

# Curvilinear vs Linear Golfers Reading Putts: Not Categories but Merely Styles of Half-educated Golfers who Need Further Skills Development

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PuttingZone – golf's most advanced and comprehensive putting instruction, a community of over 150 Certified Coaches teaching in 20 Countries Worldwide and growing strong.

I was asked recently about the teaching that many golfers cannot and should not use lines and targets when reading putts.

This is the junk that Mike Shannon teaches. I call it "junk" because it is not only wrong, factually, but it is dressed up pretentiously in "Latin terminology" to try to impress golfers as if it is scientifically incontestable. The teaching is junk, not Mike.

What follows is a bit long-winded, but that's not my fault. First, I have to explain what is bad about the existing teaching, then what is poor about the current golfer skills, then what to teach that gets golfers understanding what to do and doing the correct stuff with a high level of skill and performance. So bear with me.

## **1. What's Wrong with This Teaching?**

Mike Shannon has never read anything that says there are two sorts of golfers, one sort (35% according to him) who read putts in the "linear" (Latin term) way and the other sort (65% according to him) who cannot read putts in the "linear" way but instead can only read putts in the "curvilinear" way. No science backs this up.

I've written about this before on my blog, in response to what Mike Shannon says he teaches, published in Golf Digest in October 2010, pages 84-85, in [this blog post](#). Here's what I wrote there:

Golf Digest, Oct. 2010, Pages 84-85 -- Mike Shannon, "How to Roll Every Putt on Line." Says 65% of golfers "literally can't see in straight lines" and so cannot use the reading procedure of "aiming straight at the high point of the break". In addition, these 65% of golfers "have no system for handling breaking putts." WOW, where do you start? Here are 3 silly questions: 1. Why "can't" the 65% of golfers do what 35% of the golfers CAN do? 2. How DO the 35% of golfers accurately see how to aim at a spot? 3. If this were known, could you TEACH the 65% to do likewise? Mike Shannon answers these simple common-sense questions as follows: 1. Don't know, haven't wondered. 2. Don't know, haven't wondered. 3. Don't know, haven't wondered. Goodness gracious sakes alive -- is this what passes for golf instruction? Sadly, yes, GD certainly thinks so.

OK, so what about "rolling the putt on line" as promised by the title of the article? There is ABSOLUTELY NOTHING IN THE ARTICLE ABOUT THAT. Nothing. Nothing at all. Anywhere. Good grief! What the article is about is what Shannon recommends that the sad 65% who can't see a straight line and who have no method for reading putts ought to try: See how the ball will CURVE into the hole and then "react to the target" to "find the line". "Curved-line players need to trust that they can find the line by reacting to the target, without the distraction of drawing lines or spots." Say again, please, and this time with real feeling: REACT TO THE TARGET, you dunderbutt. OK, got that. Don't "track the eyes along the arc of the putt." That's not helpful, he says.

Basically nothing here about the surface, the slope, physics, aim points, delivery speed, or anything usually considered important to planning or executing breaking putts except seeing the angle the ball will be entering the hole and then "react" to that to find the start line then "trust it and let it go" even if your eyes say otherwise.

SUBSTANCE: NOTHING ABOUT ROLLING ON LINE, and instead SOMETHING WEIRD AND WEAK about SOMETHING SPECIAL TO TRY IF YOU CAN'T DO WHAT OTHERS CAN. VALUE: Misleading and confusing and blocks golfers from learning real skill or even attempting to understand HOW they do what works and offers nothing to the other 35% than "keep doing what you're doing, whatever that is, but in any event don't do what I recommend for the other 65% -- that's just for them."

Time out. Is he saying that the 35% can ONLY read putts with lines? That the 35% canNOT see curves at all? That the 65% canNOT do the same thing the 35% can do? That the 65% have some problem in their perception processes that prevent seeing lines?

This is pure junk, but golfers hear the Latin phraseology ("curvilinear") and ASSUME there is some science behind it, or at least that Shannon knows what he is saying based upon some sort of empirical study that gives real understanding of the reality. Adding the percentages in there (65%, not "most" or "two-thirds" or "over half" or terms like that: just the naked one number 65, not 64 or 66) is what IMPLIES this is all very scientific. That's very useful in the salesmanship of this particular instruction.

Well, no, Shannon's just teaching made-up stuff that sounds about right, but actually is illogical and harmful.

It is harmful to tell 65% of golfer that they canNOT and should NOT try to do something in reading putts that 35% of golfers can do, without first explaining why that is the case, making convincing sense about that. That absence of the explanation of the difference should be a big clue to gullible golfers, but apparently golfers are so desirous of getting

help from experts that a con game is not really difficult to run on golfers.

OK, what's real? Yes, SOME golfers say they don't use lines when they read putts, and most golfers who putt probably don't use targets or lines. In fact, according to his video in Golf Magazine's website, Shannon uses a diagnostic "test" in which the read is, say, 10 inches left of the hole with a target "next to" the hole 10 inches away, and asks golfers to aim into the read, with 65% aiming significantly further left of the target on a higher line; Shannon classes these golfers as "nonlinear" and calls them "curvilinear" readers who cannot see straight lines. He says 65% of the golfers he teaches and tests are this way. So? That only means the golfers he watches don't know much about HOW to read putts or HOW to use lines, and when they tried, it didn't work out, so they quit trying and never figured out how to use targets and lines. It's no surprise to me that 65% of golfers showing up for a putting lesson have little success using lines. The real mystery is why that number is not 95% or why 35% CAN successfully incorporate using lines into their putting.

So what exactly do the 65% "curvilinear" golfers with faulty DNA in their golfing genes actually do when they read putts in the "curvilinear" manner? First off, they don't really know what they are doing. If they see some sort of curve along the ground as the imagination of where exactly the ball will travel during a successful putt, they don't know how to make sure that imagination is correct, and then they don't know what that means for aiming the putter face along some start line. These golfers obviously pick some particular start line: they simply have no idea how they do it and don't want to know how their start line fits with targets or curves.

Shannon knows nothing at all about this process used by "curvilinear"

golfers, and doesn't have the slightest idea what to teach to help golfers about this in getting THE start line that matches their curve. Instead, he TELLS golfers something to do that they weren't already doing as so-called "curvilinear" golfers (visualize the last 2" entry path into the hole). So he doesn't say that "curvilinear" golfers already do it this way. So where does this bit come from? He made it up as a "bandaid" and then tried to see if it helped the "curvilinear" golfers get better results "somehow".

This "last 2 inches" technique is not something Shannon suggests to teach golfers how to read the putt; the way he teaches this, it is something that comes AFTER the golfer reads the putt somehow seeing the curve ONLY from ball to hole. Shannon teaches to take whatever read the golfer comes up with "somehow" and then focus only on the last 2 inches of the entry path of this curve. The golfer then "reacts" to this to get the start line somehow.

