

BIOMECHANICAL GOLF CONDITIONING - Expanded

ROBERT COLLIER
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**Posture, Flexibility, Static &
Dynamic Stability, Strength &
Power**



**A Lower Handicap &
Prevention/recovery from Injury**

What is Biomechanical Golf conditioning and how can it improve my game?

Biomechanical golf conditioning is based on the principles of **functional exercise** which is designed to restore balance, length, strength and coordination of golf specific movement patterns. Following the posture, flexibility, stability, strength, power formula will lead to prevention/improvement of injury and optimal golfing performance. Each of these phases will be discussed in more detail below.

Biomechanical golf conditioning establishes balance between the tonic (stabilizer) and phasic (movement) muscles of the body. Generally, the phasic muscles lengthen and weaken due to faulty loading and need to be strengthened while the tonic muscles shorten and tighten from overuse and need to be stretched. This results in improper recruitment of muscles surrounding joints and leads to less than optimal joint mechanics. Joint axis of rotation will be reduced if tonic muscles start to perform the task of the weak phasic muscles. Optimal posture, flexibility, stability and overall muscle balance is the key to balanced recruitment of tonic and phasic muscles which is vital for ideal joint mechanics and swing consistency.

The importance of balance is highlighted in the fact that postural sway and alignment are synonymous. The greater the misalignment of the body the greater the lateral sway during the golf swing. Golf is rotation. Therefore, the more lateral sway the golfer has the less effective their rotation will be. Increased lateral sway will only translate into more swing faults.

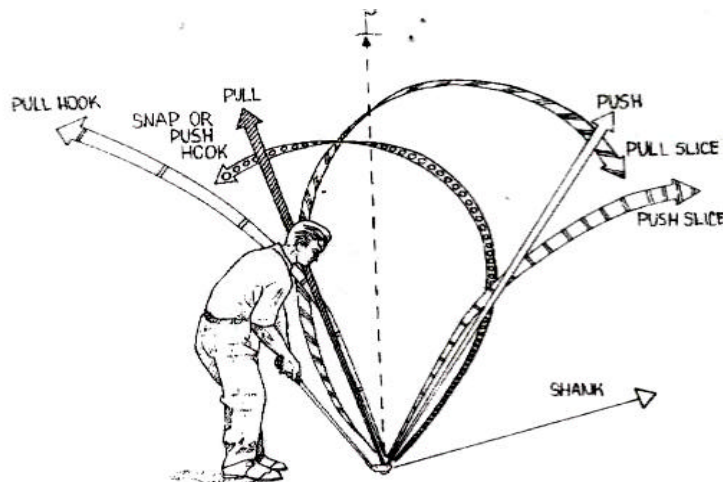
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SWING FAULTS



Biomechanical Golf conditioning (Physical factors) will optimise the following ball flight factors and therefore improve your golf game.

Ball flight factors

1. Clubface alignment
2. Swing path
3. Angle of attack
4. Hitting the sweet spot
5. Club head speed

Physical Factors

- 1-4 – Posture and muscle balance, Flexibility & Static & Dynamic Stability
- 5 – Strength and Power

Why Condition for Golf?

To Prevent Injury

Golf is often taken up by more mature people who are past running around a rugby, soccer or cricket ground. Frequently, these people are not in the physical condition they once were. They view golf as a game of technical skill rather than an athletic event. Unfortunately, the result of this is the individual often ends up with injury problems and performance plateaus. The reason is simple. GOLF IS QUITE SIMPLY A HIGHLY ATHLETIC EVENT and should be treated as such.

Amateur Golfers achieve approximately 90% of their peak muscle activity when driving a ball. This is the same lifting intensity as picking up a weight that can only be lifted four times before total fatigue. Yet golfers fail to consider that they strike a ball an average 30-40 times a game with comparable intensity.

Too often golfers and other athletes have injuries that are treated by quick fix solutions rather than getting to the cause of the pain. Pain in the back, shoulder, knee, wrist and elbow are all too common among golfers. At any given time 30% of all professional golfers are playing injured. 53% of male and 45% of female golfers suffer from back pain.

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To Improve Performance

Correct golf conditioning will balance the musculoskeletal system and establish quality motor engrams which are the basis for swing and therefore golf consistency. The following are some examples of how golfing performance can be improved.

