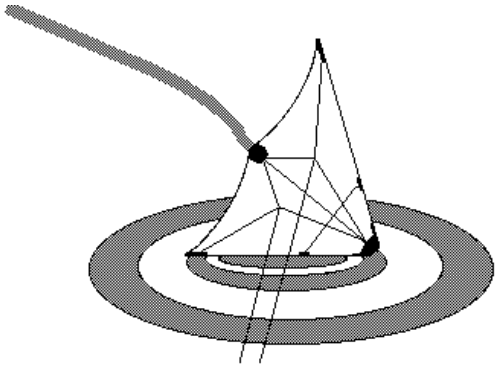
CHAPTER SIX:

ADVANCED FLYING



You've "earned your wings" as a stunt kite pilot. You can launch, fly, and land under reasonably good control. You can tune your kite for varying conditions. And you've definitely progressed past the "Oh, #$%&*!!!" stage and on to the enjoyment and thrill of the stunting experience.

If you're interested in stunt kites as casual recreation, and it's enough to be able to cruise around the sky and play, you can stop reading now. Our experience, however, is that you'll eventually be bitten by the "high performance bug", and will want to know how to go faster, higher, longer, bigger, stronger, and so on.

So let's move on to the good stuff!

FLIGHT CONTROL

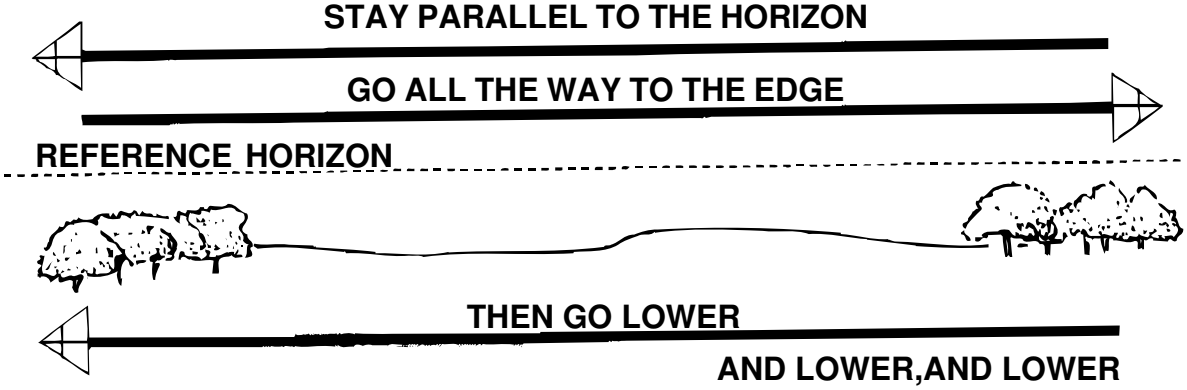
As we just now hinted, there are two ways to fly. There's playing, and then there's practicing. When you're playing, you're just flying. You will tend to stay within your limits as you've already established them, and won't generally try new things. Playing is good for the soul. It takes your mind off whatever might be bothering you, and lets you have some time to....well.....play!

Practicing, on the other hand, requires concentration. When you practice, you're concerned with developing your skills. So you'll try new things, and try to do old things better. You'll extend your limits so that the next time you play, you'll be able to play better.

And, of course, there's no reason why playing and practicing can't be mixed into the same flight. Practice awhile, and play awhile.

When you did your first Horizontal Eight, that was practicing. Your first Hovers and turns out of Hovers were practice. Here are some more things to practice.

HORIZONTAL PASSES — Flying almost straight and almost level is easy. Flying "straight and level" is not as easy. It requires concentration and finesse.
First, establish a "reference horizon" for yourself. This is nothing more than an imaginary



line in the sky parallel to the actual horizon. In the figure above, we've used the treetops as markers. Now fly straight as a ruler along, or parallel to, your horizon. You'll probably find that your first attempts have a decidedly "snakelike" look to them.

The secret is: HOLD CONSTANT CONTROL. DON'T STEER ONCE YOU HAVE ESTABLISHED THE LINE. Concentrate on your hands and on what your hands are feeling as the kite flies across. You'll feel the increase and decrease in line tension as the kite flies through variations in the wind. Your hands may move forward and back in response to these. But don't steer. You can even press your forearms together to make sure your hands move forward and back exactly together.

