PLAYING YARDAGE
The Secret to Scoring

Total Distance to Pin: 100 yds
Roll Out (subtract) - 3 yds
Downwind (subtract) - 4 yds
Uphill (add) +2 yds
PLAYING YARDAGE = 95 yds

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Playing Yardage: The Secret to Scoring

One of the great secrets to scoring is understanding how to calculate true playing yardage.

The good news is that playing yardage is easy to learn and use on the course.

The bad news is that it is seldom taught.

Most players have to learn about playing yardage the hard way - paying attention to shot after shot over hundreds of rounds to observe distances, trends and tendencies. Even then it is mostly guess-work.

If you want to play better golf and consistently shoot lower scores it is critical to understand these two things:

1) how to calculate and use playing yardage, and
2) what your true carry yardage is for all your clubs.

When you know your playing yardage you'll make better strategic decisions and you'll have a lot more confidence in your shots. You will hit your approach shots closer to the hole.

We'll start with playing yardage.

What Is Playing Yardage?

Playing Yardage is not just how far it is to the pin.

It's not how far you hit a given club.

Here's playing yardage at its simplest: It's how far you intend to carry the ball.

But of course calculating your playing yardage is a bit more complicated than just carry distance.

In fact there's a formula you should be using. A formula you should use on every shot into the green and most other shots as well. A formula you should know so well that it comes as naturally as breathing.

Here is the Playing Yardage Formula:

Distance to pin
Less: Roll-out
Plus or minus Wind
Plus or minus Elevation
Plus or minus lie and stance
Equals Playing Yardage

The distance to the pin is the starting point. Then we take out roll-out. We make adjustments for wind, elevation and lie. Once we have done that, the number we are left with is how far we want the ball will travel in the air.

That distance, or net carry yardage, is your playing yardage.
So remember this:

**Playing Yardage is the net distance you will carry your shot.**

How far you "play" the shot is the distance you want to carry it. If you want to score better, hit more greens, have shorter putts, and avoid bunkers and hazards the key number you need to know is your **carry distance**.

**The Importance of Carry Distance**

All your shot decisions hinge on knowing how far you need to carry your shot:

- your shot strategy;
- your aiming target;
- your shot shape;
- your bail out; and
- your club selection.

Carry distance is the only number you want to keep in mind. Let roll-out take care of itself. Wind, elevation, stance and lie are just calculated modifiers.

Keep your focus on carry distance. Focus on that single number during your swing.

Moreover, you should be calculating the precise playing yardage you need to carry your shot.

To the yard.

Every time.

Particularly on your approach shots into the green.

**Playing Yardage Example**

Let's use the example from the graphic.

Your ball is sitting in the fairway 100 yards to the pin. Let's say that's a good pitching wedge distance for you.

You know your ball tends to roll out three yards with a wedge after it hits the green. We subtract roll-out from the pin distance leaving 97 yards to carry.

But there is a wind behind you that will help four yards. We subtract four yards for the helping wind, leaving a 93 yard carry.

But the green height is a couple of yards above the ball position. We have to add back two yards to allow for the
uphill shot, leaving the final carry distance of 95 yards. At 100 yards to the pin, less 3 yards for roll-out, less 4 yards for wind, plus 2 yards for elevation the net carry is 95 yards. That net 95 yards is our playing yardage. That is how far we want to hit the ball in the air.

Playing Yardage is a single number, to a specific target location. You should be doing these calculations for every approach shot. Every time.

When you swing you should have ONLY your intended carry yardage in your mind. Don’t give yourself wiggle room.

Your body responds with more precision, accuracy and consistency when it has a highly specific target. The more you hit to a specific number the more you train your swing to deliver results that are specific to the yard. It’s how you develop what the best players in the world call “feel.”

**Know Your Club Yardages**

Knowing how far you need to carry your shot is the first step. But it is just the first step in the equation.

The next step is where the magic happens.

The next step is determining how far you carry every club in your bag. Not how far you hit your clubs.

How far you **carry** them.

When calculate the exact carry yardage needed for the shot and put that together with precise knowledge of your carry distance with each club, suddenly hitting the ball a lot closer to the hole a lot more often becomes easier. The results are like magic.

**The Problem with Total Distance**

When we ask amateurs how far they "hit" a club the answer is almost always based on total distance - meaning carry distance plus roll-out (with roll-out being how far the ball rolls after it lands).