The "last 2 inches" bit is a READING TECHNIQUE only if it CHANGES the aim of the putter face from what the golfer initially understood from his "curvilinear" imagination. But Shannon teaches this in a way that assumes the initial "read" of the "curve" is good, and the golfer only needs to get the correct "start line" for the already-correct curve, and this focus on the 2-inches bit is what Shannon seems to teach in order for the golfer to react and therefore "get" (somehow) the correct start line. In Shannon's teaching, the 2-inch bit doesn't change the read or the curve, and merely "reveals" the start line that goes with the curve, as we said, "somehow."

But does the focus on the 2-inch bit in fact CHANGE the start line, and therefore change the read? I think it DOES change the read the golfer comes up with. That's because the read of the curve has only one possible start line that goes with it, unless the golfer plans on using a

delivery pace different than the one used to perceive the curve to begin with. Since Shannon leaves open the possibility that an already-correct "curve" has more than one possible start line, and hence the golfer needs a trick to get the one that suits him "revealed", this means that Shannon does not understand the basic rule of reading putts and then putting reads: read with one speed and then only that speed can be used to execute the putt.

In fact, focusing on the final 2-inch entry path of the putt somewhat "undoes" the initial curve and replaces it with a higher curve and a different start line. That changes the read and the start line together. So Shannon helps the sad 65% get a higher read and some sort of start line to go with it, while professing merely to leave the "read" to the golfer and only help the golfer get the start line, and does so without teaching them how anything actually works. That's better than nothing.

Wouldn't it be interesting if Shannon was clear-minded enough to say: You are a curvilinear reader of putts, and that means you suck at reading putts unless you add in this last 2 inches bit, and then that helps "somehow" get you to read a higher line. Then you can start passing out the Academy Awards for best practices in teaching golf.

So, yes, I think curvilinear players are getting helped by focusing on the last 2 inches, but for reasons I'm absolutely certain Mike Shannon is completely unfamiliar with and in fact he does not have ANY reason he believes explains why the "focus on the last 2 inches" might or might not operate in the golfer's perceptions to help. In the PuttingZone, this focus on the "action" at the final entry path into the hole has a forward trajectory that, if run backwards in reverse away from the cup, drives the golfer's consciousness into the higher" patch of grass just before reaching the hole. This patch in turn necessitates delivering the ball over or through this higher patch, and so forth back to the ball, all of

which turns the curve further onto the uphill region before the cup. There are other tricks like this in the PuttingZone, based upon how the brain and perceptions actually work and how to drive the perceptions into better, more effective patterns. But you don't teach it simply as a gimmick that no one tries to understand.

The problem with not teaching how the skills work is that the golfer can sometimes get good results, but when it doesn't work right, the same golfer is standing in the deep dark forest of ignorance not knowing what to do on the next putt, with a funny taste in the mouth called "not sure I'm good at this." The golfer who understands how skills like reading putts work never gets in this existential crisis of faith when his effort doesn't pay off, but simply knows what he did wrong, blames and then forgives himself, and gets right back in the saddle to do it right the very next putt. Learning skills requires exploring and learning and experimenting with and understanding what body action causes good or bad results, and then playing is simply performing the skills without checklists etc., but with deep-seated background knowledge of skills, and this knowledge in the case of error in performance pops up immediately for purposes of diagnosis and correcting the error. And if you don't believe skill works that way with understanding, then I suggest you read the motor sports experts about the role of "cognitive understanding of how body movement causes good or bad outcomes" in learning motor skills, since apparently golfers and almost all golf teachers are unfamiliar with this science.

Now, why exactly can't the 65% do what the other 35% are easily able to do: see and make use of start lines at targets? What's the explanation for that? Frankly, Mike Shannon has never publicly made any statement about this, so far as I can see, so apparently he doesn't have the vaguest idea about any possible reason to explain the difference between these two supposedly separate categories of golfing species on greens.

As I believe, Shannon's 65% are simply those lacking skill seeing and using lines, and Shannon merely confirms them in their ignorant ways by telling them not to try because it's not merely hopeless, but for some unknown reason, counterproductive as well. Getting told you're an athlete and that athletes "naturally" don't need to understand what they are doing and that attempts to understand athletic skill are somehow "unmanly" is a common silliness in golf. (Try telling an NFL quarterback that his passing coach needs to stop explaining passing technique.) But this "recreational golfer attitude" to skill in golf dovetails beautifully with the notion that "curvilinear" golfers are truly the "naturally gifted" golfers compared to those "nerdy" line golfers. This is partly the reason golfers LIKE being told they are "curvilinear" and why thereafter they are perfectly happy to hear they should NOT have to do any "homework" when reading putts.

When golfers tell me they have been deemed "curvilinear", they say it with a touch of adolescent pride not too dissimilar from the inner glow of a dumb jock whose been told he's good at sports even though he gets poor grades in class and really doesn't like paying attention or learning or doing homework, so he'll probably get a nice job and good-looking girlfriends even though he's a bit dumb, so he's just glad he doesn't have to do the homework. It's always easy to quit, and teaching 65% of golfers to quit right where they are in reading putts is basically all that Shannon has to say on how to read putts.

So, his actual answer is that the 65% canNOT see or use lines because they quit trying to get skillful. And Mike Shannon blesses this. And almost all "curvilinear" golfers like hearing it about themselves.



## **2. What's Wrong with the Way Almost All Golfers Read Putts?**

Why is seeing and using start lines difficult to the majority of unskillful golfers? Why does it require something extra for the other golfers to benefit from lines?

Generally, the reason is that golfers don't understand the relationship between the start line and the curve. The curve is a prediction of the real path of the putted ball from point A at address to point B into the hole over the sloping contour of the green between the two. The start line is an imaginary direction for the golfer to aim along and to stroke the ball along at the beginning in order for the ball then to follow the curve from A into B according to the surface. Golfers don't understand this. Those 35% who get something successful going using lines are those who by trial and error eventually get something workable, but even these golfers do NOT really know why this or that start line fits this imagined curving path from A to B over the green into the hole.

Dave Pelz proved this, but didn't understand it, so he couldn't fix it. He studied golfers and found out that (almost) all golfers under-read putts and then the start lines they send the ball off along is too low. He doctored this up with scientific sounding exact numbers (something authoritative sounding like "90 percent of all golfers under-read putts by at least 50% of the correct read" or made-up pseudo-exactness like that). That's all he learned. He didn't learn why and he didn't understand the problem and he never has been able to teach anything that helps do the reading correctly to avoid this other than to advise golfers to "double" their read and try again. Beyond that, Pelz offers to sell you his "Tru-roller" ramp so you can use trial-and-error 15 or 20 times on a single putt until the aim of the Tru-roller and the pace off the end of the Tru-roller get the "read" sorted out, and that's what he "teaches" INSTEAD of telling golfers what matters, what to perceive,

and how to sort it out when playing real golf – how to get the correct aim start line for the pace and curve. This, Dave Pelz does not know.

