

Risk of dying and sporting activities

Clinical bottom line

The risk of dying associated with most sporting activities is surprisingly low, even with skydiving or hang gliding.

Data sources

- Soreide et al. *J Trauma*. 2007;62:1113-1117. How Dangerous is BASE Jumping? An Analysis of Adverse Events in 20,850 Jumps From the Kjerag Massif, Norway
- Turk et al. *Br. J. Sports Med*. 2008;42:604-608. Natural and traumatic sports-related fatalities: a 10-year retrospective study
- United States Parachute Association accident statistics, http://www.uspa.org/about/page2/relative_safety.htm
- Number of jumps made in 2006 from 2006 membership survey results, <http://www.uspa.org/about/images/memsurvey06.pdf>
- Westman et al. *Accident Analysis and Prevention* 37 (2005) 1040-1048. Fatalities in Swedish Skydiving
- Health and Safety Executive: Risk Education Statistics, <http://www.hse.gov.uk/education/statistics.htm#death>
- Redelmeier et al. *BMJ* 2007;335:1275-1277. Competing risks of mortality with marathons: retrospective analysis
- Cantu et al. *Neurosurgery* 52:846-853, 2003. Brain injury-related fatalities in American football, 1945-1999
- National Ski Areas Association (NSAA) in America: <http://www.ski-injury.com/prevention/helmet>

What the sources tell us

Careful examination of data from a number of sources tell us that, BASE jumping apart, sport is reasonably safe. There will be accidents, like folk drowning on holidays, or being involved in road traffic accidents while cycling, but by and large it is safer than most of us would probably have thought.

Give us the odds

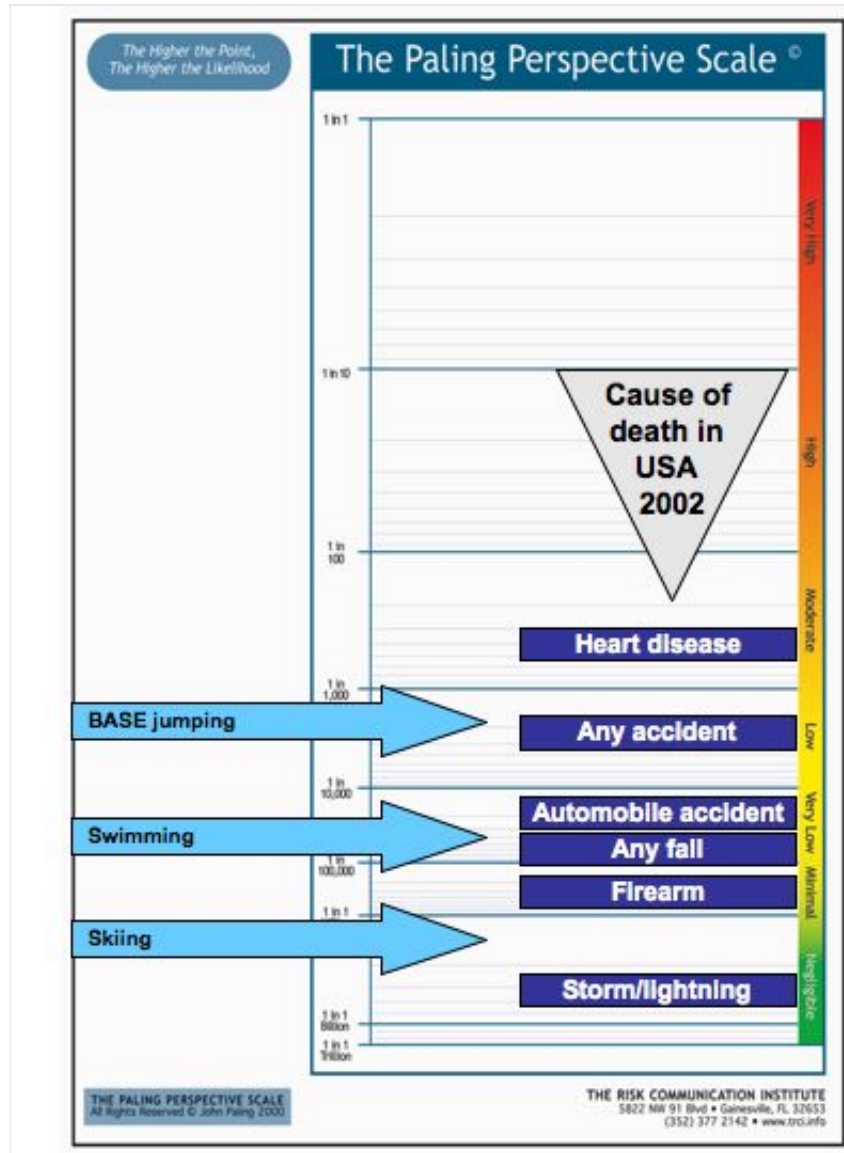
Table 1 provides the information in useful ways. BASE jumping has a risk of death of 1 in every 2,300 jumps, whereas with hang gliding the risk is 1 in 116,000 flights. Figure 1 gives a few examples with contexts of other common causes of death.

