

by **Niklas Daniel** and **Brianne Thompson**
photos by **Niklas Daniel**

TRACKING

—THEORY and APPLICATION



Becky Brocato tracks away from a 4-way formation skydive over Skydive Spaceland in Rosharon, Texas.

Tracking is an area that jumpers, regardless of skill level, need to continually practice and improve. Even those who have made thousands of skydives often need to go back and hone the basics, since many will have formed inefficient habits over the years.

A good, basic tracking position will maximize both forward drive and lift to create the most horizontal separation from others in the shortest amount of time possible. In other words, at the end of a skydive, trackers should try to fall as slowly as they can and go forward as quickly as they can so they don't open their parachutes near anyone.

It is important for jumpers to keep improving on creating horizontal separation, because as they become more proficient in their skydiving careers, they may find themselves flying in progressively larger groups. Other than pulling, tracking is one of the most important things skydivers can do to ensure their own safety. Almost all jumpers will eventually encounter a situation when tracking well will save

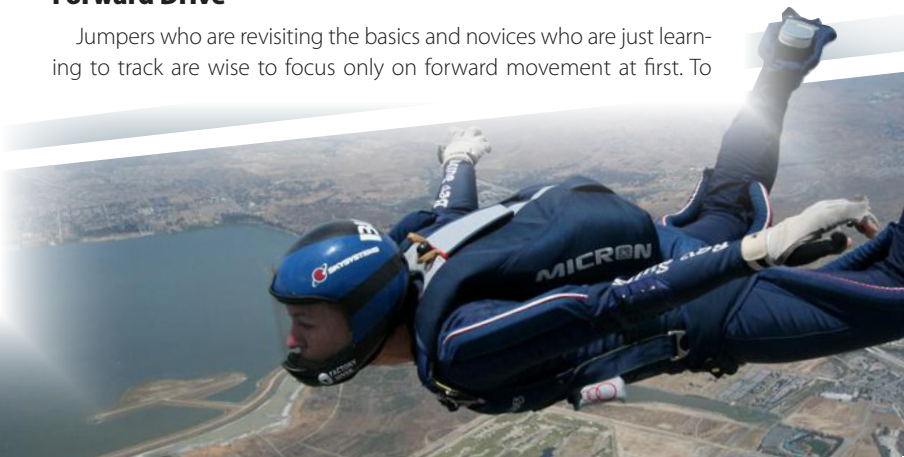
their lives. Of course, tracking can be recreational as well—many jumpers enjoy group tracking dives for fun. But no matter why a jumper is tracking, the flight mechanics remain the same.

Breaking It Down

As with all body flight, there is an evolution to the learning process in tracking. The first principles provide a starting point for expanding awareness of the airflow and build from there. These exercises focus on the basics, covering small yet important details that will help jumpers of all skill levels maximize their success.

Forward Drive

Jumpers who are revisiting the basics and novices who are just learning to track are wise to focus only on forward movement at first. To





DELTA TRACK

Left: Brianne Thompson demonstrates a delta track over Skydive Elsinore in California.

maximize forward drive, the jumper should fully extend his legs, lock his knees and fully extend and sweep back his arms. It is acceptable to keep both arms and legs wide during this phase, and the flyer may keep a strong arch to maintain stability. The jumper should be able to feel the greater forward speed this position creates. This position is called a “delta track,” since the hard arch and the wide position of the arms and legs cause the jumper’s body to take on a triangular shape (see delta-track photo, above).

While perfecting the delta track, the jumper should focus on flying straight while driving forward as aggressively as possible. Tracking in a straight line is vital. The most efficient way to navigate the heading of this track is by pushing down on the airflow with the palms of the hands and the tops of the feet, ensuring that the limbs do not drop below the torso.

Many jumpers never move beyond this phase—since they feel themselves driving forward with a lot of speed, they think they are tracking efficiently. The problem is that the delta track is really more of a dive than a true track. So once flyers feel confident generating speed, it is important that they move on to the next step: generating lift.

Generating Lift

While in freefall, jumpers can make use of two main flight surfaces: the upper body and the lower body. The body’s center of gravity—the hips—connects these flight surfaces. A flyer can isolate his legs and focus on only the lower body while maintaining an arch (and balance) with the upper body, or vice-versa. Once a flyer is proficient with using the upper and lower body’s flight surfaces separately, he can combine these skills to create a single efficient flight surface for maximum forward drive and lift.

