# The Title of this document is

# “A Golf Journey through golf insanity and back to golf sanity”

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# The most recent entries are at the top of the document. The most recent entries represent a return to golf sanity. My oldest entries are at the bottom of this document which is over 160 pages long. Some of the document are my analysis, and many are just pasted articles and web addresses of Youtube golf videos.

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# Incredible drill to master the downswing in golf!

# Worldwide Golf

# [Worldwide Golf](https://www.youtube.com/channel/UCUMvCgtwlqmY5NEqtIeKX5Q)

<https://youtu.be/zB1velb0EqU>

# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[2 weeks ago (edited)](https://www.youtube.com/watch?v=zB1velb0EqU&lc=z135uv45qridzbadu23ytzuiakm1s5og204)

# After editting this post, I have decided the reason people come over the top is two fold. They are cupping the left hand at the top of their back swing, and two they are gripping the golf handle with their right hand, entirely to much. If you really want to get rid of weak glancing blows, you are probably better off just letting the right hand go along for the ride, and you can even do drills where the right hand comes off of the golf handle after impact. I guess I am saying that there might be a way to create additional power by hitting with the right hand, but under the restriction that the right hand grips the handle very lightly, and so it is just the intertia of the right arm, that is applying velocity to the club head. In other words the right arm at the top of the swing, mearly provides mass that helps the club drop down into the slot, and I do not believe an average player shoulder be activating any hand muscles in the right hand.In other words it is almost impossible to FIRE the right arm and straighten the right arm before impact, if you grip the club with the right hand with any kind of significant pressure. The right arm fires naturally and straighens naturally before impact, if the right arm is relaxed as possible. Any power provided to the club by the right hand, should be accomplished by the muscles in the right arm that are facing the target at impact. If this is too difficult to accomplish for you at this time, then apply all of the energy to the club by thinking about the left hand and left arm and left shoulder.

# If you find my analysis to be useful and it works for you, then you can start thinking about increasing your club head speed using ground up leverage, at that point just search youtube for golf using the ground for leverage.

#

# I should note two things here. One; Everything I have went through to develop my swing analysis is due to me having narrow shoulders and a big stomach, which in turn leads to my right elbow hitting my right rib cage. This led me to totally re-think all the swings that I could not accomplish, which would create space for my right elbow to pass by my right rib cage. Since I could not do swing where you cleared the hips, or slide and rotate techniques which in theory would create space for my right elbow to pass by my right rib cage, then I was left with basing my swing on minimal right to none right hand grip pressure, and providing the left hand for quidance stability.The second item is that if you are hitting a ball that is near the base of a tree, and if there are roots that you will contact when you strike the ball, then it is very advisable not to grip the club handle firmly with the right hand. If you right hand is gripping the club handle tightly and you hit a tree root, you might get an injury to your right hand.

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# Regards Luke﻿

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# Myths in Golf. Part 1: Forearm rotation closes the club face

# Oliver Heuler

# [Oliver Heuler](https://www.youtube.com/channel/UClsOfSeB05vP4CX3-pyqJpQ)

# <https://youtu.be/LfD7FcILdpg?list=PLHaFvguB7Q6s-LMpoG85dzRZyr7dSYjnx>

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# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[6 minutes ago (edited)](https://www.youtube.com/watch?v=LfD7FcILdpg&lc=z122gr4pdxndcrxvd23ytzuiakm1s5og204)

# After writing and pasting 162 pages of every kind of golf theory, If have concluded what I have written in the next paragraph. I concluded that I am forced to have to have a left hand dominate swing, with a almost zero right hand grip pressure, because my right elbow hits my right rib cage. I spent 162 pages looking for a way to manipulate my body to create a space for my right elbow to pass by my right rib cage without making contact. I have not been able to find a method that achieves that goal.Ok let us face it. My right elbow hits my right rib cage, because I have a big stomach and narrow shoulders, my lower back has degenerated disks, and I cannot clear my hips and body to make room for my right elbow to get by my right rib cage. So I see a couple of options. Grip the club entirely in the left hand, and let the right hand go along for the ride. At this point I have two options, one the right hands stays on the club for the entire swing, and two, let the right hand slide off of the club when the right elbow hits my right rib cage. The first option will be my swing, the second option will be my primary drill.Conclusion, I under this swing, can only apply power with my right hand up and until the time that my right elbow hits my right rib cage. I will only be able to apply power with my right hand with a zero grip pressure of my right hand. If I apply power with my right hand and apply any grip pressure with my right hand, then my entire right arm stiffens. This means that I may apply power with my right hand, but only up and until my right elbow makes contact with the right rib cage, and also under the restriction that I may only apply power with my right hand, when my right hand grip is restrained in that it may not grip the club with my right hand muscles.

#

# The only other useful piece of information I picked up was to bow my left wrist at some point, as I had a long history of cupping my left wrist at the top of my back swing. I also noticed that if I just let the right hand go along for the ride, then my left wrist bows automatically, and it was my right hand grip pressure that caused my left wrist to cup. Now if you want to hit a fade, perhaps cupping the left wrist is proper and good, but I doubt it. The only reason I had this thought is some base ball players cup their left wrist when they want to hit a slice ( for a right handed player). What I am saying is that if you apply any grip pressure with your right hand to the golf club, (for right handed clubs) , then it becomes more difficult to bow the left wrist at the top of the back swing. The desire goal is to bow the left wrist, which forces the right wrist to cup. Historically I had it back wards, I would cup the left wrist and bow the right wrist at the top of my back swing, which is the exact opposite of what I needed to do. Now I bow my left wrist at the top of my back swing, and I cup the right wrist at the top of my back swing.

#

# I should probably mention here that I have a neutral grip (I do not have a strong left hand grip). With a neutral grip it becomes easier to bow my left hand at the top of my back swing. I am not sure how my approach regarding my left and right wrist, would apply to someone with a strong left hand grip (for right handed clubs).

#

# Good regardsLuke﻿

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# After writing and pasting 162 pages of every kind of golf theory, If have concluded what I have written in the next paragraph. I concluded that I am forced to have to have a left hand dominate swing, with a almost zero right hand grip pressure, because my right elbow hits my right rib cage. I spent 162 pages looking for a way to manipulate my body to create a space for my right elbow to pass by my right rib cage without making contact. I have not been able to find a method that achieves that goal.

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# Ok let us face it. My right elbow hits my right rib cage, because I have a big stomach and narrow shoulders, my lower back has degenerated disks, and I cannot clear my hips and body to make room for my right elbow to get by my right rib cage. So I see a couple of options. Grip the club entirely in the left hand, and let the right hand go along for the ride. At this point I have two options, one the right hands stays on the club for the entire swing, and two, let the right hand slide off of the club when the right elbow hits my right rib cage.

# Conclusion, I under this swing, can only apply power with my right hand up and until the time that my right elbow hits my right rib cage. I will only be able to apply power with my right hand with a zero grip pressure of my right hand. If I apply power with my right hand and apply any grip pressure with my right hand, then my entire right arm stiffens. This means that I may apply power with my right hand, but only up and until my right elbow makes contact with the right rib cage, and also under the restriction that I may only apply power with my right hand, when my right hand grip is restrained in that it may not grip the club with my right hand muscles.Good regardsLuke﻿

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#

# OK new swing. Keep right arm straight during back swing and during contact. This is a very wide arc, I take the club back until both my arms are parallel to the ground.

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#

# I am back to the go to swing where I squat with my knees at setup. I swing back with my knees back. On the down swing I straighten my knees. When I do that, I propel my body towards and above the target. If I do that my right arm and right hand have room to hit the ball because my body has moved towards the target, in which case my body is tilted towards the target about fourty five degrees which I do by propelling myself from the ground up by gaining extension of my knees.

Also try setting up with knees bent a little extra, and also bend my waist a little more at address, and the when I down swing right before impact I straighten my knees and lift my back up, so that I get dual leveragre from the ground up.

#

# Important note. Maybe I have trouble getting room for my right arm to hit the ball, because my shoulders are open at address. Try neutral to closed shoulder position at address.

#

# Important note. I found a way to make room for my right hand room to hit the ball. I simply pull of lift my left shoulder up and back. As a result, this works better than dropping my right shouder, and works better than shifting my hips towards the target.

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# [Luke Daniel Borel](https://plus.google.com/102028827874380428794)[28 minutes ago (edited)](https://www.youtube.com/watch?v=ipn7ZAn-WNE&lc=z135yrbzvvqhv3a0h23ytzuiakm1s5og204.1463748787983461)

# +JamesParkerGolf Hi again. I think I have found a major flaw in my swing. I have a long history of cupping my left wrist during my swing. I just watched a video talking about bowing my left wrist Myths in Golf. Part 1: Forearm rotation closes the club faceOliver Heuler<https://youtu.be/LfD7FcILdpg>.andThis next video I recomment here would be a natural follow on to the other video I posted about.5 Reasons you can’t fix your pull-sliceOliver Heuler<https://youtu.be/YHUCjbrWuYQ>I have not watched 5 reasons yet, but I include it here, only because his Myths in Golf, Part1 Forearm rotation closes the club face video was so good, I am presuming the 5 reasons video will be just as good.I highly recommend the above videos for those of you that have tried everything and still cannot get rid of your slices, pull hooks, and other shots that are not what you are trying to accomplish.After watching these two videos, I recommend watching again your favorite JamesParkerGolf videos, and hopefully you will be able to perceive a new and better insight.I have a neutral to weak grip, so bowing the wrist works for me. I am not sure if bowing the wrist works for people with a strong grip.When I bow my left wrist, I am able to use the ground as a spring board. I am also able to swing the club from inside out.So if I bow my left wrist, and I swing with my left arm for power, I can place the ball a little more back in my stance, use a bowed left wrist which allows my arms to swing inside out, I naturally get into a proper position with my body to create leverage and use the ground as a spring board.It seems to be that cupping my wrist caused me to get stuck and then the swing path became out side in, and hit something other than a draw.So, a bowed left wrist leads to a proper position at impact that then creates space for my right arm and hand to hit the ball without my right rib cage being in the way.What I am trying to say is that by bowing my left wrist at the top of my back swing, All the flaws that you noticed in my posts about reverse pivot and the hips being in the wrong position, the problems automatically go away.This means that I can now watch all of the JamesParker golf video properly and understand and execute what the videos are saying.I guess what I am saying is that I have a naturally weak grip, which means that I must bow my left wrist to prevent me from hitting something other than my intended gentle draw.Good RegardsLuke﻿

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# Myths in Golf. Part 1: Forearm rotation closes the club face

# <https://youtu.be/LfD7FcILdpg>

We need to start thing about bowing the wrist to get rid of the slice and maybe even to create a draw. I should start to wonder if I cup the wrist before impact or in back swing, which leads to a slice.

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# Keep in mind that no matter what the swing is that I am doing, I can create more lag by turning the shoulders on the down swing before I swing with my arms. In theory this can cause lag and shaft lean.

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# A note here. Can I just at setup, bend over at the waist to the point that I can swing the club in question past my right rib cage, with no contact. A very important observation is that we bend over a lot with a sand wedge, and the longer the club is, the shaft than is) the less we bend over a the waist at address. So with the driver, I set up to the ball, bend at the waist until I am sure the arms will have room to swing past my right rib cage without hitting the right rib cage.

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# My golf music is for now Beach Boys Pet Sounds.

<https://youtu.be/tuubYlxYcBQ>

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# Golf Downswing | Regaining Flexion in Golf Swing

# JamesParkerGolf

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# <https://youtu.be/l3kvXYOwQMk>

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# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[1 hour ago (edited)](https://www.youtube.com/watch?v=l3kvXYOwQMk&lc=z13dtheybtbogfwjy04cjvbzdsu2cb0qlkc0k)

# Your audio is very strange, you sound like a computer generated voice that was recorded with a distortion echo chamber.However, Kenny Perry makes a move during with down swing where his head gets closer to the ball. I am guessing he is doing that to make room for his right arm to hit the ball.If you watch this video of Kenny Perry, click on the link directly below this sentence. Kenny appears to be doing almost exactly what you are describing in your video Golf Downswing | Regaining Flexion in Golf Swingclick here <https://youtu.be/Wy6qwpasrSo>After watching the Kenny Perry video at the link directly above, it seems that his waist or hips, straightens up slightly during his back swing. Then in his down swing he bends his waist some in such a way that his down ward swing plane becomes steeper. When he bends his waist so that he looking down directly at the ball, he is creating space for his right hand to strike that ball with. It is worth noting here, that most people would say you want a flatter swing plane on the down swing. But wait, Kenny Perry says, bend the waist on the down swing, steepen the swing plane on the down swing, and by bending his waist and getting his face closer to the ball during the down swing, he is creating a clear space for his shoulders and arms and hands to swing through. He is not straightening up on his left foot until long after he hits his irons. So to summerize Kenny Perry's swing. Slightly make spine more vertical during the back swing. At the start of the down swing, make spine more facing the ball (bend the waist), This creates a steep swing plane with a lot of lag. The lag allows his to flatten the steep plane arc in the impact area. The result is a draw that was creating by making the swing plane more steep during the down swing, which was implemented by bending the waist more horizontal during the down swing. His method seems to look very original and somewhat of a genius concept.Now wait, before we go thinking Kenny is wrong, let us examine this. When Kenny swing back, his spine extends more vertically. Next he starts his down swing by dropping his upper body towards the ball. Because of this his right shoulder drops down on plane with the ball. I guess all is fair is love and war. He does a genius move, where he accomplishes what people say to do. They say drop your right shoulder (do not swing around with your right shoulder, swing down with your right shoulder). No one ever stipulate HOW to drop your right shoulder, only that it NEEDS to happen. So Kenny does it by getting a little vertical on the back swing, but the genius is, by bending his waist at the beginning of his down swing, and getting his face closer to the ball, what his is doing in effect is dropping his right shoulder on plane with the ball to shoulder swing plane. After the drop of the right shoulder, his shoulders by good fortune are almost on plane with the ball-shoulder plane. As a result, Kenny has maximized the power generated by the shoulders, arms and hands.As a note hear, the video we are watching Golf Downswing | Regaining Flexion in Golf SwingJamesParkerGolf the person swing the club on the video we are watching, has a swing very similar to Kenny Perry, with the exception that Kenny Perry does not straighten and extend his spine until he is well past striking the ball. In the video Golf Downsing Regaining Flexion, he is demonstrating, that by changing your posture dynamically to start the down swing, you can drop the right shoulder vertically by bending the waist so that your face gets a little closer to the ball to start the down swing. This is like a head start for dropping the right shoulder. He has not even turned his shoulders yet and his shoulder has already dropped on the proper swing plane, without even pulling the right shoulder down with the muscles in the upper body. He has used his hip and waist muscles to cause an initial drop of the right shoulder. This is genius at work. Of course after he shoulders drop due to a change in the waist bend, he starts turning his shoulders, but not until his shoulder are exactly on the swing plane of the ball-shoulder plane. As a note here, what Kenny Perry is doing is pure genius. He lifts up during his back swing, he coils his upper body in a flat plane. Next he bends his waist so that his right shoulder drops, and then he releases all of the energy he has stored during a back swing, where he had lifted up and extended his spine during the back swing. At first glance this seems exactly back wards and reversed of what many theorists of golf would recommend. Kenny says, forget about your theories, results are what counts, and I will do things my way, my way that made my famous and hall of fame material for sure.To review, Kenny Perry during his back swing, coil his body with his shoulders completely horizontal. On his down swing, he released his energy coil unwinding after he gets his shoulders on a more vertical swing plane. I rarely see this method, and I think it is pure genius as it almost completely eliminates timing during his swing, and seems to be one of the most consistent, repeatable swing out there.Well I guess I will cut my post here, and paste it into my golf journal for posterity.If anyone sees a flaw in my post I will be willing to exchange ideas as per the reply. If you agree with my post and you want to talk more about, just reply to my post and google plus will tell me I have a message. If you reply to me, mention the name of the video, Golf Downswing | Regaining Flexion in Golf SwingJamesParkerGolf so I will know what video to go back to on youtubeGood Regards Luke﻿

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# Golf Swing Power | Use Ground as Springboard

# **https://youtu.be/ipn7ZAn-WNE**

# [**JamesParkerGolf**](https://www.youtube.com/user/JamesParkerGolf)[**16 hours ago**](https://www.youtube.com/watch?v=ipn7ZAn-WNE&lc=z135yrbzvvqhv3a0h23ytzuiakm1s5og204.1463598203688815)

# [**+Luke Daniel Borel**](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag) **If you're reverse pivoting - you need to slide your hips further forward on the downswing to get more weight forward. This then tilts your spine away (right tilt) from the target and allows you to also extend your spine..﻿**

# **Reply**

# **Hide replies**

# Luke Daniel Borel

# [**Luke Daniel Borel**](https://plus.google.com/102028827874380428794)[**1 second ago**](https://www.youtube.com/watch?v=ipn7ZAn-WNE&lc=z135yrbzvvqhv3a0h23ytzuiakm1s5og204.1463657290554136)

# **+JamesParkerGolf I have an idea that might satisfy the problem. How about I solve the problem in my setup.We could try this. I set up with my half of my weight forward, and half of my weight on the instep of my right foot (I play with right handed clubs). In other words what we could do here, I curved my right ankle at setup at address, so that one half of my body weight is on my right ankle, which is rolled towards the target so that my upper arch is on the ground. and only the left side of my right foot is feeling pressure from some of the weight of my body. If do that, then when i start my down swing, I am pre-set to propel my body towards the target.I guess what i am saying is that I could address the ball in such a way, where my lower body is tilted towards the target, my upper body is tilted away from my target, however, I make adjustments at address so that I really am feeling some significant pressure in my right foot instep, and my right ankle is intentionally rolled, so that the left side of my foot is feeling pressure from some of the weight of my body (to be determined 50-50 60-40, etc)If I set up at address in a Reverse C, with my right foot rolled so that I feel a lot of pressure in my rolled right ankle, then I am preset to push off massively with my right foot on my downswing.RegardsLuke﻿**

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# **OK I guess what Tiger and Rory are doing is squating by benting their right knee and then immediately propel their body off of their right arch, I can see that working, but then I do not see how they use the left leg to generate leverage.**

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# **http://forum.brianmanzellagolf.com/golfing-discussions/4838-use-ground-leverage.html#post251494**

## Default **Knee bend and waist bend**

# Quote **Originally Posted by DDL** View Post

# ***Sitdown, squat. Use the ground for leverage. Sounds great in theory, but how does one do it? The only ting I can think of , and have experienced to a degree, is to be flatfooted at impact. However no one on Tour is flatfooted at impact. Everyone has their right heel pulled off before impact. So how is using the ground for leverage accopmplished? I don't detect a squat or sitdown in your swing ,Brian.***

# **The proof is in the pudding. I think the amount of knee bend or waist bend depends of the size, shape, flexibility, etc of the player.**

# **I try to keep an open mind, and I consider accuracy, power, will the swing hold up over several rounds, does the setup you experiment with lead to injuries. Every adjustment I make, I make to compensate for the fact that I am not a machine, but a live person.**

#

# **As an example I bend me knees a little extra at address, so that I can gain leverage from the ground during the downswing.**

# **I also do this because I am very inflexible and to get any powerful coil, I need to be a little bit closer to the ground during the backswing.**

# **Of course Pro golfers like Tiger and Rory, do a bit of a squat to start the downswing, however when I try that, I do not have time to straighten back up before imipact and my knees shake and get weak when I try to recover from the downswing squat.**

#

# **Since my ablility to activate muscles is rather slow, I have to preset the squat at address.**

# **If you can increase your leverage from the ground up so that you can gain more clubhead speed and hit the ball more solid, then no one has the right to be absolutely sure you are doing the wrong thing.**

#

# **Golf should be considered a level playing field for ideas and practices.For me to get into an athletic position I seem to have to bend my knees more than the average player. Because my torso is very rigid and non flexible, if I do not squat a bit more at address, it is almost impossible for me to create a powerful coil. My goal is to create a powerful coil can then use leverage from the ground up, to release that power.**

#

# **Everyone has a different body with different limitations. If you do something and it works, do not worry that someone who has a golf teaching theory tells you that you are doing the wrong thing. If it works and you can do it without injuring yourself, then you have a swing that chooses you. We might not be able to choose a swing. However for each golfer there is a swing that chooses them at that time in their journey.**

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# **Good Regards**

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# **LukeDaniel**

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# **OK so when I stand up to a shot, I feel like I am too high and I panic and feel dizzy. When I squat a little at address, I feel like I am at ground level and do not panic and do not get dizzy. So what I am getting is feeling like how would a midget swing. SO I am flatter swing plane, but the plane still goes through just above my shoulder, so therefore It is not fair that tall people get to bent their knees as much as they want to. So from the other perspective I can pretent that I am very tall and I want more leverage from the ground up.**

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# **Alternatively, I can do a squat with my knees during my backswing and then lift up off of my entire left foot (not just the front pads near the ball), so at impact I would be reversing the knee squat that I did during the backswing and create the lift off leverage from a flat left foot. So in review if you get more bent at the waist during the backswing, you reverse that action and take advantage of leverage by have most of your weight on the left front of the foot and straighten the back. If you get closer to the ground by benting your knees more during the backswing, then you reverse that by lifting up the body by straightening the knees off of the entire left foot (heel and toe), which occurs right before impact.**

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# **Ok, I am not sure I buy into Leadbetter’s assertion about to start the downswing the weight is on the front of the left foot and then at impact the left heel comes to the ground. What I do is 1. Have a stance no wider that my shoulders and hips (which means I have somewhat of a narrow appearing stance. 2. On the backswing I bentness my hips more so that I do not sway, and I do not lift up, and I prepare the stage for leverage from the ground up. 3. To start the downswing I do several things. I maintain control of the club with smooth accerleration. I think about how I am going create leverage by lifting my body with my lats and back muscles, lifting from the front of my left foot (the pads near the toes of the target side left foot). Only if I get more bent towards the ball during my backswing, can I support most of my weight on my left front foot which is done to create the proper leverage to lift up from when I straighten my back up more away from the ball by the time of impact. If I do not get more bent in the backwing by benting my waist more and get closer to the ball during the backswing, then I cannot support most of my weight on my left front foot, and my left foot then collapses and my left heel comes down. I also have a key where I flex my stomach muscles slowing to start a smooth downswing. For me to implement all of these things, I have to slow down my entire swing, which allows me to implement these things in proper sequence, and so I will not leave out a step and all of the steps are needed, so I have to slow down to make sure I do not leave out a step.**

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# **Ok we have an experimental update. Leadbetter says, weight to front of left foot as first move in downswing, and then at impact the left heel comes down. He claims most PRO PGA golfers do this move. I will now go watch videos of several PRO PGA golfer’s swing to verify or disprove his contention. He is either right, or he is wrong, that a lot of PGA PRO golfers do this move.**

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# **The Right Way To Shift Forward**

# Move to your left side, then rotate

# <http://www.golfdigest.com/story/leadbetter-foot-work>

#

# If you really want to develop power, you need to transfer your weight properly. Computerized testing of elite players shows they each produce the same weight-transfer pattern, moving it toward the front of the left foot as they start the downswing and to the left heel at impact.

# This ideal weight shift allows these players to deliver the clubhead squarely into the ball at impact as they rotate powerfully around the front foot.

# Many amateurs mistakenly slide their hips too much toward the target in an effort to shift their weight, but this inhibits their ability to rotate, leading to inconsistent ball striking. By allowing your weight to move initially toward your left toes and then into your left heel, you'll be in position to correctly pivot around your left leg and flush it every time.

