
Visualization: Mind over Body

Did you know that done properly, visualizing what you are about to do can be as effective as practicing it for real? Studies show that the only part of an athlete's performance that visualization will not help is gaining the strength necessary to perform the task.

Exercise is hard and skydiving is expensive, but visualization is cheap and easy. To begin, go where you can relax and where distractions will not affect you. (Potential distractions may be all around, but you can train your mind to tune them out.) Breathe rhythmically, slowly and recall or imagine a pleasant experience or moment where you are calm and very comfortable.

Then, imagine your upcoming performance exactly as you want it to occur. Start from the beginning, which includes moving to the door of the aircraft and imagine your actions through to the end. You should even visualize your descent under canopy.

Visualize every detail: where you will place your hands and feet in the door, the cold air rushing in, the noise of the plane, the clean smell of the air, the feel of the aircraft metal on your hands, and everything you can associate with the upcoming experience.

Imagine how you will move every part of your body during the count and exit and how you will feel as you fly away from the plane. Think of where you will position your hands, feet, head, and torso, particularly as you explore techniques for maneuvering in freefall. Visualize every move, including looking at the ground, checking your altimeter, and seeing your instructors.

Some athletes visualize the upcoming performance from their point of view, while others visualize as if they were watching themselves on TV from above or alongside.

Visualize in slow motion or real time, but no faster. See your performance as one continuous flowing action, rather than as snapshots. As you visualize your actions, associate the motions by feigning the small movements with your hands or your legs with each action ("twitch") as you mentally rehearse the performance.

Leave yourself a few minutes to take in the sights and sounds on the way to altitude, but keep your performance first on your mind. The jumpers who succeed best all practice their routines on the climb to altitude, so you should not feel out of place. Just look around at the others doing the same thing!

At this stage of your training, your performance requires as much of your attention as any skydiver training for competition. Use these same visualization tips that help top athletes in skydiving and other sports to help you improve your performance and increase your overall satisfaction from each jump.

Category D

Two Jumps

By now, you have learned to safely control freefall by keeping track of your altitude, focusing on a neutral body position-especially your hips and legs and relaxing. In Category D, you will learn to control heading by modifying the neutral position using your upper body to deflect air. You will need to demonstrate relatively effortless control of 90°, 180°, and 360° freefall turns before moving on to aerobatics, introduced in Category E. Under canopy, you will explore rear riser control, which opens new safety options and adds fun to the canopy ride. Before advancing, you should demonstrate the ability to return to the drop zone and steer a planned, recognizable landing pattern without assistance. To progress to Category E, you should also be able to flare and land with minimal assistance by now. You should be able to stand up on landing by the end of this category. In Category C, you observed your instructor prepare and inspect your gear for the jump. Now, it is your turn. In Category D, you will begin studying skydiving equipment in earnest to become responsible for your own pre-flight equipment checks. You will review the owner's manual for the automatic activation device and learn how to operate one. The USPA Instructor introduces some of the elements of spotting, which means choosing the correct exit point and guiding the pilot to it. You will observe jump-run operations from the door. Study assignments include the FAA requirements for cloud clearance and visibility, which you will need to memorize.

Learning and Performance Objectives

- Solo, unassisted exit
- Freefall turns
- Freefall speeds and times (review)
- Rear riser control
- Building landing review
- AAD (owner's manual)
- Pre-jump equipment check
- Introduction to three-ring release operation
- Cloud clearance and visibility
- Observe jump run

Rules and Recommendations

Cloud clearance and visibility requirements for skydivers (FAR 105.17)

1. The pilot and jumper are jointly responsible for complying with the flight visibility and cloud clearance requirements of FAR Section 105.17. Aircraft flight under visual flight rules (VFR) conditions and persons making parachute jumps require minimum clearance from clouds and minimum visibility depending upon the altitude at which the activity is taking place:
 - a. For activities that are at or above 10,000 feet MSL, the required minimum distance from clouds is 1,000 feet under, 1,000 feet over, and one mile horizontally from clouds. Flight visibility must be at least five miles.
 - b. For activities that are at more than 1,200 feet above the surface but less than 10,000 feet MSL, the required minimum distance from clouds is 500 feet under, 1,000 feet over, and 2,000 feet horizontally from clouds. Flight visibility must be at least three miles.
2. No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft:
 - a. Into or through a cloud, or
 - b. When the flight visibility or the distance from any cloud is less than that prescribed above.