Once you have the idea, try it all the way out to a Hover, then all the way back across to another Hover. Then try it lower. Then try it lower. Then try it LOWER. The goal for this practice exercise is to be able to fly all the way across at an altitude of one foot or less.

STRAIGHT FLIGHT — Now draw straight lines across the sky in every direction. Use just as much concentration and finesse as you did flying six inches from the ground, and make the lines just as straight. As you can already see, the secret to beautiful maneuvers -- to maneuvers that look like you planned them and then did exactly what you planned -- is concentration.

THROTTLE CONTROL — In general, pulling back and pushing forward act like throttle by adding or subtracting power. Controlling throttle is an important part of beauty and grace in flight. And the good news is that you've already had some practice with throttle control, perhaps without realizing it!

Remember that steering and throttle are two separate things. STEERING MEANS CHANGING THE RELATIVE TENSION ON THE TWO LINES, WHILE THROTTLE MEANS CHANGING THE TENSION ON BOTH LINES TOGETHER. Often, however, you'll use steering and throttle together. Here are the terms we'll use for the various movements:

TURN - Just like we've been practicing. Pull left to turn left; pull right to turn right.

PUSH TURN - Remember turning "under" from a Hover? You "pushed" left to turn right. That's a Push Turn. A Push Turn slows the kite down through the turn. It also makes the turn tighter than would otherwise be possible, and makes it easier to stop the turn precisely.

PULL TURN - Turning "up" from a hover, you pulled back (and perhaps stepped back) as well as turned. That's a Pull Turn. A Pull Turn accelerates the kite. It also widens the turn.

PULL.....STOP - Step back, then stop. Use a Pull Stop to add power and speed just like in a Pull Turn. You pull when doing a Self-Launch.

PUSH.....STOP - Walk forward, then stop. Remember the Better Normal Landing? You walked forward until the kite flew down into the Boundary Layer, then stopped.

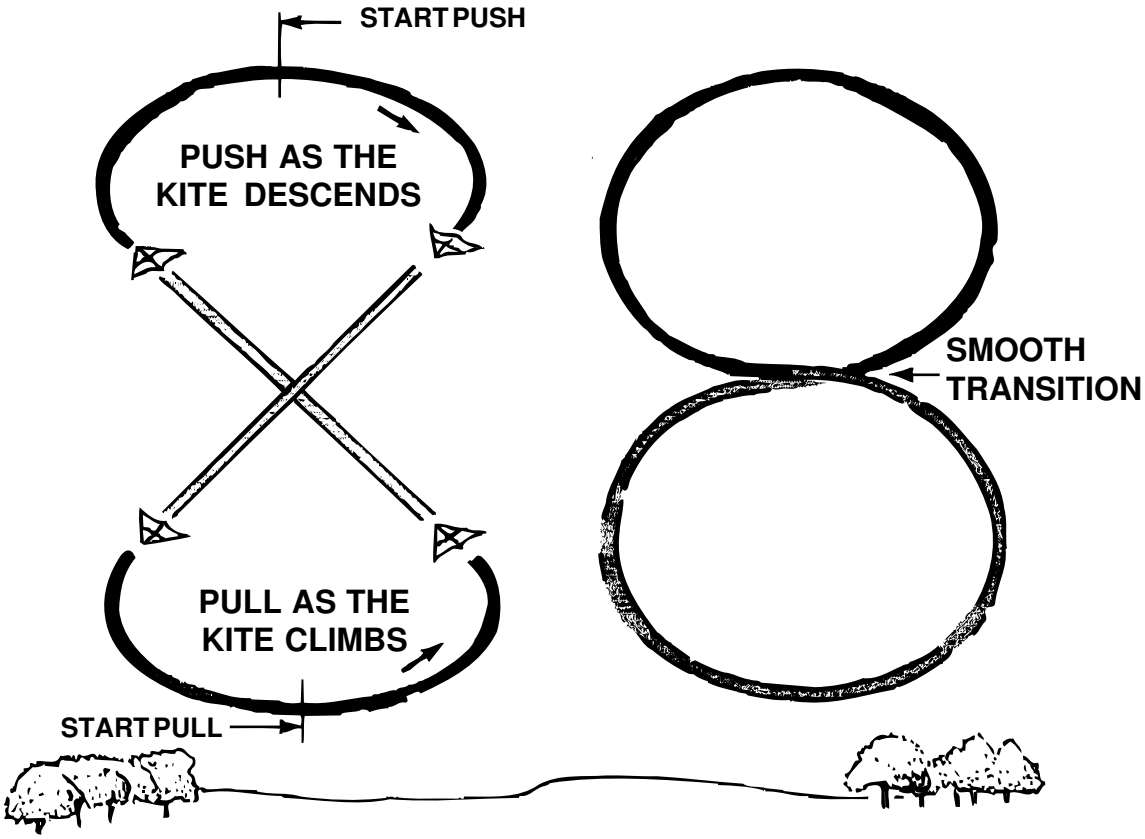
Usually when you use throttle, you'll Pull when the kite is climbing and Push when it is descending. You'll see specific examples next.

