

Safety Box - Steep Turns and Stall / Spin Considerations

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Fellow Club Pilots, I have been thinking about things we want to consider when performing turns closer to the ground. I'm going to consider any turns below 400 feet, certainly 200 feet as close to the ground. Landing patterns, off field landings, low altitude thermalling, rope breaks and the 180 turn back to the runway are prime times for a low altitude stalling situation.

I think we can agree that if we were to enter an incipient stall above 200 AGL with proper recovery techniques we will be able to recover and be flying again. This doesn't mean we may be able to make our intended landing aim point though. So, what is important is to recognize an impending stall and to prevent it as early as possible.

Remember the 6 signs of an impending stall *in order* are:

1. Excessive back stick pressure / position
2. Nose high attitude
3. Low or decreasing airspeed
4. Decreasing noise
5. Mushy controls
6. Shudder or buffeting

The most deadly incipient stalls are the gentle, slowly developing and therefor insidious ones and they can occur close to the ground because we are distracted and/or under stress. Add to that a little too much bottom rudder (skidding turn) because we want to "hurry" the turn, trying to increase the angle of bank and also an instinctive desire to hold the nose up thereby increasing the angle of attack and we might be in an incipient stall/spin situation.

Fact: By recent estimates 75% of all fatal landing accidents are due to a turning stall at low altitudes. See Tom Knauff's latest book on sailplane accidents - Sobering information I assure you!

Think for a second about the latter aspect of increasing the angle of bank and increasing the angle of attack.

When you have some excess altitude to burn off on your next flight and you can complete by 1500' AGL, practice turning stalls with and without dive brakes to attune your senses and sharpen your stall recovery technique. Also, practice picking up that low wing with rudder. Remember that opposite rudder will yaw the glider, swinging the lowered, stalled wing forward, increasing the airflow and helping to unstall the wing.

The proper steps to recover from a turning stall are:

1. Opposite rudder
2. Stick forward (1 and 2 can be simultaneous)
3. Pause, then regain flying speed
4. Roll wings completely level with coordinated aileron and rudder
5. Bring nose pitch to normal gliding attitude

In reality, this is all accomplished in much less time than it took you to read these steps.

Pop Quiz - What is safer, say turning from base to final, a 30 degree banked turn or a 45 degree steep banked turn?

In our sailplanes a steeper banked turn up to 45 degrees is safer. The reason is it is very difficult to stall a glider in turns greater than 30 degrees of bank. The elevator is designed to have a limited effect. In a steep turn nearly all of the elevator's range is used up to produce the extra lift needed in the turn. Without an abrupt, excessive movement of the stick you can't stall the glider. Another thing is if you are using a steeper turn your turn radius should be satisfactory and there should be no perceived need to "rush" the turn.

Have a fun, safe and learning Soaring Season!

Ray Fredell - CSO