

希望大家永远都不会用到这些逃生技巧，但是当灾难降临时，至少能记得什么叫“生命三角”。

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.

我的名字叫 Doug Copp。我是世界上最有经验的救援小组---美国国际救援小组(ARTI)的首席救援者，也是灾难部的经理。本文中以下信息能在地震中挽救生命。

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 (UNX051 -UNIENET) for two years. I have worked at every major disaster in the world since 1985, except for simultaneous disasters.

我和曾经来自 60 多个不同国家成立的各种救援小组一起工作过，曾在 875 个倒塌的建筑物里爬进爬出。在联合国灾难减轻(UNX051 -UNIENET)小组中我担任了任期两年的专家。从 1985 年至今，除非同时发生了多个灾祸，我几乎参与了每一次重大的救援工作。

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.

在 1996 年，我们用我创立的而且被证明是正确的方法制作了一部电影。土耳其政府、伊斯坦布尔市、伊斯坦布尔大学、及 ARTI 联合制作了这部科学研究性的影片。

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.

我们人为地摧毁了一座学校，和一个里面有 20 个人体模特的房屋。十个人体模特用“蹲下和掩护”的方法，而另外十个模特使用我的“生命三角”的求生方法。

After the simulated earthquake collapse we crawled through the rubble and entered the building to film and document the results.

模拟地震发生后，我们通过倒塌的碎石慢慢进入了建筑物，并拍摄和记录了结果。

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 % 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.

在一个在可直接观察到的而且科学的条件下，这部电影拍摄了我使用的求生技术。结果显示那些用“蹲下和掩护”方法的人存活率会是零，而那些使用“生命三角”的人能够达到 100%的存活率。上百万的人已经在土耳其和欧洲的其他地方，还有美国、加拿大和拉丁美洲的电视节目里看到过这部片子。

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.

我曾进入的第一个建筑物是在 1985 年墨西哥地震中的一个学校。每个孩子都在课桌底下。每个孩子都被压扁了。他们如果能在走道里挨着他们的课桌躺下，就有生还的希望。我不知道为什么孩子不在走道里。那时，我不知道孩子们被教导要躲在某物体的下面。

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.

简单地说，当建筑物倒塌时，落在物体或家具上的屋顶的重力会撞击这些物体，使得靠近它们的地方留下一个空间。这个空间就是被我称作的“生命三角”。物体越大，越坚固，它被挤压的余地就越小。而物体被挤压得越小，这个空间就越大，于是利用这个空间的人免于受伤的可能性就越大。

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. I trained the Fire Department of Trujillo (population 750,000) in how to survive, take care of their families, and to rescue others in earthquakes.

下次，你在电视里观看倒塌的建筑物时，数一数这些形成的“三角”。你会发现到处都有这些三角。在倒塌的建筑物里，这是最常见的形状。几乎到处都有。我培训 Trujillo (人口约为 750,000 的地方)的消防部门，教导人们如何求生，如何照顾他们的家人，以及如何在地震中援救他人。

The chief of rescue in the Trujillo Fire Department is a professor at Trujillo University. He accompanied me everywhere. He gave personal testimony: "My name is Roberto Rosales. I am Chief of Rescue in Trujillo. When I was 11 years old, I was trapped inside of a collapsed building. My entrapment occurred during the earthquake of 1972 that killed 70,000 people. I survived in the "triangle of life" that existed next to my brother's motorcycle. My friends who got under the bed and under desks were crushed to death [he gives more details, names, addresses etc.]...I am the living example of the "triangle of life". My dead friends are the example of "duck and cover".

Trujillo 消防部门的救援总负责人是 Trujillo 大学的教授。他陪伴我同行，他说：“我叫 Roberto Rosales，我是 Trujillo 的首席救援者。我 11 岁时，我被陷在一幢倒塌的建筑物里。就是发生在 1972 年的那场地震中，当时有 70,000 人死亡。我利用我哥哥摩托车旁的“生命三角”保住了生命。我的朋友们，那些躲在床下，桌子下的人都死了。（他列出了这些人的姓名、地址……）。我可以称作是“生命三角”的活生生的例子，而我那些朋友是“蹲下和掩护”的例子。

Tips from Doug Copp:

Doug Copp 的提示:

- 1) Everyone who simply "ducks and covers" WHEN BUILDINGS COLLAPSE is crushed to death -- Every time, without exception. People who get under objects, like desks or cars, are always crush.

当建筑物倒下时，每个只是简单地“蹲下和掩护”的人都被压死了，每次，毫无例外。而那些躲逃到物体，如桌子，或汽车下躲避的人也总是受到了些伤害。

- 2) Cats, dogs and babies all naturally often 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.

猫，狗和小孩子在遇到危险的时候，会自然地蜷缩起身体。地震时，你也应该这么做。这是一种安全的本能。而且你在一个很小的空间里就可以做到。靠近一个物体，一个沙发，或一个大件，它仅受到了略微的挤压，但在靠着它旁边的地方留下了一个空间。

- 3) Wooden buildings are the safest type of construction to be in during an earthquake. The reason is simple: the 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.

在地震中，木质建筑物最牢固。木头具有弹性，并且与地震的力量一起移动。如果木质建筑物倒塌了，会留出很大的生存空间。而且，木质材料密度最小，重量最小。砖块材料则会破碎成一块块更小的砖。砖块会造成人员受伤，但是，被砖块压伤的人远比被水泥压伤的人数则要少得多。

- 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.

如果晚上生发了地震，而你正在床上。你只要简单地滚下床。在床的周围会形成一个安全的空间。

- 5) If an earthquake happens while you are watching television 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.

如果地震发生了，而你正在看电视，不能迅速地从门或窗口逃离，那就在靠近沙发，或椅子的旁边躺下，然后蜷缩起来。

- 6) Everybody who gets under a doorway when buildings collapse is killed. How? If you stand under a doorway and the door jam 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!

当大楼倒塌时，很多人在门口死亡了。怎么回事？如果你站在门框下，当门框向前或向后倒下时，你会被头顶上的屋顶砸伤。如果门框向侧面倒下，你会被压在当中，所以，不管怎么样，你都会受到致命伤害！

- 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.

千万不要走楼梯，楼梯与建筑物摇晃的频率不同（他们和建筑物的主体部分分别晃动）。楼梯和大楼的结构物发生不断地碰撞，直到楼梯发生构造问题。人在楼梯上时，会被楼梯的台阶割断，这是很恐怖的毁伤！就算楼梯没有倒塌，也要远离楼梯。楼梯就像大楼的一样会被损坏。哪怕不是因为地震而倒，还会因为承受过多的人群而坍塌。所以，我们应该始终首先检查楼梯的安全，甚至建筑物的其他部分并没有被损坏。

- 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.

尽量靠近建筑物的外墙或离开建筑物。靠近墙的外侧远比内侧要好。你越靠近建筑物的中心，你的逃生路径被阻挡的可能性就越大。

- 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, says the author. 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.

当发生地震时，在车内逃生的人会因路边坠落的物体砸伤，这正是 Nimitz Freeway 的路上所发生的事情。San Francisco 地震的无辜受害者都呆在车内。其实，他们可以简单地离开车辆，靠近车辆坐下，或躺在车边就可以了。所有被压垮的车辆旁边都有一个 3 英尺高的空间，除非车辆是被物体垂直落下。

- 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.

我发现，在报社或办公室里堆有很多报纸的地方，通常会好些，因为报纸不受挤压。你在纸堆旁可找到一个比较大的空间。