

Thermalling

Kelly Farina outlines how to make the best of lift when you're in it

In this article I will attempt to explain how to turn efficiently when you are in lift - how to place the glider in the right part of the climb and stay there most of the time. When mastered, these techniques will enable you to use the tightest - and lightest - of climbs. I will not deal with how to find thermals but will cover this in a future article.

A thermal is only usable if it is wide enough to 360 in without increasing the glider's sink rate to more than the climb rate of the rising air. But thermalling is a black art. Over many years of running thermalling courses in Zillertal I have noted the mistakes many pilots are prone to make.

- Turning too wide
- Allowing the nose to dive forward when initiating turns (converting height to speed is never good)
- Heavy use of leg crossing. 100% weight shift is not subtle enough for what we want
- Not keeping energy in the wing.

After several thousand hours practice I can climb on autopilot, freeing my brain to observe other things. And while on autopilot I have been able to note what I did during a climb, when and why. I use these observations in my current method of coaching and I know it works. The results were shown clearly last season when I took a pilot with practically no thermalling ability to a level where I felt I was almost flying with a mirror image of myself. All in a few weeks!

Take a wrap: Pull down, don't push down

Large muscle groups are great for lifting or moving heavy things but are ineffective in detecting light changes in pressure. To become a sensitive, efficient pilot we need to be able to feel light changes in pressure through the control lines. To help achieve this sensitivity it is far better to pull the brake down than to push it down. This can be achieved by taking a wrap.

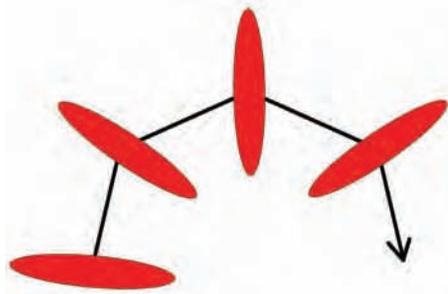
With a wrap our hands are roughly 20cm higher and the brake pressure we need comes from the biceps and the wrist, a relatively sensitive joint. This helps control most low-end and intermediate gliders that may require a fair amount of brake travel to turn them at a tight radius.

Caution should be taken if using this technique for the first time. Practice it when high and away from terrain and company. Focus on turning the wing on brake pressure and not necessarily where your hands are. Most pilots who try it soon feel disconnected without it.

Maintain the right airspeed

A thermal should be entered with some energy, i.e. not too slowly. If the glider is starved of airspeed it will tend to dive to get its energy back. Don't allow the glider to dive and convert precious altitude to speed. We want to go up, not down! Fly too slowly and the glider may spin if more brake is applied. And with a slightly higher airspeed the glider will be more responsive.

However beware that this extra energy, if unchecked, can put the glider into a spiral dive when initiating the turn. I check this by keeping the nose of the wing slightly in front of me, applying just the right amount of outside brake for just long enough to reign in the dive. The amount needed varies by situation and glider and experimentation is needed.



Smooth turns are efficient, erratic turns are not!

It helps to hold the outside brake on smoothly, in phases, whilst still leaning into the turn, whenever you feel the wing begin to "drop in" and start to enter a spiral dive. But it's important to release the outside brake before too much energy is lost - the handling will go mushy and the wing will need to dive to regain airspeed.

Sometimes as much outside brake is needed as is applied inside. Only do this for as long as you feel you need, and on release expect the turn radius to increase again. This technique is best used when entering a core. Lean in hard, pull on the inside brake and "float" the outside brake. Once this technique is mastered the pilot should feel a fairly constant airspeed on their face even though the glider will be pitching lightly.

Stay loose but firm

Being thrown around in lively spring air over jagged terrain isn't a pleasant experience and it's not surprising many pilots find themselves tensing up. Over the years I've practiced many sports, from skateboarding to kung fu. There isn't a sport I know that gives an advantage by being tense. In fact it's a huge disadvantage to anyone who relies on being able to feel his next intuitive body movement and to react without conscious thought.

This goes from head to toe, especially hips and arms. Everything should be as relaxed as possible until you are required to react. Don't allow the glider or the air to bully you but roll with the punches. Whether on a rough glide or in a choppy thermal, staying loose but firm will enable you to retain control with finesse. Stay loose but with balance, controlling roll with the hips. Again this is something that needs practice.

