

2003 U.S. Paragliding Accident Summary  
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USHGA received 95 reports of paragliding incidents and accidents in 2003, a substantial increase since 2002. 32 of the reports (34%) were about incidents. **Incidents** are broadly defined as any outcome of a flight that was not intended by the pilot but did not result in an injury. 63 of the reports (66%) were for **accidents**, which are defined as any incident resulting in an injury to the passenger or pilot.

### Fatalities

Unfortunately, there were nine paragliding fatalities occurring in the U.S. in 2003. This comes on the heels of a similarly bad year in 2002, when we had 7 fatalities. This is a stark contrast to 1999-2001 when there were only two fatalities in a three-year period.

Three of the pilots killed held advanced or tandem ratings. Five were P2's or P3's, and one was self-trained/unrated. Four of the P2's had low airtime on paragliders. One of these was an extremely experienced hang glider pilot who was transitioning to paragliders and under instruction at the time of the accident. Another pilot disappeared while flying alone and is presumed dead. A third was flying an advanced desert site at a time when thunderstorm activity with lightning was observed in the nearby area. One fatality involved alcohol and may have been a suicide. One pilot was observed experiencing an asthma attack prior to flying, and was cautioned not to fly because of his medical condition that day. He subsequently flew and asthma may have been the cause of the accident and his death.

The self-taught pilot was attempting to fly in high winds by tethering to a fixed object on the ground. A bystander was seriously injured in this accident. Fixed rope towing and tethering to objects with fixed ropes is extremely dangerous and has resulted in several other serious injuries and fatalities in the U.S. Training is essential in any form of aviation. Pilots are encouraged not to sell used equipment to people who do not have proper training. Safe towing requires a weak link, proper tow device, and training for both the pilot and tow operator.

Two fatalities were caused by intentional aerobatics over ground. There have now been three fatalities in the past two years in the U.S. that were caused by aerobatics. All three occurred over ground instead of water, although one of the pilots did impact in a shallow river. This pilot may have blacked out due to high g-forces from the aerobatics.

The final fatality was a very experienced P5 pilot who crashed while competing in the U.S. Nationals. This pilot was flying close to mountainous terrain in light lift. He experienced several collapses before being swung into the cliff face. Several reporters speculate that a “competition” mindset may have contributed in this pilot’s decision to fly in that location rather than not complete the task. This accident also happened at higher altitudes than this pilot was accustomed to flying, and was the first time this pilot had flown with oxygen supplementation.

It is worth noting that Scotty Marion’s disappearance is not included in the nine fatalities reported in this article. Scotty disappeared in Europe in 2003 and for the purposes of this annual summary, we only include accidents that occur in the U.S. This does not diminish Scotty’s tremendous contributions as a leading U.S. competitor, instructor and advocate for the safety for our sport.

The types of fatal injuries included head, neck and internal injuries. All pilots were reported to be wearing helmets. One report stated that a sharp object had penetrated the helmet. None of the pilots who were killed attempted to deploy a reserve.

2003 has now replaced 2002 as the deadliest year of paragliding in the U.S. since the birth of our sport. The cumulative fatality rate for USHGA from 1991-2003 is 1.42 fatalities per thousand USHGA members per year (standard deviation 1.2). If you exclude the years 1991-1993, the average fatality rate is 0.9 deaths per thousand USHGA members per years (standard deviation 0.65). The fatality rate in 2003 was 1.99 per thousand USHGA members.

<u>Year</u>	<u># of Deaths</u>	<u># of USHGA Paraglider Pilots</u>	<u>Fatality Rate per 1000 USHGA Members</u>
1991	4	1000	4.00
1992	3	1316	2.28
1993	6	1908	3.14
1994	1	2388	0.42
1995	2	2624	0.76
1996	4	2991	1.34
1997	4	3167	1.26
1998	4	3337	1.20
1999	1	3650	0.27
2000	1	3843	0.26
2001	0	4267	0.00
2002	7	4430	1.58
2003	9	4526	1.99

### Phase of Flight

<b>Phase</b>	<b>2003</b>	<b>2002</b>	<b>2001</b>	<b>2000</b>
Kiting	4%	--	1%	2%
Launching	17%	21%	32%	20%
In-Flight	38%	49%	29%	52%
Aerobatics	6%	6%	1%	--
Landing	33%	28%	38%	25%
Tow	4%	1%	--	--

The table above summarizes the phase of flight in which accidents occurred. **Kiting** means the pilot is clipped in but did not intend to leave the ground. **Launching** accidents include the **takeoff** phase (set up, building wall, kiting, and launching) and **departure** (from leaving the ground until established in flight). **Landing** accidents include problems during **approach**, or problems occurring in the actual **LZ**. Accidents are attributed to **aerobatics** if the pilot is performing the maneuvers intentionally.