That's a mistake.

Total distance is **not** the number you should be using when you make your club selection.

The reason you don't want to use total distance is because roll-out is not consistent.

Roll-out changes from club to club: high-loft clubs roll out less than low lofted clubs. It changes from course to course depending on the firmness or softness of the greens. It changes from day to day on the same course depending on conditions: wet greens won't roll out as much as dry firm greens. It changes from hole to hole: high, exposed greens dry out and firm up more than low protected greens. It even changes on a single hole throughout the day: in the morning when greens are fresh off the nightly watering schedule they will roll out less than the same green later in the day after baking in the sun and wind.

*The only number that will be consistent over time is how far the ball travels in the air. It’s the only number you can consistently depend upon and control.*
The Solution to Club Distances: Club Charting

The key part of the carry distance puzzle is knowing your carry distance for every club in your bag.

We've established how you calculate playing yardage: it's the net distance of how far you want the ball to carry.

Now you need to know which club will reliably give you that carry yardage.

The Tour Pros call it "charting" your clubs.

When you put a precise playing yardage together with accurate data on how far you carry each of your clubs, you have synergy. You can pick the right club that will get the ball closer to the hole and you can score.

Your primary strategic club selection should be based on the club's carry distance. THEN you factor in roll-out, wind, elevation and lie. You need to first make sure you can get your ball over any bunkers or hazards and up on the green.

But just like with playing yardage, charting is not as simple as how far you hit a given club.

### YARDAGE CHART

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### How to Chart Your Clubs

Now we get into the nitty-gritty, because club charting is both tactical and strategic.

When you chart your clubs the goal is to determine a specific carry number for each of your clubs. Getting your club carry yardage is highly tactical because you'll use it on all your approach shots.

But if you are smart about the way you chart your clubs you'll also get plenty of data you'll use to help you make better course navigation and game management decisions. That's strategy.

That means you need to understand your "miss" tendencies.

When you know your maximum distance, your minimum distance, and your side-to-side lateral miss with each club, you'll know how to play smart.

Knowing your miss tendencies will help you determine strategy. It will tell you which club to select, which pins to go for, and when to play to the middle of the green.

Now here's the thing: it's practically impossible to chart your clubs by hand.

The truth is that the best way to get this info is by using radar. Radar is far more accurate, far more reliable, and far easier to use.

That's why we are so fortunate to have top of the line Flightscope radar systems. The founder of Flightscope-Henri Jonson - adapted radar technology from military applications and basically invented using radar for golf.
These Flightscope systems are quite advanced and loaded with features that make tracking shots and keeping stats easier.

A high-end Flightscope system can run you $10,000 to $12,000 though. If you prefer Trackman be prepared to spend $22,000.00 for one system. If you have the resources it will be worth the investment. Most of the PGA Tour pros have a high-end radar system, and it is now one of the most commonly used training and practice tools on the range. If you want to get your own Flightscope get in touch with me and I will arrange a discount for you.

There are simpler radar systems that will get the job done. The one we recommend you use is called the "Swing Caddie" system.

We've tested this system side-by-side with the Flightscope and it is accurate to within a yard. And for less than $300.00 it is considerably more affordable than the Flightscope or Trackman.

It doesn't measure side-to-side distances, and it doesn't keep a history of shots, so you'll have to do those calculations on your own. But it is well worth knowing the exact carry yardage on all your shots.

Let's go into club yardage charting in more detail. You'll see why having the accuracy of a radar system will help. The best way to understand yardage charting is with an example.
Yardage Charting: Dispersal Patterns

When we create a yardage chart we have the player hit a set of 10 shots with each club. Our radar tracks each shot and plots where they land. That gives us carry distance.

But we also plot where each ball lands. And since we know exactly where the target line is we can see where each ball lands relative to the target.

The result is what called a dispersion chart. It shows the pattern of all shots and their landing spot relative to a target.

It also shows us the maximum distance, the minimum distance, and the side-to-side lateral miss tendency.

The graphic is an example of a dispersion chart for an average amateur. The flag in the middle shows the target, while the concentric circles are five yards wide. Each ball represents where a shot landed relative to the target.

Don't be deceived by the chart’s relative simplicity.

There's a wealth of information in plotting a dispersion chart. Understanding how to use it will have an immediate and positive impact on your game.

