

## FOUNDATIONS OF FLIGHT LANDING PRIORITIES

Brought to you by Niklas Daniel and Brianne Thompson of AXIS Flight School at Skydive Arizona in Eloy. Photo by Niklas Daniel. More educational content is available at [axisflightschool.com](http://axisflightschool.com).

The phrase, “Any landing you walk away from is a good one,” excuses inconsistent performance. Holding yourself to a higher standard is key to growth and improvement. Aviators routinely use checklists to stay organized, reduce errors and ensure the completion of important tasks. In most instances, there is a proper order to adhere to that creates consistent and efficient outcomes. For safe landings, a priority checklist can provide the key elements needed for success (provided the jumper is flying a parachute appropriate in size and model for their experience level, their currency and the weather conditions). The following three points address the final leg of the landing pattern using a standard approach. To avoid the Phugoid oscillations described in the April installment of “Foundations of Flight,” your turn onto final should be adequately high enough above the ground for the parachute system to recover to its trim speed and steady flight.

- **Level Wing:** Fly in a straight line to keep the wing parallel with the horizon during your final approach, specifically spanwise. This means zero degrees of bank from wingtip to wingtip. Avoid turning at low altitudes, which causes the parachute to lose lift and accelerate toward the ground. Altitude permitting, remain in full flight to build up airspeed until approximately one system height (the length from your feet to the top skin of the canopy) above the ground.
- **Obstacle-Free Area:** A landing zone (LZ) is a designated space that is free of permanent obstacles that you might hit during the plane-out phase of your landing (although you may still need to avoid the obstacle of jumpers who landed before you). While landing onto an open and nicely manicured LZ is ideal, there are times when you will land outside of that area. Though off-landings are not desirable and can be challenging—the area may be confined, the terrain may be rugged, and you may not have any wind indicators—you can still perform them safely. Choose the longest possible clear runway for your landing. Look in the direction you wish to go and avoid focusing on negative outcomes. If you are unable to avoid hitting an obstacle, hit it slowly. Apply half-brakes with a level wing while bracing for impact in the parachute landing fall position.
- **Landing Flare:** Slowing down the vertical speed can help avoid most serious injuries. The first stage of a landing flare involves pitching the nose by starting to apply brake input at approximately one system height. The pilot's relative position under the wing changes from underneath the middle to underneath the nose of the wing. As the system's airspeed diminishes, the pilot finishes the flare with the second stage, which slows the horizontal forward speed. The pilot's location under the wing should end up in front of the nose just before touch

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down. Ideally a no-momentum landing is accomplished at curb height.

This list is in the proper order in terms of importance and application. For example: It is safer to land with a level wing while flying downwind into an open field and flaring than it is to perform a low turn to chase the wind direction or improve accuracy. An accurate landing is the byproduct of precise pattern work while effectively negotiating nearby traffic with proper airmanship. A good landing is one where a canopy pilot's body weight transfers smoothly from the harness to the ground.

Landing into the wind is preferable but not a priority. Landing into the wind slows the horizontal movement over the ground. Depending on the landing area or drop-zone-specific rules, it may not be possible to put the canopy's nose directly into the wind. If landing crosswind, choose the direction that best favors a headwind. Keep in mind that if you are landing in an area leeward of objects, you may run into mechanical turbulence. Depending on the strength of the wind, you may choose to land farther away from your original target or abandon it altogether. “A long walk beats a short carry.”

### Side Note on Swooping

During a high-energy approach (high-performance canopy piloting, aka swooping), a canopy pilot intentionally turns toward the ground to build speed. This energy is then directed toward obstacles like a competition course, usually over water. In addition, most competitors prefer flying downwind through the speed and distance courses because it increases their ground speed. This methodology is not a contradiction of the landing priorities as much as it is a capability developed out of those fundamentals by an athlete. Trading safety for performance in this manner yields little margin for error, which can endanger not just the athlete, but others sharing the same airspace. Canopy piloting requires dedication, respect, and a methodical training approach over many jumps with expert guidance.

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Student Jonathon Blank from Operation Enduring Warrior has no legs on which to land, but he perfectly demonstrates the transferring of body weight from harness to the ground.