

TK's Accuracy Seminar

Understanding the Target moving 'up' or 'down'

This concept has been explained over and over again – and you probably have heard it already.

As you descend under parachute – the horizon appears to be rising in your field of view. Since you can never reach the horizon, you can assume that objects rising in your field of view are unreachable – you are undershooting them.

If you look down, as you fly over objects on the ground, they appear to

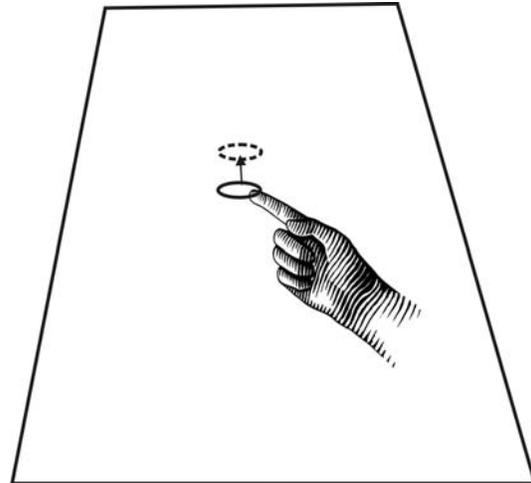


Figure 1. Target Appears to move up

move down relative to your field of view. You are overshooting those objects, so you can also assume that an object moving down in your field of view means you are overshooting it.

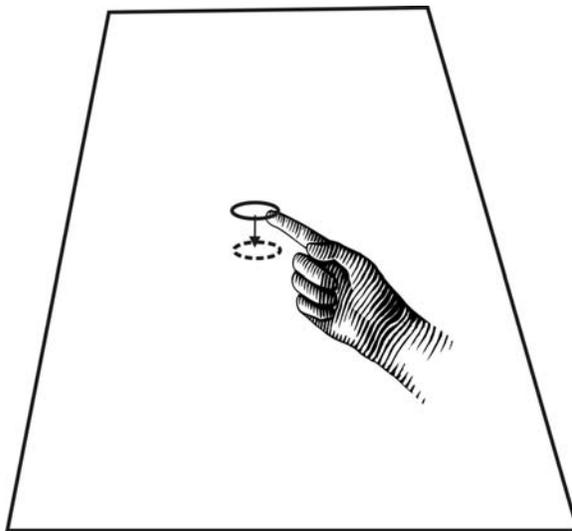


Figure 2. Target appears to move down

It can help if you use your finger, extended at arms length, held against a distant object, close one eye, and then watch the movement of the object relative to your fingertip.

If the object is rising relative to your finger, then you are undershooting it. Figure 1.

If the object is falling relative to your finger, then you are overshooting it. Figure 2.

It is far easier to see overshooting than undershooting. Distant objects hardly appear to move at all, (smaller slight movement), while objects

closer to you (overshooting) is more obvious since the objects are closer to you.

Somewhere in the middle of the picture is a spot that is not moving at all. If the winds stay the same and you never change direction of your parachute, then that is where you will likely land.

However, this is not exactly where you *WANT* to land. The purpose of the seminar is to make your *INTENDED* target to be this 'non-moving spot'

The Safety Side of the Accuracy Trick – making back to the DZ

One of the neatest things about this concept is that it works at any altitude, distance, wind speed and/or under any parachute. We have all opened our parachutes a long way from the dropzone, looked back at the DZ and wondered if we can actually make it home.

So as soon as you open, check your parachute and start heading back to the landing area, look at where you want to land (the finger trick works).

If you see the landing area moving down in your field of view, then it means you are overshooting it. i.e. you can make it home. (Barring any radical changes in wind or your flight path, like spirals etc.)

If you see the landing area rising, then you are undershooting it. i.e. You cannot make it home.

Can you improve the situation if you are undershooting from a long spot?

YES, most definitely. Almost all parachutes these days (Zero-P and 9 cells) will float or carry further, if you either put some brakes on or use rear risers to add some lift.