Don't lock your weight shift

Weight shift should never just be on or off. There are a million and one different combinations of brake and weight shift and most can be valid in a given situation. Crossing your legs and locking on close to 100% weight shift is not subtle enough for a pilot who seeks to instinctively adapt to any thermal that comes along.

There is nothing wrong with full weight shift but there is a time and place for it - usually when centred in a very strong core when you feel you are just holding on for the ride. The stronger the thermal the less sensitivity we need. That's why some pilots go down when it becomes challenging and others stay up. Anyone can climb out when it's hoofing!

Once committed to full weight shift with crossed legs, it's difficult to achieve the necessary degree of balance. It's not dangerous, just not subtle. Balanced control using the hips and head is far more efficient. Like all aspects of thermalling, this requires practice.

Keep the wing in a happy place

The only thing holding the wing open in the correct shape is the weight of the pilot underneath. This provides the wing loading, and by allowing the wing to oscillate above us we are varying the wing loading. When the wing is pitched behind there is nothing a pilot can do but wait, and then use correct control inputs to hold the wing above and slightly in front to maintain some energy. If the wing is allowed to dive 45 degrees in front the wing loading is approximately halved and the wing is far more prone to taking a hit.

Practicing how much and when to apply brake is as important for safety as any of the above guidelines are for building sensitivity. A good way to train for this (whilst high in calm air) is to rock the glider back and forth, achieving bigger oscillations on each swing, and then try to stop the dive. This will help a lot when the glider is suddenly pulled forward in a strong spring thermal. Don't expect the wing to always go backwards first.

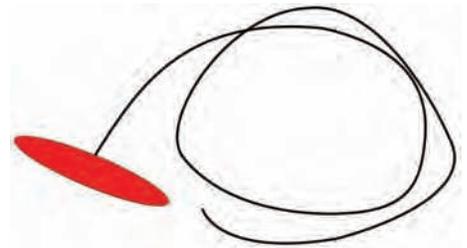
Map the climb

It's important that, at the same time as employing the above techniques, pilots map the climb they are in two-dimensionally. Just going round in perfect

circles when encountering lift is normally a recipe for never finding the core, and eventually pilots will find themselves falling out.

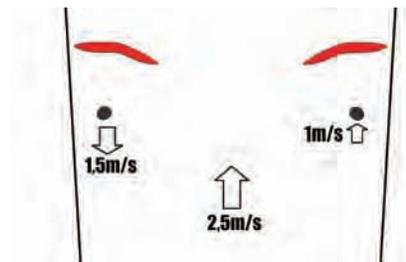
This is an art in itself and one of the hardest skills to master, and it relies on a pilot being able to fly efficiently in thermals without thinking. The brain requires time to process information about the climb, and this is hard to do when still thinking about the other stuff - outside brake, staying loose and keeping the glider above your head.

A technique widely used for finding the core and staying in it is the Three Second Rule. On first encountering lift fly straight and loose, count to three and decide which direction you are going to turn in. Lean in and execute an efficient turn, and if still in lift after a full 360 relax and start to search for the core.



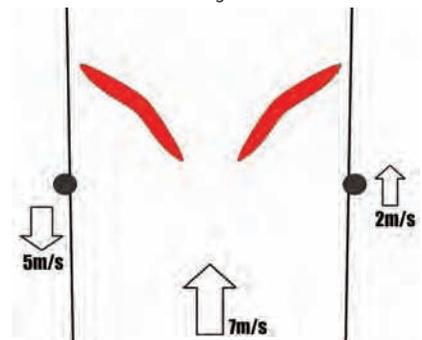
Adjusting the turn to find the strongest lift

Search by widening the turn as you climb, seeking out stronger lift. Straighten up towards where the lift is strongest on the next 360. It can take three or four full turns to finally centre on the core. With experience a pilot should be able to recognise the difference between the pull of a strong column and a short-lived bubble, and waste less time and altitude with needless 360s.



Wide turn in weak thermal fails to make the best of the climb

Changing direction halfway through a turn is not ideal. If you really feel you are turning the wrong way, execute a wider 270-degree turn to bring you facing the area you want to be in. This avoids changing direction and the height loss involved in the inevitable small wingover.



Tight turn is required in strong lift

Thermalling is the cornerstone of XC flying, and time invested in training to thermal until it becomes second nature is never wasted. These guidelines and others are discussed at greater length on our summer thermal courses in Mayrhofen. Check www.austrianarena.com for details.