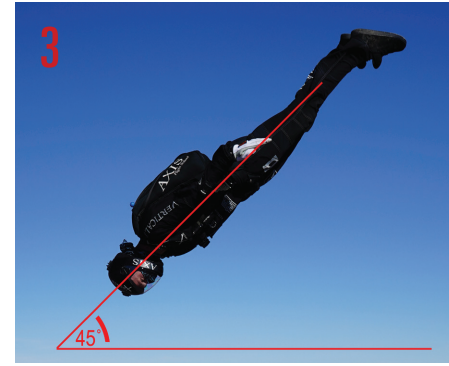


## FOUNDATIONS OF FLIGHT

### ANGLE FLYING—HEAD FIRST ON BELLY

Brought to you by Niklas Daniel and Brianne Thompson of AXIS Flight School at Skydive Arizona in Eloy. Photos by David Cherry. Information about AXIS' coaching and instructional services is available at [axisflightschool.com](http://axisflightschool.com).



Horizontal Method: Flat track (photo 1) to 45-degree pitch (photo 3)

Angle flying—also called tracking, atmonauti, zooming, tracing and many other names over the years—involves creating a horizontal flight path (as opposed to “falling down the tube”) by manipulating the pitch of the body. The challenge when angle flying is not just learning how to fly your body but also how to navigate the space around you. This type of flying blurs the lines between horizontal and vertical flying. To excel, you first have to understand your direction of travel, which comes with gaining spatial awareness. You can do this best by first becoming proficient at flying a flat track on your belly.

Steer clear of the aircraft's line of flight by planning a flight trajectory that is perpendicular to that of the aircraft. Confirm your drop zone's angle-flying policies, especially exit order, before attempting these exercises.

#### Performance Objectives

- Increase awareness and control of body pitch
- Influence your level and horizontal speed using body pitch and leg mechanics
- Gain ability to chase and fly with other angle flyers
- Achieve a stepping stone toward wingsuit performance flying

#### Prerequisites

- Proficiency at flat tracking on the belly
- Proficiency at diving on the belly
- Knowledge of leg mechanics for flying backward on the belly (see “Foundations of Flight—Backward Movement, Belly Flying,” July 2013 *Parachutist*)

#### Execution

You may experience some disorientation when flying at steeper angles due to the unfamiliar sight pictures and control inputs. Steep angles

have a rapid descent rate (similar to that of a freefly jump). Stay altitude aware and use an audible altimeter. When angle flying toward your head, you are in a continuous forward drive when horizontal and in a head-down backward drive when close to vertical. The primary flight surface for this maneuver is the front of the body. You can approach this skill in two ways:

#### Horizontal Method

Start the move on your belly facing 90 degrees off the line of flight in the direction you wish to travel. Initiate a strong forward drive by extending your legs and sweeping your arms back toward your thighs. You can control your levels by arching or flattening your chest, effectively transitioning between a belly flat track and a belly dive. When flying horizontally, your legs provide the primary forward drive, while your torso controls the descent rate.

During a typical track you look in the direction you are going. However, to steepen the pitch, start looking at the ground. Ultimately, you will look at the horizon past your legs. The trick is to maintain balance so you do not front-flip to your back, which will effectively stop you, or worse, drive you in the opposite direction. This is a safety concern when flying in groups.

Lowering your knees into the relative wind can help you pitch your torso to a steeper angle (exaggerated in the photo). The goal is to do this in a subtle manner. Better yet, keep the legs straight and push your feet down to help conserve your forward speed. If you need a more dramatic break at the hips to maintain control, change the pitch of your torso to the desired angle, then straighten out your legs. Control heading with the torso and shoulders, not the arms. At steeper angles, you must position your back in the desired direction of travel.

This kind of flying is related to the head-down outface carving maneuver in the wind tunnel.

#### Vertical Method

Start the move in the head-down orientation, facing 90 degrees off the line of flight facing opposite the direction you wish to travel. Initiate a strong backward drive by exposing the front of your body to the relative wind. Keep your head level and continue to look toward the horizon in front of you. If you lose your balance, you will most likely fall to your belly, which will result in a rapid fall-rate change. If this occurs, transition back to your head, re-establish your desired heading and continue.

#### Helpful Hints

Explore the wide range of possible angles, as these will give you the ability to fly relative to other flyers more effectively. A flat forward track on the belly will ultimately turn into a head-down backward drive when you introduce enough pitch. Although your flight path may be in the same compass direction, the flight surfaces you utilize to maintain control will have to adjust for the orientation change. In simplest terms, while performing a flat belly track, the legs are responsible for forward movement while the torso influences fall rate. While flying head down, the torso is responsible for forward movement while the legs influence fall rate. However, for angled flight, you must find a balance between your upper and lower body's flying surfaces while trying to maintain a pitch located between the horizontal and vertical planes. If you are flying relative to other people, you will need to know how to simultaneously throttle your forward drive and fall rate.

*The authors intend this article to be an educational guideline. It is not a substitute for professional instruction.*