# DAVID LEADBETTER, *a Golf Digest Teaching Professional, operates 26 academies worldwide.*

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# Ok I have a new item and genius. On the downswing, pivot about your left front foot, near the toes, this creates space for your right arm to pass across the chest with less interaction. Also this promotes and allows a gentle draw to occur without messing around with a left foot forward right foot back nonsense.

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# WHY TO SHIFT WEIGHT IN THE GOLF SWING

# Meandmygolf

# [Meandmygolf](https://www.youtube.com/channel/UCTwywdg9Sw5xs4wdN-qz7yw)

# <https://youtu.be/JKj0w6TnYhA>

#

# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[28 minutes ago (edited)](https://www.youtube.com/watch?v=JKj0w6TnYhA&lc=z12schfzlxmrwp3jn04cjvbzdsu2cb0qlkc0k)

# I have a question for ME AND MY GOLF.I weigh about 250 pounds, I have very narrow hips and very narrow shoulders, I have a barrel chest, I am 5ft 8 inches tall, and I have quite a bit of weight in my stomach area. I have trouble with my right arm hitting my right upper rib cage, that nullifies quite a bit of power I could be getting with my right arm and right hand.Should I take a narrower stance the width of my shoulders to help me get a better lateral movement to my left foot. If so, would that allow me to place the ball further forward in my stance?When I take a wider stance, I feel a click inbetween my hips in my pelvis. When I take a narrower stance, I do not feel the click in my hip pelvis area.Thanks, another great video, love the tracking device you use to validate your subject of the video.Good RegardsLuke﻿

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# OK now I get it. Another key move PGA pro’s do is straighten the right knee on the backswing, and let the knee get more bent on the downswing. However Mark Omera does not get his right knee more bent to start the downswing.

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# OK I have come to the conclusion that the only way I will hit the ball a long ways, is to get more bent on my backswing so that my head gets closer to the ball on the backswing, which involves a left knee bentness, and a slight reverse pivot to counter and swaying. I must do this because I become more on plane with my body when I get closer to the ball during the downswing, this allows me to build a powerful coil. At impact I then as a result of my backswing I just described I am deciding on an impact position of that of Rory Mckilroy, with a straightening up and curve of the body at impact. The only way I can get into an impact position like Rory, is to get closer to the ball during the backswing by letting my left knee get benter, and also getting more bent at the waist during the backswing. So at impact I activate my left lats and left back muscles. I will experiment with this swing trying to flex my stomach muscles at the start of the downswing. I think Rory’s hip push towards the ball right before impact. Rory also does a small squat to start his downswing, but he lifts to compensate for that squat. I can see now what Rory does to start his downswing. One thing he does is get more bent at the right knee (this must be the squat) and then he straightens his right knee right before impact.

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# Jason Day swing

# <https://youtu.be/fdMhA_UjOkM>

For tiger and jason, when on the downswing the chest is facing the ball, the club shaft is parallel to the ground.

See if I can accomplish this with the slow backswing, use only the left arm, the right arm is limp.

Also try to work into it that I flex my stomach muscles at the start of the downswing.

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# Ok now I have put it all together. You turn your shoulders back until they can not turn any more.

Next you swing your arms back as far as they want to go.

Then on the down swing, do not lead with the hips, lead by turning the torso and shoulders, but leave the arms behind. When your chest is facing the ball and target line, let the arms swing through (Brillian in this manner I have room for my arms to swing through, no reverse C neccesary, no hip lateral movement nessesary. All i have to do is flex my stomach muscles when I lead the downswing with the torso.)

So now I have solved the question of lag and shaft lean. By leading the swing with the torso and chest, I do not move my arms until my upper body is square to the target. That means that I still have all of my angle between my left forearm and club shaft, that I had at the top of the backswing. This means I have all the lead I need because my chest is facing the target before I even activate my arms. That also means I can easyly have shaft lean, and I can even increase my lag at that point if I want.

I mean they talk about leading with the hips as if leading with my arms is the alternative.

What about leading with the chest and upper body, while letting the arms lag behind until the chest is facing the ball. Of course by the time the arms move into the impact area, the chest have moved some towards the target, but not a lot.

I guess you can take the club back like Tiger or like my way.

The important thing is that I start my muscles with my torso, letting my arms lag behind.

When my chest is facing the target, we have made room for the arms to swing though. At that point you an swing the arms through.

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# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[1 minute ago](https://www.youtube.com/watch?v=vJs48ZQ7_3A&lc=z13igljicwnaebgai04cjvbzdsu2cb0qlkc0k)

# I understand the secret now. You start your downswing by turning your chest. You have to get your chest facing the ball, and then bring you arms through.Think about it.When you are at address your arms hang down to reach the club handle.So it makes sense that if you want room for your right arm to hit the ball, you MUSTget your chest facing the ball, with your arms trailing your torso.If you try what I just said in slow motion, with no club in your hand, you can see that ifyou rotate your torso first, and then let the arms follow, you can see that at impact, your torso will be facing the ball, and your arms are following and swing when the chest is square to the ball.Thanks for this video, did not do your drill but it made me think about it some more.Here is a video of tiger woods that clearly shows his chest facing the ball, and his armsare lagging behind. So this also answers all my answers about lag and shaft lean.Here is the great Tiger video<https://youtu.be/pSJWsYBMTKg>Good RegardsLuke﻿

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# Ok, now let us say I turn my shoulders 90 degrees.

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# New go to swing. I have solved the problem of my right upper arm and my right elbow hitting my upper right rib cage. I take my normal slow backswing and then to start the downswing I pull the club handle straight down vertically to the ground. What this does is cause the inner bicept to hit my side which leads to my right arm rolling across my right rib cage. Before I use to pull the club head down from the top along the back swing plane, This led to a direct collision between the upper right arm and my upper right rib cage.

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# I am almost certain, that for me with my narrow shoulders and massive chest, that everything I have done with creating golfswings, was as a direct result that my right elbow and right upper arm, seems to smash into my right upper rib cage.

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# Golf Lessons - Stop hitting the ground before the ball

# DerekHooperGOLF

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# <https://youtu.be/p_ZWt38d2Vc>

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# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[1 hour ago (edited)](https://www.youtube.com/watch?v=p_ZWt38d2Vc&lc=z12uidmy0maigb3qz04cjvbzdsu2cb0qlkc0k)

# You are beginning to convince me that is useful to start a lot of these drills in partial increments, starting with a very small swing, and building up to bigger and bigger steps, one step at a time, and not advancing to the next step until one can do the step they are on.For example my problem I am working on currently is how to keep my left arm fairly straight. The only way I have found that works where I can move the club back in my backswing and keep my left arm straight, is to push the club back on my entire back swing with my left hand. As soon as I get the right hand involved by pulling the clubhead back, then my left arm starts to get bent. Do you know if there is any merit to what I say, that if use my left arm to move the club during the backswing, will help me keep my left arm straight during the backswing?Do you know if there is any merit to letting my right hand and arm go along for the ride during the backswing and letting the left hand and arm do all the work?For me as soon as my right hand and arm get involved in the backswing, then my left hand and arm react to the pull of the right hand and arm, and then my left arm gets very rigid and then the left arm starts to get more bent.My question here is, if the left arm breaks down during the backswing and downswing,am I more likely to have a steep angle for the club head coming into the area of the ball impact zone, and in turn does this lead to hitting behind the ball.So I guess I am also kind of wondering, in the swing you are discussing in your video Golf Lessons - Stop hitting the ground before the ball, what is your opinion as to during the entire golf swing, at what points do think that the right hand and right arm muscles be used to apply power or direction of the clubhead and club shaft? Is the right hand and arm muscles only to be used in the impact zone, or does the right arm also have a role in moving the club head during the backswing or downswing. Pre\_-Impact (for a right handed player)I guess what I am saying about the downswing, is that, if I use any muscles of my right hand and right arm during the downswing, then usually, my right elbow runs into my right rib cage and because my right hand and right arm muslces are activated, then my right elbow does not slide past my right rib cage, and instead bounces off of my right rib cage. If instead, I use only my left hand and left arm on the backswing and downswing, then when my right elbow hits my right rib cage, it just glances off of it and slides by.So I guess that I am only able to use my right hand and right arm muscles when I get into the impact zone, If I use any right hand or right arm muscle before that point, the my elbow bangs against my right rib cage, and instead of the right arm straightening out, it remains bent and then I get no extension of right arm at impact.Apparently, if I use only my left hand and left arm during the backswing, and almost all of the downswing, then my right arm straightens at impact and I get better extension with my right arm at impact.I guess it might be that I have narrow shoulders and a big chest I run into problems with me downswing, where my right upper arm runs into my chest.I guess I could place more rotation into my swing early in the downswing, to get my body out of the way of my right upper arm.Also, I can solve the problem by having a very slow backswing and a slow start to my downswing, which allows both of my arms to be soft during the downswing.With this method I allow my left arm to get more bent in the backswing, but because the start of my downswing in this case, is very slow, then it allows me time for my left arm to straighten out before I am very far into the downswing, which in turn, allows my right arm to be straight at impact.And then, I have one other way of making space for my arm elbow to clear my right rib cage, is to get more bent at the waist moving my head closer to the ball during the backswing. Then when I near the impact area, I have to lift my upper body with my back muscles and lats. So basically, when my right elbow and upper right arm (for a right handed player) hit my right rib cage, then both of my arms turn out to both be bent at impact, which usually leads me to hit behind the ball and or hit a weak push fade or a weak pull slice.And last but not least, if all else fails, I can create space for my right elbow to pass by my right rib cage, by creating a humped upper spine like Isao Aoki in which my shoulders become more on plane with the ball. The curved upper spine posture (curved more down at the ball), creates a gap that easily allows my right elbow to clear my right rib cage and be straight by the time impact happens. I include here a clickable youtube link to a swing by Isao Aoki <https://youtu.be/sdQFVTmqLl4>, that demonstrates how his curved upper spine creates a significant gap or space, for the right upper arm to move past the upper right rib cage without making contact. I am assuming that his swing might lead to strain on the upper spine and create occasional injuries to his upper spine, or neck.One could debate whether I am neglecting to clear my hips which leads to the upper body to clear, and thus creating space for my right elbow to clear the rib cage in a way to prevent a major collision between my right upper arm and my right upper rib cage. The only way that I have discovered that works for me to clear my hips properly, is to flex my stomach muscles at the beginning of my downswing, which automatically causes my hips and my upper body to clear as a single unit. This is one method I have of creating space for my right elbow to have space to pass by the rib cage. Another method I have is to only use my left hand and left arm to control my swing, keeping my right arm completely relaxed, thus the soft right arm easily glances off of my right upper rib cage,I guess what I am saying is that no matter what swing I implement, I have to create a method that allows my right arm to straighten before impact in such a way that my right upper arm and right elbow do not slam into my right upper rib cage.Luke﻿

# Golf Lessons - Start the Downswing

# DerekHooperGOLF

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# <https://youtu.be/9lrHkCCRYBE>

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# Here is what I am seeing are three competing theories, let us say Rickie Fowler who have a somewhat flat swing plane <https://youtu.be/5-g3SpngXqw> , versus a Mark O'Meara who has a more upright swing plane<https://youtu.be/DVfPg9ckC8M> Mark Omera has easily obtained seperation between the left arm and the chest, whereas someone who has a flatter swing plane has to struggle a little bit more to achieve seperation. When using a flatter swing plane, there is a struggle not lift up and straighten at the waist on the backswing.or swaying away from the target. Personally I have only found one method when I use a flatter swing plane.The third competing theory to me would be a Bubba Watson who has a severe upright swing<https://youtu.be/vwR3R0OJflA>. However at this point I would like to say that Bubba Watson does exactly what the author of the video we are watching Golf Lessons - Start the DownswingDerekHooperGOLF says, Bubba Watson takes the club very upright, but on the downswing, he significantly lets his clubhead drop with gravity and reroutes his clubhead to a flatter inside outside swing plane.So to me Bubba seems to fit into a dual category, he takes the club back very upright, but he lets his arms drop to start the downswing, and creates a flatter swing plane to hit the ball. The link I supplied above for Bubba Watson's swing, is a beautiful analysis that breaks down his swing in slow motion, analyzed by a TV commentator. I guess I am able to do in my flatter go to swing, what you say about letting my arms drop, but in my mind I am doing a slow backswing, having a smooth transition, and then starting my downswing slow. I am speculating that by starting my downswing very slow that what is really happening is that gravity is allowing my clubhead to drop at the beginning of my downswing, by starting down fairly slow. When I do this I can hit a beautiful slight draw that seems effortless and feels more gravity oriented.So I basically have two go to swings. With the flatter swing plane I have to be careful not to rise up my upper body on the backswing, and I have to be careful not to sway with my upper body, away from the target.This is why on my flatter swing plane I have to do a more slow backswing a very slow transition and a slow beginning of my downswing. I guess by slowing everything down, I am allowing my clubhead to drop to begin the downswing.My second golf swing is more upright like Mark O'mera and in the more upright swing plane I never get stuck, as my club never goes deep and back and flat behind my back.I guess I am seeing various swings. Some do not pass one of more of the joints in the Mediucs test. Flat swings probably do not passl the Medicus test in at least one joint. However I will say the RIckie Fowler has a wonderful backswing. but then he converts the swing into one that is flat when his clubhead drops at the beginning of the downswing. Then you got a Mark O'meara, who's swing passes the Medicus test. Then you have Bubba Watson, which to me seems severly upright and I have no idea whether or not Bubba's swing would pass the Medicus test.I do not own a Medicus training aid, and have never used one. I only mention that training device, because Mark O'Meara uses it and I have one go to swing based on his swing.Thanks for the great video, as usual your videos provide a lot food for thought and I relate it to my slow tempo flatter swing, flatter than what is considered an upright swing, which from my viewpoint would be slightly more upright than Hogan's swing plane.As a curiosity, I have wondered recently if Bubba Watson's swing would pass the Marc O'meara Medicus test. That would be fun to witness.As a reference here I give you a youtube clickable link to a Medicus demonstation video. The only reason I like this concept is that I like video is that it matches one of my go to golf swings.<https://youtu.be/lsiRhlFilDQ>I guess what I am saying is there are many ways to achieve a high quality moment of impact, that is very successful and to me, the issue becomes how to execute that successful moment of impact in such a way that it minimizes any golf swing injuries. This in theory creates a level playing field in which we can debate how to achieve a successful impact and whether or not it can be achieved while still having a goal to do it in a fashion that minimizes golf injuries to the person doing the successful impact swing.Luke﻿

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# So it seems that in all sports there should be a level playing field where the only thing that matters is results and how to minimize injuries to the body, especially in golf.

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# So there is power versus accuracy, there is the bentness at the waist. There are many theories as to how to start the downswing when you are on a flat plane, meaning flater than mark omeras we will call his plane ideal, with bubba watson too upright, and fowler too flat.

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# Another theory is that you know you are on the ideal swing plane when you intentionally let you left arm as much as possible and let it wrap around you neck, or shoulder, or upper back, or lower back, and you do not get stuck and you get consistent results with some power and playable accuracy. Bubba Watson completly dispells the myth that flater swings are more powerful.

#

# I have a theory about gravity, versus rotational chest power. The easiest way to play golf is to swing just vertical enough on the backswing so that you do not get stuck. The people that believe in a flatter swing plane have complicated methods to get unstuck. There are competting concepts that contradict each other between backswing along the target line and backswing taking it back along the inside.

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# Golf Lessons - Effortless Power

# <https://youtu.be/x_OBqpnkKYk>

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# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[17 minutes ago (edited)](https://www.youtube.com/watch?v=x_OBqpnkKYk&lc=z12qdlghowijuhi5d04cjvbzdsu2cb0qlkc0k)

# I see what you are saying now after thinking about other sports. A Pro Tennis Player probably generates most of their power with their stomach muscles, their laterals, and their back muscles, depending on what type of shot they are trying to hit. In the past when I played tennis, I would use my arm and shoulder muscles to hit with. In the future when I play tennis, I will try to get power with my stomach, lats and back muscles, and I will probably vastly improve the power that I get on my tennis shots.At first I did not quite get what you are saying, but for example I think some Pro Bowlers (PBA), use their back muscles to propel the bowling ball. And some of them might ever use their stomach muscles to protect their lower back from injury to stabilize their upper and lower body.Thanks for the great video and I plan to gain a lot of insight and understanding of the golf swing from it. I think in the past when I used only my arm and shoulders to propel the golf ball, that it led to a lot of injuries, and that using the big torso muscles not only gives me more power and club head speed, but protects my body from constant injuries.Regards Luke﻿

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# I am becoming more and more convinced that when playing tennis, Pro tennis players use the big muscles, stomach and backs and laterals, when doing a for swing and a back swing. Just as I becoming more convinced that the better Pro Bowlers use their back muscles to propel the bowling ball. When I played tennis I used my arm and shoulder muscles to propel the tennis ball, but in the future when I play tennis I will use my stomach and back and laterals to propel the tennis ball. In bowling they might even flex their stomach muscles to connect into more of a one unit, the lower body and upper body, so that when they swing the bowling all you protect your lower back, so that when you power the bowling ball with the back muscles, your lower back does not get injured.

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# As a note here, it is worth mentioning that Kenny Perry gets his head and upper chest, significantly closer to the ball during his downswing.

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# I am going to experiment with a modification that will allow me to shift rotate some with use of the stomach muscles and some back muscles. What I will do is go back on the hogan plane, but start down on a plane that is equal to the Hogan Plane, but turn so it points a little right of the target, that will allow me to use my stomach muscles to start the downswing, and to get my weight left seventy percent as I just went laterally towards the target, and having gotten my head a little closer to the target line, or the ball position, on the back swing, which leads to my slightly using my back muscles in the impact area.

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# A note here. When Jason Day chips and does sand shots near the green, he has two swing plane, one that the club head travels one and one that his hands travel on.

Also on the Hogan Plane, there are really two planes. One that the club head travels on, and one that the hands travel on. In the case below on the experimental add on to my go to swing, I get my hands onto the Hogan Plane right away, pushing the club handles along the Hogan swing plane. Some golfers keep the club head on the Hogan Plane, but the hands travel on an almost parallel swing plane to the Hogan Swing Plane, but is below the Hogan Swing Plane by a few inches. Jason Day appears to use these two swing planes for all of his swings, and he takes the hands slightly inside or deep, on his shots around the green also.

#

# The secret experimental move based on the experimental modification mentioned directly below is 1. Pull the club head down the Hogan Plane (which intersects with the ball at the bottom) and when we get hip high, rotate the wrist some to square the clubface, and next we pull the club handle towards the person's center medium position which will allow me to keep the club head on the Hogan Swing Plane.

The is a secret slot that occurs in drawing below near the impact area as shown directly below.



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# Base on the new go to swing directly below, I have an experimental modification to the backswing and downswing. First of all, get the entire club and my arms directly on the Hogan plane, which I will accomplish by pushing my club handle and turn the club head (clockwise) 90 degrees. I will insert a drawing here for the beginning of the backswing.



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# So my new go to swing is, take the club head back on or outside the target line, when I am part way back on the back swing, swing along the Hogan Swing Plane. When I pause at the top, finish my back swing with a right shoulder turn towards the target. Then pause, then start the downswing doing two things; move my center of gravity towards the target onto my left leg about 70 percent of my total weight, and at the same time, gently flex my stomach muscles. Also get my head slightly closer to the ball during the backswing, which is compensated for by lifting my upper body up by flexing my back muscles.

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# I am toying with the idea of introducing a new component to my go to swing. Like Kenny Perry, whose swing I believe in, the want to take the club away outside so that the back swing swing plane is very vertical and very upright. Then light Kenny and Lydia Ko, I pause at the top, let the shoulders settle down and rest on the rib cage, and then on the downswing re-route the club more from the inside out (with some cross over at the top, during the pause, when I do a tiny right shoulder pull towards the target).

As a note here, taking the club back starting the club head on a path outside the target line, is what I will have to do to keep my arm straight, and to prevent me from getting stuck on the downswing. Ironically taking the club back on a arc outside the target line actually make me at the top, so that my club shaft is pointing left of the target (as opposed to taking it back on the inside, where at the top my club is pointing right of the target and more upright), can be resolved at the top by doing a pause and a finishing turn of pulling my right shoulder blade towards the target.

As another side note, if I turn my hips, torso, arms, and shoulders at the same time going back, if I take my club head back with a feeling like it is getting further away from my body, if I so desire, it actually is starting back exactly on the target line, and gradually transacting on the swing plane created by drawing a line from the ball through just above my shoulders at address.

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# HOW TO KEEP THE LEFT ARM STRAIGHT IN THE GOLF SWING

# <https://youtu.be/DcoQYbY77s4>

The drill here is to cock your wrist at address, then take the back swing with the wrist already in the cocked position with the club head off of the ground. I tried the drill with an imaginary club in my hand.

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# I have a possible new addition to my new go to swing. My shoulder turn will be two slow motion components. First, gently push my left shoulder back. Secondly, pull my right shoulder towards the target (pull the right shoulder so that it becomes closer to the spine). For now, do not force how much I push the left shoulder back, or pulling my right shoulder forward, this should also apply to any hip turn, make it gentle, slow, and do not force it. As an experiment try a slow backswing where I start my backswing with my hips, then my upper body, then my shoulders, then my arms (which is backwards of my old fast terrible swing).

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# I think there is one reason I just started to considering, in why people get stuck behind the ball. When I in the past, took my backswing, I would sway away from the target with my upper body, and my head would point behind the ball. The sway away from the target, changed my swing plane to be inaccurate. With my new slow back swing, I can compensate by not swaying (my new theory is that the true center of rotation is the spine running along the back of my torso), anyway I have time to keep my head, facing the ball, and my sway is just enough to keep the spine running along my back. Also my new swing, I gently flex my stomach muscles to start my downswing. So next, because I gently flex my stomach muscles, I make a lateral move, that feels like I am leading with my stomach, so that my stomach is closer to the target than my shoulders and hips. At contact I will probably usually have a small Reverse C.

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# In theory, if I did want a swing that was mostly arms, I would swing fairly upright (or get bent at the waist more), and either way I would rotate my upper and lower body at or right before, or at some point before, the club head makes contact with the ball, and due to the rotation of my body before impact, my club head would finish left and at a medium height. I am becoming a believer slowly but surely, of getting more bent at the waist, or presetting the back swing with an extra bentness on the upper back, at anyrate, getting a little closer to the ball during the backswing, and thus on the downswing, some use of the upper left back muscle. To compensate for getting upper body closer to the ball on the backswing.

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# <https://youtu.be/2ulCepT4ewk>

# Henrik Stenson Golf Swing Analysis: Weight Shift to the Left

[Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[19 minutes ago (edited)](https://www.youtube.com/watch?v=2ulCepT4ewk&lc=z13dtvrwnkj2zbmaq04cjvbzdsu2cb0qlkc0k)

What I believe in is to gently flex my stomach muscles at the beginning of my down swing. This creates a coupling between your upper and lower body, which in turns makes the downswing more consistent (In the past I started my downswing with a shift of my lower body, which made inconsistent as to when and how my upper body would shift and rotate). By gently flexing my stomach muscles at the start of my down swing, the flexing triggers my entire upper and lower body to shift together as a unit, making my weight shift and rotation more consistent). I still can think about leading with my hips, but because I gently flex my stomach muscles at the start of the downswing, leading with my hips result in small Reverse C position at impact, as opposed to not gently flexing my stomach muscles to start my downswing, which led to an more pronounced Reverse C at impact ( which led to lower back injuries, and inconsistent contact between the club head and the ball).

