

What to do in an earthquake: "Triangle of Life" vs "Drop, Cover, Hold On"

Summary

Drop, Cover, and Hold On is the appropriate action to take during an earthquake in North America. The **Triangle of Life** technique promoted by Doug Copp is not promoted by the experts for use in North America.

Background

Every time there is a major earthquake, an e-mail starts circulating advocating the Triangle of Life technique and denouncing the accepted Drop, Cover, Hold On technique. The Triangle of Life suggests that during an earthquake you should get **next** to a large object. For example, get next to a large piece of furniture or get outside a car and lie down beside it.

The method recognized and supported by seismologists, engineers, governments, emergency management professionals and first response agencies throughout North America is the **Drop, Cover, and Hold On** technique. This is supported by the City of Vancouver Office of Emergency Management and should be the only method promoted by staff.



In North America and other countries, modern building codes applied in earthquake-prone areas have worked to greatly reduce the potential for complete structure collapse. The main goal of **Drop, Cover, and Hold On** is to decrease the risk of being injured from non-structural hazards such as loose objects in your home, parts of the ceiling falling, and books falling off shelves. It also increases your chance of ending up in a survivable void space if the building does collapse.

Why is the Triangle Of Life technique not recommended by experts?

The Southern California Earthquake Center (a combined United States Geological Survey and National Science Foundation centre) provides a good overview of the problems with the Triangle of Life technique on their website <http://earthquakecountry.info/dropcoverholdon>.

An excerpt from their website is included below, including an explanation of why the Triangle of Life is not the preferred action following an earthquake in North America.

WHAT RESCUERS AND EXPERTS *DO NOT* RECOMMEND YOU DO DURING AN EARTHQUAKE

Based on years of research about how people are injured or killed during earthquakes, and the experiences of U.S. and international search and rescue teams, these three actions are **not** recommended to protect yourself during earthquakes:

DO NOT run outside or to other rooms during shaking: The area near the exterior walls of a building is the most dangerous place to be. Windows, facades and architectural details are often the first parts of the building to collapse. To stay away from this danger zone, stay inside if you are inside and outside if you are outside. Also, shaking can be so strong that you will not be able to move far without falling down, and objects may fall or be thrown at you that you do not expect. Injuries can be avoided if you drop to the ground before the earthquake drops you.

DO NOT stand in a doorway: An enduring earthquake image of California is a collapsed adobe home with the door frame as the only standing part. From this came our belief that a doorway is the safest place to be during an earthquake. True- if you live in an old, unreinforced adobe house or some older woodframe houses. In modern houses, doorways are no stronger than any other part of the house, and the doorway does not protect you from the most likely source of injury- falling or flying objects. You also may not be able to brace yourself in the door during strong shaking. You are safer under a table.

DO NOT get in the "triangle of life": In recent years, an e-mail has been circulating which describes an alternative to the long-established "Drop, Cover, and Hold On" advice. The so-called "triangle of life" and some of the other actions recommended in the e-mail are potentially life threatening, and the credibility of the source of these recommendations has been broadly questioned (see links at left on <http://earthquakecountry.info/dropcoverholdon>).

The "triangle of life" advice (always get next to a table rather than underneath it) is based on several wrong assumptions:

- buildings always collapse in earthquakes (*wrong- especially in developed nations, and flat "pancake" collapse is rare anywhere*);
- when buildings collapse they always crush all furniture inside (*wrong- people DO survive under furniture or other shelters*);
- people can always anticipate how their building might collapse and anticipate the location of survivable void spaces (*wrong- the direction of shaking and unique structural aspects of the building make this nearly impossible*); and
- during strong shaking people can move to a desired location (*wrong- strong shaking can make moving very difficult and dangerous*).

Some other recommendations in the "triangle of life" e-mail are also based on wrong assumptions and very hazardous. For example, the recommendation to get out of your

car during an earthquake and lay down next to it assumes that there is always an elevated freeway above you that will fall and crush your car. Of course there are very few elevated freeways, and laying next to your car is very dangerous because the car can move and crush you, and other drivers may not see you on the ground! A compilation of rebuttals from many organizations to these alternative recommendations, as well as news articles about the controversy, is listed in the left column on <http://earthquakecountry.info/dropcoverholdon>.

(Excerpt from <http://earthquakecountry.info/dropcoverholdon>, March 18, 2011)

Additional Information

- What to do in an earthquake - City of Vancouver
<http://vancouver.ca/emerg/prepyourself/earthquaketips.htm>
- Earthquake Information - Emergency Management BC
http://pep.bc.ca/hazard_preparedness/Earthquake_Information.html
- American Red Cross response to Doug Copp's Triangle of Life
<http://www.bpaonline.org/Emergencyprep/arc-on-doug-copp.html>