

GOOD HABITS

It's not how you start that counts, it's how you finish!

TEXT & ILLUSTRATIONS BY **DAVID SCOTT**

If you have read my articles over the years, you might recall that I derive my content from nearly three decades of training at my 1st U.S. R/C Flight School's four-day accelerated courses. Initially, the flight school mainly trained primary students through solo. But as the number of graduates grew to more than 1,000, the focus has shifted to mainly aerobatic instruction to meet the demand of prior enrollees wanting more advanced training.



Traditionally, recreational pilots have relied on trial and error or learning from their mistakes when seeking to improve their aerobatic skills. Hence, most pilots think that the only way to improve their flying is through large quantities of practice. Having a four-day course deadline, however, has a way of focusing attention on the things that matter most to ensure that pilots learn at a faster rate.

The great news is that while the equipment we fly keeps becoming more complicated, the keys to accelerated learning are not at all complicated and can be easily adopted by almost any pilot. In a nutshell, my instruction is based on breaking up each maneuver into its component parts and then introducing them to the student in a crawl-walk-run format. The secret sauce is knowing what certain pilots do that causes them to excel while other pilots with the same or more experience struggle to improve and often plateau.

Two of the most important characteristics of proficient aerobatic pilots are consistent wings-level entries into maneuvers (i.e., starting off each maneuver on the right track) and holding off on trying to fly a perfect maneuver until it's known how the airplane reacts (i.e., initially refraining from trying to correct/fix deviations or add refinements). I will discuss the importance of wings-level entries shortly, but first, let me address the so-called "do not fix" approach. This method is based on the fact that the airplane is often the best teacher, and if you allow it to, it will show you what you need to do to rapidly improve your maneuvers.

FIDDLING IS THE ENEMY OF PROGRESS

One of the biggest obstacles to efficient learning is the tendency of RC pilots to skip the crawl-walk stage and immediately try to run when learning to fly a new maneuver or a familiar maneuver with a new plane. That is, they immediately attempt to correct every deviation they see during the maneuver. The problem with that approach is that, by the time the maneuver is completed (often poorly), so many adjustments have been made that it's nearly impossible to decipher why so many corrections were needed or what needs to be done differently the next time around.

A larger problem is that no two attempts at the same maneuver ever turn out the same. The lack of consistency sets a progress-killing precedent that causes pilots to assume that constant corrections are standard when flying aerobatics. As such, most pilots seek to improve their flying by trying to get better at reacting to deviations. (That's why I'm not worried about "giving away the store" when