As a note here to support my concept of gently flexing the stomach muscles to start a downswing, it is my belief that most if not all of PGA and LPGA players have their stomach muscles flexed at impact, so after I made observations of PRO golfers, I decided I was observing a flexing of the stomach muscles by the time impact between the club head and the ball occurred.

As another note, I believe that some PRO golfers use their back muscles right before impact.

To conclude, I believe the use of target side stomach muscles, and with some, using the mid to upper, target side back, muscles at or before impact, is a topic which is rarely talked about by instructors or Commentators on a TV coverage of a golf tournament.

Thanks for the video Rotary Swing people. Love all of your videos.

Regards

Luke﻿

What this video analysis tells me is that they talk about starting the downswing with the lower body before finishing the backswing of the upper body. This seems to apply to people with a faster backswing than me. For someone with a slow backswing like me it means shifting my weight to the left before starting my downswing. This could mean a lot of things, Some might flex their stomach muscles gently to start their downswing which connects the upper and lower body together somewhat as a unit, and this flexing will trigger a weight shift if I think about shifting of the weight before the downswing, this flexing of the stomach muscles will be compatible with shifting the weight left at the proper time, different types of required shots might or might not, influence to exact or general timing of the body parts. If you have a slow back swing like me, then the concept is to start tilted (or if not tilting, then moving body my upper and lower body) left and start flexing my stomach muscles right before I finish my backswing with my upper body.

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# So when I watch Caddyshack at the beginning and I see very old people swing, they swing back slow, sway off of the ball and lift up. The opposite of the would be swing back fast, coil the body, do not sway off of the ball, and do not lift up your upper body on the backswing. If I must have a slow back swing, then do the other things, do not sway off of the ball, do not lift up the upper body on the back swing. I will mention here that the opposite of lifting the upper body on the back swing would be to get a little bit closer to the ball during the backswing.

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# HOW TO CREATE A GOOD POSTURE FOR YOUR GOLF SWING

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# https://youtu.be/Q5oBwip-7Q0

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# Hi, what I have noticed is if you watch some player like Tiger Woods, He sets up at address, relaxes his upper body and lets his arms almost hang straight down, but not exactly straight down. Then he might adjust how much his hips get bent. For some pro golfers like Tiger and Montgomery, they have a more pronounced curve on their upper back. They seem to determine which vertebrae is curved to exactly points to the ball. They then determine the swing plane created drawn from the ball, through the vertebrae of the naturally curved upper back. If you are a golfer that is bent more at the waist than the average player, then those players usually grip the club more in their fingers. Regardless, even if you get bent more at the waist than the average player, players usually draw a line from the ball, through the joint in their upper back, that points directly at the ball.The thing that most players do is one way or the other, create a plane from the ball to the back, at the same point where that particular upper back joint points directly at the ball.This post I am making is on the subject or swing planes and back and hip posture, with the goal being to create a swing plane that matches a single joint in the back that is pointing most directly at the ball.If done properly you can develop a swing, in which you do not get stuck behind the ball, due to taking the club back too far away from the target line.Players that use the method to determine swing planes, usually have planes anywhere from the ball to the right shoulder plane, to from the ball tracing some above the right shoulders, somewhere in the low to middle of the neck, and so by using this method to determine swing planes, seem to have a swing plane that is a little more upright, than players who use a different technique to determine swings planes.So basically if you want to try this technique, you address the ball, get bent at the waist some, let your arms relax and hang down, and then get a mental picture of a line drawn from the ball and the joint on your upper body or next that is most closely pointing at the ball (a perpendicular line from that joint to the ball). It seems that this produces a one plane swing, where the plane on the way back is the same as the plane down. I am not sure about that, but that is the impression I got from watching Tiger, and Monte Montgomery's, which are two players that have a more pronounced curve in their upper body, that curves naturally to on average face the ball more than players that have less of a curve in their upper back.RegardsLuke﻿

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# Woods and Monty both use the naturally curved upper back (which point directly at the ball, the hip bentness is determined by what makes the curved upper back to point directly at the ball) , the curved upper back is pointed at the ball, and then that determined the swing plane, which in the case of Tiger, is not a deeper right shoulder determining the swing plane, but the plane goes from the ball to the base of his neck.

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# Lydia Ko - Golf Swing - Improve Your Impact

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# https://youtu.be/f0L6V0f\_ZYA

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# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[12 minutes ago (edited)](https://www.youtube.com/watch?v=f0L6V0f_ZYA&lc=z13xepzgwmrzcnpbs04cjvbzdsu2cb0qlkc0k)

# Really good analysis, Thanks.It seems to me, that what Lydia Ko is doing, is pulling the right shoulder towards the target towards the top of her back swing as opposed to stretching the left shoulder away from the target during the top of a back swing, which is what you say in your analysis.Another observation is that she curves her upper back towards the ball during her backswing, which gets her shoulders more on plane with the ball. Isao Aoki has a curved upper back at address, which means he doesn't have to do anything during the backswing to get more on plane with the ball, it is preset at his address. When Lydia Ko curves her upper back more towards the ball during her backswing, she compensates for that by lifting her shoulders higher during her down swing.Now what I have been doing to get my body more on plane with the ball during my backswing, is to get more bent at the waist, during the backswing. This gets your body more on plane with the ball during the backswing. When I get more bent at the waist, which gets my body more on plane with the ball, means I naturally compensate for this by straightening my hips more upright, during my downswing.So two new keys I will try in my swing, is to pull my right shoulder towards the target during my backswing (as opposed to stretching my left shoulder away from the target),which will prevent my body from swaying away from the target, and key number two,either curve my upper back at address to get my shoulders more on plane with the ball,or I could curve my upper back more vertical during the backswing, getting my upper spine more on plane with the ball. Doing this will mean I will have to straighten my hips less on the downswing, I can instead compensate for the curvature of my upper spine during the downswing, by lifting my shoulders during the impact area.As a last comment here, I have a concern for me would be that curving the upper spine towards the ball at the address position, or curving the upper spine towards the ball during the backswing, might lead to injury in the upper spine.My intuition is the get more bent at the waist either at address or during the backswing, with a compensating more of straightening slightly in the impact zone, will be less prone to injury, than curving the upper spine towards the ball.As a side note, I think that pulling the right shoulder towards the target during the backswing, will result in less reverse pivoting, than stretching my left shoulder away from the target (which may influence a golfer to tilt towards the target to counter the sway caused by stretching the left shoulder away from the target, which for me results in me tilting towards the target to compensate for the sway caused by the left shoulder reach away from the target).Thanks for this video.Luke﻿

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# New swing keys. The first key is very important for my go to swing. During the slow backswing, instead of reaching my left shoulder away from the target, that causes a sway, stay centered, and pull right shoulder towards the target, like Lydia Ko and Corey Pavin. Swing possible key, instead of getting more bent at waist, during backswing, and getting a few inches closer to the ball, I can consider keeping my waist bentness the same, but curving my upper back to get my shoulders more steep and facing the ball more. Lydia Ko does this, which causes her to lift her shoulders during the downswing ( as opposed to lifting her back, which is what happens as a result and getting more bent at the waist during the backswing). The curved upper back is what [Isao Aoki does, with the exception that he has a curved upper back at address, where as Lydia Ko curves her upper back during the backswing (combined with pulling her right shoulder towards the target at the top of her back swing).](https://en.wikipedia.org/wiki/Isao_Aoki)

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# I have a theory that the reason I hit the ball outside to in is that my upper body lifts up during the backswing. That causes my shoulders to flatten during the backswing, and then I am stuck. So when I counter this, I lean down slightly closer to the ball, on plane, during the backswing. Find out from experiments how many inches I need to get more bent during the backswing. Two benefits to getting more bent in the backswing are one; It prevents me from lifting during the backswing, and two; it gives me leverage that when I straighten a few inches, my left hip goes back and my left shoulder go up rather than back.

Pro Bowlers do the same thing. I think we are talking a few inches so it is hard to pick up in fast motion, but those several inches do wonders.

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# <https://youtu.be/aDXEmXMfFmU>

<https://youtu.be/9fKga7gCGYQ>

# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[2 minutes ago (edited)](https://www.youtube.com/watch?v=9fKga7gCGYQ&lc=z12khfwj2vfvv34kq23ytzuiakm1s5og204)

# One thing I picked up on, is that his upper body gets a little closer to to ball during the backswing. Then when he gets close to impact he uses his back muscles to get leverage that is delivered to the ball when his back lifts up slightly.I have been watching some of the Professional Bowlers (the sport). Some of the good bowlers get more bent at the waist during their approach to the foul line, and they lift up slightly with their back muscles when they release their ball towards the pins.I think this delivers leverage that reduces stress on the knees, which is very important in golf. I think Tiger Woods uses his back muscles in the impact area which applies leverage that is delivered when striking the golf ball.Luke﻿

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# New thought, when I bentness more at the waist on the golf backswing, when I swing down and forward, I feel some stress on my left knee. What I am doing wrong here is that as I increase the bentness at the waist during the backswing, I need also get more bentness in my left knee, BUT ALSO I NEED TO BE SLIGHTLY TILTED TOWARDS THE TARGET TO GET ALL THE PARTS PROPER SO I DO NOT GET PAIN IN My LEFT KNEE ON THE doWNsWING. DURING THE DOWNSWING, I LIFT UP WITH MY BACK, AND TO SOME DEGREE I STRAIGHTEN MY LEFT LEG. BEcause, I did every right, i get bent left knee, more bentness of the waist during the backswing, and increase tilt towards target either during the backswing, or at the top of my backswing, and because I did all of these things properly, when on the downswing, I straighten my waist, using my back muscles (just like my bowling stroke), so I get leverage that way with my back muscles, Because everything I done proper, I get leverage by straightening both my right leg and my left leg. By setting up the backswing, I can reduce the stress on my left knee, by setting it up so that BOTH legs can straighten during impact.

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# OK, this is getting interesting. During the backswing, Hogan gets more bent at his waist, and the head gets closest to the ball right when he is starting his downswing. So then he has to straighten up the waist more at impact, but this causes a whiplash effect, when you get nearer to the ball on downswing, and then get further away from the ball right before impact.

VERY IMPORTANT HOGAN SWING KEY.

When you want to get left knee to get bent, then you have two choices, either lean towards the target and do a reverse pivot, or get closer to the ball with more waist bent on the back swing.

Very Important, If you get more bent at the waist during the backswing, and thus get my chest closer to the ball during downswing, it sets up a whiplash effect, so that during the downswing you can straighten up some to reverse the effect of the bentness.

Also, you protect your knees this way, because you are using less rotation and less lateral move, and gaining any lost energy, from your back and left shoulder muscle.

THINK ABOUT IT. WHEN YOU GO BOWLING. YOU NEED To GET MORE bent at the waist, not bend the knees, as you do your backswing of the bowling ball. By doing such, you only need a small backswing to create a long leveraged swing. This is due to the fact that you first get bent more, and thus lower to the ground, but are leaned forward which is very good (not more knee bentness, maybe just a little, but no more than a little knee bentness), anyway so when you make the bowling ball swing stroke as you approach the foul line, you straighten up your waist, and get massive leverage and create a long flat arc, with a short backswing.

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# OK I See what Dufner and Hogan are doing in a few videos. They turn their shoulders directly ninety degrees to the target line, the upper torso is turned so that the upper back is facing the target. At the same time that they are finishing their backswing, they do a controlled lean towards the target so that as the tilt occurs, it appears like the rotation is about a straight line that goes from the right foot, up the right leg and through the torso and the head. The face is for the most part facing right behind the ball.

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# Jason Dufner, does a very interesting thing, he takes a normal backswing. Near the top of his backswing, he actually does a T-I-M-B-E-R like a tree towards the target, right when his is finishing his body coil, when the arms and shoulders are finishing up. He TIMBERS towards the target so that his head is back to the middle of his stance where it was at ADDRESS. Some might call that a reverse pivot, but I say he is starting his downswing before your backswing is finished. That is what I am trying to introduce into my swing, which becomes difficult for me because I have a very slow backswing as my current go to shot. The thing I really notice, and I think a lot of players do this, HE STARTS HIS LEFT KNEE FORWARD TO START HIS DOWNSWING , AND THIS HAPPENS BEFORE HIS UPPER BODY BACKSWING HAS FINISHED.

# New swing, wide stance protects knees from pain and injury, works beautifully, new go to swing. When you get them real wide, during the impact and follow through the right heel will come up off of the ground and you can almost step and spin onto the left foot.

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# Observation about the last two go to swings.

They both achieve the same goal of creating a swing that you do not get stuck.

I prefer to try the swing first where I have both feet angled towards the target, left foot 75 degrees and right foot 45 degrees to the left towards the target.

Try a closed stance too, right foot pulled back from the line five or six or seven inches.

One way to hit a draw is too move the weight to the left foot toes during the downswing and follow through. Also pulling the right foot back makes it easier for me hit from inside.

I should be able to hit a draw by putting in the middle of my stance-pulling my right foot back five to ten inches-and swing from inside out, sliding and rotating my hips and torso along a line drawn from my right foot the is pulled back off of the target line to my left foot that is a few inches in front of the target line.

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# Another new go to swing

Setup square with a neutral stance

Take club back only with arms very slow, careful to restrict both the hips and torso and shoulders.

Swing forward, let the arms drop a little and the slide and turn the hips aggressively, and notice I am not stuck. My clubhead reaches the ball square very easily when I swing slow back with the arms

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# I have a new modified go to swing.

It is a good addition or modification, because it forces me to use a slow backswing, to build up leverage, in this case leverage that will allow me to hit any type of shot, without getting stuck behind the ball.

The thing with this leverage concept, is to have a slow backswing. The main move here is to drop (for now) the left shoulder straight down. Now that does not mean that I have to have a vertical swing plane. I can still have a normal swing plane, that is not really upright.

I will now go search the internet for videos and articles on dropping the left shoulder. For some reason I believe that dropping the right shoulder first thing on the downswing, will protect my knees from injury on downswing.

One thing I just thought about is that, If I keep my left arm straight which will be made possible because of my very slow backswing, I can drop my left shoulder straight down which will cause me to get a little more bent at the waist. My left knee might get bent more towards the ball, and I might get a very small reverse pivot. In other words this will cause my left hip to drop when my left knee gets bent more towards the ball. The reason is that the body will only allow the shoulders to drop straight down a few inches before it begins to cause your ribcage to form a curve towards the target. This means my right shoulder will go up. But during my slow backswing my arms will form a swing plane from my right shoulder to the ball. Basically you might have pure gravity golf, which would be a really high swing plane. No matter how you swing you need to protect your knees and the only way I know to do this is to angle your left foot so the it is pointing at the target. Back to my new swing. This left foot angled 85 degrees towards the target will make my hips and waist to do there thing quicker.

Let us invent a swing.

Setup

My feet are on the line of the target, but the left is angled 75 degrees and the right foot is angled 45 degrees.

Left foot pointing straight at target 75 degrees

Left knee pre-bent towards on same line as the foot at 75 degrees target 20 degrees

Everything else the same

Slow back swing

Pause at top

Slow transition

Note:Keep the left knee exactly still and flexed along the line of the foot and keep it bent 20 degrees throughout the entire backswing and the first part of the down swing.

During the rest of the down swing straighten the left knee.

Note Genius it works.

Now point your right foot about 45 degrees towards target.

This allows me to build up a lot of energy that is delivered forward.

At also protects both of my knees during down swing.

Still have a slow back swing and still have a slight reverse pivot at the top.

Will this set up I will make it almost impossible to get stuck.

Yes it restricts my backswing, but all of the energy stored in my coil is delivered at the target.

Also it makes my downswing move more along a line like a club head travelling on a railroad track.

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# https://youtu.be/SLIuE44R9SI

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# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[15 minutes ago (edited)](https://www.youtube.com/watch?v=SLIuE44R9SI&lc=z122gnfhrorlf1ggo04cjvbzdsu2cb0qlkc0k)

# Since the video shown above, is on the subject of Analysis of Ben Hogan's Swing, I thought I would place this post I have been working on regarding one aspect of his swing.Some say Hogan has a bit of a reverse pivot, which probably is true.However, some would say that he starts his downswing with his lowerbody, before the upper body is finished with it's back swing.However this requires a somewhat fast backswing to accomplish.However it is possible to get into a similar position as Hogan at thetop of your backswing, even if you have a slow back swing, if you have an understanding of why someone would want to introduce a slight reversepivot at the top of the backswing ( or one could also say that you canintroduce a slight reverse pivot During Your Backswing, as opposed tosaying it happens at the top of the backswing).So the a small reverse pivot if done carefully, can help prevent body swayaway from the target, during the backswing.Also, a small reverse pivot during the backswing, can make it more naturaland easier, to establish a Reverse C spine position at impact.My observation is that if you want to do a Reverse C swing, it is easy to do ifyou do a small reverse pivot at the top of your backswing. You do a back swing with a slight tilt towards the target at the top of your backswing. From this point it is easy to get into a Reverse C swing, without hurting yourlower back as much. If you attempt a Reverse C swing, after you sway awayfrom the target, you have to slide down the line towards the target to get intoa Reverse C impact position, which definitely will hurt your back. Reverse C just means that at impact your spine curve is shaped like the Letter C, but flipped around so that it is a Letter C drawn backwards.So if you want to do a Reverse C swing with minimal stress on your lower back,then at the top of the swing you want your majority of your body mass, one halfin between your left and right feet.You can watch Ben Hogan videos to witness this.Also, I include here several frames from a video of Danny Noonan swingingin the movie Caddyshack.<http://sphere137.wix.com/mysite>As you can see, Danny's head remain relatively still, centered over the ball.This is due to a very small reverse pivot, which is done partially to prevent the upper body from swaying away from the target on the back swing.His swing is similar to Ben Hogan's, and Lydia Ko, but his hands are much higherin the air at the top of his swing than Ben Hogan or Lydia Ko.As a result he has to be in a more severe Reverse C spine curve at impact, andhis hands go much higher in the follow through.The point I am trying to make here, is that if you want to do a Reverse C at impact,it is easier if you start from the top, with your body slightly tilted towards the target, so the your head is on average, in the middle of your stance at the top swing.Also, the head will remain in the middle of your stance until after impact whenthe body raises up in the follow through, well after impact.LukeRemember. Most of the videos you will see, will want to cure you of your reverse pivot.A little tiny reverse pivot can be a very good thing.The videos that are trying to cure you of a reverse pivot, show as an example, someone who is doing an extreme reverse pivot where the head moves over the left foot on thebackswing, and then the head is over the right foot on the downswing. A properly done beneficial reverse pivot is one the allows your head to remain fairly stillin the middle of your stance until well after impact. The very slight reverse pivot can bethought of as a center based swing, and it also prevents any sway on the backswing.Regards﻿

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# It is worth a note here, that Lydia Ko’s left knee bends forward during her backswing, with her irons. Now let me go check her driver left knee impact. Yes her left knee bends and the left knee moves forward during her Driver Swing. Now let me go check Ben Hogan’s swing. Yes, Ben Hogan and Lydia Ko both have a pronounced Left Knee bent towards the ball during the backswing. Does this create a path towards attempting a very small reverse pivot, yes I think it does. Is this bent left knee on backswing, create more pressure on the left knee joint at impact, not sure. If this is a problem for me, bent left knee occurring during backswing, then I will have to modify my swing so that the left knee is less bent during the entire swing, maybe just the lean tilt towards the target to start the downswing, creating a tornado, corkscrew swing, for powerful, long, seniors.

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# I have a new experimental swing. I use my very slow backswing. This allow me to correct any sway or reverse pivot. It also allows me to make corrections on too much head movement. I have a little pause at the top. Next I tilt slightly towards the target 6 degrees, which slides my upper body left, but only to the point that my head is back to where it was at address. Right after I tilt towards the target with my body, I gently flex my stomach muscles, which make a single unit out of my upper and body. I next slide my hips to the left before impact, so that I am in a Classic Reverse C position at impact, where at this point my upper body is tilted slightly away from the target. This is different than my non experimental go to shot, in that I include a slight pause, where now I start my downswing with a slight upper body tile six degrees towards the target (also try a tilt of my whole body six degree or five degrees towards my left foot, increasing the weight on my left foot before any forward hip slide or rotation. Next I gently flex my stomach muscles which activates my hips to move towards the target and morphing into a Reverse C position right before impact.

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# Lydia Ko has a swing similar to Ben Hogan’s. The only tilt she has away from the target is that due to the right hand being lower than the left hand on the grip. She never crosses past the 84 line of Hogan’s during the backswing. The same can be said for Kenny Perry, 2 or 3 angle away from target at address due to the right hand being lower than the left hand at address

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# What I am saying, is that for now the main points I have taken away from information and videos on Ben Hogan’s swing is this. My go to slow take away. Tilt Six degrees towards the target in order to keep my head still during the backswing. Do a slow smooth transition and slow smooth downswing where I gently flex my stomach muscles and into impact create a classic reverse C thus also keeping my head from moving on the downswing. The six degree tilt at the top of the backswing might allow me to swing down harder, since I no longer need to worry about getting stuck behind the ball, which implies I might be able now to hit my driver further than 235 yard draw.

For me to prevent head movement on the backswing, I need to lean and tilt towards the target, six degrees, and no more than that. Then on the downswing, in order to continue to keep my head from movement of the downswing, I need to go into a classic reverse C at impact. Do not worry about the follow through, your inertia will carry you towards the target, the legs will straighten, and almost all of your weight will be straight up on your left foot and leg.

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# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[3 minutes ago (edited)](https://www.youtube.com/watch?v=TQXzRinxsVk&lc=z13lyb1ocn25fl4qh04cjvbzdsu2cb0qlkc0k)

# Ben Hogan never leaned away from the target during his backswing.He had a 6 degree tilt (the 84 degree line they talk about with Hogan),which allowed his to minimize his head movement. Because he had a fastbackswing, this allowed his weight not to be towards the target, even though he had a 6 degree tilt towards the target.All of the anti reverse pivot drills I see, they demonstrater completely exaggerates the reverse pivot, with the head drastically moving towards the target on the backswing, and drastically the head moving away for the target on the downswing.A true reverse pivot done properly at six degrees only, Minimizes head movement during the entire swing, as long as you go into a Reverse C at impact, which thankfully results in minimal head movement on the downswing.For me, I have a very slow backswing, so when I use Hogan's 84 degreeline that he never goes past, I do experience a very slight amount of too much weight on my target side, during backswing. However the benefit I gain from asix degree tilt towards the target during my backswing, allows me, like Hogan, to minimize my head movement, which gives me good body position awarenessand control.So like Hogan, I incorporated his body positions during my swing, and as aresult I never tilt away from my target, until just before impact.You only need to be tilted away from the target, at impact, not during the backswing.The way I achieve tile away from the target at impact is to convert my 6 degree tilt towards the target at the top of my backswing, into a reverse C position at impact,which means my hips slide towards the target at the beginning of the down swing.It seems that all of the videos showing drills to get rid of the reverse pivot, exaggerate it to the point where the head gets closer to the target during the backswing.If you do the perfect amount of a reverse pivot, rather than your head moving towardsthe target during the backswing, then like Hogan, your head will simply remain stationary, the point being, to prevent your head from moving away from the target,during your backswing, which is a bad thing according to Hogan's swing.So basically Hogan form a Capital Letter A, in his address, His head remains at the top of the Capital letter A, during his entire swing. The only way to accomplish thatin my visualization, is not tilt the body away from the target, until you get to impact,and realize a reverse C position at impact, which in turn, allow the head to remainat the top of the Capital letter A, during impact, And of course after impact the legs straighten and the remainder of the weight is transferred onto the straight left leg.Luke﻿

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# So based on Ben Hogan’s swing, I have a slight modification to my go to swing. During my backswing, I tilt my body at 6 degrees toward the target to minimize head movement on both the backswing and my fore swing or down swing. This 6 degree tilt, can also be stated as Hogan’s 84 degree line. So I have a very slow backswing and very slow transition and very slow start to the down swing. I start my downswing with a gentle flexing of the stomach muscles, and from the position of a six degree tilt towards the target, I go naturally into a reverse C at impact. This reverse C at impact happens allowing my head to not move towards the target before impact. The six degree tilt towards the target during backswing allows me to start my downswing and into impact without getting stuck behind the ball, so that problem is now solved.

