

SAFETY is No Accident

by RyanVOIGHT



Welcome to the first installment of *Safety is No Accident*, a new column in Hang Gliding and Paragliding Magazine for 2012. Every month we will discuss the finer points of technique, share a cautionary tale, or respond to a reader inquiry—all in the name of improving the knowledge and safety within our free-flight community.

This month we'll start with the same way great flights start: with a great launch. We will primarily discuss the finer points of launching a hang glider, but many of the same general principles apply to paragliders as well.

[left] Looking back into the higher ranges.

Launching: What's the Point? It might seem obvious, but let's look at the big picture. What are we trying to accomplish when launching? In simple terms: we want to get our wing flying. We want our wing to create enough lift to pick us up and carry us away from terra firma.

Looking at the big picture is a great way to start, because we avoid getting hung up on technique, handholds, launch slopes, and myriad other factors that we must include in order to achieve that goal. Who cares how you do it, as long as you effectively and efficiently get the wing flying, and it lifts you to fly away safely!



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CREATING LIFT—ANGLE OF ATTACK

Hopefully, we all know that angle of attack is the angle of your wing relative to airflow (hint: it has NOTHING to do with the horizon!). Angle of attack, or AofA for short, is the first of two keys for achieving an effective launch. In nearly all cases, the best AofA for launching is having your nose just a little higher than the airflow (a slightly positive AofA). Let's ballpark it at 10 degrees nose up, relative to airflow. If your AofA is too low, the glider will not lift, and you don't launch. If it's too high, the wing is stalled and will not lift, so once again,

you don't launch.

Determining proper AofA is pretty easy. In most cases, the airflow is the same as the slope of the hill you're launching on. If there's wind, the wind flows up the slope. If there's no wind when you run down the slope, you are creating airflow at the same angle as the slope you're running on. So, hold the glider with the nose roughly 10 degrees higher than the slope you're about to run on...not too tough.

But here's where people get into trouble: We need to maintain this proper AofA throughout our launch, and this can be tricky! At most sites, we're launching with the glider sitting on our shoulders, and as we run, we must allow the glider to lift up until our harness lines are tight; then we continue running until there's enough lift to pick us up completely. Controlling pitch, and therefore AofA, during the first few steps of a launch and through the “float” phase of a launch, is the most challenging part. We've all witnessed common problems—pilots that ‘pop’ their nose up as they start to run or allow the nose to “pop” during the float-phase of the launch (often due to transitioning their hands from

[above] The author demonstrating the use of LONG STRIDES during a light wind launch at high altitude.
[opposite] Pilot initiates launch with wing balanced and takes a “falling forward” first step.



[above] Compared to the horizon, this pilot appears to have a low nose-angle. **[below]**

With the photo rotated so that the slope (and airflow) is horizontal, we can see the pilot has a slightly positive angle of attack. Remember angle of attack is all about the angle of the wing **RELATIVE TO AIRFLOW!**

grapevine grip to bottle grip).

I won't be so bold as to tell you exactly how the launch must be done. There's more than one way to skin a cat. (As long as there's one less cat in the world, I don't care how you do it!) I will tell you what you must accomplish, though, and I will share some tips for accomplishing this, for what **MUST** happen.

In terms of basic physics, we need our wing to

create enough lift to pick us up so we can fly away. Lift is dependent on two things: airspeed and angle of attack. Without these two components, we're not going to create lift. (If you try to launch without lift, you might need a Band-Aid, and maybe more!) As I said, who cares how you do it?

Two common problems cause trouble when launching. The first is popping the nose during the first few steps of the launch. We all know it's bad, and we all know not to do it, but we've all done it, too (some more than others). Here are some tips for maintaining AofA while starting your run:

When you stand on launch and balance the glider, stand with your feet side-by-side (rather than one-in-front-of-the-other like a track runner). Sometimes a wider stance is needed for lateral balance, and that's fine. When you're ready to take that first step, keep your feet planted and lean forward with your shoulders and upper body—you should lean forward until you feel you're going to fall on your face.

Wait as long as you dare before moving your feet (don't actually fall on your face, duh). Doing this gets your shoulders moving down the hill first, which means you're pushing the glider down the hill from a much higher point in the control frame



than where your hands are. It seems obvious, but pushing with our hands raises the nose. When the glider is on your shoulders, pushing with your shoulders helps you and the glider move down the hill as a single unit, making it easier to maintain the proper AofA.

After you get a few steps forward and the glider begins to float off of your shoulders, PULL-IN and accelerate! It honestly doesn't matter what hand- hold you're using, or if you're switching grips or whatever. But you've got to keep that nose from popping up. During this float phase, you need to continue your acceleration down the hill. And if the glider's not on your shoulders, you need to get your butt in gear and run faster! You need to try to run faster than the glider, taking long strides, so that your harness lines go tight.

At this juncture, you need to try to "pull" the glider into the air with your harness. Again, pulling with the harness exerts pressure from a high point on the glider and accelerates the glider forward without changing the AofA. The alternative is to try to continue accelerating by pushing the glider with the only other point of contact you have—your hands. Pushing out with your hands raises the nose. When the glider lifts, shift gears and try to get yourself further out in front of the glider and pull with your harness. If you do that, your AofA will stay put.

The second problem pilots often have is insufficient speed. Airspeed is Safety: RUN RUN RUN! The key to a safe and confident launch is airspeed. A wing, even at the proper angle of attack, won't create lift without air flowing over it. The more air flowing over it, the more lift—simple enough. So what we need to do when launching is take our glider (and ourselves) and accelerate from a standstill to a speed in which our glider creates enough lift to pick us up and lets us fly away.

I touched on some tips for maintaining AofA, and these same tips work well for accelerating during your launch run.

You've no doubt heard the saying: walk-jog-run. Nearly every instructor teaches it. Strictly speaking, it doesn't matter if you walk-jog-run or not! If you can maintain proper AofA, you can instantly go from standstill-to-sprint.


I can't; the only way I can maintain AofA is to accelerate smoothly and gradually, and that's where the walk-jog-run comes in. The tips above—starting with your feet side-by-side and making your first step a "falling forward" step—will really help



shorten the transition from walk-to-jog. As the glider lifts off of your shoulders, switching gears and lengthening your strides will quicken the transition between jog-and-run. If you can smoothly accelerate and maintain proper AofA, you're pretty dang likely to have a great launch.

One last technique I recommend to everyone is this: At the end of your launch run, as you're getting light on your feet and about to get lifted off the ground, pull-in just a touch and get in another step-or-two before your feet leave the ground. This will give you a little more airspeed as you fly away. More airspeed gets you away from the ground faster (read: farther away from the hard thing that hurts if you hit it). The additional airspeed also results in more effective roll control, just in case you get a surprise that tries to turn you back at the hill (again, the hard stuff that hurts if you hit it).

I hope you've enjoyed this first segment. We're really excited to see where this column takes us. If you have a question you'd like answered or a topic you'd like to see discussed, please email Ryan at Ryan@WingsOverWasatch.com. You just might get to see your answer in print here in Hang Gliding and Paragliding Magazine.

In the meantime, I hope everyone is staying warm this winter, and getting good flights when they can find them. And remember: SAFETY is NO ACCIDENT! 

[above] Pilot is clearly accelerating glide forward using his SHOULDERS, only using hands to control pitch.

Ryan is a second-generation hang gliding instructor and flight school owner. He has been flying since he was still wet behind the ears—he's the youngest person ever to earn the Hang 5/Master rating. Ryan currently resides near Point of the Mountain, Utah and flies both hang gliders and paragliders as often as he can.