3. Read and memorize the cloud clearance and visibility table and illustration below:

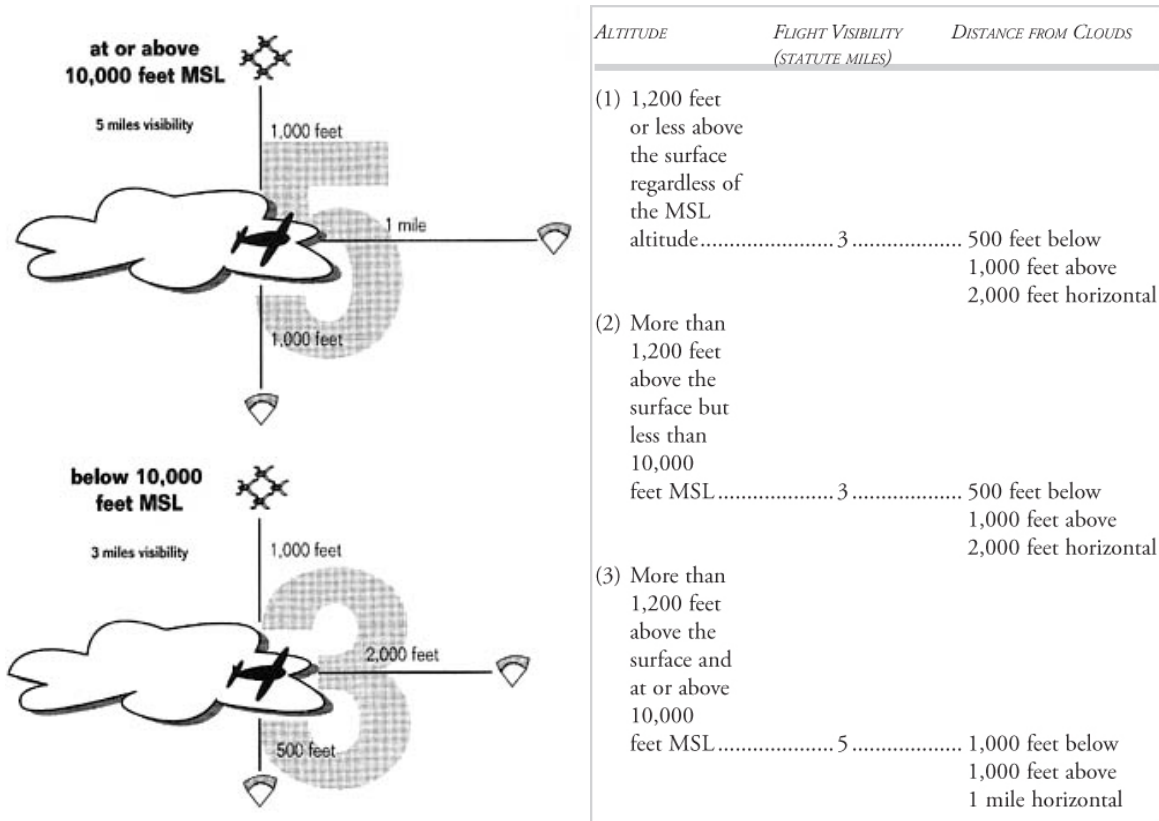


Illustration D.1 - Jumpers must observe the FAA requirements for visibility and clearance from clouds (FAR 105.17) to avoid other aircraft flying over the drop zone.

USPA requires that all student jump operations be completed prior to sunset
All student jumps, including tandems, must be completed between official sunrise & sunset. (BSR 2-1.F.9)

Equipment

1. Automatic activation device operation:
 - a. The instructor or a rigger explains the basics of how to operate the AAD.
 - b. Every jumper should read and understand the information contained in the AAD owner's manual.
 - c. An AAD initiates the reserve deployment sequence at a pre-set altitude.
 - d. An AAD is encouraged for all licensed jumpers.
 - e. The use of an AAD for activation of the reserve parachute, coupled with proper training in its use, has been shown to significantly increase the chances of surviving a malfunction or loss of altitude awareness.
 - f. The AAD is used to back up the jumper's deployment and emergency procedures, but no jumper should ever rely on one.
 - g. The FAA requires that if an AAD is installed, it must be maintained in accordance with the manufacturer's instructions (FAR 105.43.c).
 - h. An AAD may complicate certain situations, particularly if the jumper deploys the main parachute low enough for the AAD to activate.
 - i. Understanding and reviewing of the emergency procedures for Two Canopies Out is essential.

