



Key Points

Wings and Lift

- ✓ In order to produce lift, a wing has to be “fed” enough air, at the proper angle.
- ✓ The *angle of attack* is the angle of the relative wind to the chord line of the wing.
- ✓ There are two ways to make a wing produce more lift: Increase the airspeed, or increase the angle of attack (up to a point).
- ✓ The wing has a “critical angle of attack” beyond which it will always stall.
- ✓ The critical angle of attack does not necessarily correspond to a particular airspeed.
- ✓ In other words, *the wing can stall at any airspeed.*

Stalls

- ✓ In a one-G situation, the wing will stall at or near the published stalling speed.
- ✓ When the wing is under more than one G, the stall will occur at a higher airspeed
- ✓ Accidental stalls normally happen for one of two reasons:
 - The pilot inadvertently lets the airplane get too slow; or
 - The pilot “pulls Gs” while maneuvering and causes the wing to stall at a higher airspeed.
- ✓ To recover from a stall, you have to decrease the angle of attack: In most cases, this means pushing forward on the yoke and increasing power
- ✓ It’s possible to get “behind the power curve.” This normally happens on final approach. If you notice the airplane getting too slow and try to recover by adding power—but fail to lower the angle of attack at the same time—the airplane can “mush” into the ground, even under full power.

Spins

- ✓ A spin starts when one wing is more deeply stalled than the other, usually as the result of an uncoordinated stall. The differential in drag between the two wings causes a rotational force.
- ✓ In most airplanes, spin recovery involves four steps:
 - Reduce throttle to idle.
 - Neutralize ailerons.
 - Apply full rudder opposite the direction of the spin.
 - Move the yoke forward, past the neutral point.

Safety

- ✓ Remember: A stall can happen at any airspeed or pitch attitude.
- ✓ Altitude is your friend: Below 1,500 agl, maneuvering mistakes are more deadly.
- ✓ Heavily loaded airplanes fly differently. Bring an experienced CFI the first time you fly an airplane at max gross weight, or near the edges of the CG range.
- ✓ Resist the urge to “buzz.” It may seem like harmless fun, but it’s dangerous, and harmful to general aviation’s reputation.