A good number of obscure putting teachers (such as they are) have noted the common misunderstanding golfers have about the so-called "apex" of the putt. Golfers think that the "apex" is the aim point. That's because they lack basic 5th-grade geometry and are fuzzy-headed and don't define what they are talking about. I've never met a golfer who can define the "apex" clearly. Golfers will say the "apex" is the "point where the break is biggest" or something like that. They USE the "apex" to aim at it.

This is what nearly ALL uneducated golfers do, "curvilinear" golfers included. (And Shannon doesn't teach anything specifically about the "apex" apart from the cloudy notion that floats generally in the general air of golf culture, and doesn't personally understand it – I checked all of his published materials and also interviewed a large number of golfer who had actually taken lessons from him, and he never defines "apex" or its proper use.) That means "curvilinear" and "linear" golfers almost ALL use the "apex" this way. So what's incorrect about that?

If you define the "apex" correctly, it is the "maximum separation of the curving path of the predicted ball route across the green from a straight line between ball and hole." That is, if there is a right-to-left curve "seen" for the putt from ball to hole, this curve separates from a straight line path from ball to hole, starting out to the right of this straight line and eventually curving leftward until the curve again meets up with this straight line at the hole. The "apex" is that one point along the curve that is farthest away from the straight line.

The fifth-grade geometry class COULD educate golfers what this "apex" MEANS for putting, but golfers don't think about golf this way. The

"apex" in 5th-grade geometry is the point along the curve where the TANGENT at the apex parallels the direction of the straight line. But of course as soon as one uses a LATIN term like "tangent", golfers' eyeballs cloud over in confusion and refusal to leave the jock world of the playground and start paying attention to learn something. So they remain ignorant of the functional significance of the "apex".

The functional significance of the "apex" is that in order to insure that the ball's direction of travel matches the curve, the direction of the ball AT THE APEX has to be changing from going away from this straight "baseline" (I call the straight line from ball to hole the "baseline") and start heading closer to the baseline, and right at the apex the ball's direction parallels the baseline for the only time this is true.

The START LINE that "linear" golfers should be using is NEVER aimed at the "apex", since that start line will never succeed in getting the ball up to the "apex". That's like aiming a free throw straight at the front of the rim. That's guaranteed to be TOO LOW.

All but the rarest few golfers seeing curves will MISuse the "apex" in this way. "Curvilinear" golfers will under-read putts and "linear" golfers will under-read putts also. And recall that Mike Shannon actually thinks this is correct: he says the 35% of golfers who read with targets and lines use the "apex" as the target, as he says in GD: "aiming straight at the high point of the break" – and this is simply uneducated and incorrect. The default for all golfers is to under-read putts. Pelz at least documented this fact.

It's actually even worse than this. Stewart Cink, for example, uses the following "thought" about reading putts: "I putt to the 'apex' and then gravity takes the ball the rest of the way to the hole." That's from a person who attended Georgia Tech, where engineers stroll the cart

paths working calculus problems in their heads. Let's be clear about this: the above "thought" about putting is just ignorant and silly and doesn't work and Stewart Cink has success putting despite this thought, not because of it, and could do better without this thought, and instead using a correct understanding of reality. Reality is non-negotiable, folks.

So what's "wrong" about this particular use of the "apex"?

First, Stewart does not know what an "apex" is even if he can sometimes accurately perceive candidates on the ground and pick the correct one "somehow."

Second, Stewart does not define or clearly know what he means by the phrase "putt to the apex": it's ambiguous and sometimes he means "aim the start line at the apex" and sometimes he means "start the ball so its tangent rides over the apex and there matches the tangent of the baseline" – in either case IF he correctly identifies the "apex" properly understood, a successful putt MUST start off on a line aimed HIGHER than the "apex."

Third, not all putts are "downhill from the apex to the hole", so the idea that "gravity takes the ball the rest of the way to the hole" is rather silly. Some putts are "uphill all the way from ball to hole", and gravity (at least according to Sir Isaac Newton and a couple of other people who have studied this issue) never "levitates" objects away from the planet or the ground "uphill". This particular problem in the "silliness" of this "thought" is really a rather basic flaw in the way everyone in golf incorrectly talks about "break" – as if balls always start out uphill and then roll downhill towards the hole. In fact, that is how an 8-year-old probably thinks, but of course it is ignorant of the reality.

The reality is that the correct way to describe any breaking curve across

the green surface with general terms that are always accurate without confusing things is this: “balls start out to the side of a straight line from ball to hole (the “baseline”) that aims some angle off the baseline to the same side that the slope aims uphill in space, and then gravity draws the ball downhill along the slope tilt’s direction at every point along the way (with greater effect curving the ball off the initial or current line of travel the slower the ball travels and the longer it is exposed to the influence of the slope) and at some point the ball crosses the baseline. In simpler terms, all breaking putts start to the high side off the baseline and the “fall lines” along the way draw the ball downhill until the ball crosses the baseline to the low side.

In the case of a putt that is uphill all the way -- for example a putt starting 20 feet away on a baseline from the hole on a direction across slope that aims like a clockface tilted with the 6-12 axis straight thru the hole uphill and the ball position being at the rim at 4 o’clock – the start line aims to the right of the baseline from 4 to the center of the clock where the hole is located, and the fall lines on this “flat but tilted” surface are infinite and parallel to the 6-12 axis, and each point along the way the ball is drawn “downhill” along these fall lines, but there is NEVER any gravity that draws the ball in the direction of the hole, and from the “apex” the rest of the way to the hole is ALL UPHILL.

Stated and conceived accurately, all breaking putts start on lines aiming to the high side of the baseline and gravity draws them according to the slope’s tilt back to the baseline. Simple breaks travel over “flat” slope tilts, and complex putts travel over more than one slope tilt, but over any given slope tilt, the correct formulation is to think about “away from baseline, back to baseline” over that slope tilt, with the slope direction of tilt and steepness of tilt and grass friction and ball speed all combining to determine “how much” each fall line redirects the line of

travel into a curve. There is NO downhill “the rest of the way from the apex to the hole” unless the ball at the apex is on a piece of the surface slope that is HIGHER in elevation (and reality) than the hole. It happens, but only in about 55% of the putts, NOT 100% of the putts.