Let's take a more detailed look at the amateur wedge dispersal pattern to see how you can apply the lessons from the chart.
How Far Do You TYPICALLY Hit It?

Let's add a little intelligence to the chart by drawing a blue oval around the entire golf ball grouping, with the target set at 100 yards.

Now we can see that this player's maximum distance is 115 yards. Their minimum is 85 yards. If we add up all the long shots and all the short shots we'd find that on average this wedge shot carries 100 yards.

If this were your chart we'd ask you to plan your shots with this wedge to carry 100 yards, because that would be your average carry distance.

**IF** you start using your average distance as your carry distance when you play a whole host of good things will happen:

- You will, as a rule, hit it closer to the pin
- You'll have shorter putts
- You'll make more putts
- You'll hit more greens
- You'll avoid more trouble
- Your swing will stabilize to a Stock Swing
- Having a Stock swing will improve your consistency and accuracy

We're fortunate because we have several high-end Flightscope radar systems that do all this plotting and calculating for us. There really is no other way to learn your carry distance and tendencies. And in truth almost any radar system will work. That's one of the reasons we believe radar is the future of instruction and training. That's also why we developed the Radar Training Program. Radar eliminates the guesswork.
How Far Do You Hit It ... Really?

The problem is that when we ask most golfers how far they hit a club they typically give their maximum distance. In the example given that would be 115 yards.

Here's the rub: they CAN hit it 115 yards.

But that's the ideal, perfect shot. And they only hit their ideal perfect shot about 20% of the time.

It's equally true that they hit it just 85 yards 20% of the time - just as often as they hit their ideal shot.

**Wedge Dispersion Pattern**

Playing this wedge as if it were a 115 yard club would be a mistake - one that will cost you strokes. Yes, you'll hit a couple of shots near the pin. But 80% of your shots will be short, and 20% to 30% of them will miss the green entirely. It's tough to score when you are chipping for birdies and pars.

Maximum distance is NOT your playing distance. Neither is the minimum distance.

**Your Playing Distance should be the average carry distance for that club.**

In the example featured the shots are arranged to average out at 100 yards. When we use radar we'll be able to tell you your carry distance to the yard.
We don't want you to play to your maximum distance, because there are several more issues that crop up when you're always hitting to your max:

- An inconsistent swing; and
- No reserve left in the tank.

**The Problems with No Reserve**

One of the problems with always playing to your maximum distance is that you have no "reserve" left in the tank. In other words, if 115 is your maximum distance you won't be able to hit your wedge 116 or 117 yards if you need to.

Since you'll seldom be at your exact carry yardage on the course, you need a baseline carry yardage that will allow you to put a little extra on the shot when you need it. That's part of the essence of feel. That's one of the reasons we use your average carry distance for your yardage chart. You need to play to a carry yardage that you know has a few extra yards in it.

The other problem with playing to your max distance is that subconsciously you'll know that you have to hit the shot perfectly to get it there. *And you'll know that's not going to happen.*

You will subconsciously know that you're only going to get it there 2 out of 10 times. When that's the case it's almost impossible to resist giving the shot a little extra, just to make sure you get it there. That "little extra" insurance takes you over your 100% swing maximum - way out of your comfort zone - and leads to inconsistent contact and poor accuracy. A self-fulfilling downward spiral.

**Solution: The Stock Swing**

One of the more important findings that emerged from our earlier Radar For Teaching Study was the idea of a "stock" swing. Here's where it came from.

All of the players in our first Study over-estimated their carry distance by 8 to 18 yards. *Ouch!*

Once we looked into how they were coming up with their yardages the overstatement was no surprise. They were giving us their max distance, including roll-out.

But what that meant in the real world was that they were missing a lot of greens, and they had a lot of long putts.

Once they got past the ego-crushing facts of reality and started playing to their average carry distance they hit more greens and their scores came down.

Their experience and feedback is what led to the Playing Yardage Study. After all, if we can help the average golfer take three to eight strokes off their scores - without changing their swing - just by knowing how far you carry your clubs - that's significant.

*But in the first Study it was more than just knowing a new carry distance.*

Here's what happened.

We had the players hit an initial 10-ball set. From that first set we determined their "average" carry based on radar measurement. Flightscope systems keep a record of every shot, which allows us to compare results shot-by-shot or set-by set.
In subsequent 10-ball sets we gave them a specific target carry distance based on the average from the first set. Their objective for the second and third 10-ball sets was to hit the specified carry distance.

