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Proficient Pilot

Fatal instinct

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Accidents resulting from inadvertent stalls and spins continue to claim a tragic number of victims each year. This occurs despite improved stall-awareness training. We know what causes stalls and how to recover from them. So why do stalls continue to get the upper hand?

Pilots know that stall recovery demands lowering the nose, and most of us do this with ease when practicing. Such stalls, however, are performed at altitudes so high that the altitude loss resulting from a stall cannot be sensed visually. Recovery is merely an academic exercise.

A stall at low altitude obviously should not be practiced. Therefore, we are unable to develop an appreciation of what it is like to stall so close to the ground and to experience the sight of the terrain rushing up to meet us. Such an unexpected threat causes us to react by abandoning our lessons and reverting to a fatal instinct. Instead of releasing back-pressure on the control wheel, we worsen the situation by increasing back-pressure in a futile attempt to arrest the descent.

Intellectually, we know how to recover from a stall at low altitude. Each of us can accurately describe the procedure. But can we execute the recovery with equal aplomb? Probably not. I am convinced that the single most difficult task in aviation is exercising the will needed to lower the nose at a time when altitude is in critically short supply and its loss is visually threatening. Such a recovery requires extraordinary discipline, which is why an inadvertent, low-altitude stall usually results in a cloud of dust, bent metal, and spent lives.

There are a few misconceptions that contribute to the development of this fatal instinct. One is the manner in which we learn and refer to elevator usage. From the first lesson, a student pilot is instructed to use the control wheel to raise the nose or lower it. He or she is told to pull the nose up and push it down. Such terminology instills and intensifies the belief that the elevators are always used to make an airplane to go up and down. Although this is a somewhat accurate perception during normal flight, it obviously is inapplicable to stall-recovery procedures. This may be why a pilot reverts to pulling back on the control wheel during a stall with the nose pointed earthward. He tries to do what he has been taught since lesson one. He pulls aft on the control wheel to make the airplane climb.

There are other times when pulling the control wheel does not raise the nose. Hauling back on the wheel during a very steep turn does little more than increase turn rate, and doing the same during inverted flight pulls the nose down.

Perhaps we should discontinue referring to the control wheel as a nose-up, nose-down control. Perhaps it is time to heed the advice of Wolfgang Lange-wiesche, author of the classic book *Stick and Rudder.* He wrote 54 years ago that the elevators should be regarded as an angle-of-attack control. A pilot taught in this manner might be less likely to induce a low-altitude stall and more likely to recover from one. He would be less vulnerable to an instinct to pull back on the control wheel at a time when he should do otherwise.

It is natural for instructors to use expressions such as "pull the nose up" and "push the nose down," but they instill reactions that are counterproductive during stall recovery at low altitude.

There is another misuse of terminology that misleads and possibly contributes to mismanaging stall recovery. I refer to the terms *high* and *low* angles of attack. Stalls and slow flight, it is said, occur at high angles of attack, while cruise flight occurs at low angles.

Before flying I had never heard angles described as being high or low. I was aware of large and small angles; geometry teaches about right, acute, and obtuse angles. But the notion of high and low angles of attack seems illogical and dangerous. It implies that a stall occurs only as the result of a nose-high attitude.

This misleading reference is reinforced by the unusual nose-high attitudes commonly used to teach and practice stall entry.

Pilots should be trained to understand and believe that stalls can be induced with the aircraft in any attitude (especially when the nose is at or below the horizon). This requires being taught how to enter and recover (with minimum altitude loss) from stalls that occur at relatively nose-low attitudes. As a matter of fact, there may be no need to practice stalls resulting from genuinely nose-high attitudes (which can be alarming to student pilots). We rarely enter such stalls inadvertently. Exaggerated nose-high attitudes are such effective and visual warnings of an impending stall that they almost preclude the possibility of an inadvertent stall.

The inadvertent stall responsible for so many accidents each year is typically entered with the nose relatively low and at an altitude from which the loss of altitude is both apparent and frightening.

An effective way to practice such stalls would be with a visual simulator programmed to allow a student to peripherally and directly perceive the ground rushing upward toward the aircraft (complete with realistic sound effects in the event of a failure to recover). In this way, he can develop the discipline needed to overcome his fatal instinct.