## Nature and Severity of Injuries

Here is the breakdown of injuries for the past several years:

Nature of Injury	2003		2002		2001	
	Qty	%	Qty	%	Qty	%
Head	4	4%	3	4%	0	0
Face	1	1%	2	3%	0	0
Neck	3	3%	4	6%	1	1%
Back	24	25%	15	21%	20	25%
Chest	2	2%	9	13%	3	4%
Abdomen	2	2%	3	4%	3	4%
Pelvis	3	3%	6	8%	0	0
Arm	13	14%	7	10%	11	14%
Leg	22	23%	20	28%	27	34%

Severity of Injuries:

Fracture	47	75%
Sprain	5	8%
Bruise	5	8%
Minor	4	6%
Unknown	9	14%
Dislocation	2	3%
Internal	2	3%
Concussion	4	6%

There were a total of 63 injury accidents reported. 46 pilots (48%) sought care in the emergency department or from their physicians, and 33 accidents resulted in overnight stays in the hospital (35%). Accidents that result in minor injuries tend not to be reported as often, so these accident statistics will tend to overestimate the frequency and severity of injuries.

Back injuries occurred in one-quarter of reported accidents. Half of the back injuries were fractures. The most typical back fractures reported are compression or burst fractures of the lumbar vertebrae. The majority of these pilots were using soft foam type back protectors. Back protectors are believed to reduce injuries, but they will not prevent all fractures. Luckily, none of the fractures resulted in paralysis but several resulted in surgery and prolonged hospital stays.

Leg injuries remained the second most common type of injury, with fractures or sprains of the ankle being the most common.

**Qualifications of Injured Pilots:**

Rating	2003	2002	2001
Student/None	1%	4%	6%
P1	14%	8%	11%
P2	18%	22%	36%
P3	25%	21%	18%
P4	16%	31%	15%
P5	3%	1%	3%
T3	6%	4%	5%
Unknown	17%	10%	1%

There have not been statistically significant differences in the accident rates by pilot rating over the past three years.

**Wing Rating:**

For the reports that included information about the wing, here are the DHV ratings for those wings:

Wing DHV Rating	2003	2002
1	21%	17%
1-2	48%	25%
2	17%	32%

2-3	14%	17%
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The growing popularity of DHV 1-2 wings is reflected in the increasing proportion of accidents occurring on them. Although many pilots are selecting 1-2 wings because of perceived improvement in safety, we don't have the statistical power from this analysis to prove that 1-2 wings are indeed safer. As has been pointed out in other articles, the DHV ratings evaluate how a wing responds to certain types of induced collapses, but not how prone it is to experience them. There is also a wide range of stability within the 1-2 rating class.

**Factors:**

The table below summarizes the most commonly reported factors. Most accidents have multiple contributing factors. The number and percentage represent the number of times that factor was cited out of the 95 total reports received, so the percentages won't add up to 100%.

Thermal Turbulence	23	24%
Strong Wind	14	15%
Asymmetric Deflation	13	14%
Spiral Dive	10	11%
Stall	9	9%
Rotor	8	8%
Negative Spin	8	8%
Too close to Ground	7	7%
Preflight Error	6	6%
Aerobatics	6	6%
Blown back	6	6%
Poorly Inflated Takeoff	5	5%
Turning in LZ	5	5%
Obstacle in LZ	5	5%
Pilot Error	5	5%
Outside LZ	4	4%
Equipment Failure	4	4%
Line Tangle	4	4%
Reserve Not used/too late	4	4%

Tow accident	4	4%
Excessive Brake Flare	3	3%
New Equipment	3	3%
Turning into Ridge	3	3%
Wake Turbulence	2	2%
Unusual LZ	2	2%
Unknown LZ	2	2%
Power Lines	2	2%
Under Instruction	2	2%
Dragged by wind	2	2%
Alcohol/Drugs	2	2%
Unknown	2	2%
Valley Wind	1	1%
Object Fixation	1	1%
No Brake Flare	1	1%
Mid-Air Collision	1	1%
Other	1	1%
Crowded Airspace	1	1%
Cross Wind Launch	1	1%
Lack of pilot Currency	1	1%
Over/Under weight range	1	1%
high altitude	1	1%
spot landing attempt	1	1%
RC Glider collision	1	1%

The most common contributing factors were thermal turbulence and strong wind.

There were no incidents in 2003 involving power lines, but one involved collision with a chairlift cable.