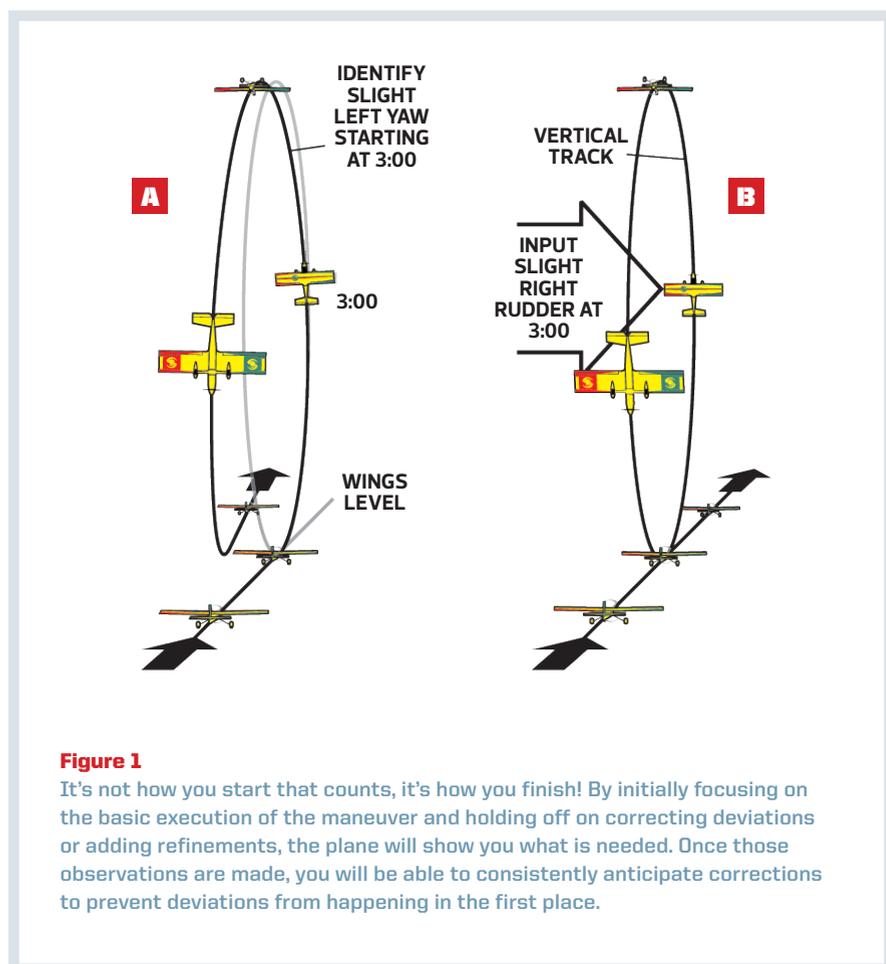
revealing the following school training technique because the only fliers likely to try it are those who've come to the realization that they are in need of a fresh approach.)

A SIMPLE SOLUTION

The "do not fix" approach is based on the winning mindset that "It's not how you start that counts, it's how you finish!" Hence, when I teach precision aerobatics, I introduce each new lesson by walking students step by step through the basic execution. I then explain that every airplane will consistently exhibit certain tendencies (deviations) every time the maneuver is performed. Thus, to master the maneuver, we must first focus on the basic execution (crawl), and when the first deviation is noted, store it in your mind for later (Figure 1).

At the flight school, we call these early attempts "mulligans" (i.e., we're not scoring them yet). And contrary to what club pilots think is ideal, our best-case scenario is when a deviation is highly obvious. That way, there's never any doubt in the pilot's mind about what

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has to be done to improve the maneuver. Even when the need for a correction is obvious, however, I instruct my students to refrain from adding it for a few more attempts. That's because it is not enough just to recognize the need for a correction. We also need to identify when the deviation occurs and how severe it is to anticipate the timing and size of the correction input (walk). Without knowing those aspects ahead of time, nearly every student will default to inputting the correction too early and too much.

When the correction is added, pilots discover how much nicer and easier the maneuver is when the deviation is prevented as opposed to trying to return the airplane back to where it belongs after a noticeable deviation. As a result, the number of "brain bytes" required to execute the maneuver is kept to a minimum, thus enabling pilots to start noticing other areas that can be improved (run). If no other corrections are needed, the remaining untapped brain bytes can then be applied to learning another maneuver dealing with wind, fine-tuning the plane's handling, and so on.

By the way, this is primarily why kids learn so quickly: While adults are prone to thinking about "what ifs" and putting pressure on themselves to do the best they can right away, kids are a blank slate and tend to approach new things with a "let's see what happens" attitude. By not biting off more than they can chew, kids will "notice" that a particular deviation occurs every time the maneuver is performed. Once that registers, their subconscious mind takes over, and they begin automatically inputting the correction (giving the appearance of super-keen eyesight and lightning-fast reflexes). Also, preventing a deviation early in the maneuver quite often reduces or eliminates the need for additional corrections. The reason they make it look so easy is because it is!

This game-changing training technique is not complicated (just the opposite) and does not depend on quick reflexes or flying several days a week, so there should be no reason why adult club fliers can't experience the same rapid improvement. You can improve quickly as long as you learn the basic step-by-step execution of each maneuver beforehand. You also need to be able to refrain initially from trying to correct every deviation or from adding refinements but, instead, allow the airplane to show you what is needed.