Large parachutes (students and such) are difficult to rear-riser due to the size and strength it takes to do so. A slight application of brakes (ear or shoulder level) will improve the glide ration, sacrificing only a small bit of forward speed. This is a *general rule* for parachutes, any may vary depending on the parachute.

Excerpt from the Performance Designs Website – Spectre Canopy Flight Characteristics:

“Many canopies being used today, including the Spectre, actually glide farther or “float” when flown in brakes, although the Spectre is not quite as “floaty” in brakes as canopies such as the Sabre2 and Stiletto.”

The best way to find out the best flying configuration for any given parachute is to talk to the manufacturer of the parachute. They have done hundreds and thousands of test jumps and can best offer the right information. Most publish the Flight Characteristics of the canopies, which offer great information and should be studied.

Back to solving the real problem of getting home to the DZ. If you are undershooting your landing area, then try some brakes. If you can then see the dropzone 'moving down' in the field of view, then you have much improved your situation, and staying in brakes for a period of time should help you to make it home.

Why? Because it is simply smarter to land in the normal landing area if you can. Landing off the DZ simply introduces more obstacles, unknown landing areas, and therefore higher risk, etc.

If you have applied brakes and you are still sinking relative to the dropzone, then OK, you need to make a decision to land somewhere other than the dropzone, but closer to you. This is an OK decision too. The point being that you can make this decision within 15-20 seconds of opening your parachute, giving you more time and opportunity to choose an 'out' landing area.

In conclusion, the accuracy trick should be used every jump, as soon as you open, verifying your position relative to the DZ, deciding immediately if you can make it back or not, and then making the decision to land out if needed, maximizing your time to pick the landing spot and set up for a good safe approach.

Teaching & Learning 'Real Accuracy' using this technique.

The objective of this learning process is to make better decisions on the downwind and downwind/base leg of your canopy flight:

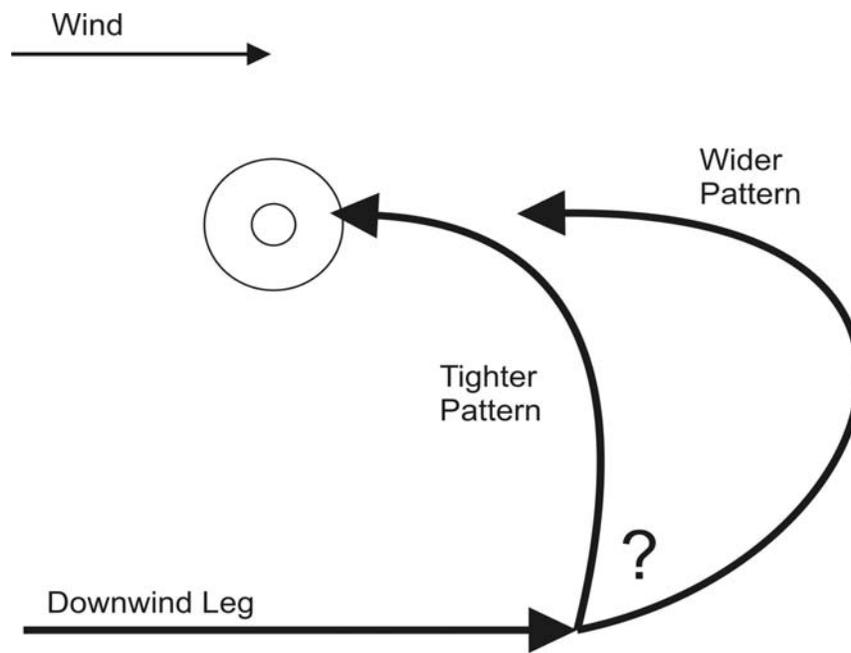


Figure 3. Decision Time - a Wider or Tighter Pattern to final?

Figure 3 shows a good example of a typical downwind-base-to-final approach. I hope, with these techniques to help you a better decision on your pattern based on your altitude, winds, but mostly based on *WHICH WAY* the intended target is moving relative to your field of view.

Exercise 1 – Watch obstacles on the ground

During any point of your canopy flight, you can simply pick obstacles on the ground in front (or off to the side) of you and watch them for up or down movement. A building, a barn, a hangar or a tree. Watch objects closer and further away. Use the fingertip if you need to and watch each obstacle for a few seconds to see the movement.

