

THE DOWNWIND TURN: AN OLD WIVES' TALE?

If you've ever flown a landing approach in gusty conditions, you've probably noticed momentary stall warning activation, even though your airspeed was well above stall. The rapidly changing relative wind is altering the wing's angle of attack, triggering the stall warning. You're experiencing wind shear.

Wind shear is a difference in wind speed and/or direction over a relatively short distance. When the wind shears to a tailwind, the airplane momentarily loses airspeed and wants to pitch down. Its inertia relative to the shear determines how quickly it returns to its previous pitch angle and speed.

When abruptly turning from flight into a strong headwind or crosswind, we're actually forcing the airplane into a wind shear. Compounding the problem, a turn is performed by banking, which increases lift on the wing outside the turn and reduces it on the other. If, during that banked turn, the airplane encounters a gust from a direction other than the relative wind, the inside wing may stall.

A gentle turn from a steady headwind into a steady tailwind doesn't risk a wind shear encounter. But performing abrupt downwind turns in gusty conditions is tailor-made for a shear situation. Combine that maneuver with low airspeed and low altitude, and an unrecoverable stall/spin easily may result.