For example, a ball putted from the sidehill position on the 3-9 axis of the slope headed straight uphill on the 6-12 axis, the ball starts out to the right of the baseline from 3 o'clock and arrives at some “apex” fairly near the hole that is on slope of higher elevation than the hole. Any ball position “above” the 3-9 axis is higher than the hole at the intersection of the 6-12 and 3-9 axes, but that happens in only slightly more than one-half of all possible putts. Similarly, a ball putted uphill from 4 o'clock likely will have the ball above the 3-9 axis at some point, in some combinations of steepness and green speed and distance, so there may be an occasional uphill putt where there IS some downhill (hence the guesstimate that there is some downhill in perhaps 55%, or more than half, of the putts); but the “apex” also may not be above the 3-9 axis even then, but may be located before the ball crosses the 3-9 axis. Catch up, please, and leave the “conventional golf” ignorance in the trunk this time.

*Fourth*, golfers thinking like Cink implicitly believe that “gravity has no influence until the ball reaches the apex.” That’s equivalent to thinking that the Sun doesn’t shine while you keep your eyes closed. When asked directly about this, a veteran swing teacher from Orlando who routinely teaches PGA and LPGA players, opined that, yes, gravity does nothing until the ball arrives at the apex. The OTHER implicit thought in these golfer’s heads is that once the ball just barely gets to the apex after climbing up to it uphill all the way from address to apex, gravity then for the first time gets “switched on,” AND there is just the right amount of gravity to “take the ball downhill the rest of the way to the hole.” Lots of swing teachers believe the same, even if they never

clearly say so out loud. Jeeze Louise, that's pig stupid.

*Fifth*, and finally, even IF the apex is physically "above" the 3-9 axis of the slope's tilt, delivering the ball to this "apex" isn't enough. There may or may not be enough gravity force to take the ball "downhill the rest of the way to the hole." The "naïve ignorant" concept in these notions is that the "apex" is ALWAYS just far enough uphill from the hole that gravity is perfectly enough to "take over" from the energy used by the golfer that suffices ONLY to get the ball to the apex, but is thereafter spent, and that once gravity "takes over", gravity is enough and not too much to take the ball "the rest of the way to the hole." Actually, sometimes gravity is not enough and the ball stalls out part way but still above the hole, sometimes gravity is plenty, and sometimes gravity is too much and takes the ball "hot" across the hole and too far past. So obviously golfers thinking this way need to learn a few things that 8<sup>th</sup> graders who paid attention in class probably have no trouble understanding when they think about the real world of balls and green surfaces.

WHETHER gravity has enough force (and HOW MUCH force gravity presents) to take the ball from the apex the remaining distance downhill to the hole depends upon the distance from apex to hole, the steepness of the slope, the green friction, and any remaining energy from the golfer's initial putt back at the address location, none of which the Cink "thought" takes into account.

And more to the point, IF the golfer actually believes the ball arrives at the apex with the initial putt force just spent, then the real physics is that NO gravity can possibly take over and roll the ball the rest of the way unless the slope steepness and green speed combine in severity so that no ball can possibly come to rest at the apex, once the putt's force is expended getting the ball onto this spot. Ordinarily, if the putt force

is spent getting the ball to the apex, the grass friction and mildness of slope combine to PREVENT the ball from going any further, even downhill. And in fact, the USGA guidelines for locating pin positions FORBID placing holes where the combined severity of slope steepness and green speed would continue to move the ball downhill AFTER the golfer's force is expended. Okay ... Therefore, golfers using the Cink "thought" will never have success with this unless they deliver the ball "across" the apex with some extra, remaining force about which they have no clue in terms of "how much" the putt needs.

So forget about "putting to the apex" to arrive there with nothing left so that gravity can do the rest: the golfer always has to putt "over" or "across" the apex with SOME dwindling force in the ball's roll left over past the apex, so let's get an 8<sup>th</sup> grader's idea about how to perceive and understand and generate the CORRECT remaining ball speed after the apex. That process requires paying attention to the slope between apex and hole and assessing the distance, slope steepness, and green friction, as they combine with respect to imagined ball speed "over" or "across" the apex. The reality-engaged imagination of the golfer assesses how the ball speed at the apex "fits" with these other factors so that the ball and these other factors deliver the ball nicely all the rest of the way from apex to hole. Any "apex" that aims the ball after the apex so that these other factors cannot curve the ball correctly in combination with a decent ball speed at the apex is obviously not suitable as the "apex" for that putt's successful curve. The "apex" is set by the golfer's pace that ends up nicely delivering the ball to the hole, not the apex, and the apex has to fit this imagined curve, which in fact is not negotiable once the golfer's delivery pace is determined and set.

So, EVEN IF there is elevation change from apex downhill to the hole, and EVEN IF the golfer tries to assess the slope factors from apex to hole to adjust the ball speed across the apex, this is not how it works.



The golfer sees the curve all the way to the hole with the usual delivery pace and then executes ONLY with that same pace, so this “apex pace” adjustment is just wrong from the get-go.

All of which means: the “apex” is totally irrelevant to putt reading and putt execution – completely and utterly nonsense to even bring it up, with only one simple exception. The one exception is to think about the apex like the hump of the back of a whale, with the whale’s back from tail to snout being the “curve” of the putt and the whale swimming along the baseline (nose on baseline, tail on baseline, flat underbelly on the baseline like a book on a floor) and the tippy top of the hump having the same flat as the flat of the baseline so the tangents of baseline and top of hump are the same, with the golfer thinking about delivering the ball up and over the hump / apex with the usual delivery pace all the way to the hole. But that’s an unnecessary supplement that independently doesn’t change anything for start line or total energy. Perhaps it helps a few golfers occasionally to re-think the whole deal of the apex into this imagery and energy pattern, but even then, it’s just ornamentation compared to structured process: might help sometimes, but fundamentally not part of the basic process. Forget apex. Just erase the whole word. Don’t look for the apex, don’t think about the apex, don’t miss it.

So, basically, how do "linear" golfers get their lines and how do they see the start line in a way that doesn't under-read the putt? They don't know.

But usually, "linear" golfers are still under-reading putts, especially if they are seeing the "apex" and thinking it has something to do with the start line. In fact, Mike Shannon teaches using the "apex" as the point "linear" golfers ought to aim at, so he's among the geometrically-challenged teachers in golf.

The ONLY thing the perception of the "apex" means to the start line is that any start line aimed at the "apex" is absolutely guaranteed NOT to be high enough and the golfer needs to aim something higher than a start line aimed at the "apex". OK, that's at least a crumb.

Yes, I'm saying that BOTH "curvilinear" golfers and "linear" golfers under-read their putts and don't know why and don't know what to do to read the putt high enough. That agrees with what Pelz found by measuring the reads of all manner of golfers -- both categories that Shannon describes under-read putts.

### **3. What Should Golfers Do to Read Putts Correctly?**

Now, as to HOW to read putts correctly so that the start line is not too low but is in fact correct, that's what we do in the PuttingZone, and because of our research being exhaustive and comprehensive, it is simply the fact to also say that ONLY in the PuttingZone has the correct way to read putts ever been taught in golf history.

