</sup> It is also essential to minimize lateral sway, which is influenced by the vestibular system.<sup>8</sup> Visual focus and vestibular control may improve golf performance.

Several conditioning programs have been recommended to improve muscle flexibility and strength of shoulder and torso regions.<sup>3</sup> There is a paucity of literature that is relevant to neck muscle inflexibility and the inability to maintain a “head still” position, however. The purpose of this report is to present a 3-week conditioning program for improvement of the ability to maintain a “head still” position; improvement of muscle flexibility of the shoulder, torso, and neck; and improvement of core muscle strength for enhancement of golf performance.

## Case Report

A 19-year-old male amateur golfer (height, 5 ft. 10 inches; weight, 173 lbs; ranked #62 among NCAA golfers in 2007; handicap index, HCP, < 10), who started playing golf at 7 years of age, complained that left shoulder stiffness restricted the follow-through of his golf swing. He stated that problem was due to muscle tension and pain that had a gradual onset. He also complained of reduced torso rotation throughout the swing. His coach observed that he was failing to keep his head still during the backswing. His club-head speed (51 m/s; 113 mph) had decreased substantially in comparison to its value five years previously, when he was 14 years old (55 m/s; 122 mph).

## KEY POINTS

- ▶ Muscular inflexibility may cause pain and affect a golfer's swing mechanics.
- ▶ Neck muscle inflexibility would hinder the “head still” ability.
- ▶ “Head still” position during swinging may enhance balance and eye-line of the golfer.
- ▶ Improving muscle flexibility may allow proper head position during the golf swing.

Range of motion (ROM), muscle tightness, and trigger point sensitivity were assessed by a physiotherapist. The examination revealed a significant decrease in the ROM for the following: (a) external rotation of the right shoulder (~60 degrees, measured with 90 degrees of shoulder abduction and 90 degrees of elbow flexion); (b) right lateral flexion of the torso in the low back region and left lateral flexion of the torso in the thoracic region; and (c) torso rotation (right side = 30 degrees and left side = 60 degrees, measured in a seated position). No deficiency in cervical motion was noted. The muscles of the shoulder, torso, and neck regions were manually assessed for tissue thickness, immobility, and pain (Table 1).<sup>9</sup> Shoulder kyphosis and weak low back musculature were apparent.

## Evaluation

Body alignment, muscle pain, flexibility, head position, and golf swing performance were evaluated before and after administration of a conditioning program. Muscle tension pain was reported by the golfer, and muscle flexibility was assessed by a clinician, both of which were rated on a 4-point scale (0 = none, 1 = mild pain /

inflexibility, 2 = moderate pain / inflexibility, 3 = severe pain / inflexibility).<sup>10</sup> Golf swing performance indicators were drive distance and club-head speed, which were measured by a golf coach at a driving range. Club-head speed was measured with the portable speed radar device (Sports Sensors, Cincinnati, OH).

The golfer actively performed the following movements to end-range: forward torso bending, lateral torso bending, torso rotation, horizontal shoulder extension, and shoulder flexion. Forward and lateral side bending were quantified by measuring the vertical distance from finger tip to the ground; horizontal arm extension was measured as the distance between the tips of the middle fingers. While performing the overhead squat test, shoulder flexion (with minimal subscapular movement) was quantified as the horizontal distance between the finger tip and the frontal plane (Figure 1). A digital video camera (30Hz, positioned overhead to capture images perpendicular to the plane of motion) and software that permits measurement of angles on video images (Dartfish, Fribourg, Switzerland) were used to quantify torso rotational displacement while the golfer actively performed the movement (Figure 2 & Figure 3).<sup>11</sup>

The golfer performed five swings while attempting to maintain a “head still” position. The same golf club was used for all of the analyzed swings (Wilson

TABLE 1. MUSCLE INFLEXIBILITY AND TENSION-PAIN BEFORE AND AFTER THE CONDITIONING PROGRAM			
	Location	Before	After
Inflexibility	Levator Scapulae	1	1
	Scalenes	1	0
	Pectoralis major	3	0
	Pectoralis minor	1	0
	Upper Trapezius	1	0
Tension-Pain	Erector Spinae L2-L3	1	0
	Erector Spinae L4-L5	1	0
	Left Anterior Deltoid	2	0
	Right Anterior Deltoid	1	0

Note. 0 = none, 1 = mild pain / inflexibility, 2 = moderate pain / inflexibility, 3 = severe pain / inflexibility.

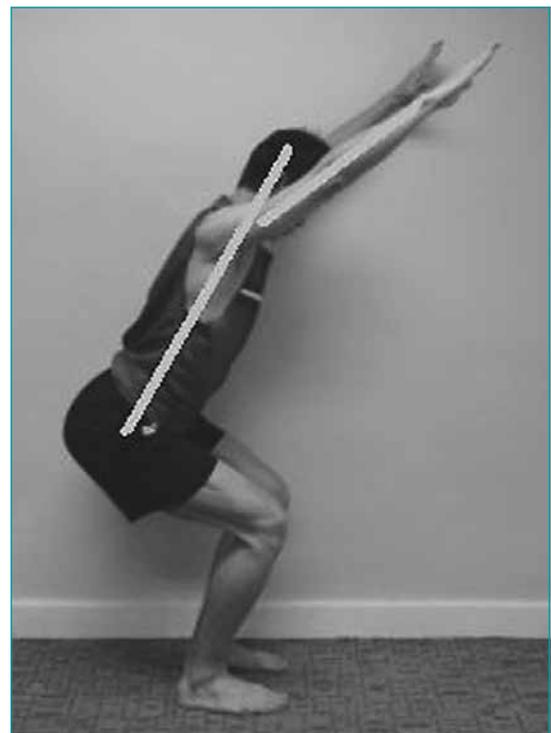


Figure 1 Shoulder flexion evaluation – overhead squat test.