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# https://youtu.be/wv79BIiFdfI

# [Luke Daniel Borel](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[31 minutes ago (edited)](https://www.youtube.com/watch?v=wv79BIiFdfI&lc=z12rsnvhmzahzn2c223ytzuiakm1s5og204)

# Ben Hogan prepare his body for his inevitable reverse C in his follow through.He also seems to tilt a little toward the target during his backswing to minimize head movement. Some say, he starts his downswing with his midsection before he completes his backswing with his arms and shoulders, and that appears to be a true statement, with regard to his full driver swing.My opinion is just an opinion, but to me, it seems if you tilt your body towards the target very slightly, before you start your downswing, you will be less likely to get stuck behind the ball.They say he has an 84 degree line he never goes past in the backswing. And they say he starts his downswing with his hips before his arms and shoulders have completed their backswing. So it is almost like saying that if like me you have a very slow backswing, in order for me to get into position like Ben Hogan, I would have to do a very small reverse pivot, if I do not want my body going past the 84 degree line. See the article for a description of his 84 degree line. <http://www.andrewricegolf.com/andrew-rice-golf/2009/10/ben-hogans-dynamic-golf-swing>For someone like me with a very slow backswing and slow transition, I guess I would have to not go past the 84 degree line on my backswing, which for me will feel like a small reverse pivot. The reason it did not feel like a reverse pivot to Ben Hogan is that he had a faster backswing than me and so he countered his fast backswing, with a slight tilt toward the target during the backswing. He also started his downswing with his hips, before he completed his backswing with his arms and shoulders, and needed the slight tilt towards the target, to stay balanced during his complete swing.What I am saying is that I do not believe you can call what I do a reverse pivot, if I am only reverse pivoting enough to minimize my head movements. Also by minimizing my head movement on my backswing, I am also then set up to minimize the head movement on my forward swing as I do a small reverse C following through . I also flex my stomach muscles gently at the start of my downswing, which protects the lower back from injury. It connects the upper and lower body together, so that when you lead with your hips, your midsection comes along for the ride.Please to not try this at home.Go to the driving range and stand over grass so as to have a soft landing if you lose your balance.Just kidding, it is safe to try.Luke﻿

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# Text above drawing.



# I think I have a swing figured out that I can use as my new go to swing. What it is mostly the same but I am adding one component to the downswing. As usual I do a very slow balanced backswing. I have a slow smooth transition at the top. When I start the downswing, the new component is that I tilt slightly towards the target moving both my upper and lower body towards the target, with minimal rotation. Also when I start my stomach muscles, I flex my stomach muscles. Next I start down slowly and smoothly with my arms and hands, retaining the lag, So what happens is that at impact I form a reverse C with my hands behind the ball and the beltline is the closest point of my body to the target. I is a wonderful method to form a reverse C, because the downswing is started slow as usual, as I flex my stomach muscles gently, my entire weight begins to shift towards the target. Now the club head approaches impact with the ball, the hips and torso continue to move towards the target, but the head stays behind and we create a tilt in the torso away from the target, and the hips and legs tilt towards the target. This is an ideal position to be in at impact. Hogan’s head moves slightly away from the target during backswing and slightly towards the target during forward swing. There is no tilt at top of backswing. On the downswing I gently flex my stomach muscles, this starts until finished a slide and rotation towards the target, the creates a reverse C at impact. It looks like Hogan flexes his stomach muscles at the beginning of the downswing, which causes a very small squat and the body temporarily towards the target. As the swing continues towards impact, the body forms a reverse C, and in some doing the legs begin to straighten, and in so doing the bent knees become straight, however there still is the reverse C, but the reverse C at and after compact begins to lessen, but there's still some reverse C. Eventually the body is straight up and down over the straight left left.

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# Interesting. I guess we would all like to be able to hit a draw from a normal setup. I guess it is just easier to hit a draw by adjust your feet, right foot back and left foot forward.

# Very interesting what you say about preventing an over the top outside in shot, by making simple adjustments in your setup.

# I guess a really skilled golfer can hit a draw with a normal setup, by moving his or her left shoulder towards the golf ball on the downswing.

# Check out this video and see if you agree with it.

https://youtu.be/yrlfTxQJYrc

# Luke

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# HOW TO MOVE YOUR LEFT SHOULDER TO HIT A DRAW

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## [RobinSymesGolf](https://www.youtube.com/channel/UC0JkD_eaztCCXmPKd9KZcKw)

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## https://youtu.be/yrlfTxQJYrc

## [***Luke Daniel Borel***](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[***1 second ago***](https://www.youtube.com/watch?v=yrlfTxQJYrc&lc=z13gfb44vonuhvrzj04cjvbzdsu2cb0qlkc0k)

## ***Interesting. I was wondering if I can accomplish what you suggest in your video easier, by pulling back my right foot at address. I notice when I do pull my right foot back at address, that my weight shifts to my left heel during the downswing and at impact. I turn my left foot 25 degrees towards the target, to protect my left ankle from injury when my weight shifts to my left foot during the downswing. Also I gentle flex my stomach muscles at the beginning of my downswing, which connects my hips and my torso into one unit and guarantees that I will transfer my weight to my left side completely.Luke﻿***

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## [***Luke Daniel Borel***](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag)[***1 second ago***](https://www.youtube.com/watch?v=f0L6V0f_ZYA&lc=z13bjzgjzwbagbhbd04cjvbzdsu2cb0qlkc0k)

## ***What helps me in the downswing is the gently flex my stomach muscles to start my downswing, which connects my upper and lower body, and this flexing of my stomach muscles causes my upper and lower body to shift my weight over to the left leg, while at the same time rotating my body. Due to this my weight shifts so effectively to my left ankle that it puts too much stress on my left ankle on the follow through. To protect my left ankle I angle my left foot towards the target 25 degrees. Luke﻿***

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## Another drill is to start out with very small swings back and forth, feel the release, and then work up to the nine o’clock, three o’clock drill. Ironically for me, having such low flexibility, narrow shoulders and narrow hips and barrel chest, nine o’clock three o’clock drill is not that far away from my current swing. I guess anyone could develop a big full swing, if they swinged upright vertical, like Bubba Watson. Either way you should have about a ninety degree lag, when you enter the groove at nine o’clock.

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## As far as more clubhead speed, the only way that makes sense to me is to first establish your go to swing. Next use the upside down club drill, where you turn the club head upside down, and grip the club near the club head. Next swing the club with you current slow speed, and listen to where the loudest part of the swish is. Work on the speed, and adjust your swing so the loudest part of the swish is at or slightly after the impact area. Once that is good, test the real swing. Once that works, now work of increasing the loudness of the swish by swinging harder. Adjust swing until the maximum swish sound is at or right after the impact point of the golf ball. This and repeat until you are happy and can test a new faster driver distance so that it is just as reliable and solid and a gentle draw as you did to begin with.

##

##

## If these things start working, the gentle draw, or maybe if it does not work out, I will start thinking about whether I should manipulate my left wrist to square up my clubface for impact, and whether my rotation of my body be involved in squaring the clubface.

##

##

## I can consider the video I just watched that said if you are topping the ball, you are straightening up on your swing. The say stand closer to the ball, but allow more time for your arms to start down, before everything start sliding left and rotating around spine and eventually finishing the rotation on the left ankle which is twenty five degrees towards target with the left foot at setup.

##

##

## Remember, in the past I only had one half of a swing, because every time I tried to finish my swing with me being upright above my left foot, I could not elevate the ball and either drop kicked the ball, or hit and topped the ball. The thing that now allows me to ge solid contact on the ball, is the slow backswing, the smooth transition, and the smooth slow start to my downswing that combined with retaining a straight but soft left arm, allows me to keep my right elbow from chicken winging, which in turn guarantees me getting in the slot, and hitting a solid shot with a minor draw, with a complete control of my balance and awareness and control of the golf club so that I do not transfer my weight too fast to the left, while getting stuck and saving the shot by coming over the top, outside in and chicken winged to save the shot. Now this does not contradict that my shots are inside square inside, which is different than the over the top outside indeterminate inside, or the inside push chicken wing outside. Inside square outside I will have to work on, in the past this was what I tried on every shot. For now I will try inside square inside, like a bunker shot. Because all of the problems I had before, I always had my hands too high at contact. WIth my slow back swing and my left arm not breaking down, and my smooth transition, meaning the opposite of John Daly, and my slow beginning to my down swing, plus allow me to transfer my weight towards the target at the same time I add rotation to the spine and left leg, which is triggered gently by the flexing of my stomach muscles as the beginning of the downswing. Because of all of these things, I now have a full swing which finishes with initially the clubhead going somewhat left, with me weight being mostly on my left leg, and with my left foot turned out twenty five degrees at address, then once I understand all of what I write in this paragraph I am currently in, the I should be able to score slightly below ninety at my home course, which is short par seventy, with small, some holes greens are very difficult to hold and put due to too much slope on some greens.

##

##

## I have to remember that best shot I ever hit was, a three fifth backswing, with a slow back swing, so that very little or no coil of the body happened. In the past I had a fast backswing which broke down my left arm, which in turn made me lose the lag I had, and because my left arm broke down, I had a flying right elbow.

I have pretty much defined my go to shot and have defined it is not like bubba which is pure vertical, it is about shoulder height on my swing plane during the backswing. Due to the relaxation I had in my body, due to having a three quarter backswing, I was able to create a flat arc in the impact zone.

The thing about people trying to copy Ben Hogan’s swing is they do ok on the backswing, but they transition to the downswing to fast and they accelerate too fast on the downswing, ruining the one piece take away Ben does.

For now I want to play the game for hitting the very little coil, go to gentle draw, three quarter. The question becomes how to maximize a repeatable lag, which would be made possible by the slow beginning to the downswing, and the ability to get into the groove that is accomplished by keeping the soft left arm straight. The question arises whether I get a wide narrow wide, which is accomplished by two means (The wide narrow wide means and refers to the arc the club head traces out). Like I was saying it is a combination of the lag that is maintained during the downswing. The second is the change of the center of the rotation which is the left shoulder, when one slides to the left and rotates about the spine and left leg. There are three concepts. A draw can be that the arms lead the shot and which means we make contact just before we complete our weight shift to the target. The second is the straight shot where we make contact at the same time we complete our weight shift to the left foot. And the third is the fade where the lower body gets to the left side right before we make contact.

One way look at it is that during the backswing, the club head leads the hands. On the downswing, when you create a lag that is maintained during a good part of the downswing, the hands lead the club head.

##

##

## Since I do not have a video of my one perfect shot I hit on the first hole, all I can really prove to myself is that I had a nice slow backswing, without about a three quarter backswing, with a smooth transition and a smooth gentle down swing. I have no proof that my left arm kept straight. If my left arm did get bent, it was only because that it was slow and smooth that it probably straightened out before impact. I hope that it does not turn out that I cannot hide a gentle draw with a left arm that always stays straight in the backswing. If I try out my new smooth slow backswing smooth transition and smooth slow initial downswing, that I initially cannot hit the gentle draw, the I should then try the nice smooth backswing slow, and let the left arm get bent some, gently transition and slow initial downswing (slow until the left arm is straight again) and I hit a draw, then I need to take notice of this, and then go back and try the left arm straight during entire backswing, and see If I can milk a gentle draw out it by not forget the stomach muscle flex or try a slower downswing so that I can activate the slide and rotate motion to combine with the straight left arm. Remember to finish left just after impact, just like a bunker shot, except in a bunker shot, if have gone past center and the club is starting to head left at impact.

##

##

## In the past, when I tried to keep my left arm straight I backswing to fast and it was a disaster. The secret to introducing a straight left arm into your swing, is to minimize the stress on the left arm by slowing back swinging your torso when you feel any tension building up in my left arm. This goes back to my original theory that if you take a very slow backswing, you gain the benefit of having perfect balance and perfect awareness of where the club is in three dimensions, and thus allows for perfect control of the club, which allows me to hit the very solid gentle draw that starts out to the right ten degrees, and then draws back left to the center of my target line.

##

##

## Another item I discovered is that letting my left arm to get bent, caused my right elbow to chicken wing. It turns out if I keep my left arm straight, that even when I turn my shoulders and hips as much as I feel comfortable, that it is difficult for me to do a three quarter backswing, where my left arm is shoulder high. RIght now my maximum comfortable backswing is in between one half and three quarters backswing, we can call it three fifths to five eighths, and at this point my right elbow is barely separated from my right side rib cage. This works to my advantage, since I am already in the groove when I start my backswing, even though, they say one idea is to drop the right shoulder to start the downswing. The key is probably to drop the right shoulder only if I do it very gently and only if it works for me. The great thing about keeping my left arm straight and my right elbow not chicken winging, is that not only should my driver go solid as I have already proven the gentle draw, but also, all of my irons, including my sand iron, should go further with a gentle draw, and also, I should be able to strike a solid draw with the five, four, and three iron too, rather that the weak push slice I use to do when my left arm bent and my right arm elbow chicken wining.

##

## Remember, I use to try to hit a draw and make my clubhead finish to the right of the target. Also my left elbow would chicken wing. Now I want to finish all of my shots like a bunker shot, where the clubhead finishes left of the target, and all of my weight finishes up and around my left foot. This puts strain on my left ankle, which requires me to fan out my left foot towards the target, about 25 degrees. Also to hit a draw I had to add a gentle slow flexing of my stomach muscles to start the downswing.

##

##

## A good drill is to turn the club upside down and grip the club near the head, and then swing the club back and forth. You can hear by the sound of the grip swishing through the air, where the tip of the club grip gets to it’s maximum velocity. By practicing this drill you can adjust your swing so that the loudest swish happens at or where the ball is.

##

## So what happened when I had that perfect shot is that I took the club back so that my left arm remained straight, and my hands were shoulder high, about a three quarter swing, slow backswing and a gentle transition and a slow smooth start to my down swing. So what might have happened is I got the Ben Hogan Spear Throwing effect. So in the future all of my shoots will have a soft straight left arm, my swing will be three quarter, the club will have a lag of anywhere from ninety degrees to pointing towards the target with the club head the same distance from the ground as my hands, which will be shoulder high. I can achieve a shot that starts out right about ten degrees and gently draws back and sits down on the fairway. Any other features such as Kenny Perry or Bobby Jones or Lydia Ko will be considered. I think it is just coincidence that the shot I hit that day resembled Ben Hogan.

##

## Of course most of the 90 pages below do not help that my only go to swing is based on a slow backswing a slow transition and a slow beginning to the downswing. Right now I can hit a 235 yard draw that is very accurate. Because I do not hit very far I can only just break ninety on average. Most of what I paste and theorize about in these many pages, has to do with finding more yardage from my clubs, without giving up my go to draw and without giving up my excellent accuracy.

##

##

## **The following many pages are from the website address listed here next.**

##

##

## **http://perfectgolfswingreview.net/xfactor.htm**

##

##

## **Jim McLean's Triple-X Factor - A Critical Review**

##

## Click [here](http://perfectgolfswingreview.net/index.html) to go back to the index page.

##

## **Introduction:**

##

## In this review paper, I will be critically reviewing Jim McLean's' **triple-X factor** concept, which is the topic of an article that he wrote for the January 2008 issue of Golf Digest magazine [1]. The triple-X factor idea consists of three separate concepts - the **X-factor stretch**, the **hip rise** and the **head swivel**. The major idea that JimMcLean is famous for is the **X-factor,** which he first described in an article in the December 1992 issue of Golf Magazine [2]. Basically, Jim McLean recommended that golfers should attain a certain differential in the degree of shoulder turn versus pelvis turn (certain degree of torso pelvic separation) during the backswing, and he believed that if a golfer optimised the degree of torso-pelvic separation at the top of the backswing, that it would enable a golfer to maximize swing power. In a certain sense, his original X-factor concept can be thought of as being a **static X-factor**, because it represented the body's position at the end of the backswing, and he believed that if the upper body was correctly coiled against the resistance of the lower body at the end-backswing position, that a golfer was storing swing power energy that could be unleashed during the downswing. In his more recent GD article, Jim McLean is introducing the idea of a **dynamic X-factor**, where the degree of torso-pelvic separation is **increased** at the start of the downswing as a result of the lower body moving before the upper body. If the lower body moves before the upper body in the downswing, then it would increase the degree of torso-pelvic separation, and it is therefore easy to understand why Jim McLean would call this dynamically-activated increase in torso-pelvic separation the **X-factor stretch**.

## I will be describing the three component parts of the triple-X factor concept separately and most of this review paper's contents will be devoted to the topic of the X-factor (both the static X-factor and the dynamic X-factor). I will start off by describing the evolution of the X-factor concept, as described by Jim McLean in his book on the X-factor [3], so that a beginner golfer can better understand its historical significance and its present-day applicability. After describing the X-factor concept, I will then critically review the biomechanical validity of its core fundamentals from a personal perspective. Beginner golfers, who know me from my website's other critical review papers, will expect an in-depth review that is very scholarly and very probing, and I don't think that I will disappoint that small subset of beginner golfers who frequently visit my website because they are eager to maximize their understanding of the biomechanics of the golf swing. I have given this subject a great deal of thought and I will be introducing many new ideas that should intrigue an open-minded beginner golfer who is willing to entertain new ways of thinking about the biomechanics of the golf swing. As always, I expect my website visitors to be creatively sceptical of my personal opinions, and to not accept, or reject, my opinions without a great deal of independent thought. Whether a beginner golfer finds my opinions rational/logical (or not), this review paper will provide him with a great deal of controversial thought-material that he will need to digest.

##

## **The X-factor Stretch**

##

## In his book [3], Jim McLean stated that at the time he developed his X-factor concept (early 1990's), that the prevalent golf instructional approach to the golf swing was premised on the teaching idea that "to generate maximum power, turn your hips and shoulders to the maximum." In other words, a golfer, who wanted to maximize swing power, was encouraged to freely turn the hips and to turn both the shoulders and hips to the maximum possible degree. Jim McLean's X-factor concept is basically a rejection of that conceptual idea, and he believed that one needs to restrict the hip turn so that one can coil the upper body against the resistance of the lower body. How did Jim McLean develop his X-factor idea? In his book [3], Jim McLean stated he based his idea on research findings derived from a SportSense Motion Trainer (SMT) developed by Mike McTeigue. Here is a photo of the machine in operation - with Jim McLean as the guinea pig and Mike McTeigue at the controls. The SMT machine is capable of measuring the degree of shoulder and pelvis rotation at different points in the swing.

##

##

## SportsSense Motion Trainer - from reference number [3]

##

## Jim McLean derived a great deal of SMT data as a result of using the SMT machine on tour players, and he discovered that long hitters (power hitters) had a greater differential - rotating the shoulders much more than the hips.

## Here is a table from Jim McLean's Golf Magazine article [2].

##

|  |
| --- |
|  **Five Long Hitters**  |
| **Player** | **Shoulder turn (degrees)** | **Hip turn (degrees)** |  **Gap** | **Gap as % of shoulder turn** | **Distance ranking**  |
| John Daly | 114 | 66 | 48 | 42 | 1 |
| Tom Purtzer | 88 | 49 | 39 | 44 | 4 |
| Tommy Armour III | 69 | 37 | 32 | 46 | 22 |
| Jay Don Blake | 100 | 59 | 41 | 41 | 29 |
| Mark Hayes | 71 | 37 | 34 | 48 | 37 |
| **Average** | **88** | **50** | **38** | **43** | **19** |
|  **Five Short Hitters**  |
| Lennie Clements | 86 | 63 | 23 | 27 | 141 |
| Lance Ten Broeck | 83 | 59 | 24 | 29 | 148 |
| Tom Byrum | 89 | 70 | 19 | 21 | 158 |
| Peter Persons | 100 | 71 | 29 | 29 | 175 |
| Mike Reid | 88 | 62 | 26 | 30 | 184 |
| **Average** | **89** | **65** | **24** | **27** | **161** |

##

## It can be seen that long hitters, on average, didn't have a greater degree of shoulder rotation than short hitters, and that the major difference between the two groups is due to the fact that long hitters had a more restricted hip turn (50 degrees versus 65 degrees). It can be seen that the gap (magnitude of torso-pelvic separation) can be expressed as a % of the shoulder turn, and that long hitters had a larger "gap as % of the shoulder turn" value - 43% versus 27%. Jim McLean thought that this was the source of their greater swing power. It is interesting that Jim McLean didn't offer a biomechanical reason why increased torso-pelvic separation should increase swing power in his article. He vaguely wrote about loading/coiling the upper body against the resistance of the lower body, but he didn't elaborate any further on this issue in his landmark article and book. So, how does increased torso-pelvic separation during the backswing increase swing power?

## Although I have never personally read a biomechanical explanatory comment by Jim McLean as to why increased torso-pelvic separation can potentially increase swing power, I have read many comments by golfers who interpret his research findings in the following manner. Some golfers believe that if one turns the upper torso more than the lower torso, that one is stretch-coiling the upper torso against the resistance of the lower torso, which has a more restricted turn. The analogy they use is of a wire watch spring which is coiled up. They conceive of the upper torso coiling up during the backswing (like coiling-up a wire watch spring) and passively uncoiling during the downswing. In other words, they think of the upper body as having elastic properties, and they think that the upper body can store energy elastically during the backswing, and release this energy elastically/passively during the downswing - and that this "elastic energy" can supplement the energy generated by active muscle contraction during the downswing phase of the golf swing. However, there is no anatomical equivalent of a "coil spring" in the human body and there is no research evidence that demonstrates that body structures like torso muscles/tendons can store significant amounts of energy elastically when stretched during the backswing and then release **significant amounts** of elastic energy **passively** during the downswing. I think that the most rational explanation for the increased swing power relates to the fact that certain torso muscles are eccentrically loaded if torso-pelvic separation is maximized during the backswing. Consider the following diagram.

##

##

## Photo-diagram adapted from reference number [4]

## When a golfer turns the upper torso much more than the lower torso, he is essentially stretching certain torso muscles, especially torso muscles on the left side of the torso (depicted in red in the above diagram). Those stretched torso muscles do not increase swing power during the downswing secondary to a passive elastic recoil phenomenon, but simply due to the phenomenon of stretch-induced enhancement of muscle contraction. It's a simple physiological fact that a stretched muscle (if not over-stretched beyond its limit of contractile-effectivity) can contract furthermore) during the same period of time as a muscle that is less stretched. So, if a muscle normally stretches by an amount of "y" and you increase the stretch by an amount of "z", then that muscle is stretched by an amount of "y + z". If the stretched muscle contracts fully, then it is contracting a greater amount during its contractile phase, and it can therefore actively produce a greater amount of energy per unit time. In other words, the increased swing power is most likely due to increased **active** muscle contractile power of the eccentrically loaded torso muscles during the downswing phase of the golf swing, and it is **not** due to passive elastic forces that are potentially stored up during the backswing.