MANEUVER PRACTICE

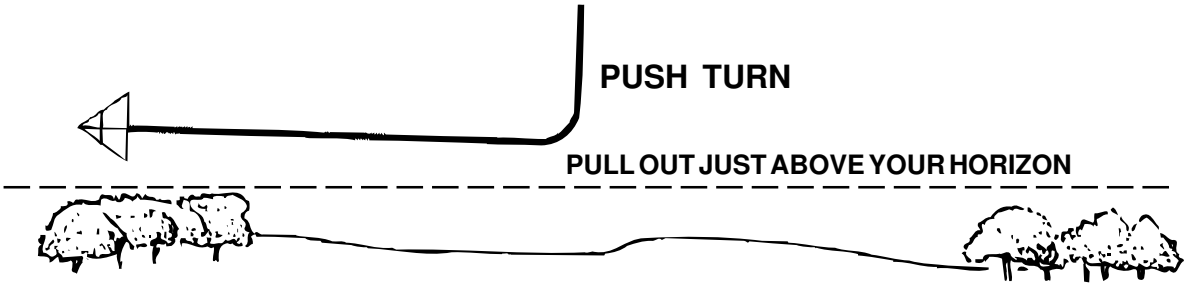
VERTICAL EIGHTS — If you fly a Vertical Eight by just doing Turn Left, Turn Right

> *If you have ever wondered how an experienced flyer seems to effortlessly knock out maneuvers with unbelievable ninety-degree turns -- while you're still struggling to not oversteer or draw a good straight line -- it's the push and punch technique that's the secret. If this isn't an integral part of your flying repertoire, it should be. Your flying skills will make quantum leaps forward once you come to grips with the push turn.*

like you did Horizontal Eights, you'll get a "pear shaped" maneuver, bigger on the bottom than on the top. The reason is that the kite flies slower at the top, so the same control produces a sharper turn. A subtle Pull and Push will smooth the maneuver out nicely. Remember the value of finesse.
Everything will work about the same for a **ROUND VERTICAL EIGHT** except that you need to watch the transition between Left Turn and Right Turn. Don't "snap" from left to right. Instead, fly the kite smoothly "through" the transition.



Notice that these maneuvers don't have "entry" and "exit" points marked. Make your own, and vary them. Enter from the top or the bottom of the middle. Exit everywhere. Make up your own combinations.
"L's" and SQUARES — A good sharp ninety degree corner is a real crowd pleaser. Begin practice with your horizon well above the ground. Fly straight down, Push Turn, and then fly straight horizontally.



Practice until you can turn just above your horizon. Pushing the dive will slow it down and heighten the suspense, as well as making it easier to turn at the bottom. Practice turning both ways at the bottom. Then put your horizon at ground level and find out if you <u>really</u> got it right!