Here's how:

First, the golfer cannot read a putt without having and knowing ONE TOUCH that consistently and accurately results in the SAME DELIVERY SPEED of the ball to the holes for all putts, regardless of day of the week, green conditions, length of putt, feeling of golfer, putter, situation in the competition, and any other factor one can mention. Touch is an ability to deliver the ball to the hole with the SAME delivery speed (within plus or minus variability that cannot be reduced below a certain range), and this delivery pace is one that balances the reality of the physics of ball-hole interaction so that: 1) the ball speed is above zero revolutions per second (rps) at the front edge of the cup so as never to

stop short of the cup; and b) the ball speed is at the low end between slightly above zero rps and the maximum center-cut crossing speed of putts for 4.25" wide holes (which is about 9 rps); and c) any misses don't go more than 3-4 rolls further past the cup so the next putt is not a problem, which again is at the lowest end of the speed range. This TOUCH balance works out to be 2-4 rps at the front lip, and this has NOTHING to do with what golfers want or desire to choose for their personal putting, and all this notion that golfers "choose" whether to be "die" putters or "aggressive" putters is total nonsense. Golfers end up either with a "smart" touch delivery pace based upon the physics or they end up with a "dumb" delivery pace. The "smart" delivery pace is 2-4 rps that always gets all the way to the hole and then dives deeply in the cup even if crossing on a short side path over the circle of the cup, and then in case of a miss stops within 2-4 more rolls in the next one second so the final comeback putt is within 4 rolls of a ball (which are 5.28" each) or ABOUT 21" or ABOUT somewhere within the leather for a gimme comeback (the "leather" is usually 24-25" up from the sole of the putter and the remaining grip is 10" long for a 34"-35" putter.

IF a golfer has this "smart" touch delivery pace, THEN he should be able to read putts correctly and not under-read putts nearly as often as uneducated golfers.

That is because the ONLY missing factor in what determines the actual curve of the ball across the green is the pace. The pace has to be predictable, since reading putts is "predicting" the future reality of the ball's path across the surface. Everything that affects this reality EXCEPT touch pace is simply fixed and set and "is what it is". That includes the green speed, the distance of ball from hole, the fall line direction of the slope at the hole, the slope steepness, other contour shapes different from the slope at the hole, elevation changes from ball to hole, and anything else that matters. All of these factors don't change from

whatever they are. Yes, reading putts requires skill at perceiving and interpreting and using these factors in sorting out the aim of the putter face or the direction to start the ball off along, but they in fact are static properties.

The factor that causes almost all the problems reading putts is TOUCH. Only unless the golfer has the ability to deliver the SAME pace to all variety of cups, this factor confuses the reading process. So ONLY golfers who a) have a good delivery pace, and b) can execute putts in a wide variety of situations to CAUSE the same smart delivery pace to result at the cup, and c) KNOW and are FAMILIAR with the touch pace, and d) USE EXACTLY THIS PACE when imagining and predicting the interaction of ball and green to "see" the curve, are the golfers most likely to read the putt in a way that results in a start line that works out. The final trick is to use just this ONE SMART PACE when reading the putt, and then aiming along the start line correctly, and then USING THIS SAME PACE when putting along the start line.

Golfers who are *really* excellent at reading putts and then putting their reads NEVER read with one speed and then use a different pace for executing the putt. And the really, *really* good ones also do not start the ball on any line OTHER than the one found with the correct speed. And the really, really, *really* good ones also AIM their putter faces accurately into the real start line as well. Amateurs and all golfers who lack skill at this, however, almost always do exactly the bad, ill-logical, unskillful things with their pace and line. I call this "reading putts with bail money in the sock." First, these golfers aren't that exact or demanding to get the correct read, because they hold in reserve the next-step of setting up to a flawed, half-baked read and "coming up with Plan X from Outer Space" to "fix it" with a different speed than the one used to generate the half-baked read. The Plan X speed is always faster than the read speed, as that is the only way to aim too low above

the baseline and still keep the ball on the “high side” when it goes as far as the hole – aim too low and speed it up. And second, if they don’t change the speed, these golfers have another “sock” with bail money: a crooked putt line to fix a half-baked read. The crooked putt comes in a non-conscious aiming of the putter face farther uphill than the imaginary (and too-low) apex or other target and then sending the ball higher than the read but now with something closer to the read’s speed, and / or aiming accurately at the goofy-low target but then sending the ball off on a higher line than aimed anyway, also without being the least bit aware that is what the golfer is actually doing to fix the bad read. Great putters, few and rare though they be, never use anything other than the usual delivery pace and also always simply start the ball off on the correct start line, and could probably improve if they also aimed the putter face correctly as well.

Putting instruction is so poor these days that the sentence “read with the usual pace and then execute the putt with the same usual pace” is not even commonly understood. Tiger Woods, for example, does not know this, as he always blames his difficulty getting the *speed of the greens* for his trouble in a round reading putts (he has said stuff like this for years), and touch doesn't work that way. The touch skill is BEYOND problems with the green speed, but always ACCEPTS whatever the green speed might be and knows HOW to make strokes that work out for delivery pace, no matter what the green speed. Loren Roberts also does not get this main point about touch, and focuses daily on getting the green speed. That's why some days he has touch and some days he blows it, as he did in Greensboro a few years ago, putting great the first two days and then putting the same greens the final two days with poor touch to drop the Saturday morning lead and end up 30th or something like that, only due to the drop-off in putting acumen.

Even if the golfer has great touch, and smart touch, and even if he reads

the putt using ONLY that touch, if the golfer doesn't understand the relationship between the start line and the curve, but instead ignorantly uses the "apex", he will revert to under-reading putts. Because of poor golf teaching that fails to get rid of this mis-use of the "apex", the vast majority of golfers mis-use the "apex" and cancel out any benefit they might have from being lucky enough to have a smart touch.

So, WHAT IS the correct relationship between the start line and the curve? Why is getting the line good for the read a PITA?

Basically, the correct start line to send the ball off initially so the ball thereafter matches the curve across the green is the TANGENT of the curve right at the point where the ball sits at address. So what, again, is the TANGENT?

The tangent is the direction a curve is traveling at one specific point along the total collection of points from beginning at A to end at Z. Each point along a curve has one tangent direction. If you imagine any curve as a country road at night, twisting and curving this way and that, and then imagine a sports car driving along the dark road with the head lights on, the head lights point now northeast and now closer to north and now slightly northwest and now west as the car rounds a curve to the left. The direction of the head lights is the TANGENT of the curve at each of these places along the road.

Given a right-to-left break across the green, if you drove a car across the road of the read on the green as if driving a car on a dark road, the head lights will parallel the baseline only at the "apex". Interesting, but irrelevant. The TANGENT that matters is the one right at the beginning, at the ball. THAT TANGENT is the correct start line for the read's curve. That's how the "linear" putter's curve matches the "curvilinear" putter's curve, so there is no conflict between the two.