2. Checking assembly of the three-ring release system:

(Note: Disassembly and maintenance of the three-ring release system is covered in Category H.)

- a. Each ring passes through only one other ring.
- b. The white retaining loop passes through only the topmost, smallest ring.
- c. The white retaining loop passes through the cable housing terminal end.
- d. The release cable passes through the white retaining loop.
- e. The retaining loop is undamaged.
- f. The release cable is free of nicks, kinks, and burrs (especially on the end).

3. Pre-jump equipment checks:

(Note: The instructor should guide you through a complete pre-flight equipment check using a checklist.)

- a. Before each jump, check your equipment before putting it on.
- b. With the help of another jumper, get a complete gear check with all your gear on before boarding.
- c. Get your equipment checked once again before exiting the aircraft:
 - (1) "Check of threes" (jumper self-check)
 - (a) Three-ring assembly (and reserve static line)
 - (b) Three points of harness attachment for correct routing, assembly, and adjustment
 - (c) Three operation handles--main activation, cutaway and reserve
 - (2) Pin check back of system (by another jumper) top to bottom:
 - (a) Reserve pin in place (and automatic activation device on and set to correct mode)
 - (b) Main pin in place
 - (c) Ripcord cable movement or correct bridle routing
 - (d) Activation handle in place
 - (3) Personal equipment check ("SHAGG"):
 - (a) **S**hoes: tied, no hooks
 - (b) **H**elmet: fit and adjustment
 - (c) **A**ltimeter: set for zero
 - (d) **G**oggles: tight and clean
 - (e) **G**loves: lightweight and proper size (only if below 40° at jump altitude)

4. Jumpsuit or clothes:

- a. Access to handles: shirt tails, jackets, and sweatshirts tucked in, pockets zipped closed
- b. Protection on landing
- c. Provide correct fall rate

Aircraft and Spotting

1. Instructor-assisted planning with the landing pattern for the day's conditions.

2. Overview of aircraft spotting and jump-run procedures (what "spotting" means):

(Note: It is recommended that a jump pilot explain spotting procedures in Category E.)

- a. Determining the best opening point:
 - (1) Calculations from wind forecasts
 - (2) Observation and discussion of previous jumpers' canopy descents
- b. Pre-flight briefing with the pilot to discuss the correct jump run and exit points
- c. Guiding the pilot on jump run
- d. Verifying that the area below is clear of clouds and other aircraft before jumping

3. During jump run, observe spotting procedures and demonstrate the technique for looking straight down from the aircraft:

- a. Sight from the horizon looking forward
- b. Sight from the horizon looking abreast
- c. The junction of the two perpendicular lines from horizon marks the point straight below aircraft.