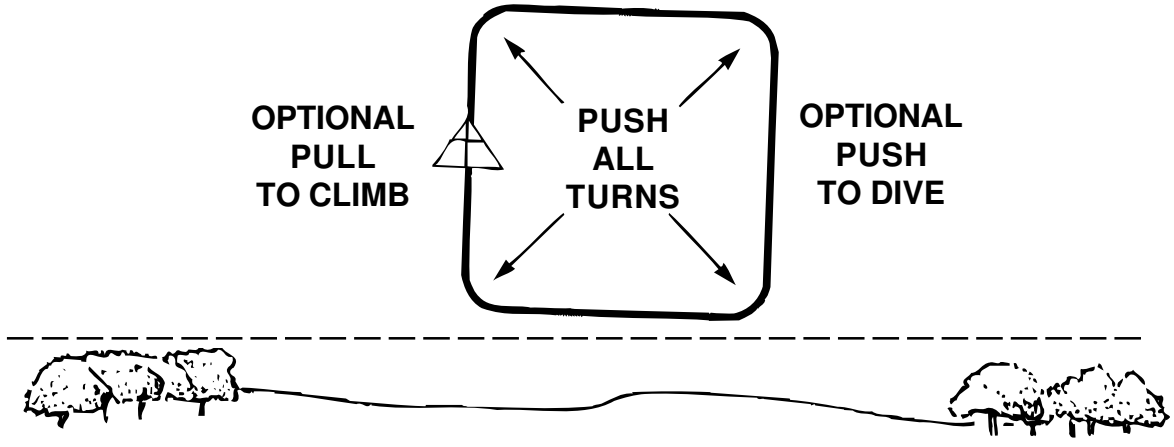
This Push Turn is your first **"Angle Maneuver"**. If you take the time to get it right, angles, squares, and all their variants will be easy.

> *If you are thinking about contest flying, practice different geometric patterns. Once you get the 90 degree "snap turn" down, you'll find that other figures will be small variations on this basic maneuver.*

One additional hint about making a good 90 degree Push Turn — just before starting the turn, "lock" your elbow to your side on the "stationary side" of the turn. In the figure above, you'd lock your right elbow since you intend to push with your left hand. Then Push Left and immediately return your left hand even. With a little practice you'll be able to get an exact 90 degree turn every time.

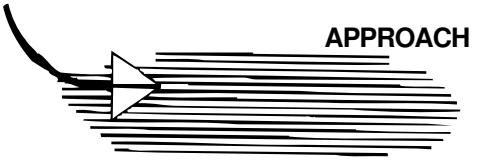
Now use this Push Turn technique four times in a row to do a **SQUARE**.

Once you've mastered 90 degree turns, the only trick to doing a great Square is visualizing a square Square in the sky. Pushing the dive and Pulling the climb helps even it out so it looks more organized, too.

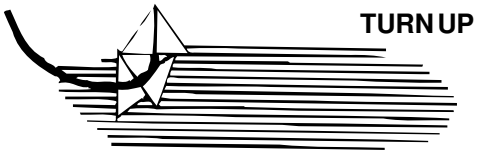


THE "EAGLE" HAS LANDED — When we first talked about landings, we mentioned the "Eagle". Well, here it is. This maneuver is difficult at first but soon becomes almost second nature. Unfortunately, it only works with the "Delta style" or swept wing stunters.

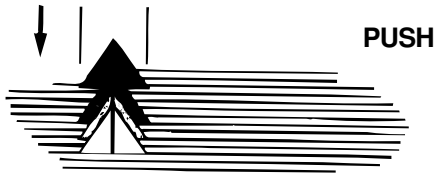
Approach the edge as you would for a normal landing. Remember, walk towards the kite on the approach, then flare to about one foot in altitude. This landing won't work if you flare too high. When the kite has almost stopped, but still has a little forward motion, TURN UP.



What you want the kite to do is pivot its nose vertical and stop in a stall at an altitude of not over 4 feet. Then immediately, PUSH or step forward. The kite will fly backwards down to a landing. Ta-daa!