But this TANGENT almost always "seems" to uneducated golfers to be WAY TOO HIGH. That's because golfers are ignorant, and under-read putts and LIKE WHAT THEY DO, because they don't know what is correct. No golfer deliberately does a poor job reading putts, and every golfer believes that whatever he is doing is as good as he knows to do, and golfers look around them to see that they are doing about the same as everyone else, so they really like doing what others are doing, and no one deliberately reads putts doing what they KNOW is a bad way to do it. And yet, golfers usually suck at reading putts. Logically, this means that WHATEVER the golfer is doing when he reads putts is NOT GOOD. So why keep doing it? Golfers misread putts just as poorly as their buddies, but no one ever says to themselves: "Hey, guys, whatever we're doing reading putts is bad and we need to stop it and do something different." So when golfers are shown the correct way to aim along the TANGENT at the ball, they react to it very poorly out of their "comfy zone" habit, and say "That's not what feels right to me, and I don't see any of my buddies doing that either, so that's just weird -- no thanks, no sale!"

The reason golfers reject this aim line is they are uneducated about the skill. The SKILL of reading putts starts and stops with ONE TOUCH delivery pace. Read with that pace, aim the tangent that read curve requires, and then execute the stroke ONLY with the SAME pace used to read the putt to begin with. This last part is what almost all golfers cannot and will not do. Almost all golfers read putts with implicit, poorly defined delivery speed X rps, aim something, and then start wondering at address WHAT delivery pace will "make all this work out". Almost all golfers execute the putt they read with X+ something rps, faster than the pace used to read the curve to begin with, and that means the initial effort to read the putt was a total waste of time, since the Plan X speed (i.e., X+) only gets formulated at the last moment

standing beside the ball without the usual care to "stalk the putt" etc.

Yes, the HIGH LINE of the tangent really IS the one that matches the curve predicted with steady pace, but it is ONLY the correct start line if the golfer sends the ball off with the SAME pace used to predict the curve to start with. That's a HUGE problem in putting instruction.

Crenshaw and Roberts BOTH putt with a "high and slow" line. They are great golfers, but not great explainers or teachers. AND both could be better putters than they are if they really comprehended matters more clearly.

What separates a too-low line from a just-high-enough line is the just-high-enough line is the first higher aim that allows the golfer to putt the ball without SPEEDING up the delivery pace above the usual pace, which was used to predict the read curve to begin with. Amateurs ALWAYS feel a need deep inside the gut to speed up the delivery pace once they have read and aimed the putt, since they have under-read the putt. The reality of the putt basically bothers them in the gut, and says, "Unless you add a little extra pace, this start line will result in the usual-pace putt dropping to the low side of the baseline before the ball makes it all the way to the hole." This all happens without awareness, but golfers almost all either miss putts slow and low or abandon the read they saw and aimed into and putt with some "Plan X from Outer Space" pace to try to fix things at the last moment. That's ignorant.

In contrast, really great putters never accept a start line until it is high enough SO THAT they DON'T have any inclination to add speed to the pace used to read the putt. In their ignorant way, PGA Tour putters might describe this as "feeling" the break. (Geoff Ogilvy, bless his non-teaching soul, says exactly this in Golf Digest.)



OK, how do you get the curve first, and then how do you get the start line so that the start line is HELPFUL in organizing and executing the putt?

Initially, perceive the green's factors that affect and matter to the putt and understand how "whatever" these factors may be the way in which the golfer has to accept and deal with these factors to predict the curve accurately, using the consistent touch. (OK, back up one step and get touch skill first -- without that, you're lost in confusion forever.) The PuttingZone teaches ALL of that, one green factor at a time, in terms of HOW to perceive what is and HOW to use what is the correct way.

Next, this curve as a matter of straight-forward geometry matches up with only one start line, and this start line "aims" in only one direction, and the line of this start line passes over a line of specific grass blades or "aim targets", and ONLY these grass blades are acceptable aim spots. The EDUCATED golfer know how to get this start line, knows the relationship between this start line and his read touch, knows the relationship between this start line and the "apex", knows the relationship between this line and the execution touch.

Getting the start line from the curve is done in at least three ways, as taught ONLY in the PuttingZone.

The first method to get the start line matched to the curve is to imagine the reality / predict exactly how the ball would react with the green for curving along if the start line aimed straight down the baseline at the center of the cup AS IF the putt were straight and level and using for this imagining / predicting the USUAL delivery pace from touch. Predicting this will result in predicting the ball curving off the baseline to the low side and then crossing the fall line straight uphill thru the hole exactly X inches below the center of the cup and then stopping

between 2 and 4 rolls further past the fall line. However many inches this imaginary straight putt crosses the fall line, the target to aim for the REAL start line is exactly this many inches ABOVE the center of the cup. For example, on a 10-foot sidehill putt across a slope of 2% grade from the 3 o'clock sidehill position over a green speed of about Stimp 9' or 10', using a delivery pace that arrives at the hole with 2-3 rps, imagining aiming straight at the cup and then predicting how low the ball is when it crosses the fall line, golfers quite naturally and accurately will see the spot on the fall line directly beneath the cup about 10" from the center of the cup. If the golfer then aims a start line at a spot on the fall line 10" ABOVE the cup and then starts the ball on that line with the usual touch, the ball curves into the heart of the cup.

The only implicit assumption that allows this is the assumption that the surface traversed by the first putt shares the same uncomplicated shape or contour as the surface area traversed by the second, higher putt.

Since the second method, the golfer imagines the FINAL 2-3 feet of the putt arriving on the curve into the center of the cup, while standing 2-3 feet below the hole on the fall line, looking back to the ball and predicting exactly and only the final 2-3 feet of the curve, as only the end of the read matters and must be correct and is outcome determinative and is the only part of the putt's total curve where the exact pace of the ball is predictable, since all putts with touch end up with the SAME speed at the end of the putt. Getting this little 2-3 feet of the predicted curve accurately predicted is fairly easy. USING this to generate the start line is a skill golfers generally lack. The skill is to imagine a car driving this little country road 2-3 feet along with head lights on, first in the forward direction into the hole over this little roadway, and then in reverse out of the hole back over this same patch of roadway and then filling in the blanks the remaining distance of the curve all the way back to the ball. Then the direction the head lights

are shining at the ball represents the start line. The head lights are the TANGENT of the predicted curve at the ball. The head lights also will shine all the way to the fall line above the cup and illuminate the SAME spot found from the first method above. Both methods will result in the golfer perceiving the SAME start line aiming the same direction, angled the same angle off the baseline to the high side of the baseline, and aiming at the same target spot on the fall line. That's because ALL methods to read putts that use the same delivery pace to predict the curve will always show the golfer only the same one curve, and the same one start line that matches that curve.

