

**KASRA Members:**

**The information presented below is another perspective on how to behave in an earthquake. You make your choices and take your chances, we suspect.**

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**EXTRACT FROM DOUG COPP'S ARTICLE ON THE "TRIANGLE OF LIFE",**

Edited by Larry Linn for MAA Safety Committee brief on 4/13/04.

My name is Doug Copp. I am the Rescue Chief and Disaster Manager of the American Rescue Team International (ARTI), the world's most experienced rescue team. The information in this article will save lives in an earthquake.

I have crawled inside 875 collapsed buildings, worked with rescue teams from 60 countries, founded rescue teams in several countries, and I am a member of many rescue teams from many countries. I was the United Nations expert in Disaster Mitigation for two years. I have worked at every major disaster in the world since 1985, except for simultaneous disasters.

In 1996 we made a film which proved my survival methodology to be correct. The Turkish Federal Government, City of Istanbul, University of Istanbul Case Productions and ARTI cooperated to film this practical, scientific test. We collapsed a school and a home with 20 mannequins inside. Ten mannequins did "duck and cover," and ten mannequins I used in my "triangle of life" survival method. After the simulated earthquake collapse, we crawled through the rubble and entered the building to film and document the results. The film, in which I practiced my survival techniques under directly observable, scientific conditions, relevant to building collapse, showed there would have been zero percent survival for those doing duck and cover. There would likely have been 100 percent survivability for people using my method of the "triangle of life." This film has been seen by millions of viewers on television in Turkey and the rest of Europe, and it was seen in the USA, Canada and Latin America on the TV program Real TV.

The first building I ever crawled inside of was a school in Mexico City during the 1985 earthquake. Every child was under their desk. Every child was crushed to the thickness of their bones. They could have survived by lying down next to their desks in the aisles. It was obscene, unnecessary and I wondered why the children were not in the aisles. I didn't at the time know that the children were told to hide under something. Simply stated, when buildings collapse, the

weight of the ceilings falling upon the objects or furniture inside crushes these objects, leaving a space or void next to them. This space is what I call the "triangle of life." The larger the object, the stronger, the less it will compact. The less the object compacts, the larger the void, the greater the probability that the person who is using this void for safety will not be injured.

The next time you watch collapsed buildings, on television, count the "triangles" you see formed. They are everywhere. It is the most common shape, you will see, in a collapsed building. They are everywhere.

### **TEN TIPS FOR EARTHQUAKE SAFETY**

1) Most everyone who simply "ducks and covers" WHEN BUILDINGS COLLAPSE are crushed to death. People who get under objects, like desks or cars, are crushed.

2) Cats, dogs and babies often naturally curl up in the fetal position. You should, too, in an earthquake. It is a natural safety/survival instinct. You can survive in a smaller void. Get next to an object, next to a sofa, next to a large bulky object that will compress slightly but leave a void next to it.

3) Wooden buildings are the safest type of construction to be in during an earth-quake. Wood is flexible and moves with the force of the earthquake. If the wooden building does collapse, large survival voids are created. Also, the wooden building has less concentrated, crushing weight. Brick buildings will break into individual bricks. Bricks will cause many injuries but less squashed bodies than concrete slabs.

4) If you are in bed during the night and an earthquake occurs, simply roll off the bed. A safe void will exist around the bed. Hotels can achieve a much greater survival rate in earthquakes, simply by posting a sign on the back of the door of every room telling occupants to lie down on the floor, next to the bottom of the bed during an earthquake.

5) If an earthquake happens and you cannot easily escape by getting out the door or window, then lie down and curl up in the fetal position next to a sofa, or large chair.

6) Most everyone who gets under a doorway when buildings collapse is killed. How? If you stand under a doorway and the doorjamb falls

forward or backward, you will be crushed by the ceiling above. If the door jam falls sideways, you will be cut in half by the doorway. In either case, you will be killed!

7) Never go to the stairs. The stairs have a different "moment of frequency" (they swing separately from the main part of the building). The stairs and remainder of the building continuously bump into each other until structural failure of the stairs takes place. The people who get on stairs before they fail are chopped up by the stair treads - horribly mutilated. Even if the building doesn't collapse, stay away from the stairs. The stairs are a likely part of the building to be damaged. Even if the stairs are not collapsed by the earthquake, they may collapse later when overloaded by fleeing people. They should always be checked for safety, even when the rest of the building is not damaged.

8) Get Near the Outer Walls Of Buildings Or Outside Of Them If Possible. It is much better to be near the outside of the building rather than the interior. The farther inside you are from the outside perimeter of the building the greater the probability that your escape route will be blocked;

9) People inside of their vehicles are crushed when the road above falls in an earthquake and crushes their vehicles; which is exactly what happened with the slabs between the decks of the Nimitz Freeway. The victims of the San Francisco earthquake all stayed inside of their vehicles. They were all killed. They could have easily survived by getting out and sitting or lying next to their vehicles. Everyone killed would have survived if they had been able to get out of their cars and sit or lie next to them. All the crushed cars had voids 3 feet high next to them, except for the cars that had columns fall directly across them.

10) I discovered, while crawling inside of collapsed newspaper offices and other offices with a lot of paper, that paper does not compact. Large voids are found surrounding stacks of paper.

*Submitted by Evo Alexandre*