- After 5 weeks on the golf conditioning programme I increased my drive off the tee from 200 to 245 metres and my handicap is down from an 8 to a 6. (Jenny Sim 12)

- After 5 months on the programme my handicap has come down 3 shots. (Chris Sweeney)

- Since commencing training with Robert Collier 6 months ago I have greatly increased core strength and general fitness, allowing me to increase my driving distance by 15% and maintain performance under physically grueling circumstances. (Emmerson Hall – NZPGA Member)

- In doing the golf conditioning programme I wanted to become more flexible and have better core strength before receiving lessons. In taking this approach I am achieving greater swing consistency and better golf. (Steve Kilpatrick)

- The golf conditioning programme has personally been an enlightening and beneficial experience. (Don Forbes)

- I had my best score for 5 years last Saturday (74 on a 9 handicap) which is a direct result of your conditioning programme coupled with golf lessons. Without the conditioning programme the lessons still wouldn't be effective. Your programme has been a good investment. Thankyou. (Alan Calder)

- Within 6 months on the golf conditioning programme I have increased my driving distance from 220 to 260 metres and my handicap has come down from a 12 to 4. I look forward to further improvements. (Soshi Harari, 16)

- Having completed the course, we just wanted to thank you again for the excellent programme you formulated us. Jocelyn and I consider our respective games have definitely benefited from the additional torso flexibility introduced into our swings by the programme in addition to the general muscle strengthening which has improved our ball address stance, combating lateral sway. Your readiness to adapt the programme at the individual sessions to allow for the frailties of wrinklies such as ourselves is also much appreciated. In short, we shall recommend your course to any enquirers. (Jocelyn and Malcolm McKay)

The 5 Phases of Golf Conditioning

Posture



- Is defined as the position from which movement begins and ends
- Poor posture = poor rotation and joint wear/tear
- Optimal posture = improved rotation and performance.
- Achieve by = muscle balance and postural awareness
- Be aware of Red flags (Degenerative spine problems, upper cervical problems)

Optimal posture achieved by establishing muscle balance throughout the musculoskeletal system. Achieving optimal posture in the sagittal, frontal and transverse plane is essential to gain swing consistency.

Frontal/transverse plane – Having a C curve in the spine, a rotated or hiked pelvis or shoulder girdle will limit rotation and swing consistency as the body will always compensate by moving the body into an undesirable position to help maintain club head speed.

Sagittal plane - Having too much upper back flexion and being tight and internally rotated through the shoulders will limit rotation and may lead to overuse and injury of the neck, shoulders, elbows and wrists.

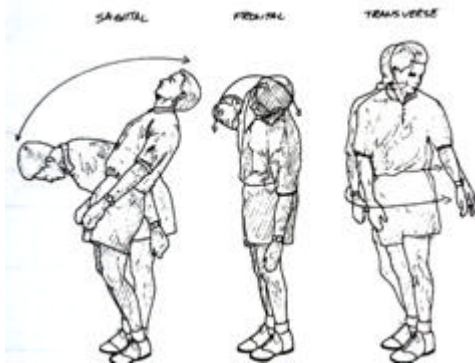
Posture (alignment) comes first before stability can improve. The worse your postural alignment the worse your postural sway. When a golfer has good postural alignment his or her body will hold an optimal rotational axis which means reduced lateral sway, swing compensations and injury potential.

Be aware that joint restrictions must be identified and addressed first before posture, flexibility and muscle balance can be properly improved. The key areas for this are restrictions of the cervical spine, shoulder girdle, thoracic spine, sacro-iliac joint, lumbar spine and hips. Restrictions in these areas will lead to movement compensations in other areas of the body which will limit performance and may lead to injury of the spine, shoulders, elbows and wrists. Also be aware that restrictions in either the lumbar spine/sacroiliac joint and the cervical spine are synonymous.

Red flags

Need to be aware of spinal subluxations and the important relationship of the lumbar spine with the cervical spine. The atlas and occiput have up to 25 degrees of movement, whereas C1-C7 have only 4 degrees of movement. Therefore a restriction in the lumbar or cervical spine will influence the proper movement mechanics of the rest of the body.

Flexibility

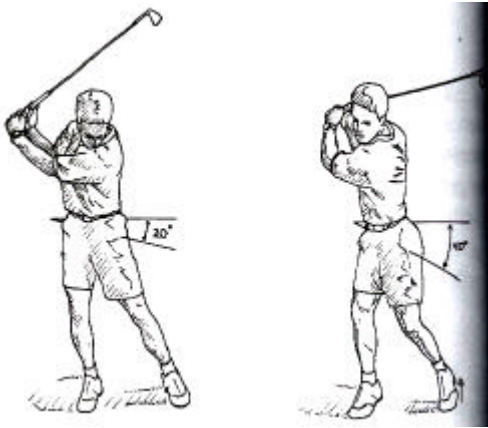


Optimal flexibility is required to allow the golfer to get in the required position to consistently execute a quality golf swing time and time again.