This approach is especially important in the sport today because the emphasis on modern technology is supplanting many bedrock airplane design and setup principles. As a result, some traditional rules of thumb often no longer apply.

Allow me to explain. Back in the day, guys who flew "free-flight" models had to learn how to properly configure and trim an airplane because they had no control after launching it.

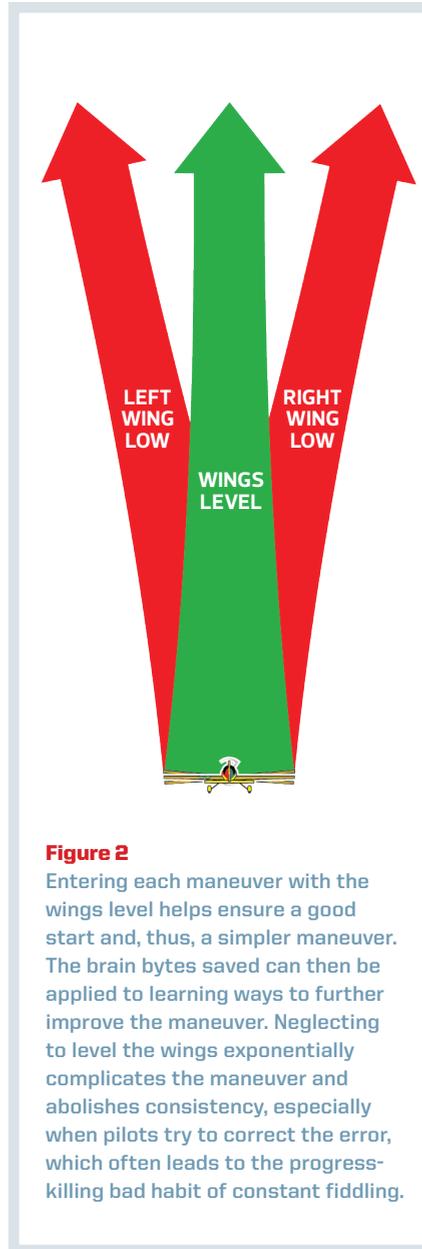


Figure 2

Entering each maneuver with the wings level helps ensure a good start and, thus, a simpler maneuver. The brain bytes saved can then be applied to learning ways to further improve the maneuver. Neglecting to level the wings exponentially complicates the maneuver and abolishes consistency, especially when pilots try to correct the error, which often leads to the progress-killing bad habit of constant fiddling.

Consequently, when they became RC pilots, they shared those essential fundamentals with others. Those fundamentals then became the foundation of almost all RC plane setups until the end of the century. Therefore, pilots became used to their planes displaying certain characteristics. Loops, for example, were expected to tighten approaching the top due to the effect of gravity; so if a pilot wanted to fly a round loop, he had to take out a little elevator to "float" over the top. Or if a plane was rolled inverted on a 45-degree upline, some forward elevator was needed to prevent the line from becoming shallow. Planes were also expected to yaw to the left near the tops of loops and vertical uplines due to propwash (sometimes mistakenly called "torque"); thus,

right rudder was typically needed to maintain the proper track.

For a whole host of reasons, however, it is quite common these days to come across airplanes that do just the opposite of convention. You might discover, for example, that your loops grow flatter on top as opposed to becoming tighter, thus requiring you to pull more elevator over the top to keep the loop round. Or your plane might pitch up more steeply after rolling inverted on a sustained 45-degree upline instead of dropping.

As awkward as these events would seem to a veteran pilot, these breaks from convention, in theory, shouldn't be a problem for those who use the crawl-walk-run approach. Specifically, your initial mulligans will keep you from inputting the wrong corrections just because someone told you that the maneuver required them.