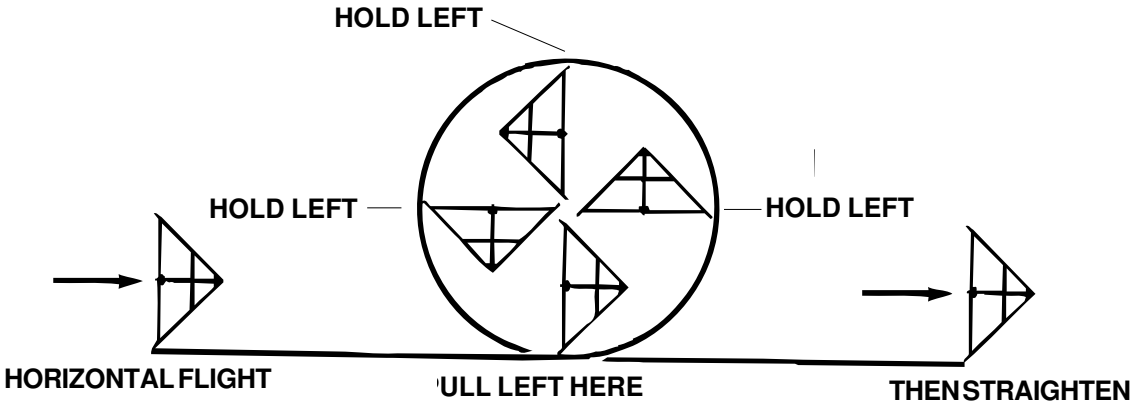


A perfectly executed "Eagle" landing is a source of wonder for onlookers and also produces great personal satisfaction. If you do it right, keep some tension on the line and you can launch again without further attention. Just remember not to leave the kite staked out unattended or someone may trip over the line.
You can also use this same technique to practice wingtip touches and sustained wing stands.



SPINS — All stunt kites can turn but not all can spin or turn on one wingtip. It also takes a bit of extra skill to keep the kite under control in a spin.

Spins are really just very tight loops. To complete a spin to the left, PULL LEFT a little more than you would for a loop to the left. HOLD for a few turns, and then bring your hands back even. The kite will fly back out in a straight direction.



A fast spinning kite will often make a loud roar similar to that of an airplane propeller. (Remember, noise and speed are related.) Many beginners are afraid to put a kite into a spin because it gives the initial impression that the lines will get tangled up. Remember to keep track of the number of turns. Stabilize. And then spin back the other direction.

WING LAUNCH -- Back in Chapter Two, we talked about how to launch a Diamond kite from from a nose-down position. With practice, this same maneuver is possible with Delta Wings as well. The results are spectacular -- not to mention the fact that they save you the trouble of setting up your kite from scratch, every time you crash.

For a wing launch, the kite should be toward the edge of the wind with its nose pointing toward the "outside" of your flying area or away from the center. One wing should be on the ground and the other pointing skyward.

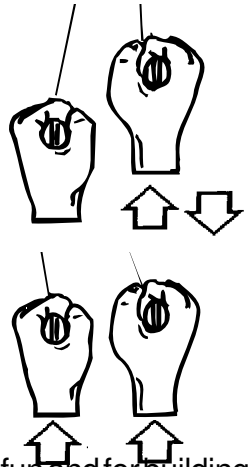
Gently draw back on the upper line so that the wing which is not on the ground begins to lean toward you. Pull it over just enough for the wind to get under it and and lift the kite. Then pull back sharply on both lines. The nose should swing around into the air, and the kite should lift off after dragging a wingtip for a moment.

If your kite is closer to the center of the wind, you may need to walk left or right to create a better launch angle. A few quick steps backward as you begin to launch will also help. With practice, you will learn to balance your stunter on its nose and lift off without even touching a wingtip to the ground.

Just a short note on "Pull" and Push" turning: Try Pushing left <u>while</u> Pulling right. This is usually a very quick move which results in a "flip turn" - 180 degrees or better - almost instantly. It is a "snap-type" maneuver like a "jab". Start with both hands at your body to allow full play in both directions. The kite will usually flip and then return on the same flight line as before the reversal.

MID-AIR STALLS -- You already know how to hover at the edge of the wind. But what about stopping suddenly in the middle of the wind? With a bit of practice and coordination, a properly tuned Delta can do what we call a "snap" stall.

Start with a horizontal pass. With both hands close to your body, punch one hand forward to turn up in a brisk "L". Turn the nose of the kite up. Then, just as quickly, pull your hand back to your body to straighten the flight..



Now push both hands forward, hard to stop the kite. These three movements -- punch-pull-push -- need to be done right together. Practice your timing so you can get the maneuver as quick and crisp as possible. Then all you need to do is work on balancing the kite and holding the stall.

PRACTICE — Now you have all the tools and techniques for hours of fun and for building contest-quality maneuvers. Try them out. Put them together in your own way. Concentrate. Use finesse. Make the kite do <u>exactly</u> what you have in mind. You'll like the results.