Flexibility needs to be assessed in all three planes sagittal, frontal (side flexion couples with rotation) and transverse (Golf is rotation). Lack of flexibility will increase the golfer's postural sway, and diminish their biomechanical advantage (joint mechanics will not be optimal which will lead to development of poor motor engrams). E.g. The shoulder girdle muscles attach to both sides of a joint and act synergistically. That is, the shoulder joint produces internal and external rotation. When the synergy or balance of the pec minor (shoulder protraction) and rhomboid/mid trapezius (shoulder retraction) is altered and/or the balance between the mid trapezius/rhomboids (shoulder depression) and the latissimus dorsi (Shoulder elevation) changes, joint mechanics and therefore swing mechanics will not be optimal. Compensation therefore needs to occur. The larger the lack of joint balance the more the golfer has to compensate for altered joint mechanics. The more compensations the less stable he or she will be and the more swing faults there will be in their game.

Less than optimal scapular thoracic mobility (shoulder girdle/upper back) will lead to movement compensation and over rotation of the knees, hips and spine as well as increasing lateral sway.

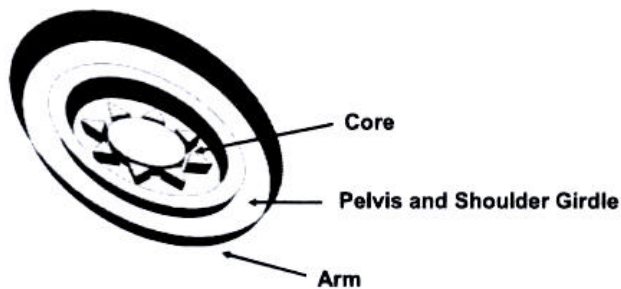
RESTRICTED FLEXIBILITY OF THE HIP AND BACK



Stability

Static stability – Also known as postural stability. Is the ability to remain in one position for a period of time without losing good structural alignment. This is very important for holding correct address position throughout the entire course of a game.

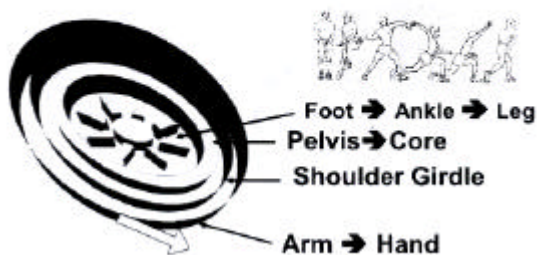
STABILITY IS GENERATED FROM THE CORE OUT



All movement starts from the core which is transferred to the pelvis and shoulder girdle and then expressed through the arm and hand.

FORCE IS GENERATED FROM THE GROUND UP

THROWING ROTATION & FORCE GENERATION



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Force is generated from the ground up. It is then transferred through the foot, ankle and leg, then to the pelvis and core and expressed through the shoulder girdle, arm and hand. The same force generation sequence that applies to throwing a ball also applies to the golf swing.

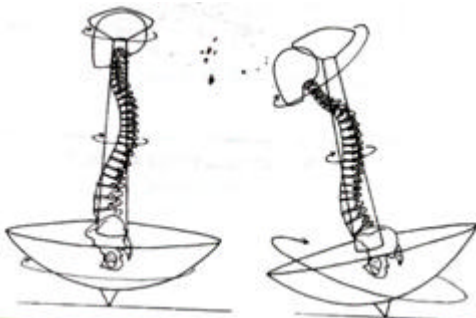
Dynamic stability – Is the ability to keep each and all working joints in optimal alignment during any given movement, such that the efficiency of movement is facilitated and injury is prevented. Lack of training of the stabilizer muscles will lead to increased postural sway as the golfer becomes progressively tired during the round. More than half a head of lateral sway will diminish swing consistency and increase swing faults because the head will move outside the rotational working parameters of the hips. Diminished rotational capacity will lead to compensations and therefore swing faults.

LACK OF DYNAMIC STABILITY = INCREASED POSTURAL SWAY



The less dynamic stability the golfer possesses the greater their lateral sway will be. This will lead to a greater number of swing faults and swing inconsistency.