## From my perspective, the idea that increased torso-pelvic separation during the backswing can increase swing power is **not** really controversial - even if golfers argue about the precise biomechanical-etiological explanation that best explains the cause of the increased swing power. The second question then becomes - can a **further** increase in torso-pelvic separation at the start of the downswing **independently** increase swing power (independent of the static X-factor)? I find the idea that increased torso-pelvic separation at the start of the downswing (dynamic X-factor or X-factor stretch) can independently increase swing power very problematic.

## There is no doubt that certain golfers can increase torso-pelvic separation at the start of the downswing. Jim McLean stated in his article [1] that certain tour golfers can increase their torso-pelvic separation by an average amount of 17 degrees, and one can readily see that phenomenon in Tiger Woods' swing. Here is a good quality slo-mo SwingVision video of Tiger Woods driver swing.

## <http://www.youtube.com/watch?v=DEdWy9gP-Zo&mode=related&search=>

## Note that Tiger Woods has a significant amount of torso-pelvic separation at the end-backswing position, and that he seems to restrict his hip turn to about 35 degrees while rotating his shoulders by about 100 degrees. That creates a static X-factor differential of about 65 degrees - which is huge! If Tiger Woods can increase his torso-pelvic separation by another 17 degrees at the start of his downswing, can that increase swing power, and what's the biomechanical explanation for the increased swing power? Jim McLean uses the term **X-factor stretch** to denote the dynamic X-factor. But what part of the torso is becoming **increasingly stretched** during the downswing transition phase of the golf swing - when the hips turn before the maximally-rotated shoulders? It cannot be those torso muscles on the left side of the body (depicted in red in the above diagram) because they were maximally stretched during the backswing phase of the golf swing, and those **particular** muscle groups would also **not** be stretched more if the pelvis rotates forwards. Therefore, it must be torso muscles on the right side of the body. There are no torso muscles on the front side of the right chest wall that can be significantly stretched, and therefore it must be the abdominal wall muscles on the right side of the body that get increasingly stretched when the pelvis rotates forwards.

##

##

## Photo-diagram adapted from reference number [4]

## If the pelvis rotates before the upper torso during the transition phase of the golf swing, then the abdominal wall muscles (depicted in green) are stretched, and they can therefore potentially contract a greater amount/distance per unit time when those abdominal wall muscles **eventually** become **active** during the early downswing. In other words, the increased **active** muscle power of those **stretched** abdominal wall muscles could potentially increase the uncoiling of the upper torso and generate faster upper torso rotational speeds. This biomechanical phenomenon is not due to the storing up of elastic power in torso muscles, so that the elastic power can be passively released at a later stage. Rather, it is due to stretch-induced enhancement of muscle contraction due to the eccentric loading of certain **lower-mid** torso muscles - when the hips move before the shoulders.

## In his article [1] Jim McLean wrote-: "To maximize your stretch, learn to start the downswing with your lower body. Place your left hand on your left-front pocket and simulate a backswing with your right arm. Then shift your hips towards the target, feeling your left-front pocket move forward before you start the your right arm down. That's the X-factor stretch - the **primary** reason an average-sized tour player can drive the ball so far." Jim McLean is seemingly implying that the average golfer should increase his torso-pelvic separation at the start of the downswing, by rotating the hips towards the target while keeping the shoulders back - as demonstrated in the following photo.

##

##

## Jim McLean demonstrating the X-factor stretch - from reference number [1]

##

## Note that Jim McLean has rotated his hips to a near-square position at the start of the downswing, while keeping his shoulders back (non-rotated). Is it biomechanically possible to keep the shoulders back while rotating the pelvis forward? I believe that it is **only** biomechanically possible if one has **not** maximized the static X-factor at the end-backswing position. Consider a simple experiment. Stand at address and then perform a backswing motion and deliberately restrict your hip turn to about 40-50 degrees. Then maximise your shoulder turn to the greatest possible degree. Let's presume that you can turn your shoulders to 100 degrees with the hips turned to 50 degrees. Then get a friend to place his hand on your right shoulder to prevent you moving your right shoulder forward, and try to rotate your pelvis forward in order to **further** increase your degree of torso-pelvic separation. You will discover that you cannot rotate your pelvis forward. Then repeat the experiment, but turn your shoulders 20 degrees less than your maximum possible shoulder turn (eg. 80 degrees instead of 100 degrees). Then, you will be able to turn your pelvis forward by about 20 degrees at the start of the downswing before the shoulders feel strongly impelled to rotate forwards in concert with the lower body. Why? The reason is that you have a certain amount of "slack" in your **spine** when you have an **incomplete** shoulder turn, while you have no spinal "slack" when you have a complete**/maximized** shoulder turn. In other words, I believe that if a golfer can **significantly** increase his degree of torso-pelvic separation at the start of the downswing, that it means that he hasn't maximised his potential static X-factor during the backswing, and that he hasn't torqued his thoracic spine to the **maximum possible degree during** the backswing. No golf teacher discusses the role of the spine in the X-factor concept and I believe that it plays a key role in allowing rotational movement of the lower torso to be transmitted to the upper torso, so that the upper torso and lower torso can act in a time-synchronised, coordinated manner at the start of the downswing. Consider some pertinent anatomical facts regarding the human spine.

## When one performs a backswing pivot action correctly, the right femoral head moves backwards and leftwards, and that causes the right pelvis to move in the same direction - because the right pelvis has to move with the right femoral head due to the snug cup-shaped anatomical nature of the hip joint. This pelvic movement is depicted in the following diagram.

##

##

##

## Movement of the pelvis and lumbar spine in the backswing

##

## Note that the rotational movement of the pelvis during the backswing hip pivot action causes the 5th lumbar vertebra (lowest lumbar vertebra which is rigidly attached to the pelvic sacrum) to move leftwards, but to also change its face-orientation so that it faces towards the right. If the pelvis rotates about 50 degrees during the backswing pivot action, then the 5th lumbar vertebra will also face 50 degrees to the right at the end-backswing position. Consider the anatomical features of the lumbar vertebra.

##

##

## Lumbar vertebra - from reference number [5]

##

## There are 5 lumbar vertebra and each lumbar vertebra articulates with the adjacent vertebra via a facet joint. The superior articular process of the lower lumbar vertebra abuts the inferior articular process of the adjacent lumbar vertebra (just above) at the facet joint. Note the **vertically-oriented** cup-shaped appearance of the facet articulation joint, and note how the bony structure of the articular processes only allows the lumbar spine to move in a sagittal (vertical) plane, thus allowing for lumbar flexion and lumbar extension. The lumbar spine is incapable of lateral flexion or rotation. Therefore, if the 5th lumbar vertebra is oriented 50 degrees to the right at the end-backswing position, then the **entire** lumbar spine will be oriented 50 degrees to the right.

## The only part of the human spine (below the level of the cervical vertebra) that is capable of some rotary movement is the thoracic spine. Consider the anatomy of the thoracic spine.

##

##

## Thoracic vertebra - from reference number [6]

##

## Note the shape of the facet articulation joints of the thoracic vertebra - they are like roof shingles. This bony structural arrangement allows each thoracic vertebra to slide a little with respect to the adjacent thoracic vertebra. The potential amount of lateral side-to-side slide is markedly limited by the presence of numerous ligaments and short muscles that tether the thoracic vertebra to each other and to adjacent ribs. Each thoracic vertebra can therefore only slide about 2-3mm laterally, and that allows each thoracic vertebra to have a rotational capacity of about 2-4 degrees. Because the thoracic spine consists of 12 vertebra, the rotational capacity of the **entire** thoracic spine is limited to about 24-48 degrees (on average). This anatomical structural limitation explains why most golfers, who rotate their pelvis (and lumbar spine) 50 degrees, can only achieve an upper body (shoulder) rotation of 74-98 degrees. Golfers, who are more flexible, can achieve a greater degree of thoracic spine rotation than those theoretical "average" values, and they may **potentially** have an additional 10-15 degrees of upper torso rotational capacity at hand. Tiger Woods is exceptionally flexible and he can achieve near-superhuman amounts of spinal rotation, and that fact allows him to achieve a static torso-pelvic separation value of approximately 65 degrees at the end-backswing position, and an additional 10-15 degrees of dynamic torso-pelvic separation at the start of the downswing. This explains why Tiger Woods can turn his hips at the start of the downswing **while keeping his shoulders back** - because he has about 10-15 degrees of spinal "slack" at the end-backswing position, despite a huge static X-factor differential of approximately 65 degrees at the end-backswing position. Is this remarkable anatomical capacity advantageous to Tiger Woods. Not necessarily! Consider the advantages and disadvantages.

## If Tiger Woods can increase his torso-pelvic separation at the start of the downswing by turning his hips while keeping his shoulders back (thus creating a **X-factor stretch** of 10-20 degrees), it can potentially increase his capacity to eventually rotate his upper torso at a faster speed a fraction of second later in the downswing - by stretching his right abdominal wall muscles. However, there is a significant downside to this increased capacity to rapidly accelerate the hips at the start of the downswing while keeping the shoulders back - it allows the lower body to more easily outrace the upper body during the downswing. This problem has plagued Tiger Woods throughout his golfing career. Consider this comparison photo of Tiger Woods at impact - when aged 16 years and 24 years.

##

##

## Tiger Woods at impact - from reference number [7]

##

## Note that Tiger Woods' pelvis is nearly 90 degrees open to the target at impact, and that his right heel is raised off the ground - when he was 16 years old. By comparison, when Tiger Woods was 24 years old, he had learnt how to prevent his lower body outracing his upper body and his pelvis is only about 50 degrees open at impact. Even today (2007), Tiger Woods is wrestling with this hips-outracing-shoulders problem and he is always trying to slow his pelvis down during the downswing, so that he has better coordination between his upper and lower body movements. I recently read that Tiger Woods is consciously attempting to keep his right heel down for longer during the downswing - and this conscious thought-move presumably acts like a "governor" limiting the speed at which his pelvis rotates open during the downswing.

## Beginner golfers need to understand that the hips should not outrace the shoulders during the downswing, and that the shoulders should nearly catch up to the hips my impact. For example, consider a golfer who has a backswing hip turn of 50 degrees and a backswing shoulder turn of 100 degrees, creating a static torso-pelvic separation value of 50 degrees at the end-backswing position. By impact, a good golfer (on average) will have his hips open by about 40 degrees and the shoulders open by about 20 degrees. That means that during the downswing the shoulders have to rotate 120 degrees while the hips only have to turn 90 degrees. In other words, the shoulders have to rotate more than the hips during the downswing, and they must therefore rotate faster to nearly catch up to the hips by impact. In fact, if one studies a high speed swing video of a tour-quality golfer on a frame-by-frame basis using a swing analyser program, one will note that the shoulder-pelvis turn angle difference (degree of torso-pelvic separation) **often diminishes** during the **early** downswing (defined as the time period from the end-backswing position to the lead arm parallel position).

## Here is an example of that type of video analysis.

##

##

## Swing video of one of Slicefixer's students (Slicefixer = Internet name of a renowned Texas golf instructor) - from reference number [8]

##

## Note that the degree of torso-pelvic separation is 48 degrees at the end-backswing position. Note that the degree of torso-pelvic separation steadily diminishes during the **early** downswing, and that it is only 37 degrees when the lead arm is parallel to the ground (end of the **early** downswing). **In other words, the shoulders are actually rotating faster than the hips during the early downswing.** Manybeginner golfers are taught that one should hold the right shoulder back at the start of the downswing while they start the downswing with a lower body shift-rotation movement. I think that it is mistake to hold the right shoulder back, and I believe that the right shoulder should move forward as soon as any spinal "slack" is taken up. In other words, I agree that it is very important that a beginner golfer should be taught to start the downswing with a lower body shift-rotation move, so that the downswing starts from the bottom-up (lower body moving first **before** the upper body secondly moves). However, a beginner golfer shouldn't artificially/unnaturally hold the right shoulder back, and he should allow the shoulders to turn as soon as all spinal "slack" is taken up. If a beginner golfer maximises his static X-factor (maximises his static torso-pelvic separation by maximising the rotary torquing of his thoracic spine during the backswing), then he will only be able to increase his torso-pelvic separation by about 5 degrees in the early downswing (creating an X-factor stretch of about 5 degrees). I think that if a beginner golfer minimizes the spinal "slack" to about 5 degrees by maximizing his shoulder turn during the backswing, that it will both i) enhance his swing power and ii) increase the "connectivity" between the upper body and lower body in the early downswing thus allowing for a smoother and more coordinated upper/lower torso rotation. Do I have any scientific evidence to support my biomechanical argument that it is better to maximally torque the thoracic spine in order to maximize the static X-factor, and thereby automatically minimize one's dynamic X-factor, if one wants to increase swing power, and therefore ball velocity? I actually have substantial scientific evidence to support my position. Consider the scientific evidence.

## Although many studies of a golfer's swing are performed at certain major golf company's headquarters (eg, Titleist, Taylor-Made), their study results are not publically available. I therefore could only peruse research studies published in the mainstream sports science literature. The most pertinent recent study is the research study by Myers et al. that was performed by the Department of Exercise and Sports Science of the University of North Carolina, and which was officially published in the January 2008 issue of the Journal of Sports Science [9].

## The researchers studied the driver swings of three groups of golfers in an attempt to discern if there was a positive, and significant, correlation between upper torso and pelvis rotation/velocity and ball velocity. Ball velocity is a marker of swing power, and they divided the study participants into three groups, based on their ball velocity - a high ball velocity group (HBV group), a medium ball velocity group (MBV group) and a low ball velocity group (LBV group). In this review paper, I am going to only compare the HBV group to the LBV group. The HBV group were on average about 33 years of age and had an average handicap of 1.8, while the LBV group were on average 58 years of age and had an average handicap of 15. Both groups had a similar stature and body mass.

## The following table lists the results of their study's observations.

##

##

## Table reproduced from reference number [9]

##

## I have placed red numbers alongside certain lines so that it will be easier for readers to locate which line's results I am referring to when I discuss the study's results. I will not be analysing all their results, and I only want to point out certain result-differences between the HBV group and the LBV group. I will also only be discussing the **mean values** and they should be conceived as being **roughly representative** of each sample group's "**average**" result. (Note that each result is followed by a +/- value and that the +/- range represents one standard deviation - which means that 68% of the group's participants had measured results within that +/- range).

## Line 1 demonstrates that the HBV group had a significantly increased ball velocity when compared to the LBV group - 75.4m/sec versus 55.7m/sec. This result-difference is **significantly different** - a P value of <0.001 reflects the likelihood of such a large measured difference in ball velocity being due to to chance if the two groups were not actually different, and it implies that there is <1/1,000 likelihood of getting such a large result-difference due to chance alone (if the two groups are not actually different). In general, one can presume that any study result accompanied by a P value <0.05 indicates that the measured result is **not** likely to be due to a chance event, thereby implying that there is a significant "**real**" difference between the two groups. The lower the P value, the more likely there is a "real" difference between the study's comparison groups, and the more likely that the measured difference is not likely to be due to a chance event.

## Line 2 shows that the HBV group had a bigger upper torso (shoulder) rotation by the end-backswing than the LBV group - 104 degrees versus 94 degrees (an extra 10 degrees of shoulder rotation). Line 7 shows that the HBV group had a smaller amount of pelvis rotation by the end-backswing position than the LBG group - 44.9 degrees versus 49.8 degrees (5 degrees less pelvis rotation). Line 11 shows that the static X-factor (degree of torso-pelvic separation at the end-backswing position) was larger in the HBV group than the LBV group - 59.1 degrees versus 44.2 degrees (a 15 degree absolute difference). These **highly significant** result-differences (P value <0.001) between the HBV group and the LBV group helps to substantiate Jim McLean's theory that increasing one's static X-factor will likely increase one's swing power and therefore one's ball velocity.

## Now, here are some interesting results! Note that the **maximum** degree of torso-pelvic separation (dynamic X-factor + static X-factor) was only 2.7 degrees greater than the end-backswing degree of torso-pelvic separation (static X-factor) in the HBV group, compared to 1.4 degrees for the LBV group - see lines 11 and 12. That's a biomechanically insignificant difference, and this study demonstrates that **both** the HBV group and the LBV group had very small X-factor stretch values of less than 5 degrees (2.7 degrees for the HBV group and 1.4 degrees for the LBV group). From my perspective, these small X-factor stretch value-results suggests that **both** groups of golfers maximized their upper body turn during the backswing so that they had very little spinal "slack" at the end-backswing position. That means that they would be biomechanically incapable of holding their shoulders back at the start of the downswing when they started the downswing with a fast hip shift-rotation movement.

## Now consider how fast their hips and shoulders moved in the **early** downswing (time period between the end-backswing position and the lead arm parallel position). Line 19 shows that the HBV group had a pelvis rotation speed of 401.7 degrees/second, while the LBV group had a pelvis rotation speed of 348.8 degrees/second, at the lead arm parallel position. That demonstrates that the HBV group could rotate their pelvis forward faster than the LBV group by a **significant** amount. However, note the **very large difference** in shoulder rotation speed between the HBV group (738.3 degrees/second) and the LBV group (546.1 degrees/second) at the lead arm parallel position - line 14. That's a **highly significant** difference (P value <0.001)! In fact, note that the HBV group could rotate their shoulders so fast in the **early** downswing that their shoulders were -37.4 degrees (the "minus" sign indicates that the shoulders are closed relative to the ball-target line) at the lead arm parallel position - line 3. This shoulder position is similar to the value for the LBV group (-36.1 degrees) despite having 10 degrees of **extra** rotational distance to travel. In other words, the HBV group golfers could generate much faster shoulder turn speeds in the early downswing (compared to the LBV group). What accounts for the ability of HBV golfers to turn their shoulders very fast in the **early** downswing? I think that three biomechanical phenomena are in play and that these three biomechanical phenomena are working in concert to increase shoulder rotation speeds in the **early** downswing in golfers who are capable of generating a high ball velocity. First of all, the HBV group golfers had an increased degree of torso-pelvic separation at the end-backswing position - 15 degrees greater - and that would allow them to use stretch-induced enhancement of eccentrically loaded left torso muscles to generate a faster upper torso turn at the start of the downswing. Secondly, they had probably maximised their spinal torque values at the end-backswing position by maximizing their static X-factor. That would minimize spinal "slack" and allow their upper torso to be rotated **passively** forward with a minimum of delay when their pelvis rotated forward at the start of the downswing. These HBV group golfers were capable of turning their pelvis significantly faster in the early downswing, and with a minimization of spinal "slack", that faster speed of pelvis rotation would rapidly torque the lumbar spine, and consequently the thoracic spine, so that the upper torso could turn **passively** faster around to the left. Thirdly, I would imagine that younger, very low handicap golfers would have a greater inherent capacity to actively use their mid-upper torso muscles more efficiently, so that they could **actively** turn their upper torso very fast during the early downswing - compared to much older, higher handicap golfers.

## I think that a beginner golfer can learn a great deal from this research study. If a beginner golfer wants to maximise his swing power (ball velocity) **when hitting a driver**, then he should perform **all** of the following biomechanical actions.

##  i) He should maximise his static X-factor in such a way that he eliminates any unnecessary spinal "slack" by the time he reaches the end-backswing position.

## ii) He should start the downswing with a fast lower body turn. The lower body must move first so that it can rapidly take up any spinal "slack". This will allow the upper torso to respond optimally a fraction-of-a-second later, and thereby maintain an optimized level of "connectivity" between the upper and lower body during the early downswing.

## iii) He should allow **natural** spinal anatomy/biomechanical functioning to **automatically** transmit a torquing force, generated by a fast lower body turn, from the rotating pelvis-lumbar spine structural entity to the torqued-up thoracic spine, and this will allow **part** of the lower body's rotational force to be **passively** transmitted to the upper body, so that the upper body can also rotate faster. He should not artificially hold the shoulders back at the start of the downswing, and thereby resist this natural/beneficial spine-torquing phenomenon.

## iv) He should actively use his eccentrically-stretched left mid-upper torso muscles to actively turn the shoulders very fast at the start of the downswing, so that the **entire** torso turns synchronously as a single cohesive unit, and he shouldn't allow the lower body to outrace the upper body. There should also be a distinct sense that the right side of the torso is keeping up with the left side of the torso, and there should never be a "feeling" that the left side of the torso is pulling away from the right side of the torso. The entire torso should turn as a single unit - from side-to-side and from top-to-bottom. When the lower body turns, the shoulders should rotate almost immediately - as perfectly exemplified by Ben Hogan in the following swing video.

## <http://www.youtube.com/watch?v=QL_6M_xZvq0>

## Note the perfectly synchronous, perfectly coordinated, movement of Ben Hogan's upper and lower body as he actively starts the downswing with a lower body rotational movement. Although Ben Hogan starts the downswing by **primarily** rotating his lower body to an open position, note that his upper body seems to be moving at the same speed, and that there is no sense of asynchrony - no sense of separation - between the movement of his lower body and the movement of his upper body. The body seems to me moving as a **single unit rotating in space** during the early-mid downswing.

##

## **Hip Rise**

##

## In his recent article [1] Jim McLean also included the **hip rise** phenomenon as part of his triple-X factor concept. The fact that the right hip becomes slightly higher in the backswing and the left hip significantly higher in the late downswing is a well-known fact. I am not sure why Jim McLean regards this phenomenon of the left hip rising in the downswing as being a "power surge" phenomenon, rather than being secondarily reflective of a power surge phenomenon. He states-: "As you start down, both hips should lower into a sit-down position before the left hip rises dramatically, producing that burst of power". He used the following photo in his article to demonstrate the hip rise phenomenon.

##

##

## Hip Rise - from reference number [1]

##

## I think that the main reason why the right hip rises slightly in the backswing is due to the fact that a golfer is pivoting over a relatively straight right leg, while the left knee naturally bends due to the fact that the left pelvis becomes relatively more unweighted as the backswing pivot action reaches completion. The opposite phenomenon occurs during the downswing - one pivots over a straightening left leg, while the right knee bends due to the fact that the right pelvis becomes progressively more unweighted as one gets closer to impact. The rise in the left pelvis is more dramatic because one generates more left-laterally directed momentum during the initial downswing pelvic shift-rotation movement, and the force of momentum drives the left upper thigh and left femoral head, and therefore the left pelvis, backwards and slightly upwards when the golfer resists the force of momentum by firming up the left knee. If the left knee firms up during the downswing, thereby resisting left-lateral sway of the left leg and pelvis, the left-laterally directed force (secondary to the hip shift-rotation movement of the pelvis at the start of the downswing) deflects the left upper thigh, left femoral head, and therefore left pelvis, backwards and slightly upwards. The greater the magnitude of this force, the more likely the left pelvis will be slanted upwards in the late downswing. One can readily see this phenomenon in Tiger Woods swing.

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## Tiger Woods - capture images from a swing video

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## Image 1 shows that Tiger Woods' pelvis is level at address. Image 2 shows that his right pelvis is slightly higher at the end-backswing position - due to the fact that he is pivoting over a relatively straight right leg. Image 4 shows that the pelvis becomes level again during the hip squaring action (secondary to starting the downswing with a hip shift-rotation move to the left). In the late downswing (images 5 and 6), Tiger Woods starts pivoting left over a straightening left leg and that causes the left pelvis to rise. Image 7 shows that his left leg is very straight at impact, thus maximising the elevation of the left pelvis. By contrast, the right pelvis simultaneously sinks lower to the ground because the right hip joint becomes progressively more unweighted during the late phase of the downswing.

## What is very interesting, and very informative, from my perspective, is the causal relationship between the left hip rising in the **late** downswing and the dropping of the right shoulder so that it moves downwards under the chin in the **late** downswing. Robert Baker (logicalgolf.com) brilliantly demonstrates how these two phenomena are causally related in a very informative swing video.