Most of the newer and more fancy tricks work best with a kite that has been tuned "down" or with the clips as far away from the nose as possible. The kite will move slower and stall more easily. To find your bottom limit, adjust your bridle connection, lowering the clips a quarter inch at a time, until the kite will not launch.

LIGHT WIND FLYING

With the right equipment and techniques, you can keep your kite airborne in as little as 2 mph of wind, and do aerobatics in 3 mph. Here's how:

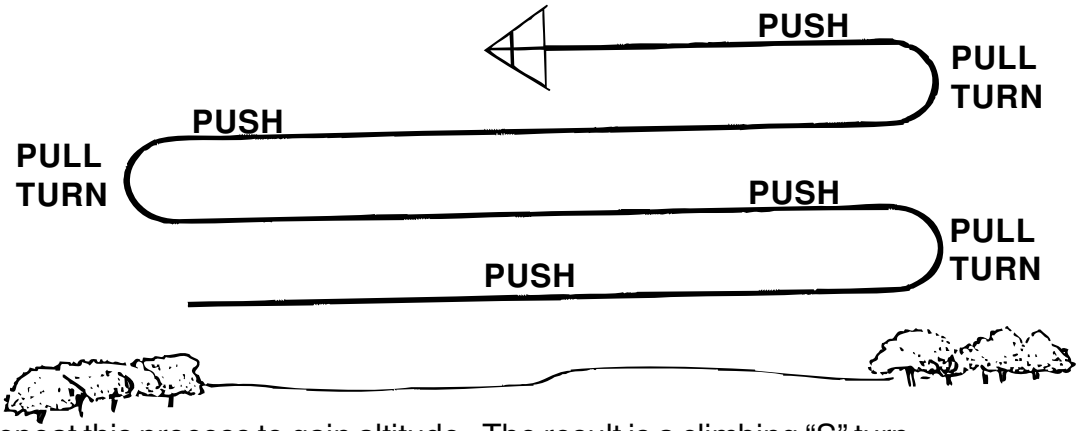
1. The lighter the wind, the more important your kite's tuning gets. A poorly tuned kite will fly more or less all right in plenty of wind, but won't fly at all in light wind. So tune your kite. Experiment with clip positions to find the farthest forward adjustment you can get away with.

2. You'll need LESS STEERING and MORE THROTTLE in lighter wind. Steer carefully, and you'll be able to control the kite even when it's barely moving and has almost no line tension. PULL for climbs and regain position by PUSHING descents.

3. Switch over to lighter flylines. Remember that heavier line produces drag and reduces control.

ROWING is a technique to keep the kite in the air in the lightest wind. Practice it to get the idea of light wind flying. Then use it on puffy days when the wind sometimes drops off, then picks up again. Rowing to survive a lull in the wind can save you from having to land and wait for more wind.

Use the fact that the kite needs less energy to fly horizontal than it does to climb. Push while flying horizontal then Pull Turn.



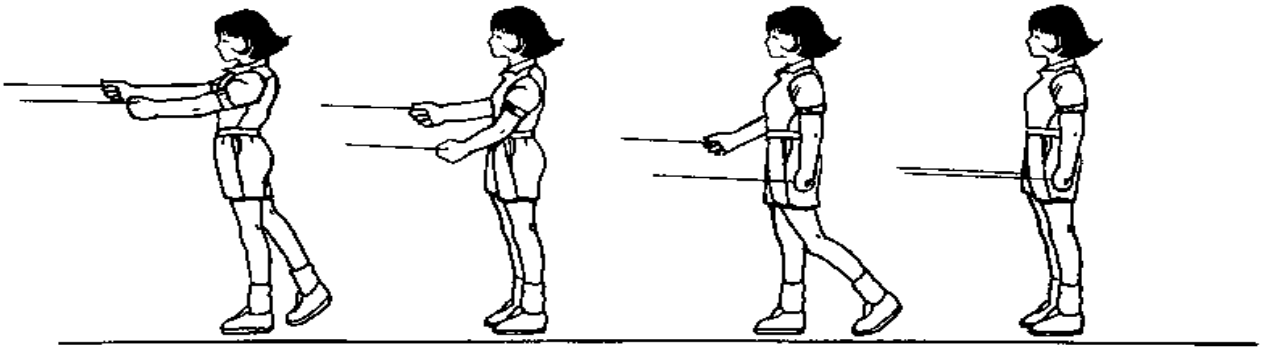
Repeat this process to gain altitude. The result is a climbing "S" turn.