Again, further objects have less and smaller movement than closer objects. The purpose of the exercise is repetition to train your eye. Do this every skydive during your flight home.

An object need not be right in front of you to see this movement. Look at things that off to the side of your flight path. Do you see them moving down?

Exercise 2 – Practice solo jumps with a final approach at 2500+’

Normally we fly to a holding area (upwind of target), then enter a base leg to a final approach point (200-300’).

A good exercise is to open and check your canopy, then immediately fly to the final approach point, and set up for a final approach, but say at 2500’.

You will, of course, overshoot. But again, the purpose here is to train your eye to see the downward movement of the target as you overshoot it.

Line up on the wind line as best you can, and the moment you recognize and see the target moving down, do a figure 8 or S-turn and come back to the final approach point again, stop and watch the target. Again it will be moving down, and repeat the S-turn again.

The purpose here is that you can practice your final

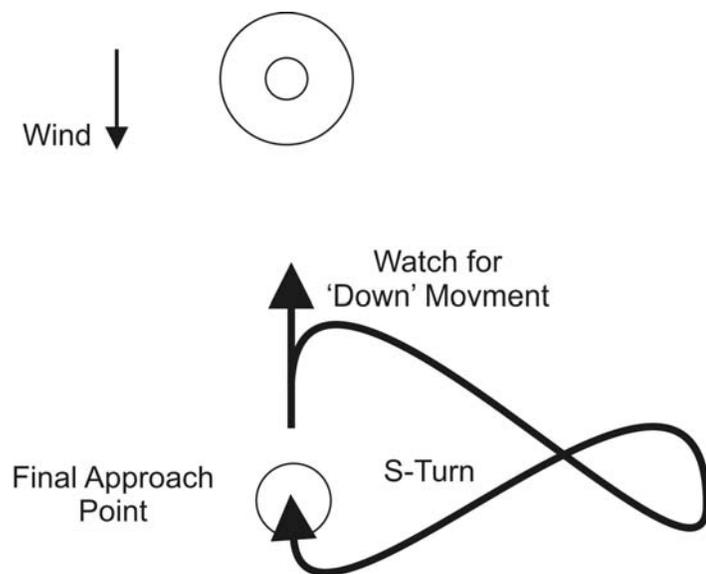


Figure 4. S-Turn Practice on 'Simulated Final'

approach 3-5 times on each jump, rather than just once. Set up at 2500', then 2000' then 1500', etc. until you are at an altitude where you feel you need to stop turning and fly straight in to final landing.

We are not asking you to do anything here that makes you uncomfortable, like low turns. Depending on your experience level, this could be 500' or even 50' when you stop the exercise. Fly and land normally.

I expect that you will already be closer to the target than you ever have been before – since this is the first time you really focused on the target itself and it's movement.

As well, each time you saw yourself overshooting (downward movement of the target), you did an S-turn to burn off altitude.

Most people need to do this exercise for 2-5 jumps to really have their eye trained, meaning you did 6-15 approaches total).

NOTE: This is not considered to be an acceptable way to fly your parachute 'normally' in the landing pattern with other canopies in the air. This exercise is only for the purposes of training your eye further to see the target movement.

Exercise 3 – Recognizing the transition on Base Leg

As I said earlier, the up/down movement occurs whether you are flying directly at the target, or flying away from it, or along side of it.