There was only one mid-air collision in 2003 and it was between a paraglider and RC glider. The paraglider pilot was too low to deploy his reserve and was luckily not injured.

Out of the six aerobatics accidents reported, two were fatal. Five aerobatics accidents occurred over ground. One extremely lucky pilot had two reserve deployments in a two-week period, both while doing aerobatics over ground. The reserve deployed correctly once, but the

pilot was too low in the second incident. Landing on soft bushes saved him from injury or death. This was reported to be his sixth reserve deployment from aerobatics gone wrong, raising the question of what will it take to get the message through to this pilot? One pilot experienced a “massive line failure” while doing aerobatics on a glider that he was significantly over the placard weight on.

As aerobatics become increasingly popular in our sport, it is clear that the number of pilots who have the skill and abilities to do them safely over ground is smaller than the numbers who are attempting them. Most pilots who do aerobatics should probably perform them over water, with a skilled instructor, a rescue boat and proper safety equipment. We have already received a report in 2004 of a serious injury tandem accident resulting from intentional aerobatics over the ground.

Two accidents involved very experienced hang glider pilots who were transitioning to paragliders. Unfortunately, one of these was fatal and the other resulted in serious injuries. The pilot who is missing and presumed dead was a very experienced military fighter pilot who was relatively new to paragliding. Paragliding instructors should be aware that experience in other types of aircraft does not necessarily translate directly to paragliders. Instructors should take this into account when training pilots who are already experienced in other aircraft. Training programs for paragliding instructors may want to emphasize this difference.

### **Reserve Deployments:**

There were 15 intentional reserve deployments in 2003, which is an increase from 2002. Most of these resulted from line tangles or asymmetric deflations resulting in spirals or spins that the pilot was unable to recover from. Three of the pilots sustained fractures of the back or arm, but the other 12 pilots had minor or no injuries. With the possible exception of the pilot who is missing and presumed dead, none of the pilots who were killed in 2003 attempted to deploy their reserve.

Four of the deployments were after intentional aerobatics.

There were two inadvertent reserve deployments reported in 2003 caused by incorrect repacking of reserves resulting in a handle that was too tight, causing the pin to be pulled. Neither of these resulted in injuries.

### **Tandem Incidents:**

There were ten tandem incidents and accidents reported in 2003. This is an increase from the four reports in 2002. Six of these involved only minor ankle sprains or no injuries to the instructor or student. Students tripping during launch or landing caused four of the minor injuries. Athletic ability and passenger weight were both cited as contributing factors. Three of the accidents involved more serious injuries to the tandem pilots including fractures of the back or the lower extremity. There were no mid-air or reserve deployments involving tandem flights in 2003. One tandem incident involved a tree landing and is worth pointing out because the tandem instructor pilot was well prepared for a tree extraction.

It is worth noting that tandem instructors are required to file accident reports with USHGA. Nine of the 10 reports this year were official reports from the tandem pilots, and we really appreciate their diligence in submitting reports.

### **Please continue to report your incidents and accidents!**

We have seen a gratifying response from pilots to our requests for help. Pilots may submit reports online at <http://www.ushga.org/emailacc.asp> or use paper forms available on the website or from USHGA. We really prefer you use the form because it helps us collect data about ratings, number of flights, wing rating, etc. You are welcome to attach your narrative to the report form. Pete Reagan gets a lot of great insight into the accidents from the narrative for his accident columns, but for the year-end summary we need the additional details.

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Author's Note: This is my third year compiling the paragliding accident statistics for USHGA. I'm a P3 pilot and family physician in Portland, Oregon.

I think part of my justification for writing this article has been an attempt to prove to myself that the criticisms of my friends and family about the perceived risk of the sport are wrong. But if I joined a bocce ball club, and they told me that 1-2 out of every 1000 people in the club would die each year, I would think VERY hard about those odds. If I were 90 years old I might accept the risk because I would have already outlived my life expectancy. But if I was 30, the benefit would have to be very great for me to accept that risk. So what is the real "risk/benefit" ratio for paragliding? I LOVE the sport, it is simply incredible to thermal and soar with eagles, but is it worth dying for? Is it worth a 50% risk of back or leg fracture if I'm involved in an injury accident? Those are difficult questions to ask and to answer. But if I don't ask those questions of myself on a regular basis, then I'm doing a disservice to both my family and myself. The answers to those questions determine my risk tolerance and aversion, and SHOULD be what I guide my decision on whether I want to fly or not on any given day.

This article wouldn't be possible without the encouragement, editing, and mentorship of Steve Roti and Pete Reagan.