In extremely light wind, you won't be able to gain altitude this way, because the kite won't be able to sustain horizontal flight while you Push. It will lose altitude gradually. The result will be a Horizontal Eight. If you can climb, use the altitude you gain to do maneuvers, then start the climbing turns again. After you've practiced awhile, you'll find you can Row through any maneuver just by Pulling climbs and Pushing descents.

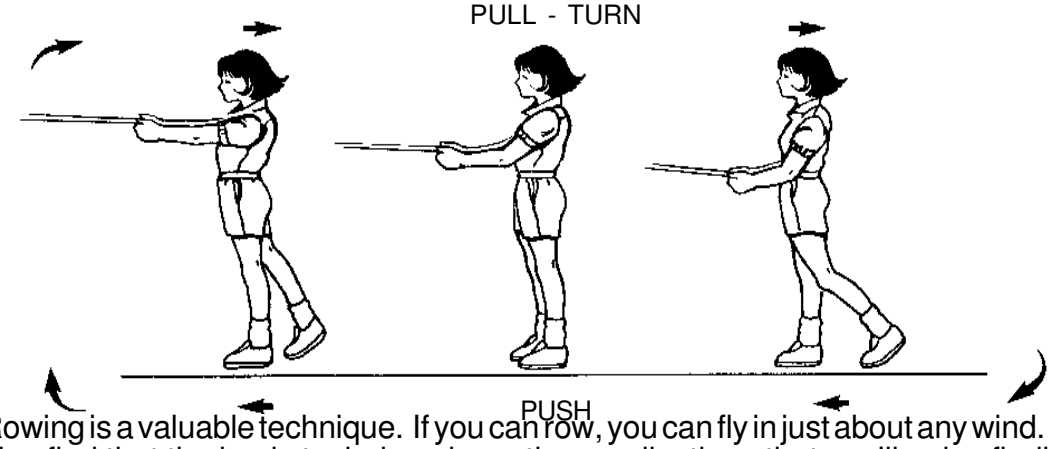
Always trade height for speed. Never lose altitude unnecessarily. Gain field (walk forward) whenever you can. In particular, move downfield and toward the kite whenever you dive. You may need that extra field later to back-up and gain altitude.

Al Hargus III
Chicago, Illinois

Much of the time you'll be able to row effectively with just your arms, without having to walk forward and back. If you've learned to pull your arms down, rather than back to your chest, it will really pay off now. You'll have better control with less fatigue.



PULL - TURN



PUSH

Rowing is a valuable technique. If you can row, you can fly in just about any wind. You'll also find that the basic technique has other applications that you'll enjoy finding for yourself.

Many manufacturers are now producing "ultra-light" kites or replacement parts. They rely on lighter fiberglass or graphite spars, thinner nylon sails, less reinforcement, and smaller vinyl fittings. Every ounce has been shaved off to allow light wind flight.

Ultralights work well. But because of these adjustments, they tend to be more fragile than standard stunters. If you are hard on kites, stick with a heavier, but more durable version.

Special maneuvers like the "360" require low wind situations. In a 360, the pilot flies a ground pass in a complete 360 degree circle. The upwind arc is completed by backing up or running faster than the wind is blowing. This provides enough throttle to continue forward momentum while the kite is upwind.

HEAVY WIND FLYING

Obviously, as the wind speed goes up, the kite's speed goes up. The kite has more power. The line pull increases, and so does the stress on the kite. In winds over 20 mph or so, some kites are even capable of producing enough stress to break spars and struts, "blow-out" seams, or puncture sails.

Never fly an ultralight kite in heavy winds -- even though it may take the strain. Sails stretch and the kite won't handle right when you try to fly it in lighter winds later.

If you want to go flying in higher winds, here are a few hints on how to minimize the damage.

1. Make sure all your equipment is in good condition. Inspect it carefully. Is the harness frayed where it's attached to the clips? Have the flylines accumulated knots or frays or worn spots? Are there any unpatched tears in the skins? Flying in strong wind will point out weaknesses in your equipment in a dramatic way! Parts are cheap and repairs are easy, so don't neglect them.

