Bungee Jumping and the Art of Risk Assessment

By Erik Lief — August 19, 2016

When you're looking to have a lively conversation, nothing fills the bill quite like the topic of risk. Regardless of age, pretty much everyone from 15 to 85 has a very clear idea about how much risk to their physical well being they're willing to accept. For instance, there are those who say that voluntarily introducing any additional risk to their lives -- especially for the sole purpose of being thrilled or entertained -- is ridiculous and idiotic. Others (and you know who these contrarians are) say the acts of merely getting out of bed and crossing the street are inherently risky propositions. So if you're itching to assess your friend's risk tolerance, just raise the topic of bungee jumping -- and let the fun begin. That conversation always seems to begin with one essential question: Why do it? Why -- by one's own choosing -- would someone want to expose themself to serious injury or possibly death just for a few thrill-inducing minutes (or even seconds)? We've all heard the catch-all justification in one version or another: "It's exhilarating -- and it makes me feel alive." This debate made me want to take a closer look at the health consequences of this edge-of the-envelope activity, which appeared to really have its hey day over the last two decades. On its face it seems quite risky. But how risky -- in terms of injury or worse -- is it? Health and accident information is somewhat hard to come by, but here's some of what I found. Reference.com [1] states in somewhat vague fashion that, "As of 2009, fewer than 100 deaths had been recorded due to bungee jumping accidents," according to XtremeSport [2], a website that showcases these types of edgy sports. Meanwhile, HeathResearchFunding.org [3], a British medical site, says that, "Between 1986 and 2002, only 18 reported fatalities have resulted from bungee jumping." From those two statements we're left to wonder what the true worldwide fatality figure is, but one possibility is that from 2002 to 2009 roughly 80 thrill-seekers perished over that seven-year span, as opposed to just 18 over the previous 16 years. If that were true, that would mean the sport is becoming rapidly and increasingly dangerous. It's frequently mentioned that jumpers die for two main reasons: (1) there's an equipment malfunction and the cord disengages, and (2) jumpers use too long a cord, and don't properly account for its elasticity, causing them to hit the surface at extreme speeds. Perhaps the most infamous bungee jumping death occurred in 1997, when a 43-year-old woman scheduled to perform at halftime at the Super Bowl was killed while practicing her
routine days before the show in New Orleans. Laura Patterson "and other jumpers were engaged in their third and final rehearsal leap," the Los Angeles Times reported. "Patterson apparently hit her head on the [concrete] floor of the Superdome." On the other hand, when bungee jumping is compared to other risk-inherent activities, it fares much better. Under huge red type reading "YOUR CHANCES OF DYING," besthealthdegrees.com cites statistics from the National Center for Health Statistics (part of the CDC), stating that only one death occurs for every 500,000 jumps. Stack that up against these activities:

- **Hang Gliding**: 1 in 560
- **Canoeing**: 1 in 10,000
- **Mountain Hiking**: 1 in 15,700
- **Skydiving**: 1 in 101,083
- **Bicycling**: 1 in 140,845
- *****BUNGEE JUMPING: 1 in 500,000***
- **Skiing**: 1 in 1,400,000
- **Snowboarding**: 1 in 2,200,000

By this measure, bungee jumping seems like a relatively safe adventure -- 50 times as safe -- especially if your idea of relaxation and low-risk enjoyment is paddling down a river somewhere. Now, of course, the incidence of death isn't the only measure of safety, or lack of it. What about non-fatal injuries? This is where it gets interesting, and fairly concerning. The list includes neck injuries, spinal injuries and gruesome injuries to the eyes, as described by Livestrong.com:

**NECK INJURIES** "... injury to it can range from mild to severe. The force on this fragile part of your body that connects your brain to your spinal cord during the final stage of the jump can be enough to strain your neck muscles, and cause pain and a temporary decrease in range of motion. There have also been instances of the bungee cord accidentally entangling a jumper’s neck. When this happens, it can cut off blood flow between the heart and the brain, or strangle the jumper and make him unable to breathe." **SPINAL INJURIES** "The extreme forces your body is subject to as it is pulled back upward by the bungee cord can injure the vertebrae of your spine ... Injuries typically include compression fractures — broken bones in the spine — and herniated discs and spaces between the vertebrae. While these injuries can be healed, they can also be severe and permanent. If the spinal cord inside the vertebrae is damaged it can result in forms of paralysis and quadriplegia." **EYE INJURIES** These occur "because of the dangerously high increase in
pressure that occurs in the eyes. When the elastic chord suddenly jerks you upward, it causes fluid to flow to your head, which results in very high blood pressure inside the blood vessels in your eyes. Your retina ... can be negatively affected by this increase in pressure. Injuries to these areas of your eyes usually cause temporary impairment of vision.” And then there’s … 'HEAD DIPPING’

And for those leapers who really look to tempt fate, some bungee jumpers known as "head dippers" take the plunge over water and actually aim to submerge their coconut below the surface before being yanked back up above it. (Why? Who knows.) But here’s what happens when it goes wrong. "If the height or your weight is even slightly miscalculated, then hitting water at speed is not much different from tarmac. This is exactly what happened to one San Franciscan jumper, who smacked face-first into the water, and continued down until waist-deep,” writes Lewis Dartnell from the Centre from Mathematics and Physics at University College, London, along with co-author Dr. Mike Clifford from the University of Nottingham, in a 2013 paper on physics of bungee jumping [7]. "He claimed to have experienced little pain at the time, but woke the next morning with his mug so bruised and swollen he could not open either eye. A CT scan revealed hair-line fractures in both his nose bone and the floor of his eye socket." Millions, perhaps tens of millions, of jumps -- it's difficult to be sure -- have been performed since the activity was reportedly introduced in Bristol, Great Britain, in 1979. At the same time the number of injuries resulting from the sport is a figure that's just as elusive. Combined, both unknowns make it anyone's guess as to determine whether bungee jumping is "safe" or "safe enough" -- and whether it's a risk worth taking. If you're unsure, maybe you should ask a friend what he thinks.