EXPLAINER
How To Survive a 47-Story Fall
Make sure you land on your feet.
By Melinda Wenner
Posted Monday, Jan. 7, 2008, at 4:06 PM ET

On Friday, the New York Times reported on the "miraculous" recovery of a 37-year-old window washer named Alcides Moreno, who had survived a 47-story fall off the side of an apartment building four weeks earlier. (His brother, who was on the same window-washing platform, was killed instantly.) Moreno has recently begun talking, and doctors now believe he might walk again within a year. How can you survive—and recover from—such a fall?

Don't hit your head. People who fall just a few stories and land on their heads almost always die: According to a study published in the journal Injury, you're just as likely to survive a five-story fall landing feet first as you are a one-story fall headfirst. Although no one knows exactly how Moreno landed, it's clear he spared his skull.

The other body part to avoid injuring in a fall is the pelvis, a ringlike structure of three bones located at the base of the spine. The pelvis is surrounded by large nerves, blood vessels, and the digestive and reproductive organs, so an injury there can cause substantial bleeding, internal organ damage, and ultimately death. According to an analysis of 200 patients in the New York City area, pelvic injury is second only to head injuries as a predictor of death in fall patients.

It's difficult to land in such a way as to avoid hurting both your head and your pelvis, though—because while landing headfirst almost surely spells death, landing feet first sometimes causes pelvic injuries due to the force of impact transmitted up through the legs. All things considered, though, feet first is the better way to go; if your fall is long enough, it's possible to right yourself to land feet first using the types of body motions used by athletes or acrobats to perform midair somersaults.

If you do manage to spare both head and pelvis (as Moreno did), breaking lots of other bones isn't necessarily life-threatening. The total number of fractures doesn't strongly affect survival rates—most will heal over time; spinal injuries can cause permanent nerve damage and paralysis, but they're generally not fatal. Moreno broke 10 bones in his accident, including several ribs, an arm, and both legs.

It also helps if something slows down your fall. The severity of injuries is closely linked to the speed of impact, which explains why long falls are more dangerous than short ones—velocity.
correlates with fall distance. (In 2002, a young man survived after falling from the 19th floor of an apartment building and hitting a tree on his way down.) Although it's unlikely that Moreno hit something during his fall, it appears that he stayed within his window-washing scaffolding the entire way down. The extra wind resistance provided by its large size may have slowed the descent and reduced the force of impact. (Some reports have suggested that Moreno's brother was thrown from the scaffolding during the fall, so he may have fallen faster.) If you're unlucky enough to fall a long distance without anything—like a parachute—to slow you down, it's best to lie flat to increase your surface area in contact with the wind, but be sure to orient yourself feet first before landing.

Youth helps, too, and Moreno was only 37. According to a study published in 1994, senior citizens account for about 14 percent of all falls but half of fall-related deaths; an 85-year-old is 100 times more likely to die from a fall than a 5-year-old.

Got a question about today's news? Ask the Explainer.

Explainer thanks Philip S. Barie and Andrew Klein at NewYork-Presbyterian Hospital/Weill Cornell Medical Center.

Melinda Wenner is a science writer living in Brooklyn, N.Y.

Article URL: http://www.slate.com/id/2181498/