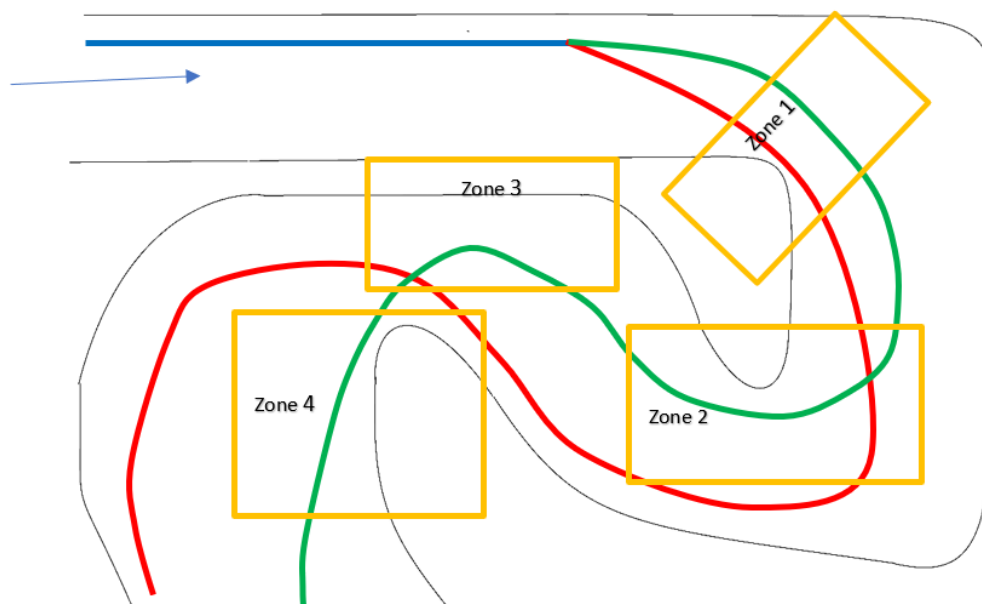


TRAIL BRAKING AND BALANCING

What else do we need to think about when we are faced with a corner complex?

We need to think about how we use our controls. The basics we learned in beginners, and that we have continued to practice still hold true, but again, we may need to adapt what we do to get the best compromise.

Firstly, we're going to look at trail braking. This is a technique we use for braking and turning at the same time.



Looking at the diagram above, do you notice anything about the braking zone? You may have noticed that the first apex we hit is deep into the corner. In Zone 2 in fact. Now our normal technique would have us braking before we turn in. However, if we do that in this case, we will lose time in the first part of the corner. So in this case, it is better if we turn into the corner as we are braking. But hang on, won't that cause us to spin? Not necessarily. Here is how we do it:

- As we approach the corner, come off the throttle.
- Start to apply the brake but do it smoothly and apply less pressure than you would normally.
- Feel what the tyres are doing. Is the kart stable? If so, you may be able to apply more pressure. If you feel that the tyres are starting to break traction, release the brakes slightly.

By smoothly applying the brake and using less pressure, you are controlling the weight shift of the kart to prevent a loss of traction that could compromise your control of the kart. We are also delaying the point at which we can get back on the throttle, but in this case, it is the appropriate thing to do.

Actually, what we have been doing is getting more advanced at controlling the balance of the kart. This is a very important skill and it will help you to get the best put of a corner, especially complexes or longer corners, and it can help us a lot in faster corners. So how do we affect the balance of a kart, more importantly, why do we want to?

Well, for our purposes, the balance of the kart is simply the way that the weight of the kart is distributed between the front and rear axles. From a driver's perspective if the weight is focussed on the rear wheels, you will feel relatively more grip at the rear, and less grip at the front. Can you remember what this is called? You got it....**Understeer**. Conversely, if your weight is focussed on the front axle, you will feel more grip at the front, and less at the rear. This is called.....**Oversteer**. Understeer and oversteer are the extreme effects of balance from front to rear. There is a range of balance from one end to the other.

So why do we need to know about balance and changing balance? Well, there are a couple of instances where it is very useful to be able to change or control the balance of the kart as we are cornering. Well, it can give a driver confidence about what the kart is going to do, it can help control, or influence how quickly a kart turns, it can help to keep the kart in an efficient state and it can determine the grip of the kart through the corner. There's a lot to unpack there, so let's try to keep it simple.

By using the brake whilst cornering, you can shift weight to the front wheels and release weight from the rear wheels by lifting off the throttle, or smoothly applying the brake. This will have the effect of increasing grip at the front and reducing it at the rear, allowing the driver to quickly make a small adjustment to the direction of the kart. The more assertive the input, the more marked the change in balance, and therefore effect of the balance shift.

Conversely, but releasing the brake early, or inputting some throttle mid corner, there will be a rearward weight shift. This will reduce the turning effect and can stabilise the kart, especially if the kart is starting to slide due to oversteer.

So where are we most likely to use balance shifting? Well, in most corners that have a sustained, or long cornering effort, or any corner that you need to make a small adjustment in the attitude or direction of the kart.

Lap Speed

So now we've got some good background on how to drive quickly. The use of the controls, with some advanced racing lines, and you've got a winning combination. But what makes a driver quick? Here we are going to look at putting it all together. Some of this stuff will sound familiar. That's because it's important, so try to build these good habits into your routine and approach.

You often hear of drivers 'putting a lap together'. That's because, like a good jigsaw, we have several pieces to put together to get a good lap. So where do we start?

Firstly, we're going to take account of a few changeable factors:

- If this is your first time at a particular track, spend a few laps getting to know it. Don't rush in. A few slower laps will help you get acquainted with it.

- If you are on a familiar track, has anything changed? On indoor tracks, this could be track temperature, barrier changes, level of use through the week. On an outdoor track, this could be weather conditions such as wind direction, temperature, moisture etc. Taking account of factors such as these is important as they will let you know where the limits are.
- How is the kart feeling? Are you out on cold tyres? There will always be differences in the feel of karts, even if they are closely matched. How we adapt to the kart is important. Think about the grip and balance, the brake performance, and the throttle/engine performance. These things may change as you drive and the kart will warm up, tyre pressures will change, fuel load will change, and you will find out more about what you are driving.
- Look ahead and plan your lines. Make sure you are spotting your braking, turn ins, apexes and exits. This gives you more control.
- Try a few things. Are you losing out anywhere? Are there drivers going away from you out of corners? Are you struggling, or not feeling comfortable in a particular corner? Try adjusting your lines, braking and throttle points and balance. How does it feel, and how is it affecting your speed relative to other drivers?
- Look at what other drivers are doing. If someone is quicker than you, try and break down why, then learn from it.
- Try and get into a rhythm. When it flows, it is easier to drive quickly. Make sure you keep relaxed, both physically and mentally. Stress or aggression can be a great motivator, but only if they are used in the correct way.
- Concentrate on what you are doing. If you let your mind wander, you are not concentrating on what you are doing. It will slow you down!!