THE WINGS-LEVEL IMPERATIVE

There is an essential element that must be part of your maneuvers for you to achieve the consistency needed to detect and predictably prevent the deviations associated with each maneuver: Each must be entered with the wings level. That ensures that the airplane will, at least, start out tracking vertically during looping maneuvers and help prevent other maneuvers from veering off to one side (Figure 2).

Of course, if you entered a maneuver without level wings, you could try to correct during the maneuver. But then you'd have to expect your flying to stagnate as a result of exhausting most of your brain bytes by fiddling with the ailerons. Plus, the resulting inconsistency would make it nearly impossible to identify the plane's tendencies or even cause you to misdiagnose your plane's tendencies. In short, like everything else in life, it's far easier to do things the correct way and avoid a problem than it is to try to correct after the damage is done!

Before you claim that it's sometimes hard to judge whether the wings are level, I can tell you that there's a solution (and it's not going to see your eye doctor or traveling back in time to when you were younger). Pilots fail to level the wings for the same reason that they fail to maintain good positioning; they get ahead of themselves or divide their attention among too many things and, thus, neglect to place enough emphasis on it.

For example, a by-product of four-day accelerated training, in which new lessons are constantly being introduced, is that sometimes students will neglect to level the wings before entering a maneuver. After the subsequent poor result, students will usually say that they thought the wings were level even though they clearly were not (aka "wishful thinking"). Knowing that every attempt without level wings will prove to be a waste of valuable

time—or worse, negative reinforcement—I bring out a small buzzer and step on it each time a maneuver is started without the wings level (a buzzer is more humane than an electric-shock collar). As a result, my students become hyperfocused on making sure that their wings are level to avoid hearing that dang buzzer, and because of that, their wings are level 99 percent of the time! Consequently, their practice is so much more consistent and efficient that they start recognizing all sorts of ways that the maneuvers can be improved. (That's when I joke about us having witnessed the miracle of instantaneous improved eyesight and ability.)

Another version of this technique involves me waving a dollar bill in front of students while they're flying and saying, "I'll bet you a dollar that, if you set your mind to it, you can enter each maneuver with the wings level for the rest of the flight. But if you don't, you owe me a dollar." Of course, I lose the bet almost every time. But it's definitely worth it when suddenly everything seems like it's happening slower after the number of inputs the student has to make are cut in half, thus making things easier on both of us.

In fact, the improvement after a student starts prioritizing level wings is so obvious to

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the other students watching that the whole class will often start making bets among themselves as a way of incentivizing each other to do better in key areas. All this is to say that executing consistent wings-level entry is not difficult; rather, it's a decision that will cause a lot of other things to then fall into place. (By the way, at the end of the day, everybody gives the dollar back or puts it into a lunch fund because it's the outcomes we are all after, not the money.)

BOTTOM LINE

The best club pilots you know are likely better than everyone else at reacting to deviations, but as they will tell you, it took untold hours of practice to develop those skills. That's largely because they are often too busy making

corrections to think about how they might be prevented in the first place (it's also why they usually can't tell you specifically what they do). Proficient pilots (the ones who make everything look easy) use their initial practice to pinpoint what they need to do to make significant strides in just a few attempts. As more consistent fliers, they also use fewer brain bytes and, thus, are more open to taking on new challenges.

That said, I know that most pilots are inclined to think that the way they approach flying works best for them—that is, they only need to practice more. If you are one of those pilots who takes a long time to adapt to a new plane or learn a new maneuver, if you're uncomfortable flying in winds more than 10mph, or if you take more than a day to set up a new plane to achieve optimal handling, those shortcomings are reflective of your current approach maxing out your brain bytes. Consequently, it only takes the introduction of one variable to bog you down indefinitely. If you wish to do better, the habits featured here and over the next several months will enable you to enjoy flying more than you ever thought possible. Flying is, after all, the most fun when you're doing well and making progress! ✚