## [http://www.golf.com/golf/video/article/0,28224,1595277,00.html](http://www.golf.com/golf/video/article/0%2C28224%2C1595277%2C00.html)

## Robert Baker brilliantly demonstrates, using two hula hoops, how the upper body is rotating along one axis (upper hula hoop axis) while the lower body is rotating along a more horizontal axis (lower hula hoop axis). During the downswing, one should start the downswing move with a lower body shift-rotation move that eventually causes the left pelvis to slant upwards. This left-upwards slanting movement of the pelvis causes the lumbar spine, and therefore the thoracic spine, to become tilted rightwards (away from the target) in the late downswing. You can see that phenomenon occurring in images 6 and 7 in the Tiger Woods photo-sequence posted above. In image 4, the lumbar spine is facing forward (towards the ball-target line) during the hip squaring phase of the downswing pelvic action. However, the pelvis then starts to become more open in the late downswing and it also slants more upwards (image 6). That causes the lumbar spine, and therefore the thoracic spine, to become tilted backwards (away from the target) while its face-orientation becomes more oriented in the direction of the target. While the lumbar/thoracic spine are undergoing this change in tilt/face-orientation, the shoulders are rotating perpendicularly around the upper thoracic spine. You can see how Tiger Woods' right shoulder moves more vertically downwards in images 6 and 7 along a steeper path. I think that the changing tilt-axis and changing face-orientation of the lumbar/thoracic spine plays a major role in the steep movement-path of the right shoulder in the late downswing. Conceptually, a beginner golfer should think of the spine as being the primary interconnecting link between the lower hula hoop (pelvis rotational axis) and the upper hula hoop (shoulder rotational axis), and that **changes in tilt/face-orientation of the spine** allows changes in the lower hula hoop's rotational axis to **causally affect** the upper hula hoop's rotational axis.

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## Composite image created from Robert Baker's swing video

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## This composite photo shows Robert Baker in the **same** downswing position - from three different views. Note how the lower hula hoop axis is slanted slightly upwards and leftwards and that it causes the spine to be slanted in such a manner that the upper hula hoop axis becomes more vertically oriented along the ball-target line. The right shoulder travels along the path of the upper hula hoop axis, and its path is steeper in the later downswing. If a beginner golfer understands this interlinked relationship between the two hula hoops, it will allow him to understand how a "correct" lower body move (hip shift-rotation move) at the start of the downswing helps get the right shoulder moving downwards and forwards along the "correct" path and how it helps avoid an OTT move (roundhousing move of the right shoulder). If a beginner golfer can master this interlinked move, then he can drive his right shoulder down the upper hula hoop axis very fast at the start of the downswing without having to worry about coming OTT. Unfortunately, too many beginner golfers are taught to hold their right shoulder back at the start of the downswing, in a misguided attempt to avoid an OTT move. However, the OTT move is not primarily due to moving the right shoulder too fast at the start of the downswing - it is primarily due to moving the right shoulder along the incorrect path.

## In an optimised golf swing, where the two hula hoop axes are optimised during the downswing, a golfer can freely rotate his pelvis very fast along one rotational axis while **simultaneously** rotating his shoulders freely and very fast along another rotational axis, and the golfer should allow his spine to "correctly" interlink these two rotational movements so that that the upper and lower body can act in an **optimally coordinated** manner - thereby maximising swing power.

##

## **Head Swivel**

##

## The third component of Jim McLean's triple X-factor is the head swivel. In his Golf Digest article, Jim McLean wrote-: "most tour players rotate their head towards the target before impact, yet the single swing thought for many amateurs is to keep their head down". I agree that many beginner golfers are incorrectly taught to keep their heads fixedly still during the golf swing, and that it is both unnatural and harmful to keep one's head "fixed in space" during the golf swing. I think that many beginner golfers, and their uninformed golf teachers, would greatly benefit if they simply observed the movement of a tour golfer's spine and head as viewed from above.

## Consider a series of capture images from a swing video of a good golfer's swing - as viewed from above - from reference number [8].

##

##

## Capture images from a swing video - see reference number [8]

##

## At address (image 1), the head and neck is roughly held square to the ball-target line (see white marks on the back of the golfer's hat) and the eye line (straight line between the eyeballs) is therefore parallel to the ball-target line. Note that the pelvis, and therefore face-orientation of the lumbar spine, is parallel to the ball-target line, and that there is minimal rightwards spinal tilt.

## At the end-backswing position (image 2), the pelvis has rotated about 50 degrees while the shoulders have rotated about 90 degrees. The fact that the shoulders have rotated 40 degrees more than the pelvis means that the thoracic spine is torqued so that it faces **more** rightwards than the lumbar spine (which faces about 50 degrees rightwards). The torquing of the thoracic spine to the right causes the cervical spine to also have a tendency to rotate slightly rightwards and that causes the head to rotate slightly rightwards in sympathetic alignment with the cervical spine. Note how the front bill of the golfer's hat has rotated a few inches to the right.

## During the early downswing, the pelvis becomes square to the ball-target line and that causes the lumbar vertebra to face the ball-target line. At the same time, the thoracic spine is starting to also rotate towards the target and that causes the cervical spine and head to move likewise (see image 3).

## By impact (image 4), the pelvis is about 40 degrees open, and that means that the lumbar spine is facing right of the target. The shoulders are about 20 degrees open, which means that the thoracic spine is facing slightly to the right of the ball-target line. It is perfectly natural, and virtually automatic, for the cervical spine and head to also become oriented in that same general direction - note the position of the white spots on the back of the golfer's hat, which indicates that the golfer has swivelled his head leftwards.

## During the late follow through, when the club shaft is parallel to the ball-target line and along the toe line (image 5), the front of the thoracic spine is facing the target. If the golfer let's his cervical spine and head swivel naturally/automatically, the head will have a natural tendency to also swivel in the direction of the target.

## All these rotary/swivelling movements of the head are natural/automatic biomechanical phenomena that will happen naturally (unconsciously) in response to the swivelling/spiralling motions of the thoracic and cervical spine. A beginner golfer should **not** resist these natural head swivelling movements, because any resistance will impede the natural flowing motion of the spine/torso as it rotates during the swing. Jim McLean is correct to infer that head swivelling or "looking off the ball" after impact is a natural action and that a golfer should simply let it happen in a biomechanically natural manner.

## It is important that a beginner golfer understand that one should swivel the head to the left during the late downswing **without** any lifting motion of the head, because any head lifting will cause the spine angle to change. A useful swing thought for beginner golfers is the idea of laying one's head on a pillow - as demonstrated in the following diagram.

##

##

## "Head on Pillow"

##

## Note that the golfer has swivelled his head left-laterally without any lifting motion of the head, or any alteration of the spine angle. That gives the golfer the appearance of "laying his head on a pillow" as the right shoulder rotates under the chin in the follow through.

## A beginner golfer should also ensure that his **eye-line remains parallel to the ball-target line throughout the entire downswing**. This will help ensure that the club shaft approaches the ball along an inside track. During an OTT move, the club shaft will have an outside-in swing path and the eyeline will be directed inwards in the late downswing. By keeping the eyeliner perfectly parallel to the ball-target line during the **entire** head swivelling action, the likelihood of an OTT move will be diminished.

## See this swing video by Mike Malaska.

## <http://www.golf.com/golf/search/results?squery=&author=&archive=video&num_results=10&tournament=&last_result=19&this_page=3>

## When you get to this linked page, **click** on the **link** to the "**Stop Coming Over The Top**" video lesson. In that video lesson Mike Malaska demonstrates how one can avoid an OTT move by keeping the eyeline parallel to the ball-target line, or oriented slightly to the right of the ball-target line, throughout the downswing. A beginner golfer should practice this move when swivelling his head to the left during the downswing.

##

## **Commentary, criticism and controversy:**

##

## Insightful comments from readers will be included in this section.

##

## Jeff Mann.

## January 2008.

##

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## 9. The Role of Upper Torso and Pelvis Rotation in Driving Performance in the Golf Swing. Joseph Myers, Scott Lephart, Yung-Shen Tsai, Timothy Sell, James Smoliga, and John Jolly.

## Journal of Sports Sciences, January 15th 2008; 26(2): 181 – 188.

## Department of Exercise and Sport Science, University of North Carolina, Chapel Hill, NC, USA.

##

## Abstract: While the role of the upper torso and pelvis in driving performance is anecdotally appreciated by golf instructors, their actual biomechanical role is unclear. The aims of this study were to describe upper torso and pelvis rotation and velocity during the golf swing and determine their role in ball velocity. One hundred recreational golfers underwent a biomechanical golf swing analysis using their own driver. Upper torso and pelvic rotation and velocity, and torso-pelvic separation and velocity, were measured for each swing. Ball velocity was assessed with a golf launch monitor. Group differences (groups based on ball velocity) and moderate relationships (r >/= 0.50; P < 0.001) were observed between an increase in ball velocity and the following variables: increased torso - pelvic separation at the top of the swing, maximum torso - pelvic separation, maximum upper torso rotation velocity, upper torso rotational velocity at lead arm parallel and last 40 ms before impact, maximum torso - pelvic separation velocity and torso - pelvic separation velocity at both lead arm parallel and at the last 40 ms before impact. Torso - pelvic separation contributes to greater upper torso rotation velocity and torso - pelvic separation velocity during the downswing, ultimately contributing to greater ball velocity. Golf instructors can consider increasing ball velocity by maximizing separation between the upper torso and pelvis at the top of and initiation of the downswing.

##

## PMID: 17852693 [PubMed - as supplied by publisher.

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## Ok, I think I got it figure out. My major flaw use to be that I let my left arm bend.If I want to imitate Hogan, I think his secret is to do a one piece take away, then let the wrist cock begin when the club is parallel to the ground on the back swing. Next continue the backswing to shoulder height, and then start the downswing before I finish the backswing.

In other words, the top of the backswing is when the hands are a maximum distance away from the target, and then start the downswing with no pause at the top and beginning the downswing just slightly before I finish the backswing.

##

## [Luke Daniel Borel 26](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag) [seconds ago](https://www.youtube.com/watch?v=1prTGCEfPKE&lc=z121ubjohoaeyhwkf23ytzuiakm1s5og204)

## Seems like the people who have the most lag, start their downswing before they finish their back swingIn theory it might be possible to achieve gigantic lag with a pause at the top. Still thinking about that.Luke﻿

##

##

## <https://youtu.be/1prTGCEfPKE>

## [Luke Daniel Borel 34](https://www.youtube.com/channel/UCHftcnATKt4Bg2FhtBwCrag) [minutes ago (edited)](https://www.youtube.com/watch?v=1prTGCEfPKE&lc=z13ictnx2kipe1pns23ytzuiakm1s5og204)

## If you want to see a three quarter back swing with alot of lag, just look at some youtube videos of Ben Hogan<https://youtu.be/PQC7LHVFMkw>. It reminds me of a spear thrower.<https://en.wikipedia.org/wiki/Spear-thrower>For me, it takes me back to when I attempted a one piece take away, and you let your wrists cock at the top. It was like I was getting most of my energy from my wrists.It was effortless power, but I did not hit it any further. Open to try it again though.Ben Hogan looks like though that he swing back about halfway to three quarters and but he does not start his downswing before finishing his backswing.Ben Hogan appears to have a slight pause at the top, in which he manipulates something in his hands, perhaps slightly loosening his finger grips, which allows him to manipulate the shaft into a massive levered minimized lag position.Then it appears that when he starts his downswing he gentles re grips the handle of the club to generate club head speed by the time he reaches impact with the ball.It looks kinda like he releases his hands early, but still has a wide narrow wide swing somehow that I haven't figured out yet.It is possible that he is merely taking a small backswing (should high, with his hands a maximum distance away from the ball or target). I guess at the pause at the top of his back swing, he achieves the amount of lag necessary to have the club head pointing directly towards the target. He either achieves this by manipulation of the club to force the giant lag, or he is loosen his grip pressure just enough to be able to manipulate the club to get the club more easily into the giant lag position.To me, it does not appear that he is starting his downswing before he stops his back swing. Therefore he is probably, slightly loosening his grip, the get the club pointing at the target, and the on the downswing he appears to at some point gradually regrips the club with a normal grip pressure.In my opinion Ben Hogan get the most bang for the buck out of his swing, maximizing leverage, while maintaining, maximum accuracy and repeatability.On the complete other side of the spectrum, it looks like he does have a one piece take away, and when the club shaft is parallel to the ground on the backswing, he begins cocking his wrist to the ninety degree position. Contradicting what I said earlier in this post, he does appear to be starting his downswing, before he complete his back swing, thus obtaining the additional wrist cock, past the ninety degree mark. Then he has a very simple downswing, and it all works simple and effective.Luke﻿

##

##

## So I believe in a golf swing that will last that minimizes damage to my body. Also I believe in having a moderate go to shot that is solid produces a slight draw and is accurate. A man should know his limitations. I can have my go to shot and attempt to find more distance without sacrificing my belief in a golf swing built to last and a swing that minimizes damage to my body, a swing to last, solid, a slight draw, repeatable, and accurate. A swing that allows me right now, to play in the upper eighties at my home course, which is a short course, with small difficult greens.

## In theory, the more lag you have at the top of the downswing, the more you can accelerate on the way down. The key for me is that the club shaft must be vertical when you reach just above hip level. Next, the club shaft must be parallel to the ground when you are just below hip high. Your go to shot should be no faster than you can go and achieve the vertical start position and parallel shaft position.

##

## In golf for me, prevention is 90 percent of the cure and possession is 90 percent of the law. Waste not want not. An ounce of prevention is worth a pound of cure. My main beliefs is vegetarian, ecology, So fight your battles mainly connected to vegetarian and ecology. I also believe in water conservation and drug overdose prevention. I also believe is hippocratic oath which is do no harm. So it is looking more and more that I believe in wisdom.

The way you gain more distance in golf, for me, is to start out with a very slow backswing a slow smooth transition and a slow smooth beginning to the downswing. From this point until contact, I guess I can try speeding up my swing from the point where the club is vertical at about sternum high. Then at hip height or slightly lower, the club is horizontal to the ground and I guess I can work on increasing the stomach flex which naturally increases the weight transfer and rotation. The club is squared in two ways. One is the slide and rotation of the body. The other is by manipulation of the wrist when the lag is converted mostly to shaft lean. I can also experiment with my grip where my left hand grip is mostly or entirely in my fingers, which in theory might allow me to have some lag impact (some angle between my club shaft and left forearm). This would allow me to gain some clubhead speed from rotation combined with impact lag. To me impact lag is the angle between the club shaft and the left forearm. Impact shaft lean is the shaft lean angle between vertical and the shaft angle, at impact.

## What about the tortoise and the hare. The turtle sing that song, dum te dum te dum te dum te dum te dub the dub. And the hare runs around all crazy off balance and scatter brained. Should I be the tortoise in my golf swing to make solid contact instead of the hare that swing fast and wild and hits glancing blows.

## Check out this tennis serve. How can I incorporate that into my golf swing.

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## ***Something I am wondering about from Isuckatgolf and other websites. Is a key move dropping the right shoulder at the beginning of the downswing. Some say the right elbow and some say pull the hands down and some say straight down and some say on the swing plane. I will have to test all of these to see which is the best. Whichever one you pick, the right shoulder sounds the best because it creates a tilt between my lower and upper body. I should be able to do this at the same time that I flex my stomach muscles. This will automatically start the left slide-turn at the right amount to be gradual and not instant.***

## I guess for me a do everything slow in my swing, because it is the only way I know I can do components of my swing in the proper sequence. I must have about 10 components of my go to swing, and if I do not do them in the proper sequence, then my swing does not work optimally. A non optimum sequence is much worse than my swing where all of my components happen in proper sequence.

## This is my new theory. For a draw you arms are ahead of the torso-hip unit at impact. For a straight shot the arms and torso-hips arrive at impact at the same time. For a Fade the hips-torso unit arrive at impact before the arms and hands. For a Fade the arms and hands are behind of the rest of the body. These are to me the most reliable methods that fit into my slow backswing philosophy where I have complete control of my balance and complete awareness of where the club components are at any given time during the swing. I also have complete control of my balance during my swing. I do this in accordance with keeping my left arm straight until after impact where my club swings left and up, and my body mass finishes up almost entirely on my left foot, with my arms and hands up and around my shoulders pointing right 90 degrees of the target. As seen in the next paragraph following this paragraph, it is much better to backswing slow and transition smoothly and slowly, in such a manner, that the left arm can stay completely straight and as soft as possible. Some of the muscles in the left arm will activate to some degree, the idea being keep everything slow and smooth in the swing so that we eliminate any bent of the left arm. For every degree of left arm break down we probably lose 1 to 2 percent control and will cause deviation from the moving bent circle. Although a byron iron has a perfect circle, most people have curves of the clubhead path the change it’s radius of curvature, and its orientation in four dimensional space. The idea is to stay on some form of an optimal series of arcs. The arc are very short and connect together to create an optimal path. I will mention here that the one arm drills that I saw on I think it was gravity golf videos. I will also mention rotary swing as interesting. Right now my current go to swing is a slow smooth solid swing. This current go to swing should be good enough to break 90 on a consistent basis.

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## Another reason for a slow backswing and smooth transition and a slow beginning to the downswing is to make sure my left arm does not get bent until after impact. If the left arm gets bent before impact, you lose massive amounts of power and lose the capability of having solid contact. So there is a dilemma, you want a soft left arm, but the faster you swing down the more forces there are that might cause the left arm to bend.

## <http://isuckatgolf.net/besttipever.html>

*FAST FIXES*

# **BEST GOLF TIP EVER!**

By Senior Staff Writer Ken Tonks

The "best tip ever". Wow, that sounds like something doesn't it? Better than the tip about not looking up until you hear the ball fall into the hole on short putts? Could it be that good? (I always thought that to be the dumbest tip myself. If you do miss, you have no more information on the next putt than you had on the one you just missed because you weren't watching! How dumb is that???

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If you watch a lot of golf you probably have a good idea of the players and their abilities. Take note how most pros utilize our "best tip ever"! Understanding a pros swing can be particularly important in improving your own swing, and useful if you ever [bet on golf](https://betway.com/#betting)! But if you don't bet on golf or even watch much golf, this tip will help you enjoy *playing* golf a lot more!

Anyway, back to the best tip ever...

Just send $19.95 and I'll send you my c.d.....just kidding! Here it is:

This move involves dropping the right elbow into your right side as your first move on the downswing. You want to bring your right elbow into your side so that you can actually feel it lightly touch your shirt. What this does is keep you on the inside path to the ball, preserves your wrist cock, and eliminates that over the top move that been causing all those banana balls and cursing fits you've been having all these years.What you are doing is dropping into the infamous "slot". Watch the pro's swing. They almost seem to "drop" a hair as they transition from the back swing to the downswing. The legs squat just a bit, and there is a slight pause as the club changes direction. At that pause is when you think "bring that elbow down as I start the downswing. Down, NOT OUT!



Most of us "fire from the top" in an effort to clobber the ball. It seems like the more powerful move, but it absolutely is not. Problem with this move is that it immediately starts un cocking your wrists, while throwing your arms away from your body. The result is an over the top, outside in swing, with most of the power spent long before you get to the ball. By keeping your elbow tucked into your right side, you automatically swing from the correct inside to inside path, and you'll maintain most of your wrist cock until the last minute. As Emeril would say, "BAMM!"

Take your time on the downswing. Swing hard!, but let it progress. You're first move should be a little drop motion as your right elbow pulls down into your right side. Now that you're in "the slot", get ready to let her ride! Release the hands hard at impact and feel the resulting power. If you've never hit a shot from "the slot" before, you're in for a treat, and a good 20 or more yards off the tee.

- See more at: <http://isuckatgolf.net/besttipever.html#sthash.FONuKntS.dpuf>

## The above is ok for a start, but once you are committed to the slot, you must flex your stomach muscles at the top of the downswing, and slurn which is slide and turn at the same time, in order to deliver the clubface to the ball at the time that is at the most speed and solid path time of the downswing, this is in the part of the arc that gets flattened by slurring your body. For the most part, if you want to hit the ball solid, you must swing the club so that it is in a direct collision course with the right side of your rib cage. As the left elbow gets near the right side of the right rib cage, you slide and turn your body, to provide some space for the right arm to travel through the impact area, without hitting your chest.

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## Do I want to be pulling the club grip handle towards my belly button at impact. Do I really want to pull the club handle straight down at the start of my downswing, or is it really I want to pull towards inbetween directly down to the ground and the swing plane established during the backswing.



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## https://youtu.be/zB1velb0EqU

## in theory you could play the ball back in the stance,pull the club grip gently or hard, straight down into the ground.at some point discovered by experimentation, flatten the arc at the bottomand square the clubface, at which time whatever lag you have will beconverted into shaft lean. In theory this could be accomplished by only the upper body and arms, without ever thinking about the lower body, as long as the ball is back far enough in your stance. The further forward in your stance the ball is, the more the lower body has to slide and rotate so that the flattening of the arc occurs further forward in your stance.The key for me is complete control over my balance, and complete control and awareness of the club and all your body parts. You can swing as hard as you want as long as you maintain complete control of everything, in theory that is. For me I do a very slow backswing, a very slow transition and a very slow to the start of my downswing.But that is just me and right now I do not care how far I hit it, I just like to hit a basic solid shot.Regards Luke﻿

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## <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3899667/>

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## The following description the golf swing is offered as an aide to understanding the fundamental mechanics involved. The description is from the top of the backswing through impact based upon data from the scratch golfer.

## The downswing is initiated with a pulling along the shaft while simultaneously applying a positive alpha (swing) torque resulting in positive linear and angular work being done. As the club head moves away from the body, the action of the linear force becomes less directed at speeding up the club and more toward controlling the path of the grip point. About the time the club becomes vertical in the downswing, the alpha torque increases in magnitude as it takes over the acceleration of the club from the linear force. Simultaneously, the gamma (rolling) torque is initiated to square up the club head for impact, and a beta torque is applied to pitch the club forward. From this position up until the club shaft is roughly parallel with the ground, all the torque components increase smoothly and reach their maximum values. From the parallel position to impact, which coincides with the increase in swing motion of the wrists, the torque components rapidly decrease. All the torque components pass through zero at or near impact resulting in maximum angular work just before impact. By the time impact is reached, the linear force is maximized and perpendicular to the path of the club head in the plane of the swing. At this time the linear force is reacting to the centrifugal loading of the club thus maximizing the linear work at impact.

## Just before impact the wrists momentarily approximate a “free hinge ”configuration as the golfer merely holds on to the club as its momentum carries it to impact. By the time impact is reached, all torque components are in opposite directions because the wrists cannot keep up with the rotational speed of the club at this time in the downswing. The club head does not slow down however, as the straightening of the shaft continues to accelerate the club head. The club head swing plane deflection component passes through zero at impact releasing about half of the shaft stored strain energy, and resulting in the club head velocity peaking exactly at impact.

## This subject exhibited a swing hub curve with a large initial radius of curvature that decreased continuously during the downswing. He also had a highest degree of initial wrist cocking. Together, these served to reduce the initial centrifugal acceleration which in turn diminished the tendency of the club to move outward even though a positive alpha torque was applied from the initiation of the downswing. This large radius path was carried through most of the downswing as the hand speed was increased by the linear force. Approaching impact, the hub radius was quickly reduced by a redirection of the linear force, which in turned caused a rapid increase in the centrifugal acceleration. This action which was coordinated with a large increase in alpha torque, pulled the club outward and through impact. These coordinated actions give the impression of a consciously delayed wrist motion. It is believed that this sequence of events are necessary to yield the optimum segmental addition, thus the largest possible club head velocities.