4. You must get your head completely outside the aircraft to look effectively for other aircraft and clouds.



Exit and Freefall

1. Poised exit without assistance:
 - a. Use the same climb out, set-up, launch, and flyaway procedure as on previous exits.
 - b. Prepare for slightly different results without an instructor gripping the harness on exit.
 - c. A.I.R.: Provided you are **A**ltitude aware, **I**n control, and **R**elaxed (AIR), you may continue in freefall and deploy at the assigned altitude.
 - d. Five-Second Rule: If you are above your assigned deployment altitude but cannot control your freefall (spinning rapidly or tumbling) for more than five seconds, deploy your main canopy immediately. Deploy your main canopy at the assigned deployment altitude regardless of stability.
 - e. Roll-Out-of-Bed (ROB) Technique: If you are above your assigned deployment altitude and falling in a back-to-earth orientation, roll to one side to recover to a stable, belly-to-earth body position. Check altitude, arch, look towards the ground to the right, bring the right arm in across your chest, as your body rolls to the right and you are facing the ground bring your right arm back to the freefall position. Check altitude.
 - f. Review short Circles of Awareness (altitude, arch, legs, relax, and correct turn if needed):
 - (1) Know the altitude by reading the altimeter or counting from exit (depending on exit altitude).
 - (2) Arch at the hips to improve belly-to-wind stability.
 - (3) Check your leg position and adjust as needed (probably extend to 45 degrees).
 - (4) Relax by taking a breath and letting go of unwanted body tension.
 - (5) Recognize heading changes and actively correct as jump continues.
 - g. Exit without assistance and establish control within five seconds before advancing from Category D.
2. Initiating freefall turns:
 - a. First, establish a comfortable, relaxed, neutral body position.
 - b. Find a point ahead on the horizon as a primary heading reference.
 - c. Initiate a turn by changing the level of your upper arms to deflect air to one side; the forearms should follow.
 - d. Assist the turn's effectiveness by extending both legs slightly to counter the effects of tension in the upper body.
 - e. Any deviation from the neutral position (as when initiating a turn) demands more effort to maintain the rest of the body in neutral.
 - f. Maintain leg pressure and arch for a smooth turn.
 - g. Stop small turns (90 degrees or less) by returning to the neutral body position.
 - h. Stop larger turns (180 and 360 degrees) using the "start-coast-stop" principle.
 - (1) Start the turn using the turn position for the first half of turn.
 - (2) Return to neutral when original heading comes into view.
 - (3) Counter the turn if necessary to stop on heading.
 - i. To regain lost control: altitude, arch, legs, relax (neutral position), pick a new heading to maintain.
 - j. Stop all maneuvers at 6,000 feet and maintain a stable arch on heading with positive leg pressure through wave-off and deployment.
3. Calculating freefall time according to exit altitude based on average terminal velocity of 120 mph:
 - a. Ten seconds for the first 1,000 feet
 - b. 5.5 seconds for each additional 1,000 feet (round down to five seconds for an added safety margin)
 - c. Example: jump from 5,000 feet with a planned deployment altitude of 3,000 feet
 - (1) Allow ten seconds from 5,000 to 4,000 feet
 - (2) Add five seconds from 4,000 to 3,000 feet
 - (3) Plan a total of 15 seconds for freefall



Emergency Procedure Review

1. Study and review all possible equipment malfunctions in a training harness:
 - a. Recognition and decision-making ability for good or bad canopy:
 - (1) Review sample problems not requiring a cutaway and practice the procedures.
 - (2) Review premature deployment.
 - (3) Review sample malfunctions requiring a cutaway and practice the procedures.
 - b. Procedures for testing a questionable canopy above cutaway altitude:
 - (1) Make two tries to clear the problem with toggles or back risers if altitude permits.
 - (2) The canopy must fly straight, turn, and flare reliably to be able to land safely.
 - (3) Decide to cut away or land the canopy by 2,500 feet and act.
2. Procedures for landing on a building:
 - a. Plan your landing approach to be well clear of objects.
 - b. Fly far enough from objects that another jumper or your own misjudgment does not force you into a building or other hazardous object.
 - c. Focus on clear, open landing areas and steer the parachute to a clear area.
 - d. Make any low-altitude avoidance turns from braked flight to avoid an equally dangerous dive following a turn from full flight.
 - e. If a building is unavoidable, press feet and knees together and prepare for a PLF to absorb impact.
 - f. If possible, disconnect the RSL before landing on a building.
 - g. At ten feet above the first point of contact with the building, flare to at least half brakes.
 - h. Strike the building feet first, whether landing on top or into the side of the building.
 - i. After landing on top of a building in windy conditions:
 - (1) Disconnect the reserve static line (if possible).
 - (2) Cutaway the main parachute canopy to avoid being pulled off roof.
 - (3) If landing with a reserve, retrieve and contain the canopy until removing the harness.
 - j. Wait for competent help and assistance.

Canopy

1. Rear riser steering:
 - a. Steer using the rear risers with the brakes still set to change heading quickly after opening:
 - (1) With the brakes set, the canopy has less forward momentum to overcome for a turn.
 - (2) The rear risers operate more than the entire back quarter of canopy.
 - b. Using risers to steer in case of a malfunctioned toggle:
(You must discuss this section with your instructor.)
 - (1) Release both brakes.
 - (2) You need to conserve enough strength to complete all turns with rear risers until landing and still be able to flare.
 - (3) Especially on a smaller canopy, you should practice riser flares many times above 1,000 feet on a routine jump before committing to a riser landing (important).
 - (4) Your plan to land or cut away in the event of a malfunctioned toggle should be made before you ever encounter the problem.
 - (5) One locked brake with the other released may necessitate a cutaway; decide and act by 2,500'.
 - c. Practice all riser maneuvers above 1,000' & focus on the canopy pattern & traffic from 1,000' down
 - d. Before making any turns, look in the direction of the turn to prevent collisions and entanglements.
2. With minimal assistance, land within 165 feet of the target.