In other words, if their first set showed a dispersal pattern like the example, with a max of 115, a min of 85, and average of 100, we gave them 100 yards as the target distance for the second set.

A number of really good things happened in the second and subsequent sets.

First they were no longer trying to hit the ball as far as they could.

It's a natural tendency when you first get on radar to try to bust every shot. Go for max distance. See how far you can hit it. Once you get a max number in your mind and bring it to the golf course you're going to have some disaster shots. Guaranteed.

Hitting every club as far as possible is not the point.

If you have an iron in your hand it's all about accuracy - both distance control and directional accuracy. Trying to hit it as far as you can leads to wildness, inconsistent contact, no distance control, and no accuracy.

Once we gave the Study players a specific number to hit - a number that was less than their max distance - their swings settled down. The shots were more consistent and the groupings got tighter. We hope you'll notice the same thing with your swing.

Second, the players found the magic 80% swing.

You've no doubt heard that that you should never swing at 100%. That your best shots will come when you swing at 80%.

But what the heck is an 80% swing?

Fortunately we can actually measure swing speed with our Flightscope radars. And it turns out that the magic 80% swing isn't really 80%.

It's 95%.

And that makes a lot of sense.

If a golfer has a swing speed of 100 mph they aren't going to feel comfortable swinging at 80 mph. It wouldn't feel like they were hitting the ball anywhere.

But 95% is do-able.

That's a number golfers can get comfortable with hitting, because it is still hitting the ball pretty close to the yardage they would normally be getting. But it leaves a little in the tank if they need it. Without getting over the 100% mark that leads to wildness and inconsistency.

We actually went into the database of all shots and measured the swing speed from the initial baseline sets and compared it to their swing speed hitting to a target distance. The actual average swing speed varied from 92% to 97%, with the average right at 95%.

Once the players started hitting to their average carry yardage they all felt the shift. They all recognized that their swing had stabilized and become much more repeatable at that 95% level.

When we went back after the study and analyzed the data, it turned out that taking 5% off their swing led to much more consistent results. The magic 80% swing is actually a 95% swing.
They called it their "stock" swing.

What they meant was that they all felt they had developed a swing that was normal, comfortable, and repeatable. A swing that wasn't a stretch, nor was it backing off too much. They weren't trying to pound the ball. They were just making nice swings and taking a little bit off. 5% to be precise.

If you can live with taking just 5% off your top velocity and learning to play to your average carry distance, we can promise some very nice things will happen to your game.
Understanding Your 'Miss' Tendencies

There's more we can learn from the plot chart. Let's discuss how to account for your "miss" tendencies.

Note that the shape of the blue oval is predominantly vertical. The vertical shape tells us that this golfer's primary challenge is controlling distance.

**Distance Control:** There is a 30-yard difference between the maximum distance at 115 yards and the minimum distance at 85 yards. Compare that to only about an 8-yard difference in lateral distance (side-to-side, or directional accuracy). The issue is distance control, or as you'll sometimes hear on TV - controlling trajectory. Pretty much the same thing.

Given that most greens are 6,000 square feet, or about 30 X 30 yards, these shots would find the green. But at least four of the putts would be longer than 40 feet. That's three-putt territory, and that's going to cost you some strokes.

In this example there's no clear 'distance' miss. This player is just as likely to hit it long as he is to hit it short. As a rule, though, it is not unusual for a 'long' miss to go left and for a 'short' miss to go right. Useful facts to keep in mind when deciding your shot strategy and evaluating your ability to recover from various miss locations as they relate to the pin placement.

When we work with players in our Radar Training program we find that the most common causes of distance misses boil down to either contact issues, variances in swing speed, or variances in attack angle.
The Side-to-Side Miss

**Lateral Accuracy Control**: One other grouping gives us another key 'miss' tendency - the lateral miss.

Note the smaller green oval on the example chart. It encircles a grouping of balls to the right of the target. On average these balls are five yards to the right of the target. Of the ten balls hit in this set, eight are to the right of the target.

Most players have a tendency to miss on one side of the pin or another. This lateral miss tendency may be caused by alignment, swing path, or club face angle.

The key point is to know your lateral miss tendencies. With every club. That way you can pick a target aiming spot that allow for your miss tendency, and will give you the best chance of getting your ball close to the hole.
The Pro Miss

By way of contrast let's take a brief look at the plotting chart for a pro.