2. The first time you launch in strong wind, PULL to get the kite airborne, then PUSH. Walk towards the kite as you fly it up to a hover. As it flies up, look for bending in its frame. From a hover, test the flight envelope a little at a time, putting stress on the kite gradually by venturing closer to the center of the wind. Be prepared to walk towards the kite if necessary to relieve some of the stress.

If the stress seems to be too much for the kite (or for <u>you</u>, for that matter), LAND, and adjust your tuning.

3. De-tune the kite by moving the clips forward. Yes, you're setting it for "less wind", but that's not the point in this situation. Moving the clips forward will prevent the kite from making so much power. It won't turn on a dime, but it will stay together. It will also go terrifically fast, sound like a jet, and be lots of fun to fly.

4. You may want to consider stronger flylines if you intend to spend any length of time flying in winds over 15 mph. See the section about Flylines for more discussion.

High wind flying puts tremendous stress on the center spine of most stunt kites. Try replacing the center rod with stronger fiberglasss or graphite. You can also use an insert of fiberglass or wood.

The extra weight won't make much difference in heavy winds and the added support will keep the kite from "warping" while flying or breaking on impact with the ground.

Hoy Quan
Montebello,California

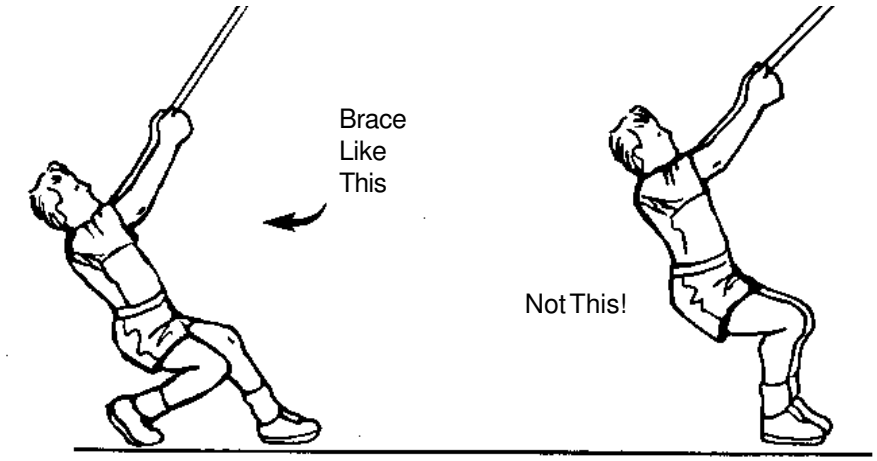
Kite Traction - using the kite to pull yourself - has received a lot of attention lately, both good and bad. Clearly, safety is a major factor any time that you are being "dragged" by a powerful kite. As long as all due precautions are taken for safety, hang on for the ride of your life!

Whether you are sand skiing barefoot on the beach, being pulled across ice on skates or skis, or RollerKiting on an empty parking lot, the thrill of speed and the control you have over your kite allow you to feel an element of power as it passes from the kite, through your body, and down to your feet - or whatever other body part happens to be in contact with the ground!

Bob Hanson
Sea Bright, New Jersey

BODY POSITION - And a word about your frame and your limits. Almost any stunt kite in 25 mph winds will drag you around. Work up to flying monsters in strong wind gradually, or you'll get the same results as if you overdo any other vigorous exercise. You'll bend your frame!

When you're flying a powerful kite in lots of wind, brace yourself properly.



If something breaks, or the wind suddenly drops, the flyer on the right is going to be dealt a severe blow to his . . . pride. And a broken . . .pride . . . is very painful and takes a long time to heal!

Keep your weight low and one foot back, ready to catch yourself if necessary. If you use the correct position, the kite can actually drag you forward without pulling you over on your face. You can lean against the line when the kite is pulling hard, then regain your balance when it slacks off.

In strong wind, learn to steer more with your shoulder and body than with your arms. Lean right and step back right to turn right. Lean left and step back left to turn left. After awhile, you will find the pivot balance point . Like a skier or dancer, I use this technique for flying in winds over 20 miles per hour and even in hurricanes.

Robert Loera
Honolulu, Hawaii

For more about heavy wind flying, see the sections on Tuning and Flylines. There you'll find information about equipment and adjustments that will make it easier on you and your kite when the wind gets excited.