STABLE AND UNSTABLE AXIS OF ROTATION



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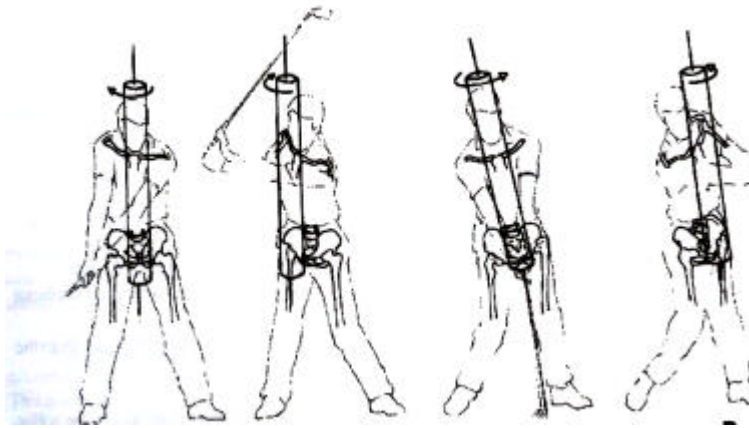
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Golf is rotation. Quality rotation will provide a more consistent swing. Poor rotation only leads to swing faults and inconsistent golf.

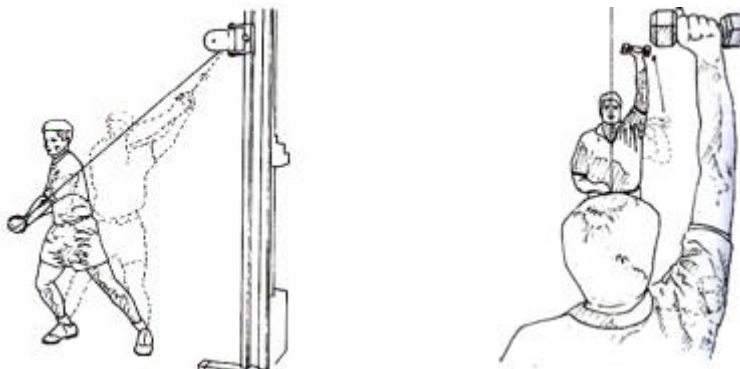
THE TRI-AXIAL SYSTEM AND QUALITY ROTATION



The importance of only moving laterally only half a head during backswing is highlighted on the above diagram. Moving only half a head means the golfer stays within the working rotational parameters of the hip joint. Moving any further than half a head contributes to rotation breaking down and swing faults occurring. The same principle applies on the follow through also.

Strength

- Strength training is vital for the improvement of performance. Strength is important as a prerequisite for power training.
- Strength training will significantly reduce the chance of injury to the back, shoulder, elbow and wrist. Be aware of the following statistics. At any given time 30% of all professional golfers are playing injured. 53% of male and 45% of female golfers suffer from back pain. **GOLFERS NEED TO BE STRONGER TO SURVIVE THE SPORT.**



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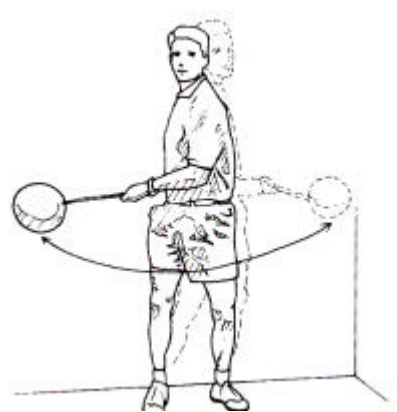
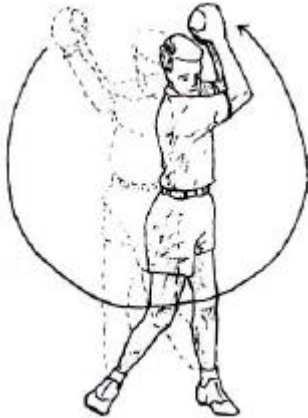
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Power

- Power training is an important extension of strength training. Power training will provide the golfer with even greater gains in their driving distance by increasing club head speed.
- Power exercises must be as close as possible to movement and tempo demands of the golf swing. This is the SAID Principle - specific adaption to imposed demand.



Golf Specific Warm-ups

A golf specific warm-up will lubricate your joints, warm-up your muscles and connective tissues, activate your nervous system and sharpen your senses.

Performing static stretches will inhibit your nervous system, disrupt motor engrams and therefore negatively affect your golf swing. Golf specific warm-up exercises must have a direct correlation to the movement demands of the golf swing. Therefore, they must be dynamic in nature.



Conclusion

To learn how you can take your golf game to the next level, call Robert Collier on **027-223-5039** for 50% off your initial Biomechanical Golf conditioning assessment.

Happy golfing

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