Category D Quiz

(Must be passed before Category D-1 jump.)

- 1. For planned deployment initiation at 3,000 feet, approximately how long should an average-sized jumper fall after exiting at 5,000 feet?**
 - a) 10 seconds
 - b) 15 seconds
 - c) 20 seconds

- 2. What is the most appropriate response to loss of heading control in freefall?**
 - a) Altitude, arch, legs, relax.
 - b) Correct by turning in opposite direction.
 - c) De-arch.

- 3. What is the best way to avoid a canopy collision when turning?**
 - a) Announce in a loud, clear voice your upcoming turns and/or maneuvers.
 - b) Always fly a right-hand pattern.
 - c) Look first in the direction of the turn.

- 4. What is the quickest and safest way to change heading immediately after opening?**
 - a) Aggressively use toggle inputs to turn.
 - b) Rear riser turn with the brakes still set.
 - c) Front riser turn with the brakes still set.

- 5. How would you steer a parachute that has a broken brake line?**
 - a) Immediately cut away and pull the reserve.
 - b) Use the back risers to steer with the brakes still set.
 - c) If familiar with rear-riser flares on that canopy, release both brakes and use the back risers to steer.

- 6. How would you prepare to land a canopy using the rear risers to flare?**
 - a) Practice with rear-riser flares at altitude with that canopy during a routine jump.
 - b) Prepare to PLF.
 - c) Set the brakes first, then land using rear risers.

- 7. What is the procedure for landing on a building?**
 - a) Cut away 5-10 feet above the building surface, prepare to PLF.
 - b) Disconnect the RSL (if time), contact the building feet first, PLF, cut away after landing on top of a building, wait for competent help.
 - c) Steer away from building so that you land on solid ground.

- 8. What is the purpose of the automatic activation device?**
 - a) To back up the jumper's emergency procedures
 - b) To deploy the main canopy if the jumper is unable
 - c) To give the jumper more useable freefall time

- 9. What is the "check of threes"?**
 - a) Check with manifest to confirm your load number; check with your instructor to go over the dive flow; check with the pilot to confirm load.
 - b) Check three-ring release system for correct assembly & RSL; three points of harness attachment for correct routing, assembly, & adjustment; three operation handles-main activation, cutaway, reserve
 - c) Altitude, arch, legs.



- 10. What must the spotter do to determine what is directly underneath the aircraft while on jump run?**
- a) Maintain communication with flight control.
 - b) Check GPS spot.
 - c) Place head completely outside the aircraft and look straight down.
- 11. How far horizontally must jumpers be from any cloud below 10,000 feet MSL?**
- a) 2,000 feet
 - b) 3,000 feet
 - c) one mile
- 12. How far horizontally must jumpers be from any cloud at 10,000 feet MSL and above?**
- a) 2,000 feet
 - b) 3,000 feet
 - c) one mile
- 13. What are the minimum visibility requirements below 10,000 feet MSL?**
- a) one mile
 - b) three miles
 - c) five miles
- 14. What are the minimum visibility requirements at 10,000 feet MSL and above?**
- a) one mile
 - b) three miles
 - c) five miles
- 15. Who is responsible for a jumper observing cloud clearance requirements?**
- a) Jumper and pilot
 - b) Each jumper
 - c) Safety and Training Advisor
- 16) According to the BSRs, what is the latest a student may jump?**
- a) 9:00 PM (2100)
 - b) All student jumps must be completed by sunset.
 - c) All student jumps must be completed by thirty minutes after sunset.
- 17. What is the technique for determining the point straight below the aircraft during jump run?**
- a) Determine two lines from the horizon, one ahead and one abreast, and find the intersection of those two lines.
 - b) Look straight down and focus on the point that does not move.
 - c) Determine two lines from the horizon, one ahead and one parallel, and find the intersection of those two lines.
- 18. What must the jumper look for below before exiting the aircraft?**
- a) Previous groups of skydivers
 - b) Clouds and other aircraft
 - c) Both a and b



Category D Dive Flows

One AFF instructor

D-1 Freefall Dive Flow

- Observe spotting from the door.
- Exit in a relaxed arch (instructor gripped).
- Perform a full Circle of Awareness
- One smooth practice touch without assistance.
- Instructor releases grip and flies to front.
- Perform a short Circle of Awareness.
(Altitude, Arch, Legs, Relax, Correct Turn)
- Find a reference point on the horizon and determine the position of the instructor.
- Ask permission to turn (head nod).
- Receive reply from instructor (head nod).
- Start a turn, coast, and stop at 90°.
- Perform a short Circle of Awareness
- With instructor's permission each time, perform alternating left and right 90° turns while doing a short CoA in between each maneuver.
- Initiate no new turns below 6,000 feet.
- Finish final turn by 5,000 feet.
- Lock on to altimeter at 6,000 feet.
- Wave-off at 5,000 feet.
- Pull by 4,500 feet.