When two separate methods show the golfer the SAME start line for beginning direction and the SAME angle off the baseline and the SAME aim spot on the fall line, then the golfer has confirmation and has great confidence his read is the real one and his start line is the correct one.

Ok, that's great, but let's get a THIRD confirmation.

In the *third* method, the golfer starts by realizing that amateurs and poor putters always aim too low and then have to *add speed* to the delivery pace or else they will miss low with putts faltering below the baseline before reaching all the way to the hole, and then flips this flawed approach on its head. The PZ student DELIBERATELY angles the putter off the baseline to the high side NOT ENOUGH and NOT HIGH ENOUGH, knowing and expecting that this too-low start line will generate a gut reaction of needing to add speed to the putt to keep the ball on the high side of the baseline as far as the hole. Once the golfer "feels" this need for speed, he incrementally adds angle higher, re-checking to see if he can drain all this amateur need-for-speed out of his gut reaction. The first time the aim is high enough so that the gut feeling of the need-for-speed completely dissipates, that is the correct start line. If the putter face had head lights, and the golfer turned the

head lights on to see what spot on the fall line is illuminated with this first-time-high-enough putter face, the head lights hit the SAME spot as twice before.

Then the golfer also knows not to speed up the stroke, but to chill out. At this point, there is only one possible way to sink the putt: start the ball down the start line with the usual delivery pace. Anything else cannot possibly work. This EDUCATED golfer is perfectly at ease about what to do to sink the putt, and how to do it. There is never any last-minute problem-solving in the mind of a great putter.

Touch first, read second.

Now, back to "linear" and "curvilinear" golfers. They are both poor readers, and "curvilinear" putters are simply avoiding getting BETTER HELPFUL skills, and Mike Shannon first blesses this ignorance and then bandaids it. It would be MUCH BETTER TEACHING to explain to the golfer how it really works so the golfer has KNOW-HOW and can self-coach and avoid streakiness and never get bothered by minor failures since the failures are understood in cause-and-effect terms and the golfer always knows what to correct to get the next putt done perfectly or at least with a much higher quality read and execution. So "curvilinear" putters need to hear the gospel: thinking that they are as good as they are going to get avoiding learning about lines and target spots and simply seeing the final 2" of the entry path strands them in a state of ignorance and deprives them of tools that are quite useful to the better golfers who will bury them in a year's worth of higher-quality more-educated putting reads and executions.

As to the "linear" golfers, they also need to hear the gospel that they aren't nearly as good as they need to be, and in particular need to learn quite a bit more about HOW to see the curve to begin with and HOW

to know what start line is the right one and what all this means for executing the putt.

Apparently, Shannon never tries to teach the "linear" golfers anything at all, since Shannon doesn't know how and whether any particular start line would be good or bad. Apparently, he doesn't even tell the "linear" golfers to visualize the final 2" entry path, because if he did that, he would have to get involved in sorting out the relationship between the final 2" entry path, the total curve, and the start line used by these "linear" golfers. So far as I can tell, Shannon doesn't know anything at all about these matters, and doesn't teach "linear" golfers anything, but leaves them to their own devices, doing whatever they showed up at his lesson doing. He does tell them to aim at the "apex", so Shannon is among the geometrically-challenged teachers in golf.

Nowadays, golfers are starting to be hand-fed an aim spot on the fall line, without being shown any skill for perceiving it independently. As I have written elsewhere, the people teaching aimpoints (Mark Sweeney and friends), don't know anything about touch, and simply borrowed what some physics professor borrowed from a physics high school teacher, who simply guessed at it and came up with balls stopping 6-12" past the hole. This is all what happens when dilettantes come to "sort out" golfers with science, whether it is physics or optometry or something filled with Latin phrases. So ALL aimpoint targets that golfers read from the charts are TOO HIGH for real golfers and their existing touch, and the level of touch used to calculate all aimpoints is something that even Ben Crenshaw doesn't use, and the level of touch that matches these aimpoint start lines to curves is not something aimpoint "teachers" know how to teach to their students.

In effect, a computer-cum-caddy purports to "read the player's putt" without the slightest familiarity or even interest in that golfer's personal

delivery speed. And the computer-cum-caddy also doesn't really know from experience or analysis what IS good touch, but uses a level of touch pulled out of the air or some nether region. And the computer-cum-caddy with reads-in-a-booklet also doesn't happen to know that 90% or more of all golfers lack the skill to aim at a target 10 feet away, and a mere sliver of error 1 degree off line in aim or stroke will miss the center of the cup, and will sail by the outside edge over 2 inches wide. Almost all golfers aim way worse than 1 degree off line from 10 feet away, so what's the point giving them an exact, computer-calculated spot to aim at? And then of course, even IF the golfer COULD aim accurately, that still doesn't matter unless he also strokes balls where his putter face points. But, oh yes, that's right: since 90% of golfers can't aim, they also NEVER or nearly never except by accident actually send the ball where the putter face was aimed, since relentless experience teaches these golfers that doing so would never work.

Now there are MORE aim calculations, this time with David Baldi and Mike Schy using the delivery pace of Colonel H.A. Templeton, USAF Ret., and his aim calculations a quarter century earlier than Sweeney. The retired Air Force Colonel from Dallas spent over two years calculating and surveying and field-testing his calculations before writing all the science up in his erstwhile wonderfully entertaining book, *Vector Putting: The Art and Science of Reading Greens and Computing Break* (1984), a 200-page fiesta for physics nuts like me. It's better than Sweeney's borrowed and merely calculated touch lifted from a "play paper" by a physics prof from British Columbia's Malaspina University who readily admits he knows nothing at all about putting or reading putts and that all his play-paper calculations didn't help his personal putting, as they say in math class, "one iota." But in fact, neither Sweeney nor Baldi and Schy teach golfers skills in perceiving and appreciating and understanding and performing good ball delivery pace, the green surface factors that combine with the pace

to generate only one possible curve to read, the start lines and targets required by these curves, the aiming skills to use the aim targets, or the stroke and touch performance skills to execute the putt according to the read so that putts actually have a high probability on a consistent basis of at least scaring the hole. They give them aim targets only, and in the normal course of events, the "factors that matter" in the green must be detected not by golfer perceptions but by technology used in practice rounds and recorded for future reference in "cheat books" to use during real rounds of golf. Enough, or as William Blake opined, Too Much!

So that's all total junk from the get-go. But I'm sure dunderheaded putting teachers who don't know how touch works and don't know these aims are all not correct will SUBSTITUTE these aims to fake it with gullible golfers, and start adding in these aims and start telling even "linear" golfers what they should be ending up aiming at.

What a pitiful state of affairs golfers accept from putting teachers!