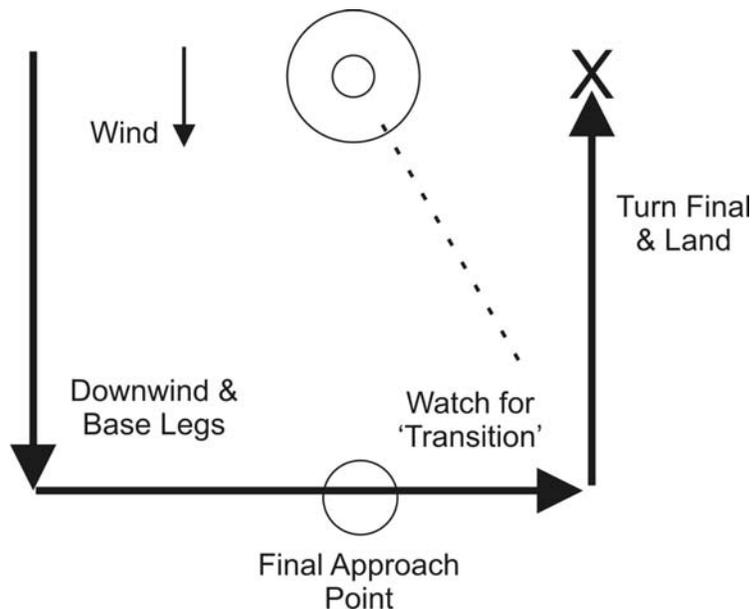


Figure 5. Learning the 'Transition' on Base Leg

During this exercise, fly a normal landing pattern, then turn your downwind to base leg, and then watch the target. It should be moving down relative to you (overshooting), continue to fly the base leg, but watch the target. Eventually, you will be flying away from the target, which also means that eventually the target will begin to 'move up' in your field of view (undershooting).

In order for the target to go from moving down to moving up again, it had to go through 'zero' or the point of no movement. The whole point of this exercise is to train your eye to see the transition from overshooting to undershooting.

When you see the transition of the target moving up, then simply do a turn to final and land. Ensure that you have 'outs' when you do the final turns since you may not be in line with the target when you turn.

What you will find is that you are pretty much landing in line with the intended target

Again, for this exercise, no radical turns, nothing too low or stupid, we are not trying to scare you, just get you to recognize the transition from downward to upward movement of the target.

Exercise 4 – Go for the Target

The final step is to simply go for the target when you see the transition from 'target moving down' to 'target moving up'

Diagrams of landing patterns showing nice 90 degree turns from downwind to base to final are nice, but the fact is that we do not fly our parachutes like that. We fly with much smoother curves and turns throughout the pattern.

If you are on the downwind leg, watching the target, and you see the target suddenly move up and away from you, then you need to 'cut the corner' and close the distance between you and the target .

Figure 6 shows a good example of that.