To create lift, a jumper should maximize his body’s surface area to fall as slowly as possible. In a delta track, the extended arms and legs already create a little bit of lift; to create more, the jumper should flatten his entire body. His head should be aligned with his hips, knees and feet—all of which together should form a straight line. The best way to flatten the core and torso is by rolling the shoulders forward and sucking in the gut. Since the jumper has already fully extended his arms and legs, he can now put energy into making them as rigid as possible. A good track should make the jumper work a little! This improved track will allow the flyer to travel farther forward during the limited time available at the end of a skydive (see flat-track photo, below).

Even More Lift

When the body’s flight surfaces come into closer contact with one another, they create a larger, unbroken surface area and thus produce more lift. Therefore, the jumper’s ultimate goal should be to “pencil up,” creating a tight, unbroken and flat body position (see penciling-up photo, page 47). Since the body has a tendency to roll around the axis of the spine when a jumper’s arms and legs are close to one another, it can be harder than normal to maintain balance. The most efficient way for a jumper to combat this is to use his shoulders to maintain both his balance and heading. The jumper can keep his spine straight, concentrating on banking his shoulders the way an airplane’s wings bank in a turn. The arms and hands should remain at the sides of the jumper’s torso—if he puts them underneath himself, the track will be less efficient.

Troubleshooting

One of the most common mistakes jumpers make when tracking is to de-arch. De-arching tends to result in a rounded spine, which often leads to a jumper flying with his limbs below his torso, knees bent and low, and hips up. If his arms drop below his torso, they



FLAT TRACK

In this composite shot, Brianne Thompson demonstrates a flat track, a body position that generates maximum forward drive and lift.



TRACKING

—THEORY and APPLICATION

PENCILING UP

In this composite shot, Brianne Thompson "pencils up" to maximize lift.

may act as flaps do on an aircraft—effectively slowing down his forward progress and potentially changing his body's pitch. De-arching causes a jumper to present less surface area to the relative wind. It can also disrupt the airflow over the body, which results in the upper and lower body performing in conflicting flight modes. Instead, a jumper should concentrate on keeping his torso and spine flat, not curved.

Many flyers who are tracking away from others tend to put their chins to their chests in order to look through their legs to see what is happening behind them. However, what is happening behind a flyer is not nearly as important as what might be happening in front and above him. Putting his chin to the chest will also cause his spine to curve—in effect, de-arching. This habit can also change the body's pitch, which creates a dive. Jumpers should particularly avoid this separation-minimizing habit when tracking away from a formation.

Regardless of how many jumps someone has, he can always improve his tracking skills. And though tracking may be a basic skill, that doesn't mean that learning and maintaining a good track is easy. Despite the number of jumps or amount of experience someone has, he should always strive to make his skills better—particularly the basics.

About the Authors

Brianne Thompson, D-30035, and Niklas Daniel, D-28906, are the founders of Axis Flight School (www.axisflightschool.com), which focuses specifically on teaching the most efficient and effortless body-flight mechanics for navigating in freefall on all axes. Thompson and Daniel are also members of the U.S. women's 4-way formation skydiving team, Spaceland Blue.



TRACKING *in* GROUPS

Group tracking dives are a great way to improve upon individual tracking skills. Here are some tips:

- ▶ A newer jumper should start with small tracking groups, such as 2- and 3-ways, then work his way up to larger groups.
- ▶ The leader, or "rabbit," should be an experienced tracker who makes sure that others in the group maintain their heading, speed and levels, and break off at the proper altitude. The leader usually monitors the jump by flying in front in a back track and signals breakoff to the rest of the group by waving his arms or legs.
- ▶ The leader must ensure that the group's primary flight path is perpendicular to the line of flight to create separation from other groups.
- ▶ Catering to the slowest flyer, the leader should start the track at a slow speed and gradually increase it.
- ▶ The group should have slot-specific positions for each participant.
- ▶ No one at any point in the skydive should pass or fly underneath the rabbit.
- ▶ The jumpers following the leader will have a higher chance of success by setting up as close as they can in the door. The people leaving the aircraft last need to pay attention to their approach speeds while going from dive to track to avoid dangerous collisions.
- ▶ Think of flying in a tracking dive like driving on the freeway: No one should be like a drunk driver, swerving across other people's lanes. The followers should find their slots and stay there.
- ▶ Due to the forward speed of a track, burbles will no longer be directly above the flyer, but will shift slightly behind him.
- ▶ The larger the group, the higher the breakoff altitude should be. On a large tracking dive, it is wise to stage the breakoff and have the jumpers split up at three altitudes (e.g., at 5,000, 4,500 and 4,000 feet) and in predetermined angles from the leader.

It is always wise to have a plan before any skydive, and tracking dives are no exception. As always, have fun, be safe, look cool doing it.