Bottom line: explain to "curvilinear" jocks that they can keep the 2" deal, but they are going to have their heads handed to them by better golfers knowing more about it the same way "naturally gifted" athletes who also pay attention in class end up with the girls and the nice jobs. The SMART golfer gets the most out of his natural talents. So "curvilinear" golfers need to drop the pretense they are doing what they understand and they should not try to learn more -- ain't no where close! They need to get busy or get out of the way.

And "linear" golfers also need to learn more.

All golfers need to learn how to perceive the curve better and then how to know what start line goes with the curve and the touch used to see the curve.

People like Mike Shannon and the others mentioned in this discussion unintentionally but nonetheless unfortunately lead lots of impressionable golfers AWAY from skill. Yeah, okay, at least the golfers don't suck as bad as they did before they got "something" going more or less in a better direction. But is that all? Of course not! At least not if you're a golfer who takes the game seriously and wants to build real skill for solid, consistent performance, taking personal responsibility for your results every stroke.

Cheers!



Geoff Mangum

Putting Coach and Theorist

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Just a gentle reminder that the PuttingZone REALLY is the best putting instruction in golf history, in case you haven't heard:

The PuttingZone record of accomplishments includes the following, with player bio in parenthesis at time of first lesson:

Blake Adams (young mini-tour player age 28): 1 lesson, 1 course record, tournament record, tour record, personal best 62 the next day for \$12,000 on the Developmental Tour followed by 3rd on the money list on the Nationwide Tour in a single season winning \$400,000 without a victory (6th in putting) to advance straight thru to the PGA Tour, where he won over \$1.1 million in his rookie season without a victory and ranked 21st of 186 players (top 11%) in putting.

Travis Lethco (assistant club pro age 20): 1 lesson, 1 course record, personal best 63 within 2 months, then played Division II golf and finished 8th in the National Championship in his freshman season.

Ben Parker (18 year-old English National Team player, son of a teaching pro who also spent 3 months yearly at Hank Haney Ranch for three years): 2 lessons, 1 63-67 start the next month in the Junior Orange Bowl Invitational to win in a runaway, followed the next month by an opening 62 in the Tasmanian Open to win in a walk.

Chis Hanson (English 22 year old EPD Tour player): 1 lesson, 1 64 next day and 3rd on money list in rookie season on EPD Tour.

Shaun Micheel (PGA Tour top-10 ball-striker winless in 6 years and

162nd in putting in 2002 winning \$640,000): 1 lesson in May, won PGA Championship in July with putting 16th in the field to earn \$1.83 million for the year; also 2nd in 2006 PGA Championship at Medinah and 2nd in 2006 HSBC World Match Play, improving pre-lesson putting stats from career average pre-2004 of 152nd of 190 players (bottom 20%) to post-2003 putting of 81st of 190 players (top 57%), more than doubling his putting performance, and tripling his earnings from 2002 to 2003.

Jin Jeong (18 year-old amateur ranked 135th in Amateur World Ranking): 1 lesson, advanced in 3 months to number 1 Amateur in the World Rank with win at 2010 British Amateur 5-and-4 against favored Scots amateur playing in St Andrews followed the next month by T-14 in the British Open at St Andrews, eagling the 72nd hole on television from 40+ feet.

Nikki Garrett (22 year old Australian professional): 1 lesson by PZ Coach, back-to-back wins on LET Tour.

Amy Yang (18 year old Australian professional, winner of Australian Ladies Masters at age 16): 1 lesson by PZ Coach, 3 wins on LET Tour, including Sunday 62 (10 under) to win by 6 shots on field in Annika Sorenstam's last pro event in Stockholm; currently 12th on Money List on LPGA; one lesson on Monday at the 2012 Kraft Nabisco at Mission Hills CA transformed an average putts-per-round for the year from 31 to 19 putts in Round 1 and an average for the week of 25 putts, an LPGA record and tournament record, 14 putts fewer than her average in Round 1 and 6 strokes per round fewer on average for 4 days that event (24 fewer putts in 4 Rounds), 19 putts lower for the event than that week's field average and 16 putts lower than the average for the top-10 finishers.

Katja Damman (19 year old amateur): 4 lessons, won 5 of 11 events on male World Amateur Tour, and defeated 440 of 450 male raw scores in National Championship to earn NC Golfer of the Year award.

Chris Baker (24 year old mini-tour player): 1 lesson after 3 missed cuts on the eGolf Tour, 1 runner-up finish same week on eGolf Tour,

securing entry in Morocco's Challenge Tour, where he won, and then won \$100,000 for the season.

Steve Elkington (10-time PGA Tour winner including PGA Championship and 2-time winner of The Players' Championship): 3 lessons, nearly quadrupled Tour earnings from \$240,000 in 2009 to \$940,000 in 2010, increased cuts made from 11 of 23 (48%) in 2009 with only 3 top-25s to 14 of 19 (74%) in 2010 with 9 top-25s and 3 top-10s, including near win at 2010 PGA Championship; 2010 3rd on Tour for stroke average (69.82); Tour putting performance tripled from 2009's 122nd (63% below top) to 2010's 44th (23% from top).

Olivia Lansing (Drake University Golf Team Senior): 1 lesson prior to 2010 Spring season, 5 wins and 1 runner-up finish in final 6 events, including medalist at the Missouri Valley Conference Championship, and MVC Golfer of the Year; following her post-graduation season with the unprecedented winning of the Minnesota Amateur Grand Slam in the summer of 2010: consecutive wins in the the State Publinx Match Play, the State Publinx Stroke Play, the Minnesota Women's Golf Association Match Play, and the Minnesota Women's State Amateur; she also won the 2010 MGA Mixed-Team Championship.

Urbana MD High School Team: 1 lesson, 1 season winning 15 of 15 events and winning Maryland State 4-A Championship 1st time in school history followed by two more years as State 4A Champs (2009-2011), defeating and replacing Churchill team that had dominated State 4A with 8 titles in 14 years 1995-2008.

Shawn Hodge (38 year-old former mini-tour pro): 1 lesson, 1 64 within one week.

Megan McChrystal (19 year-old Sophomore on LSU Golf team): 1 lesson, 1 win within 1 month, followed by 4 more career wins, lowest score in NCAA Championship history (64, 9 birdies, 1 bogey), lowest career scoring average in LSU history by 2 full strokes below next best, and Senior season with #1 ranking in NCAA golf and 7 top-5s in 10 events including 2 wins and 2 runner-ups.

2010 US Amateur: 3 of 4 finalists were PuttingZone Students, and only 4 PuttingZone students entered the US Amateur: finalists Peter Uihlein (2010 Champ), David Chung (2-time runner up US Amateur), and Ben An (2009 US Amateur Champ); missed finals, Jin Jeong, 2010 British Amateur Champ.

Just sayin' ...