Table 1: Risk of death with sports activities

Cause of Death	Country	Year	Number of Deaths	Population Estimate	Crude Rate per 100,000 population	Odds of Dying (1 in)
BASE Jumping	Norway (Kjerag Massif)	1995-2005	9	20,850	43.17	2,317 jumps
Swimming	Germany	1997-2006	31	1,754,182	1.77	56,587
Cycling	Germany	1997-2006	19	1,754,182	1.08	92,325
Running	Germany	1997-2006	18	1,754,182	1.03	97,455
Skydiving	US	2006	21	2,122,749	0.99	101,083 jumps
	Sweden	1994-2003	9	1,126,704	0.80	125,189
Football	Germany	1997-2006	17	1,754,182	0.97	103,187
Hang-gliding	UK				0.86	116,000 flights
Tennis	Germany	1997-2006	15	1,754,182	0.86	116,945
Sudden cardiac death whilst running a marathon	US	1975-2005	26	3,292,268	0.79	126,626 runners
Horse Riding	Germany	1997-2006	10	1,754,182	0.57	175,418
American Football	US	1994-1999 (average annual figures)	6	1,100,142	0.55	182,184
Scuba Diving	UK					200,000 dives
Table Tennis	Germany	1997-2006	7	1,754,182	0.40	250,597
Rock Climbing	UK				0.31	320,000 climbs
Canoeing	UK				0.13	750,000 outings
Skiing	US	2002/2003	37	57,600,000	0.06	1,556,757 visits

Figure 1: Risk of dying with various sporting activities

Risk Communication Tool (c) John Paling 2000 (www.riskcomm.com)



Comment

Most of these risks are far lower than might have been thought, even with skydiving or hang gliding.

3 deaths in 1 week: How risky is high school football?

A 16-year-old high school football player died Wednesday following an on-field collision.

Tom Cutinella was a junior at Shoreham-Wading River High School. He was pronounced dead after collapsing during the third quarter of a varsity football game. But school officials say football is not to blame.

STEVEN COHEN, Shoreham-Wading Superintendent [WNBC](#): "It was the result of a typical football play. It was just a freak accident."

Cutinella's death is the third death of a high school football player due to football-related injuries in a week. Demario Harris Jr. of Troy, Alabama, died Friday after being tackled. That same day, Isaiah Langston of Rolesville High School collapsed and died during pre-game warm-ups.

That certainly makes for an [eye-catching headline](#). But let's look at the [overall numbers](#) behind [school football deaths](#).

In a 2013 study, [The American Journal of Sports Medicine](#) found football-related fatalities in high school and college average 12.2 per year. That is about one in every 100,000 participants. Fatalities are most commonly from indirect causes, such as heat illness and cardiac failure. College football players are also 2.8 times more likely to suffer fatal injury than high schoolers.

And the popularity of college football may be an issue here. [The New York Times](#) paraphrases Kate Carr, president and chief executive of Safe Kids Worldwide, as saying that "some of the intense culture of professional and collegiate football is trickling down to the high school level."

Some school districts have instituted stricter practice and equipment guidelines in response to evidence that deaths have increased since 1994.

According to a study in the International Journal of Biometeorology, deaths from heat-related injuries nearly tripled from 1994 to 2009. Researchers said some of the increase may be explained by higher temperatures during practice times and an increase in average BMI among football players, though those are only a couple of possible factors.

Students and teammates held a candlelight vigil for Cutinella on the school's football field Thursday. Cutinella's grandfather told [The New York Times](#) that even though there are risks associated with football,

he would never ask his grandsons to quit playing.