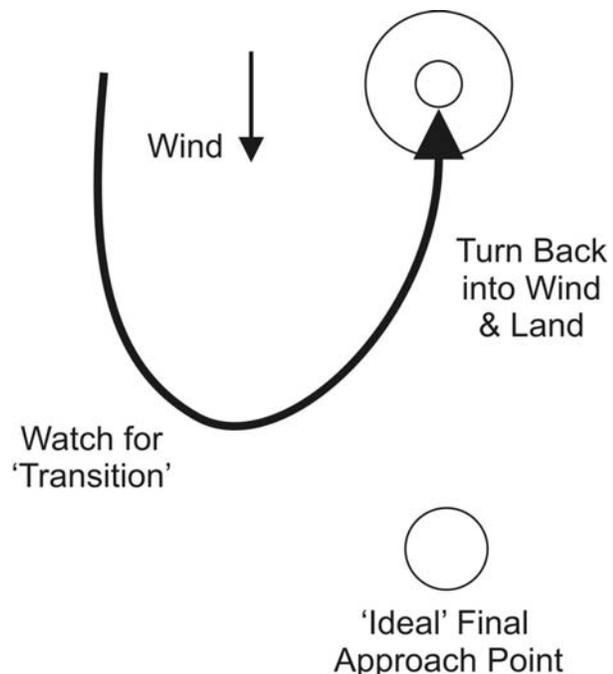


Figure 6. Example of 'Tight' base-to-final

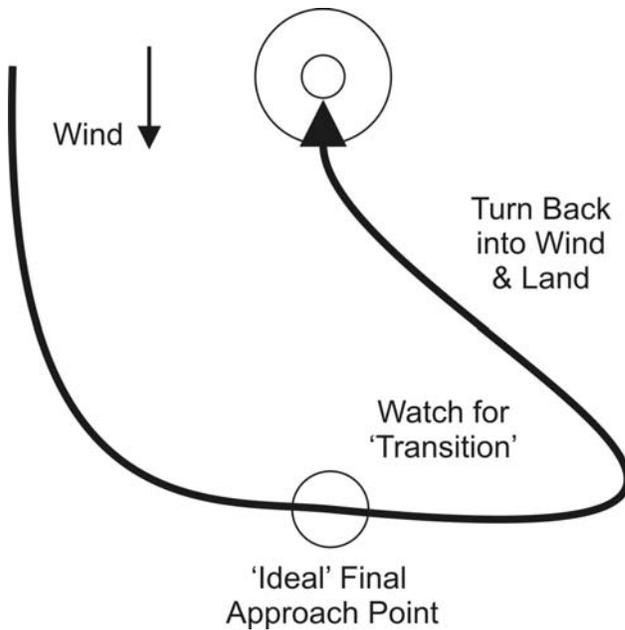


Figure 7. Example of a 'Wide' base-to-final

If you are already on your base leg, and you reach what you think is the 'Ideal Final Approach Point', but the target is still moving down, then continue to fly a little further, or fly a wider pattern until you again see the transition.

You can then turn more than 90 degrees, come back to the target, correct into the wind and land.

What you will find, over time, is that the target will become the spot that 'never moves', especially during the downwind to base leg of your flight.

You will simply automatically adjust your flight path by paying attention to the movement of the target.

Target is moving up and away? Move closer to it.

Target is moving down and under? Move farther away from it.

With practice, you will get to the objective described in Figure 3 – making a better decision on downwind-base leg of needing a wider, or tighter pattern to still land on the target.

Common Mistake

Overshooting on Final – Students, low-time jumpers, and for that matter, a large number of experienced jumpers tend to overshoot their targets anyway.

The mistake they often make is to put brakes on to slow down, thinking they will land shorter.

We already discussed in the section about "Making it back to the DZ" that adding brakes makes you go further by adding lift.

I cannot stress enough that if you are overshooting, then you have to ***INCREASE THE DISTANCE*** between you and that target. And you can only accomplish that by making a turn, even slightly, away from the target.

Yes, some parachutes are designed to 'sink' in deep brakes, but these are advanced topics using specialized parachutes like the Parafoil, Accutron and several other accuracy canopies.

For most skydivers, jumping 9-cell Zero-P canopies, moving away from the target is the simplest maneuver. If you have any moderate wind, that can be as simple as a slight sideways turn, allowing the wind to push you further from the target, until you see the 'transition' again and turn back on target.

Land any Parachute, Anywhere, Anytime

Throughout the exercises, we have never once talked about what size of parachute we are jumping or wing loading. Nor have we talked about wind speed.

That is because these issues do not enter into it. Whether the winds are high or light, large or small parachutes, the technique is the same. The spot that is "not moving" is still the spot you will land on.

What you will find is that larger parachutes on high wind days will cause the target to "move up" more quickly when you are on downwind to base leg, therefore you will have to stay closer to the target to keep it from moving.

And if you jump some hot-rod high performance parachute, you will find, on your base leg, that you are still overshooting, so you have to move further away, probably further than usual. But the target will eventually begin to "move up" and then you turn to final.

For advanced canopy pilots, you will also find that high performance hook-turns may still cause you to overshoot the target, generally due to the increased lift and glide generated by the parachute at high rates of speed.

So you may build in a small time delay to adjust for that before you turn to final. i.e. the target begins to move up, wait 1 second....2 seconds.....then hook-it, swoop down and level out short of the target, but gliding over it.

Bottom line is that if you use this technique, train your eyes to see the movement, your hands will begin to automatically adjust using the toggles to keep your position relative to the target.

"Land any parachute, anywhere, anytime"

David TK Hayes

USPA AFF-I, IAD-I, TAND-I, PRO, S&TA

CSPA PFF, IAD, Tandem, Rigger, Coach II

6800 jumps, 6 dead centers in Canadian and US Accuracy nationals using a Sabre 170 loaded at 1.5lbs/ft²