D-2 Freefall Dive Flow

- Observe spotting from the door.
- Solo poised exit in a relaxed arch.
- Perform a full Circle of Awareness.
- One smooth practice touch without assistance.
- Instructor flies to front
- Perform a short Circle of Awareness.
(Altitude, Arch, Legs, Relax, Correct Turn if needed)
- Find a reference point on the horizon and determine the position of the instructor.
- Ask permission to turn (head nod).
- Receive reply from instructor (head nod).
- Start a turn, coast, and stop at 180°.
- Perform a short Circle of Awareness.
- If above 6,000', turn 180° back to instructor.
- With instructor's permission each time, perform alternating left and right 360° turns while doing a short CoA in between each maneuver.
- Initiate no new turns below 6,000 feet.
- Finish final turn by 5,000 feet.
- Lock on to altimeter at 6,000 feet.
- Wave-off at 5,000 feet.
- Pull by 4,000 feet.

D-1 Canopy Dive Flow

- Correct common canopy problems (line twist, slider, end cells) using rears with brakes set.
- Look right and turn right 90° using rear risers.
- Check altitude, position, and traffic.
- Repeat to the left.
- Check altitude, position, and traffic.
- Release brakes, conduct controllability check, and fly to the holding area.
- Look right & turn right 90° using rear risers.
- Check altitude, position, and traffic.
- Repeat to the left.
- Look right & turn right 180° using rear risers.
- Check altitude, position, and traffic.
- Repeat to the left.
- Check altitude, position, and traffic.
- Practice rear riser flares.
- Return to normal controls by 2,000 feet.
- Verify landing pattern & adjust as necessary.
- Continue to stay in holding area until 1,000 feet.
- Follow planned pattern over landing area.
- Prepare to PLF and flare to land.

D-2 Canopy Dive Flow

- Correct common canopy problems (line twist, slider, end cells) using rears with brakes set.
- Look right and turn right 90° using rear risers.
- Check altitude, position, and traffic.
- Repeat to the left.
- Check altitude, position, and traffic.
- Release brakes, conduct controllability check, and fly to the holding area.
- Look right & turn right 180° using rear risers.
- Check altitude, position, and traffic.
- Repeat to the left.
- Check altitude, position, and traffic.
- Practice rear riser flares.
- Return to normal controls by 2,000 feet.
- Verify landing pattern & adjust as necessary.
- Continue to stay in holding area until 1,000 feet.
- Follow planned pattern over the planned landing area or alternate.
- Prepare to PLF and flare to land.

Note: Your hands should go to the rear risers after opening on every jump for collision avoidance. You can flare your parachute to land with the rear risers in situations where your toggle(s) are rendered useless.



Advancement Criteria

Spotting and Aircraft

- Recognize and observe the airport and the spot from the aircraft door during jump run

Equipment

- Operate the AAD

Exit and Freefall

- Stability within five seconds after an unassisted poised exit
- Cumulative of four 90° turns, within 20°
- Cumulative 2 180° & 2 360° turns, within 45°

Canopy

- Cumulative two 90° rear riser turns with brakes set
- Cumulative two 90° rear riser turns with brakes released
- One 180-degree rear riser turn, and one 360-degree rear riser turn with brakes released
- Two rear riser flares above 1,000 feet
- Stand-up landing
- Landing within 165 feet of the target with minimal assistance

HAVE YOU JOINED USPA?

The United States Parachute Association represents and works for skydivers like you. USPA maintains FAA-recognized skydiving training, licensing, and rating programs, sanctions competitions and much more.

As a USPA member, you receive third-party personal liability and property damage skydiving insurance coverage.

Maintaining a strong association of skydivers requires your participation. Please join at your local drop zone, on line at www.uspa.org, or call (540) 604-9740.