## [Go to:](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3899667/)

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## Now we have fast typing speed back.

## Very slow backswing

## Only swing back as far as my flexibility allows

## Pause

## Swing back a little more

## Pause

## Smooth transition

## Flex stomach muscles gently

## Start downswing very gently and smoothly and maybe even slowly

## Pull club handle straight down to closer to the ground.

When you feel that you need to rotate near impact zone at a faster rate, than do so. Basically there is a steep plane, can be vertical, that prevents the over the top outside inside flight path. Then we are coming into the distance from the ground where we need to rotate everything to create a flattest possible arc at bottom, combined with an automatic shift towards the target initiated by the gentle flexing of the stomach muscles at the beginning of the downswing.

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## hogan3.jpghogan4.jpghogan5.jpg

## hogan2.jpg

## Notice in the image below and the images above, he turn his hips very small amount, and instead turns his shoulders somewhat but not very much. Because his hands and butt of the club shaft are so far away from the target, he needs minimal hip, torso and shoulder turn and maximizes lag effect. His hands are the maximum away from the target and his hands are further away from the target than any other part of his body, including his right foot. Notice the lag I want, 25 degrees. I use to bend my elbow and have almost no lag. No I will hit solid accurate draws.

## ben hogan.jpg

##

The drawing can be modified for a bigger hip turn and bigger torso turn, and the drawing would illustrate that the hands and club position would be at the same position at the top of the swing and the club head, and the arms is same position due to the goal of being committed to having a 45 degree lag angle as opposed to the previous left arm bend and resulting 125 degree lag angle and so lose much power when I hardly have any lag angle, zero degrees would be the max lag angle and 180 being the minimum degree lag angle.

## The diagram below show me with limited torso flexibility and the main aspect of my swing is like ben hogan, I look like this with a small torso turn, but with a 45 lag angle. I use to bend my arm and have a 125 degree lag angle. The other main feature of my swing is a very slow back swing ( it retains complete control of balance and keeps my left arm as soft as possible). Another feature I have is that I gently flex my stomach muscle to create a single unit of my torso and hips to prevent my hips from getting too far ahead of my upper body. I have a very smooth transition, at the top after I stop, I do a small torso and shoulder turn to finish my top and thus get a second pause at the top. It is at this second pause that I have my slow smooth transition. I swing my handle straight down and then later rotate body and shift weight left during contact. After impact I finish left like a sand shot.

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## It is becoming more and more clear that it is almost impossible to get a straight answer from the medical personnel around here. For example the woman that takes blood for tests, told me one month ago that she always has paperwork from the Doctor that ordered the test that I can view. Today she said they changed policies. Then the Head Nurse came in and asked me why I won’t do the test. When I informed her what the Blood Nurse said about a new policy, the head nurse said she does not know anything about that. So I said, when I can get a straight answer from anyone around here, we can talk further. The head nurse thinks she can tell me to jump, and I will respond how high. I am sorry but I do not jump for anyone anymore. When someone tries to stimulation me with a mild shock to get me to react, I ignore the stimulus and stand my ground.

## I am becoming a believer in gently flexing your stomach muscles at the beginning of the downswing, provided you have a slow backswing and a smooth transition and a gentle beginning to the downswing.

## Gravity Golf. What can I say. Radical, Simple, and Effective.

Some gravity golf youtube videos are good and some are not.

<http://gravitygolf.com/>

## <https://youtu.be/siuJjWSerqo>

## Now that I have an experiment to conduct on the range, With the hands low, at about mid back height from the ground, and the club head high than the hands, at shoulder height and above, I should experiment with amount of wrist cock, and how I do the down swing. I could pull the club head down to closer to the flatter swing plane that the hands create, I could do this right away in the downswing, or I could gradually bring the club head into the flatter swing plane, the two planes meeting somewhere before impact, or I could also try other experiments. The main goal is to hit a low draw that has a lot of backspin, so that it starts low, but raises up and left, and then sits like a dog in the middle of the fairway.

## +Thunder I have not tried this out yet at the driving range, but in theory at the top of the backswing, you could have low hands and a high club head. The low hands will give you rotational power on a flatter plane. That would be the rotation part of the energy equation. Next the high club head at the top of the golf swing would give a more vertical component of energy like people get from an upright position. So with club head high you get upright energy, and with hands low you get rotation energy and that part of the flat arc at the bottom that provide a solid blow to the ball. The club head being high helps the club comes down and get under the ball. The low hand contribute a nice flat arc at the bottom for a solid hit. If you have low hands and a low clubhead, I think you just get a snap hook, unless you really slide towards the target really hard, in theory.Luke﻿

## At this point I would like to comment, that I have solved most of my problems by slowing down the backswing, transitioning smoothly, and smoothly starting down the downswing. Then we have my theory about the clubhead at the top being higher off of the ground than the hands. Now this concept may agrees with the following paragraph titled pull down, that says pull the butt of the club toward the ground. There might be a compromise zone, in between straight down and along the line of the ball. I think these all coincide with the theory of starting down more vertical and then transitioning the hands on a flatter plane with the club head more on a slightly more steep plane. Either way, without a slow smooth backswing and a smooth transition, with a smooth start to the downswing, I will never be able to keep my balance and control of the club. So matter what kind of shot you want to hit, it requires a slow backswing and a controlled start to a smooth start of the downswing. A fade is just the opposite. Start down shallow and come over the top.

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## Pull Down

### As your arms and hands start into the downswing, it is important to imagine pulling the butt of the club straight down toward the ground. This keeps your hands ahead of the clubhead – often referred to as "lag" – and keeps the power you've built up on the right side of the ball.

## <http://golftips.golfsmith.com/proper-golf-downswing-1744.html>

It is my believe that the biggest mistake I have made in the past, is pulling the club handle aiming just stepper of the golf ball. My new belief is you must swing down entirely vertical to start the downswing, After you do this a little, say twenty percent down of your swing, starting down gently, you can greatly accelerate once you are established on a flat swing plane, which is always a good thing.

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### Drop the hands at the beginning of the downswing so that you will not pull the ball or push fade. <https://youtu.be/Q_sMP30BM4A> this is maybe a very important concept.



### <https://youtu.be/AUidzf-Bvp8>

The above link describes gripping the club more in your fingers to allow the player to get more leverage, lag, and more whip lash effect at impact with a flatter arc at bottom of swing.

### The following link talks about the whiplash effect and many other topics.

### [**https://books.google.com/books?id=Z0AXW-2pK7oC&pg=PA44&lpg=PA44&dq=golf+the+whiplash+lag+effect&source=bl&ots=phX3PlqUhF&sig=PEDaVSel-wtg2\_OC9mydJfPy7dQ&hl=en&sa=X&ved=0ahUKEwib3cq-uLvMAhXntYMKHQHPDR8Q6AEIIzAB#v=onepage&q=golf%20the%20 whiplash%20lag%20effect&f=false**](https://books.google.com/books?id=Z0AXW-2pK7oC&pg=PA44&lpg=PA44&dq=golf+the+whiplash+lag+effect&source=bl&ots=phX3PlqUhF&sig=PEDaVSel-wtg2_OC9mydJfPy7dQ&hl=en&sa=X&ved=0ahUKEwib3cq-uLvMAhXntYMKHQHPDR8Q6AEIIzAB#v=onepage&q=golf%20the%20whiplash%20lag%20effect&f=false)

### **So pro golfers seem to get a whiplash effect. The have a soft left arm, they take a good torso turn. There arms turn back so the hands are over a postion 6 inches away from the target, behind the right shoe (in other words they get the club level to the ground at the top by creating and angle between the forearm and the club shaft of less than 45 degrees, as small as 25 degrees. That can be taken advantage of by creating a whip lash. This also flattens the arc at impact. Ben Hogan has a 25 degree angle at the top like Garcia. Also you want the hands lower at the bottom than a high handicapper does.**

### **So kenny perry has no lag angle at impact and still hits consistent draws without snap hooks. He is rotating the clubface closed at impact, some done with his left forearm and wrist hand, and some maybe by the rotation of his body counter clockwise.**

### **I can see now that the more lag or angle you have in wrist forearm angle, the easier it is to rotate the left wrist about the left forearm in the counterclockwise direction, without closing down the clubface. You can always rotate the left wrist forearm counterclockwise but unless you have some lag or angle between the wrist and forearm, you risk closing down the clubface when you rotate the left hand wrist forearm, thus risking a snap hook.**

### **I achieve lag by using a slow backswing, a smooth transition, and initially a slow downswing. People cast the lag away, by swinging back very fast, and recoiling as a result, and swinging down fasting than you can hold the lag angle. As we approach the impact area, with lag intack, we rotate the torso and instead of flipping at the bottom with no lag, we take the saved up lag, and as we rotate our torso, we rotate the angled lag left wrist and rotate it counter clockwise. You see when you lose the lag, then at impact there is no angle in the left arm left wrist combination, and the inertia of losing the lag cause the club to flip under. The better move when losing the lag would be to rotate the left arm counter clockwise.**

### **As a thought, with a very slow backswing, this will allow me to do most any shot and setup. For example, to hit a high drive from a teed up ball, I can tilt away from the target at address, in the past, when I tried this shot, my very fast backswing threw me off balance, and I lost control of the club. Now when I practice a tilt with a slow backswing, I see no problem with this tilt away from the target, as long as I have a very slow backswing. Also, do not forget that with a slow or slower down swing and if I create a good wrist cock, I will be able to retain my wrist cock longer into the downswing.**

### **Consider this, in the past I would let my left elbow bend a lot, and this led me to not cock my wrist. With my new slow backswing, I will now introduce a proper wrist cock, and with my new slower beginning my downswing slow, this will allow me if I want, to maintain my wrist cock, or lag into the impact area. In addition, one reason I let my left elbow bend, was that I did not turn enough with my torso and now I will have a soft left arm by consciously turning my torso and arms in my backswing, but at the same time I will have a soft left arm, with proper ninety degree approximately wrist cock.**

### **Another test to do, Flex right ankle, but before you start downswing, roll right ankle towards target. I am now at a similar point I was in the next paragraph where I flex the right ankle, but now I add rolling right ankle first, then flexing right ankle so that weight is on my right instep or right arch. Now at this point, I can experiment as I did in the next paragraph, of flexing gradually, my stomach muscles. I think I am really onto my go to swing. First do backswing very slow. At top do a slight shoulder turn back to finish the top swing. Next pause, roll right ankle, for a right handed golf player, roll the right ankle towards the target, so that I feel a definity, noticeable of weight, on my right foot’s arch (is that the same thing as the instep?). I am now in an excellent position to begin my downswing, with an acceleration profile or initially being very small velocity and very slow acceleration. Swing down ten or fifteen percent, and increase my change in velocity profile, or the acceleration profile, until we are waist high on the downswing. At this point, the third part of the downswing we now increase the change of velocity, or acceleration profile by a medium amount. Then part four, we get near the impact area, and increase yet again the change in velocity and impact zone. At this point we are really doing good, because the right arch flexed muscles is a really good base to propel the swing, and the gradual flexing of the stomach muscles, which connect better the torso and hips, thus producing an excellent consistent weight transfer and rotation occurring at the same time, with the hands and arms slightly leading the torso and hips, which requires a slow backswing, and no more than a three quarter downswing speed, which will consistently produce a solid shot, where you stripe the ball.**

### **Now that I think of it, Should I flex the muscles in my right ankle to create stability? Also should I combine this exercise with gently flexing my stomach muscles on the downswing to create a solid connection between my lower body and upper body?**

### **As a note, you do not turn your hips towards the target to initiate the downswing, you do a couple of things, you start down with your hands and arms very slowly, and then soon after that when the arms have moved ten percent down, you lean to the left a little and begin to turn your torso (not your hips; although the hips will follow the torso with a five or ten percent lag), and then the arms come down more and you begin to rotate your body about the left foot as the weight continues to lean towards the target and get into the impact area. Next you are rotating and moving to the target at impact and the arc is flattened due to the combination of moving towards the target while at the same time rotating about the left leg. After impact the club head finishes left of the target and the body continues sliding the rest of the way onto the left foot and continuing to finish the rotation around the left foot. None of this works if you do not start down with the hands that first 10 to 20 percent and THEN begin to slide and rotate; the hands coming down must start very slow so as to keep perfect balance. As a side note, an experiment would be that certain shots may require flexing of the stomach muscles during the downswing. This involves the theory of increasing your rotation of the torso hip combination.**

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### **I like this one the best. There are no x factors to consider, and it is as follow…..Then there is the factor of gravity and inertia. When you have a very slow backswing. Then the pause at the top, you have the time to establish perfect or near perfect balance. Your weight is centered or so it feels, somewhere between the instep of your right ball, and the ball's position. This allows you to slowly start your downswing with your arms, and at the same time lean slightly to the left. When you strike the ball you are still moving left, but are also starting to rotate about the left foot. I use to lean into the target during the backswing, but now I know I simply take a slow backswing, and prevent my weight from swaying past the inside of my right foot. If I do slightly get off balance during the slow backswing, I have time to adjust. My favorite theory and philosophy, is that having a slow backswing and maintaining great balance allows me to deliver a consistent solid blow.**

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### **There is an x factor between the hips and the middle to upper back. If you create an x factor between your hips and lower back you will hurt yourself. You can only get a couple of degrees between your hips and lower back, so it is not worth it. Stick with , if you need to, to create an x factor between your hips and upper back.**

### **X factor, or is it flexing gently the stomach muscles. Consider a dual start of downswing. Bring hands and arms slowly down, and at the same time gently flex my stomach muscles right after the arms come down about one quarter of the way.**

### **Another x factor is your hip is bent by so much at address and whether it changes during the swing.**

The other day I was watching the Golf Channel, and someone was talking

about keying on turning the sternum (solar plexus), and not keying on the

shoulder turn.

After I tried doing this I was believing that turning the hips are the same

as turning the Sternum (or the buttons on your shirt). I thought I had no

flexibility in my in my torso.

However after restricting my hip turn and forcing my shirt buttons to turn

I fould that I could turn my shirts buttons, without turning my hips.

Now all of a sudden, that led me to the questions as to how many x factors

there are.

So now I see there is an x factor between the hips and the torso. There is

another x factor between the torso and the shoulders (there were talking

about the fact that you can turn your shoulders independent that they are kind of free floating above your rib cage).

So now I have identified 2 x factors, and I am beginning to wonder just

how many x factors there are; for example your head turning relative to

your neck.

Now this got me to wondering do you model into a given shot, like a low

bullet 3 iron fade off of the tee box as compared to a bunker shot by

the green (a standard splash bunker shot).

So that got me to thinking I could create a chart for each type of shot (like a

draw), and write down on the chart, what number of degrees differential between

relates to any head turn relative rotation with regards to the neck.

What are your thoughts about this, as I am applying for jobs for assistant coach

at Universities, Colleges, or as An Instructor or Assistant Pro at a Golf Course.

Also if you know of any literature or videos that address my question as to

the various x factors (relative angles) in the golf swing and how many

degrees of separation I should have between my hips and my torso, my

torso and my shoulders, and my head turn relative to my address position.

I suppose these angles could be calculated as relative to the starting

point and address, at the top of the backswing, at impact, and at the

the hip and the buttons on my shirt, relative to my shoulder top of the follow through.

Regards, sincerely Luke Daniel Borel

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### **The x factors. There is the amount of hip turn, and then there is the amount of sternum turn, and then there is the amount of shoulder turn. For me I at first thought that my hip turn is the same as my sternum turn, but that is not necessarily true. By restricting your hip turn, with a lot of effort you can achieve an x factor between the hips and sternum. This raises the question whether you restrict hip turn with sand shots around the green; splash shots.**

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### **Consider what the guy said on the golf channel yesterday. Instead of thinking about turning your shoulders, think about turning your sternum. Your shoulders are free floating. Maybe there is an optimum amount of turn of the sternum, and the after the sternum turns, you might or may not want to also have some turn of the shoulders, so that there might be some angle between the shoulder turn and the sternum turn.**

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### **Consider this; all or most shots should have a follow through like a standard sand shot in terms of the club head finishing to the left.**

### **Just a theory. Arms lead hips at impact, DRAW. Arms equal with hips and impact, STRAIGHT. Arms lagging hips FADE. One note about this theory; I must backswing slow, start downswing slow until everything is synced for the type of shot I am hitting, and then release and accelerate the last fifty percent of the downswing. No matter what type of shot I am hitting, I believe in a slow backswing, a slow transition, and start the downswing slow and gradually build up speed. These requirements are true, because the solid shots requires proper sequencing of muscle and club activation and movement.**

### **I saw on TV someone who bent over more at the waist, but he did not swing flat, I mean it was flatter, but his hands were behind his right ear like it would be if he should up straighter. The fact that he was bent over more at the waist, changed what muscles he activated on the downswing. It seems to take the weight on left foot on follow through out of the equation. Yes he straightened up a lot after impact, but that seems cosmetic. This got me to thinking how the degree you are bent at the waist, affects the downswing a lot. The thing is he was in the top ten, and very accurate on his shots.**

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### **3. LET YOUR ARMS DROP**



Let Your Arms Drop

IS IT FOR YOU? If you "come over the top" on the downswing (giveaways are slices, pulls, deep divots with the irons and pop-ups with the driver), this probably is for you. Start down by moving your arms back in front of your chest (*above*), and you'll refrain from throwing your right shoulder toward the ball—the cause of coming over the top. You'll achieve an in-to-out path and boost your swing speed.

HOW TO DO IT: At the top, you'll sense your hands are behind your right ear. From there, let your arms simply drop toward the ball. Feel like the lower body is following rather than leading. Don't force the issue.

<http://www.golfdigest.com/story/john-elliott-jr-4-ways-to-start-the-downswing>

I am beginning to see that a proper follow through for my rotational power swing, means that in my follow through, instead of my foot turning under towards the target, like players that do not take advantage of rotational power, my left foot experiences torque that causes pain in my ankle. To prevent injury to my left foot I will at my address, turn and rotate my left foot towards the target.

So my belief of hitting a solid shot, regardless of whether you are hitting a draw or fade or straight shot, is that we always rotating our body as we transfer our weight, long after impact. With a draw the arms are ahead of the body at impact I suppose, and for a straight shot our hands are even with our body at impact, and with a fade out body is ahead of our arms at impact, and regardless of which type of shot we are hitting we rotate hard before during and after impact. I believe for a fade you could hit a draw, but squeeze the grip as they say squeeze a low bullet fade. A tight grip and leading with the arms might prevent the hands from rotating at the same rate that your body is causing a solid blocked draw or a squeeze bullet fade.

Watching Laura Davies, she showed a more advanced move than I have written about. She has a normal backswing ( I could replace that with a slow backswing), she starts down slowly, and once she is confirmed to be on the right track to impact, and about one foot before impact, she rotates like heck as she transfers about half of her weight at impact. Following impact, the rest of her weight transfers to her left foot and finishes the rotation on the left foot. I mean I agree that she transfers weight the same way I believe, so that at impact the rotation is happening and the weight is being transferred from the right to the left foot, it is just that the total weight transfer does not happen until after impact. Also, for a lower shot and a draw concentrate on finishing low and left with the clubhead. That implies that a lot of rotation continues in the swing long after impact, which implies a lower finishing position after the swing is completed with a draw than with a fade. A fade the hands finish high with a little rotation coming as a lagging action at the top of the swing. I guess what I am say is that laurie davis has a nice solid swing and impact, in that the arms lead the downswing, with the rest of the body following. So this proves you can hit a solid fade. I think the difference is that her hands get higher in the backswing and her hands are higher after impact than with a solid draw. So I guess in general the simplest way to hit a solid shot is to finish low and left with the hands, which is a direct result of a strong rotational component of your mass during the backswing and foreswing. Thus when the body continues to rotate after impact and if your hands are leading the downswing, then ipso facto, your hands will go to the left after impact meaning as your body is facing the target your hands are low and your arms are probably pointing left of the target ( since the arms are ahead of the rest of your body, and since after impact the front of your body is facing the target, then your arms and club are pointing left of the target) .

To get rid of the slice you want to avoid having your belt buckle point towards the target at impact. What you want is for the belt buckle pointing at the ball at impact. So the arms lead the downswing, and get slightly ahead of the lower body and the torso. When you get near impact you spin around your center, with everything synchronized pointing at the ball. People lose the ball right when the lower body and torso get ahead of the arms. When people slide to the left and get their weight mostly on the left foot at impact, you lose the ball to the right. To hit a straight ball or a draw your weight is centered equally on the left foot and the right foot. A draw or straight ball the clubhead goes left and low right after impact with the ball. When people get ahead of the shot, their weight is left at impact, and the club is not going low and left after impact.

Reasons to take a slow ¾ backswing. When we take the club back too fast, then when we change directions to the downswing, we are likely to have our left arm become not straight. And if the left arm does get bent at the top even with a slow backswing, a slow transition to the downswing, allows the left arm more time to re-straighten. My best swing on the course was on hole on, after playing a few rounds. It was late in the afternoon, and I decided to hit a nice slow ¾ swing. It was the best shot I ever hit with a driver. It started out slightly right, rose and drew left about 15 yards, settled down about 235 yards out. Basically, if you are overweight, have poor flexibility, and are weak, these are some of the reasons you should have a slow backswing, and at least at the first part of your downswing be somewhat slow, and then build up a moderate swing speed. You only want a clubhead speed that allows you to consistently hit a solid shot. A slower solid shot is better than a fast, non solid golf strike of the ball. One way to teach golf would be to start with a ¼ swing, build up to a ½ swing, then build up to a ¾ swing. Do not proceed to the next quarter until you can repeat the quarter you are on.

Consider that when we finish to the left after we make contact with the ball, it becomes easier to finish your swing with most of your weight on the left foot. So with the club head high and my hands low, we get the rotation flat energy, but with the club coming from high, it allows the clubhead to get under the ball. So we have rotational momentum with the arms and torso (this is the goal of swing the arms on a plane closer to being in plane with the mass of the chest and stomach) and then we get gravitational energy stored up in the club head ( which is the vertical part of the swing), then you can see we are combining several kinds of energy (two of which are gaining energy from what is stored up in the torso and arms, and secondly, the gravitational energy stored up in the club head). So we have two follow through concepts, following low and left, which makes it easy to transfer weight to the left side after impact with the balls, and two, the high follow though, which is the mirror finish of the higher than the hands height of the clubhead in the backswing. So, in theory we should get a follow through with the hands medium low and left, and secondly the clubhead finishing as a mirror image of the club head height at the top of the backswing)

Consider, that players like jason hit with right shoulder by dropping right shoulder down and under. Consider that my swing thoughts involves me not having that capability because I have narrow shoulders and big rib cages. That is why I believe club head should be higher than hands. Also, the concept of standing further away from the ball and being more bent at the waist might be adjustments people make to create more room for the right shoulder to hit the ball at impact. Also placing the ball further back in the stance might be related with people with low flexibility, narrow shoulders, short in stature, narrow shoulders and high weight. As a believer in a slow backswing, might be connected, slow backswing allows player to maintain balance. Professionals have above average hand eye coordination and superior balance.

# http://www.canada.com/story.html?id=ca555916-60bd-4308-9167-4646a5d8d91d

# Keep clubhead high, hands low

## You don't have to reach too high to achieve an ideal position at the top of your swing.

You don't have to reach too high to achieve an ideal position at the top of your swing.

But most golfers try to swing their hands as high as possible on the backswing because they equate "high hands" with increased power.

Flexible golfers tend to get their hands up, and there are players on the PGA Tour such as who have very high hands. However, I'm convinced that most golfers would benefit greatly from what I call "low hands, high clubhead."

