

Three Most Dangerous Landing Mistakes Pilots Make and How to Prevent Them

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Over-shoot, under-shoot, loss of directional control, wing tip strikes ... are all symptoms of mistakes made BEFORE the pilot touches down. Mistakes that are easily prevented - but not necessarily in a way you might think.

I landed at the Nuttree Airport in a Cessna 172 in 1968. I felt pretty smug. It was a very smooth landing, one of those landings that you could hear but not feel. Then a wind gust picked me up and I landed a second time on a parallel taxiway. The pilot taxiing in the opposite direction was kind enough (or perhaps stunned enough or frightened enough) to hold short of a turn-off so I could move over to the parking apron. I couldn't look him in the eye as we went past. I mumbled some excuses to my passengers that I didn't believe. I had just made the three biggest (and most common) mistakes a pilot can make when landing.

Determined to never let that happen again, I spend a great deal of time in the intervening 40 years thinking about how to prevent these mistakes. The NTSB says that a full 45% of the weather-related accidents are caused by crosswinds and gusts. I believe it. It is time to introduce some little known techniques that help prevent these accidents. But first, we should look at their causes.

Landing too fast is caused by flying the approach too fast or trying to force the airplane to land before it is ready. The solution is to fly a consistent approach at the same airspeed, picking a safe projected glide point (or PGP), and controlling the PGP until you land. But hold the airplane a foot or so off the runway until the airplane nose has rotated up to the landing attitude. Hold that attitude until the airplane lands. That way you will land at the right speed.

Failing to cross control in a crosswind leads to ground loops, being blown off the side of the runway (the MOST common cause of accidents in the United States), wing tip damage, or, in my case, flying over the infield and landing on a taxiway. To put it simply, cross controlling is using the rudder to keep the long axis of the airplane parallel to the long axis of the runway and using the ailerons to keep the airplane positioned over the runway. This guarantees that you will keep the airplane moving straight down the runway after the wheels touch.

Quit flying the plane before the plane is through flying is one of the most dangerous mistakes that a pilot could make. Its cause is lack of concentration. Its solution is good flying habits.

I was lucky at the Nuttree. If the crosswind had been coming from the opposite side, I could have been blown into a canal. Remember that just because the main gear is on the ground does not mean that there is no 'fly' left in the airplane. Also remember that if you keep the airplane just above the runway until it absolutely, positively will not fly any more, then it will an unusually strong gust to put it in the air again.

It is easy to be lulled into the bad habits that lead to these mistakes. When the wind is gentle and the runway is long, all will be forgiven. So the question is: how to keep these bad habits from developing?

Let me introduce two exercises that have helped my students far more than I could have ever imagined. They are the 'very slow Dutch roll' and the 'controlled projected glide' point. Neither is difficult or dangerous. Both simplify and strengthen any pilot's ability to land.

The very slow Dutch roll is a simple exercise done at a safe altitude. It teaches two very important skills. First the pilot learns to continuously move the stick and rudders to control the airplane as conditions change, and second, the pilot learns how to cross control the airplane in the most extreme circumstances.

Here is how to do a very slow Dutch roll. Pick a point on the horizon and hold it steady as you change the angle of bank, airspeed and flap configuration. Maintain constant altitude. Change your bank very slowly. Continue to increase the angle of bank until either the aileron or the rudder is pushed to its limit. This is the angle of bank for the maximum crosswind that the airplane can land in. The cross controlled airplane slowly accelerates to the side for a minute or two. During this time, the pilot must move the flight controls continuously - an unanticipated benefit of this exercise when I thought it up.

Let me tell you about the projected glide point or PGP. When you approach the runway your eye will naturally gravitate toward a point on the runway that does not move in your field of vision. The phenomenon is much like when you are on a collision course with another airplane: it stays still in your field of vision but just gets bigger. Well, there is always a point on the ground where exactly the same thing happens. This is the point that you would glide to if you never made that last little flair to land. This is an extremely important concept that can save you many hours of landing practice. I never heard another flight instructor talk about it but I am sure that many pilots use this technique.

You can control the PGP with power and drag while keeping the airspeed constant. To move the PGP closer to you, reduce the engine's power or increase the airplane's drag - usually with flaps. To move the PGP away from you, increase the engine's power or decrease the airplane's drag.

Put the two concepts together to make consistent, safe landings. Once established on final, use the center line of the runway as your reference point for very slow Dutch rolls. Use the ailerons to position the airplane on the extended

centerline, the rudder to keep the long axis of the airplane parallel to that extended centerline. Move the PGP to the same place every time. I recommend the runway threshold. Consciously continue cross controlling until the airplane slows to a taxi.

These two simple techniques will get you to the same place on the runway every time in a landing configuration that compensates for crosswinds or gusts until the airplane is going so slow that you can taxi to parking.