

Stretching the X-Factor for Power

Dr. Robert J. Neal & Ms. Karen A. Harrison

At the elite level, the nature of tournament golf has changed dramatically in the past 10 years: the best players in the world now consistently drive the ball over 300 yards showing scant regard to driving accuracy. Most amateur golfers seem to have a similar obsession with power too. They all want to know what to do to hit the ball further!

That's why when Jim McLean first wrote about the X-Factor in 1992 it was so well received. Golfers learned that driving distance is not as much a function of how far you turn your shoulders and hips to reach the top of the backswing, but that it is partly a function of how much of a gap, or differential, you can create between these two turns at the top. McLean called this gap the "X-Factor" and it is a measure of how much 'coil' a golfer develops in his/her body. While Jim is proud to say that since 1992, "X-Factor" has become part of the golf lexicon, we would like to add two crucial links in this story.

Although, we often hear of these turns of the hips and shoulders being ideal at 45 and 90° respectively, we cannot expect all golfers to fit this 'perfect model'. It is still widely thought that the bigger the X-factor, the more potential there is for power, but we do know that there is an optimal range of values. For PGA Tour Professionals, an X-Factor of between 40 - 50° is the norm; and even for the average golfer, this range *is* within reach.

There are players however; who are limited in their trunk rotational flexibility and they will struggle to reach this ideal range. That isn't to say that it cannot be improved – often it can, with specific stretching exercises. It is important to note that no amount of instruction or practice will change this golfer's capacity to make the desired technical adjustment without the requisite range of motion through the trunk (upper back, lats and side trunk, gluteals and hip flexors are the usual culprits). Good instructors are now recognizing this phenomenon and are suggesting that their students participate in regular physical training, including stretching, to improve their physical capacities.

At The Jim McLean Golf Schools we routinely measure the 'X-Factor' of our students as well as various PGA Tour Professionals using video and 3D motion capture using the Golf BioDynamics system. The hardware available is now



so sophisticated, that it is accurate to within one degree and 1/25th inch! This 3D technology also makes 240 measurements per second, eight times as fast as normal video! So we don't miss much!

When it comes to distance, X-Factor is not the complete story. Further research has highlighted a move we now know as the X-FACTOR STRETCH, as being very important in the power equation. It has been shown to correlate strongly with driving distance and can be defined as the amount (in degrees) the X-Factor increases, or "stretches", from the top of the backswing, to its maximum reading during the early part of the downswing. Simply put, it is how well the hips lead the shoulders in transition.

A good X-Factor Stretch is definitely a hallmark of all the best ball strikers. Our own research shows that golfers with a high X-Factor Stretch hit the ball significantly farther than players who do not increase their X-Factor during the transition phase. Not surprisingly the X-Factor Stretch in amateur golfers is dramatically different from the PGA Tour Professionals. The average X-Factor Stretch of PGA Touring Pro is 17°, three times higher than the average golfer!

The reasons the X-Factor Stretch is so vital to a powerful and efficient golf swing, are that it allows for the correct sequence of body motion, for energy to be stored (and then released) in muscles and tendons, plus it produces more powerful and efficient muscle contractions. It is the quality of this sequence that affects the final impact speed tremendously. When the sequence and timing are destroyed there is a loss of efficiency and power and off centre contact with the ball is the result.

Thus, in a high quality golf swing we observe the hips initiating the action with a small lateral shift and then a rotation. The upper stays relaxed with the shoulders lagging behind. All the time you're shifting and rotating, the arms are responding and preparing for whipping the club powerfully to the ball. The best players can strike the ball with incredible power and yet they seem to expend minimal effort. This apparent effortless disguises the power that these golf athletes generate during the downswing.

Typical amateur golfers often make an over-the-top move, either starting with the arms and hands or by spinning the shoulders too early. By starting incorrectly, the player has little or no chance to deliver the club head to the ball with power and consistency. However, with sufficient flexibility in trunk rotation, quality instruction and dedicated practice



we are able to bring about an alteration in the movement pattern for our golf students. The secret is learning to start the downswing with a lateral shift or 'bump' of the hips towards the target - Stretch the X-Factor!

Now, to be able to stretch the X-Factor, you must first be able to rotate your hips and shoulders independently of each other. Try this as an exercise in front of a mirror! Assume a good golf posture and then cross your arms on your chest. Imagine you are standing in a barrel while you swivel your hips to the left and then back to the right without rotating your upper torso. If you can do this activity easily, then you have the movement capability to get some X-Factor Stretch in your golf swing. If you cannot, then you need to practice this drill! In other words, if you cannot rotate your hips and shoulders independently without a club in your hands and without trying to make contact with a golf ball, there is little prospect of you doing so in your real golf swing.

At the Jim McLean Golf Schools, we also use a highly successful technique called Biofeedback Training to accelerate learning. Using the Golf BioDynamics 3D System during a lesson, we are able select a range of values or a "corridor" that we want the golfer to move in. An audible sound is triggered when the student achieves the correct movement pattern, for example, a change in the differential (of hips and shoulders) at the top or achieving an increase in the X-Factor Stretch in transition. With over 60 different parameters to feedback on, the system gives us the flexibility to tailor the session to suit the individual.

So distance obsessed golfers take note: if you want to hit the ball a long way, X-Factor Stretch is at least as important as the X-Factor gap at the top of the backswing, if not more so! Unless you are already hitting the ball 300 yards this should give you a clear picture of the correct sequence of body motion as opposed as to what you are doing right now. And remember having sufficient flexibility to allow you to move this way is key.

In the next edition we will talk about the most recent **discovery** we have made! We realized after investigating both the X-Factor and X-Factor Stretch that there was still something missing. Stay tuned.