High is when you raise your hands above the right ear (for right-handed players), and there are costs in trying to play with high hands if they don't fit your body type.

The danger is you'll exceed your flexibility threshold.

Two specific problems are common:

1. You straighten your spine angle, rising up from your original address position. This causes your shoulders to turn on a too-flat plane, and if you don't lower your spine angle perfectly on the downswing, you'll hit it thin or fat.

2. The other problem occurs with the front elbow. In an attempt to get the hands higher, you're likely to bend your front arm instead of turning your spine for a full coil.

So unless you're blessed with maximum flexibility, consider playing with low hands.

The secret is to own the club at the top of the swing.

Low hands are approximately even with the top of the right shoulder, never going above the right ear.

The key to developing low hands, high clubhead is maximizing the angle between your front forearm and the clubshaft at the top. The following tips can help create this leverage.

First, use a long thumb in your grip, extending it fully along the club's handle.

Second, adopt a different pressure point in your grip. At address, exert steady pressure with the pad of your right thumb on the top of your left thumb.

Third, aim your left arm to 10 o'clock at the top of your backswing

Consider how some players hit with the right shoulder right before and during contact.

Consider Danny in Caddyshack. His setup is to lean towards the target with weight more on left leg. Then during his backswing he transfer his weight away from target, so that more of the weight is on his right foot than the left, or at least it is equal between left and right foot. Then during his downswing his weight starts centered, and then his head moves away from the target, but his lower body moves towards the target. The only way I could get this to work is to have a slow backswing.

Also consider whether or not you need to stand further away from the ball to hit a draw, or to gain more power. This seems to indicate more research and testing said concept by practicing various shots moving closer and further away from the ball at address. Also position of hands, club head, and shaft direction at the top of the swing.

Consider this. I saw a guy set up to the golf ball like I did. He bent over at the waist what looked like too much. But he swinged the club to a average normal upright position. In other words, like my habit of standing too far from the ball like I do, and what I did wrong was swing back too flat, too low to the ground. So now I have a new variable, how far am I to stand away from the ball.

The more you desire to finish the swing with all of your weight on the left foot (or at least most of your weight on your left foot), the more you half to start your backswing with your arms, followed by your shoulders, and then after impact you can start thinking about turning your hips.

I was just watching golf channel and they were showing an old golf tournament, and they showed someone that had a beautiful backswing, but swinged forward too fast and all out. The ball went right. Johnny Miller the announcer said, when you swing down too fast the ball went right. Does this mean that Spieth was swing down too fast when he kept hitting his shots right on the back nine at the final round of the Masters?

I think what I take away from golf so far, is that good golfers seem to swing back very slow, and when they near the top of the backswing they slow down briefly, as they finish their backswing. Then on the way down they seem to make sure they are on the proper swing plane or club head path, and then once they are sure of that they accelerate more than the beginning of the downswing.

Hi, my name is Luke Daniel Borel, and I am a golf instructor at lessons.com

I am responding to your interest in lessons with me.

When I teach I go to south kansas city driving ranges.

I need to contact one of the driving ranges and get permission

to teach at their location.

I am out of town right now, at will not be back in kansas city,

until june or july.

In the meantime, if you are interested in learning one of the golf

swings I believe in, go to youtube and watch a slow motion golf

swing of Kenny Perry.

[https://www.youtube.com/watch?v=TtxGGIzrqWI](https://deref-mail.com/mail/client/dereferrer/?redirectUrl=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DTtxGGIzrqWI)

If you are looking for a swing that produces a draw (right to left curve)

then Kenny Perry would be a decent place to start.

The idea is to take the club back with you arms until they feel that

they cannot go back very much further. Do not over do it, just

bring the arms back until they reach about 85 percent of how far

you can take them back.

Next, what you want to do is pause for a second.

Next, finish your backswing by turning your shoulders back

say about 15 degrees to 25 degrees. At this point you slowly

begin your downswing until your hands are about hip high.

When this is achieved, then you can accelerate some into

the impact area.

To recap, when you take your arms back, do not consciously

turn your shoulder back. When the arms start to reach their limit

and are approaching their comfortable limit, then next pause for

one second. During this one second time you shoulders will move

down an inch or two and rest on your rib cage. Also this one second pause

allows you to get ready to hit the ball, by making sure that some of your

weight in centered over the inside of your right foot. When people swing

back fast and have no pause, they sway so that some of their weight

is centered over the outside edge of their right foot. When 60 percent

of your weight is centered over the inside of your right foot, you are

prepared to begin the downswing and are properly braced with a

push off point to deliver a blow in the direction of the target.

If you think this is to complicated, then study Tom Watson and Lydia Ko.

Here is an excellent article written by the famous golfer Johnny Miller, which

the subject matter is Tom Watson's golf swing.

[http://www.golf.com/tour-and-news/tom-watson-swing-not-perfect-stop-top-helped-him-win-major-championships](https://deref-mail.com/mail/client/dereferrer/?redirectUrl=http%3A%2F%2Fwww.golf.com%2Ftour-and-news%2Ftom-watson-swing-not-perfect-stop-top-helped-him-win-major-championships)

The idea with Tom Watson's swing is similar to Kenny Perry's swing. What Tom Watson

does is swing back about 80 percent, next he pauses briefly, next he completes his swing

with a final shoulder turn. The idea is to turn your club and body smoothly most of the way back.

When your club, arms, and shoulders are turned most of the way back, you pause, let your

shoulders settle down onto your rib cage, then complete your backswing with the finishing touch

of turning your shoulders back another reasonable amount. You are now at the top of your

backswing, and then final shoulder turn that completes your backswing, may cause your club

to cross over at the top, meaning the club shaft might be pointing to the right of the target.

At any rate, at this point you are at the top of your golf swing and there is only a tiny bit

of pause before the downswing. Start your downswing very slow and very gradually build up

club head speed, until you are sure that your clubhead is not approaching the ball from the

outside; you want it to feel like the clubhead is approaching the ball from the inside.

If you try any of these swing concepts that I shared, and still want to study the golf swings

of professional players, here is the list of players I study currently.

Kenny Perry

Lydia Ko

Tom Watson

Miguel A Jimenez

You should be able to locate slow motion videos of each of these players.

I will email you when I am back in town, back in Kansas City.

In the meantime, if you have the time and money to go to a driving range, you might

consider trying some of the ideas that suggested. Try to hits a few balls, then think about

what you need to adjust during your swing, then hit a few balls, and repeat this process.

The biggest mistake I use to make, was to hit a hole bucket of balls, using the same swing

on each ball. Now when I practice I hit a few balls, make some minor adjustments, and

then hit a few more balls.

I will email you in a few months.

Sincerely Luke Daniel Borel

sphere1@mail.com

**Sent:** Monday, April 11, 2016 at 6:19 PM

**From:** "Lessons.com" <support@lessons.com>

**To:** "Luke Borel" <sphere1@mail.com>

**Subject:** New Student Inquiry from Lessons.com

Stop section of email sent and resume golf philosophy

Think about this; when you stop at the top, it allows you to get your weight on the inside of the right foot, at the same time, when you do that, you reset your swing plane flatter and you squat a tiny bit. Then through impact you straighten up a little bit.

Acceleration is the cause of the pull hook. Over Acceleration at impact is the cause of the push slice. Ideal acceleration of zero at impact mimics a club traveling a rail at a constant velocity and then hitting the ball with a constant velocity and acceleration of zero throughout the impact. Same goes with putts chips and sands shots or explosion shots out of the rough.

I believe in constant velocity impact, especially for putting, chipping and sand bunker shots. I believe in large backswing, and then proceed with the correct velocity with acceleration near zero at impact. Most professional golfers hit up on the golf ball when putting, imparting topspin on the ball; I can still do this with acceleration near zero put impact. With my full swing I slowly pause at the top, then gradually build up my velocity on downswing until I reach the proper velocity for a given shot; and then stabilize that velocity before impact; continuing with that velocity after impact.

Basically a bad slow swing is better than a fast disaster of a swing. When I learn or teach golf, continuously and gradually slow down the golf swing, build up slowness until we get a pause at the top. Next practice with a complete several second stop at the top. Next begin downswing very very slow and build up speeds at the right time in the downswing. Should we squat at all on the downswing. Should we bend at your waist at the top ( or in other words do not straighten up on the backswing; or sway away from target or move head back and up during backswing). By slowing down the backswing it allows people with little flexibility to minimize undesirable movements.

**by Johnny Miller**

Posted: Wed Aug. 15, 2012 Updated: Mon Dec. 1, 2014

Tom Watson is one of the greatest players of all time. but there’s more to his legend than what you read in his stat sheet. Watson was the guy who finally gave Jack Nicklaus a run for his money, unseating him as the No. 1 player in the world in 1977 and establishing a rivalry between the two that elevated the game’s popularity to the level that we all enjoy today.

Tom had a reliable, albeit unique swing. He did things that elite players typically shy away from, like crossing the line by pointing the shaft to the right of the target at the top of the backswing (photo). And he had a noticeable pause in his transition—the shaft sort of hung in the air before he whipped it back down. It was a move Watson learned from Byron Nelson: “Rock the club up, pause, then rock it down.” The pause, in my opinion, is what helped Watson dominate in his prime and remain competitive on the pro circuits well past his 60th birthday.

I wouldn’t say pausing at the top is a must move for every golfer, but let’s face it: Swinging badly and fast is much worse than swinging badly and smooth. In fact, a common factor I see in all “strange-looking” swings is a pause at the top. Pausing gives you just that much more time to reroute the club into the correct position if it falls off plane in the backswing. Watson did this to perfection, and he used it in his chipping motion, too.

A good way to practice Watson’s pause is to swing to the top, stop, turn your head to see if everything is where you want it to be, and then swing down. Stop, check, boom! If this sounds weird, then consider that I’ve seen Tiger Woods do this on the practice tee and during his warm-ups, and that Tom Watson used it to win eight majors in the span of nine seasons when he—and his pause—were tops in the world.

 Article stops here

Now about the setup; should I grip the ground with my toes, so that I feel like have claws on the tips of my toes and I can sink my claws into the ground? Will my muscles in my feet fatigue and produce non repeatable results. I think I should try this concept. As a note, if I grip the ground with my toes I must really slow down my backswing. This will work out because I believe in a slow backswing.

Putting. I now see that many pro golfers hit the golf ball with the lower edge of the putter, striking the golf ball upwards, putting top spin of ball. Some put too much top spin on the ball and motors the ball and a miss on the high side of the hole. Get angle of strike and use constant velocity impact, not accelerating through impact. I use constant velocity on chips with no acceleration. Is this a good method. Sometimes. Consider tilt of lower and upper body at address and how they change during each phase of swing. Also consider the two tilt variables in putting and chipping.

This raises the question, when you tilt the axis away from target, does the tilt on the lower body match the tilt on the upper body. Do some have lower body non tilt vertical, with all of tilt in upper body. And so some have constant tilt at impact where the upper body tilt matches the lower body tilt, so that there is a straight line tilt from head to toe. Also can one develop a chart that lists tilt angle of lower body, versus tilt angle of upper body. Does the tilt lever tilt towards target on specialty shots. Good question, I do not know but suspect.

I guess what I am trying to say is when doing the golf swing in slow motion, and when I realize the proper finishing position with weight of left foot body posture straight up with knees straightened and hips not bent. What happens is when I try to do this in fast motion, my weight gets ahead of the ball at impact. The proper way is to at the top of the backswing, pause and then on the beginning of the downswing start shifting weight to the left and then the power leverage is applied to the club head. So next if your weight is too far left, so you are getting close to impact and you concentrate on creating a pivot of rotation going from the inside of the left foot, up through the left leg and continuing to the right ear, the head being behind the ball with the back now tilted away from target. Then comes impact and the inertia of the mass of the body completes the foreswing and the momentum carries the weight all to the left leg, with the body ahead of the previous ball position or the divot position. So basically when you start the backswing, the arms start the proper swing path, next the body shifts to the left foot. As when get closer to impact the center of body mass is that the upper body shifts away from target creating a tilt away from the target. The axis of rotation still is the left foot at the bottom of the axis. The axis still goes through body, but goes through right side of head, instead of the left side of head. So initially the axis is not tilted, but as the club approaches the impact area, the axis is tilted away from target. Next comes impact and axis is still tilted away from target. After impact the axis usually is straight up and not tilted away from target and momentum carries the mass to the target over left leg with no tilt and the proper position at top of foreswing balance so you can hold your follow through.

My technique will use the knowledge but will strive to minimize pain or damage to the left knee joint. The question is raised, is all of this effect by ball position. When you hit a draw and the ball position is moved back, does this reduce the tilt from left foot up to right side of head, with the head behind the ball. Does hitting a draw reduce strain on left hip and left knee and left ankle. I think this is true. And with a fade is the stress on left hip, left knee and left ankle increased. Maybe. So is the idea to create came power but to minimize stress on hip knee and ankle. Seems to be the goal. I am trying to decide when you hit a draw does the body shift weight to the left at impact. With a fade the weight shifts left before impact but you have a tilted axis with lower body ahead of ball and upper body behind the ball. So more stress on left knee and left hip at impact. Withdraw the axis stays not tilted throughout swing. With fade body is rotating a lot at impact with tilted axis away from target. Withdraw the axis is vertical and slides to target through impact, thus minimizing stress on left knee and left hip.

One point I am investigating and it is in tandem with developing your swing in slow motion. Do your backswing, then on the downswing you shift weight left, as you near impact area the weight shift back to the right and you pivot your swing up the left leg , weight mass ⅔ rds behind ball and ⅓ in front of ball, anyway as you near impact and all of these things are happening the left leg straightens and then after impact your entire weight moves to the left leg and the finish. Now the question becomes is this compatible with my theory that the weight shift happens naturally is you cross over at the top of the backswing. I also want to fit this into my theory about keeping hands low and you compensate for this by having the club head higher than the hands, and crossing over at the top; the question then becomes when you cross over at the top of the backswing do you go past parallel; my desire is to not cross over at the top; and also this raises the question as to how much tension will I desire between the hips and the shoulders or the x factor as some call it. My desire is to develop a swing that at the top of the backswing minimize the x factor, but that the x factor is cooked in the backswing so that in the process of the downswing the proper amount of backswing will occur. When hitting a draw the arms lead the shoulders. When hitting a fade the shoulders lead the arms. Are the previous 2 sentences true or not.

I am not sure if I have discussed this item. A good drill is to backswing very slow. Move arms fully and most of your shoulder turn. Pause at the top. Complete your shoulder turn (another 5 or 10 or more percent). Then swing down. On next attempt when you pause at the top, experiments with various positions of the height of the hands compared to ground level. Also experiment with the height of the club head compared to ground level. Also experiment with the club shaft pointing in various directions.

When satisfied finish shoulder turn by a small or medium amount to complete your backswing. Then swing down. Use this technique to practice various types of shots (straight draws fades low high slice hook, and more like low shots that rise up and land softly on the fairway).

Now that I have all of my basics down, I am now considering the idea of squatting to initiate the downswing. I have tried this before and got stuck. Perhaps the idea of squatting only works if you do not do it too much. The concepts goes onto when you approach impact, your weight is transferring left and you straighten up your left leg. This may be hard on the left knee, so it might contradict my whole basic concepts and I could say the swing I teach is designed to not require a squat and thus have a swing that most amateurs can do, in other words not have much flexibility and strength in the knees.

Today, modern golfers start their arms down and get the club on a proper path; then when the club head gets close to the ball they violently turn their hips and shoulders. This requires a lot of timing, but it is a method that can be taught to amateurs. Since I have weak, narrow, hips, I am working on techniques that has more hip and shoulder rotation baked into the swing. By crossing over at the top, or placing a pause at the top where next the arms and shoulders are turning and crossing over at the top during the pause to create torque and tightness and x factor, during the pause, bakes in automatic hip, shoulder and torso rotation which take place during the entire downswing. So most modern golfers start down with their arms, and when the clubhead gets close to the ball, let it go with the rest of the body, implementing the rotation right before impact. I on the other hand create a longer path for the club at the top so that the timing allows an automatic release of the body and rotation through impact. I need to be able to do both types of swings. With a draw you place the ball further back in your stance and I guess you aim more to the right of the target. With a fade I guess you play the ball further up in your stance and aim left of the target. This is just a theory stated by many people. My theory states if you cross over at the top, you will automatically cross over at the top of the follow through. I bake in the natural reaction of the body when you cross over at the top of the backswing, to force the body to rotate through impact, which automatically means you will cross over at the top of the forward swing. Just because you cross over at the top of the follow though does not guarantee you where rotating everything though the impact area. Modern day golfers cross over at the top of the follow through, but it is too late, they did not create the rotation of the body in the impact area. Then they are amazed that they either double crossed or pushed the ball. With my method you take more of the timing out of the swing and you naturally create a rotation of everything through the impact of the ball contact area. With a fade the hips clear before impact. A draw the upper body starts first, so the shoulders are ahead of the hips. A fade the hips are ahead of the shoulders. Does this contradict what I have just written in this paragraph. To be natural about it, by adding the pause at the top and then crossing over, or just crossing over at the top, either way the idea is to create a natural reaction that the hips do not get ahead of the upper body and or arms. I need to ponder all of that I have written in this paragraph. OK remember the body not only rotates, but also moves towards the target so that in the after swing the body is on the left foot.

So now I am combining several concepts. First I am designing a swing for people that do not have a lot of flexibility. I first am considering swings where the hands are low but the club head is higher than the hands. Secondly I am considering swings that cross over at the top. And thirdly I am considering swings like Kenny Perry and Lydia Ko, that swings the club back with arms and then pauses at the top and then turns shoulders and torso some which creates a cross over at the top, but only after a pause at the top and then a shoulder torso turn at the top that builds up some x factor and causes the club to cross over at the top.

I am adding Lydia Ko to my list of golf swing to use for teaching. Her swing is similar to Kenny Perry. She takes the club back neutral with an upright swing plane, and then at the top she completes her backswing, crossing at the top slightly, and pauses for a brief moment allowing her club shaft and hands go closer to the ground, creating a flatter swing plane and setting up the swing to have a rotated cross over follow through. Lydia Ko and Kenny Perry have very similar golf swings. They take the club back and up, without turning their their shoulders. Once they complete the arm backswing, they pause and turn their shoulders a bit, causing the club shaft to cross over the target line thus pointing to the right of the target line. The ball is probably placed slightly behind the instep of the left foot.

A note about hitting a draw. First place ball back further in you stance. Next start the downswing with the hands and arms, from the inside, so that the club head approaches the ball from the inside out. When you are sure that the club shaft is swinging from the inside out, then start turning the torso, and then the hips and legs. This is backwards from how they teach. The flaw in how they teach nowadays is the they say start swing with weight shift towards targets. This causes weak hits where you feel stuck.

My golf swing was developed by not being to hit a draw around the severe dog leg left.

My theory is to hit a draw you need to cross over at the top like Bobby Jones. I also

study Kenny Perry. I am adding the golf swing of MIGUEL A JIMENEZ (he also kinda crosses over at the top). I am adding arnold palmer to the swing model influence. He crosses over at the top and he has a twirl that crosses over at the top of his forward swing. The concept it to play the ball back in your stance, cross over at the top, downswing from the inside, almost hit a shank, follow through to the left, and cross over a lot at top of forward swing. New concept based on the best golf shots I ever hit. Start down slow with arms (in this matter I will never get stuck). Next once the club grip is somewhat above hip high, then we concentrated on spinning through the impact area (intentionally spinning out). This create a centripetal force, flattening the arc at the bottom, and this also leads to a spinning finish with club shaft crossing over at the top. Also don't forget to cross over at the top of the backswing. Remember the minor league baseball player that has the course record at minor park, Started out low, rise due to back spin, drawed left, and set softly onto the fairway or green. This is my goal and why I am trying the hands low and club head crossing at the top, and maybe even pointing up at the sky.

I think to hit a draw you want the club head higher than the hands at the top of the swing.

The bigger the draw, the more you want the club head higher at the top of the swing than

the hands.



One note I need to make here. Regardless of whether you take a small backswing like in a

short iron, or a long swing, like with a driver, you must take the club back on the inside, so

that if you did make a full backswing you would be crossing over at the top.

The exception is Kenny Perry, he takes the club back on an outside path. At the top, he pauses,

completes his backswing and at this time he crosses over at the top. So in reality how you take

the club head back, the main thing is that the club shaft crosses over at the top.

Whether the club head is higher than the hands is just my way of saying hitting a draw is easier

if the club head is higher than the hands.

This golf swing was kinda developed by combining Bobby Jones, Kenny Perry and my theory,

plus this idea.

Start with the finishing position, you can see that on a full follow through you cross over at the top.

Loosely speaking you can start with your finishing position and form a mirror backswing.

Now is the time for me to discuss something. And that is what points of movement would we use

to model the swing with a simulator. We have the shoulder joint, The shoulder rotation, the elbow

bend, the hip bend, the waist, the knees, the ankles and more.

One point of movement is the wrist. I mistakenly thought that you would take the club back in a closed position and bend the wrist to keep the club face closed throughout the backswing.

What I have learned is that to hit a draw you do not bend the wrist during the backswing, you

rotate the wrist. You rotate the wrist counter clockwise to hit a draw. In other words, if you

cross over at the top, the way this is accomplished is by taking the club back on the inside

path. Next you follow the backswing to its crossed at the top and naturally your left wrist for a

left handed golfer rotates counter clockwise.

Now the more you rotate your left wrist counter clockwise, in theory, the more you will draw

the ball and the more you will cross over at the top. If you do not rotate the left wrist

counter clockwise your club head runs the risk of being level or below your hands and one

could say that this is related to being laid off and therefore stuck.

Let us look at the case where you need or want to keep your hands low, and below the

swing plane. One can counter this problem by rotating the club counterclockwise, thus

elevating the club head and at the same time the club shaft is now pointing to the right

of the target line, except the club point elevated above being parallel to the ground, points

somewhat to the sky.

So what looks like a half back swing, it is actually a full backswing, but by rotating the left

wrist count clockwise the club goes beyond crossing at the top and in now pointing even

more to the right of the target, but pointing even more to the sky.

The one issue I have with Bobby Jones swing is that although he always crosses over at

the top, his hands were at the same height as his club head. I prefer shots where the

club head is always at a higher elevation than the hands. I accomplish this by rotating

my left wrist counter clockwise more than Bobby Jones.

There is one more thing I need to discuss. In the past when I tried to hit a draw, I would take

the club back close, and I was laid off. So I may of rotated the left wrist counter clockwise

but I had no wrist cock.

So if you take the club back and create a wrist cock, that is good, or you may create the

wrist cock on the downswing, but you have to combine that with rotating the left wrist

counter clockwise.

This diagram shows that for the method I am describing requires both wrist cock and counter clockwise rotation of the left wrist and forearm. Kenny Perry demonstrates this good. At the top of his backswing when he pauses and then completes his backswing when he crosses over at the top you can see he has a good wrist cock too.

I just watched a bobby jones video and he does have a very good wrist cock at the top when he crosses over at the top. I do not think he rotates his left wrist counter clockwise as much as Kenny Perry. I suppose that is because he turns his hip so much, thus he mirrors his follow through and just reverses the final swing position where all the weight is left and right heel up, on the backswing he simply reverses that and at the top of his back swing it looks more like the reverse of his

follow through more than anyone else that I can remember.

The main difference between Kenny and Bobby is the Bobby hands are not lower to the ground than the club head. Because he turns his hips so much on his back swing, Bobby has a longer backswing than Kerry, kind of like Bubba Watson has so much hip turn.