In this example the yardage is the same - a 100-yard target.

But note the tighter grouping.

Less than four yards separates the longest from the shortest ball. Even the lateral dispersion is no more than 8 yards. The average distance is 101 yards.

On the other hand the shape of the oval - horizontal - clearly shows that the primary challenge for this golfer is directional accuracy.

Furthermore, seven of the ten shots are to the left of the target, with a left-miss midpoint of about six yards.
How to Factor 'Miss' Tendencies
When you know your miss tendencies you should account for them when you pick your final aiming target.
In the Pro’s case, for example, if the shot happens to call for a 101-yard carry, all he has to do is pick an aiming target six yards to the right and make his stock swing.
In the Amateur's case, his miss is five yards to the right. If his shot calls for a 100-yard carry, all he has to do is pick an aiming target five yards to the left.
Both players will more than likely 'miss' it right next to the hole.

How to Avoid Trouble
Sometimes scoring well on the golf course is as much about staying out of trouble as it is making good golf shots.
Let's revisit the Amateur dispersion chart again and apply the miss tendency to an on-course scenario.
Using a different set of ovals to evaluate miss tendencies we see that 40% of the shots are below the hole by five to 15 yards and to the right. In contrast, 30% of the shots are above the hole and to the left.
If we compare these miss tendencies to a scenario you might find on the golf course you can see the immediate application to shot strategy.
In this case the ball is 100 yards from the pin.
You might think "Aha! 100-yards is the perfect carry distance for my wedge."
But the pin is only four yards on the green. The lip of the trap is 96 yards to carry.
You know from your miss tendency that 40% of your shots will wind up more than five yards short of the pin.
If we put an overlay of the shot chart on the green you see that four of the balls wind up in the bunker.

In this example it may be a better strategy to take one more club, choke up an inch, make a three-quarter swing and be sure to get the ball on the green.
The trouble in front of the green is much more severely penalizing than going a little long or over the green.

Our hope is that as you develop a 'stock' swing at 95% you'll see an improvement in your miss tendencies and the most common causes. We also believe your dispersal patterns will tighten with a stock swing.

**Calculating the Effects of Wind and Elevation Change**

A couple more notes on adjusting for wind and elevations changes. These are rules of thumb, so some experimenting on your part is in order.

**Wind:** Have you ever seen a player pluck a small tuft of grass and toss it in the air? Not only will this tell you the wind direction, but if you toss the grass about 8 feet in the air and watch how many feet it travels you can also gauge the effect of the wind. It's about a yard per foot. If your grass travels six feet away from the pin, you're hitting into about a 6-yard wind. Adjust your carry target accordingly.

**Elevation:** With radar we can not only measure your launch trajectory but your descent trajectory as well. What we've learned from descent trajectory is that it usually averages somewhere between 38° degrees and 58° degrees. Lower for the driver and long irons, and steeper for higher lofted clubs. On average, though, a 45° degree angle is a pretty safe bet.

That's important only because a 45° degree descent angle means that for every yard the ball moves forward it loses a yard in elevation.

That makes calculating the effect of an elevation change pretty straightforward: about 1-to-1. For every yard the target is above the ball it will carry one yard shorter than normal. The same is true for targets below your elevation. If you are hitting to a 100-yard pin, but the pin is eight yards higher than the ball, you'd need to add 8 yards, making your total target carry yardage 108 yards. If the pin were eight yards below you, your target carry distance would be 92 yards.

**Calculating Roll-Out**

If you aren't doing this already, start paying attention to where your ball ends up relative to the pitch mark it makes every time you hit a green. It's the only sure way to learn your roll-out distances.

You need to do this for every club, because the roll-out will be different. Longer for lower irons and shorter for lofted clubs and wedges.

You'll also need to factor in the conditions of the greens. Wet greens won't roll out much, while firm or sandy greens may roll out quite a bit.
As a rule of thumb it's not a bad idea to use 2 to 3 yards for wedges, 3 to 4 yards for short irons, 4 to 5 yards for mid irons, and 5 to 6 yards for long irons.

A lot depends on the conditions, how you strike the ball, how much spin you put on the ball, and your trajectory or launch angles.

**SUMMARY**

We hope this primer on carry yardage has been informative and straightforward to understand. Comments and feedback are welcome and appreciated.

You can learn more about additional resources and training programs here: