

Rescue Curve¹

The rescue curve describes rescue in terms of who does what when and what will happen if those attempts fail. The rescue curve states that once an incident occurs, the probability of survival or avoiding injury, damage, or loss decreases as time without intervention increases. The rescue curve has been refined several times since it was first developed by Kauffman and Carlson (1992; see figure 10.9). Although the model was originally developed in the context of outdoor activities, it has been generalized to non-outdoor activities (Kauffman, 2003).

According to the rescue curve, the first line of defense is **safety and prevention**. These include the active and passive measures that the participant should take to avoid a rescue situation or, if a rescue situation occurs, to better help survive the situation. *Active measures* are measures a participant takes to help prevent an incident from occurring. The participant uses their knowledge, skills, and abilities to avoid a situation in which a rescue is necessary. A climber's climbing ability, a paddler's paddling ability, or a driver's driving ability are examples of active safety measures. *Passive measures* are measures that normally do not help prevent the initial incident from occurring but that do help during the rescue phase. For example, a climber uses climbing ropes and protective gear as protection against a fall, but ropes and protection do not aid in the actual climb. A paddler's life jacket aids the paddler only if she comes out of her boat. A spare tire has little value to a driver unless the car has a flat tire. On a playground, surfacing, fall zones, and equipment design are examples of passive measures.

Once an incident occurs, injury, damage, or loss normally occurs unless there is intervention.

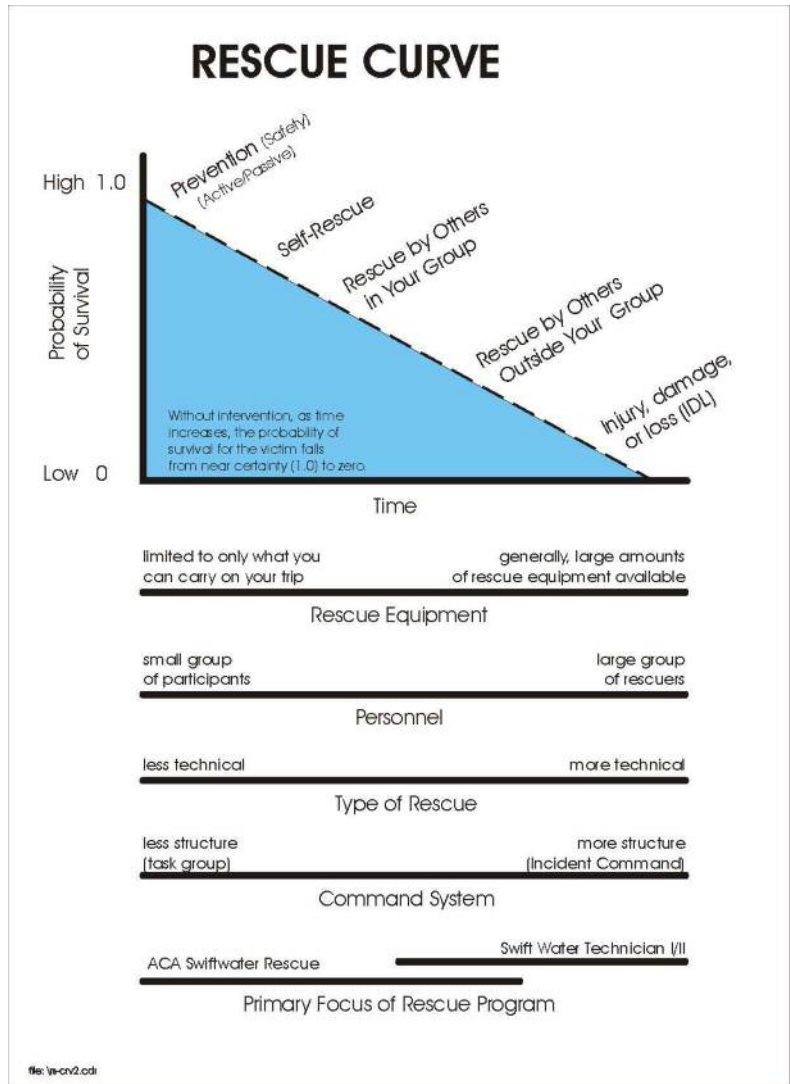


Figure 10.9 The Rescue Curve – The rescue curve suggests that once an incident occurs, without intervention the probability of survival decreases as time increases. The four stages of the rescue curve are prevention and safety, self-rescue, rescue by others in the group, and rescue by others outside the group. The differences in rescue equipment, personnel, type of rescue, and command structure are addressed with the curve. Source: <cl>Kauffman and Carlson, 1992, Kauffman 2003.

¹ This section on the rescue cure is excerpted from the textbook: Kauffman, R., and Moiseichik, Merry., (2013). *Integrated Risk Management for Leisure Services*. Champaign, ILL: Human Kinetics. p. 200-202.

Intervention is defined as self-rescue, rescue by others in your group, and rescue by others outside your group. Occasionally, intervention will occur naturally. A person falls from the rock face, lands in a tree, the branches cushion the fall, and the person lands relatively unharmed on the ground. A child falls off a climbing apparatus on the playground, and hits the pea gravel surfacing underneath the apparatus. The pea gravel breaks the fall (intervenes) and the child continues to play, uninjured.

The first level of defense after an incident occurs is *self-rescue*, or what the victim can do to rescue himself. For example, a climber who falls several feet as a rope suspends his weight can grab hold of the rock face and continue climbing. The paddler can Eskimo roll or swim with her boat to the shore. The driver can remove the flat tire and put on the spare tire. On a playground, a child slips on a climbing apparatus, catches herself, and continues climbing. The child self-rescued.

Rescue by others in the victim's group is the next line of defense. If the climber is belayed, the belayer may lower the climber to a safe area. If the paddler comes out of her boat, a member of her group may paddle over, extend the stern and grab loop to her, and paddle her to shore. The passenger in the car may help change the tire or assist by directing traffic. On the playground, the child climbs to the top of the climbing apparatus, looks around, gets scared, freezes, and starts crying. Her mother rushes over and with outstretched arms lifts her daughter off the climbing apparatus. The daughter is rescued by others in her group. Anyone participating in the activity alone bypasses this phase and directly enters the next.

The next line of defense, *rescue by others outside the victim's group*, includes the rescue efforts of people passing by or the rescue squad. If the climber is injured in a fall or the rescue escalates beyond the capabilities of the other climbers, a rescue squad with specialized training is summoned. The same is true for the paddler. On the playground, the child is crying atop the climbing apparatus, and the mother is standing there not knowing what to do. A passerby rushes over and lifts the child off the apparatus. The passerby performs a rescue by someone outside of the group. Or, in the same situation, the passerby calls 911, and the park sends the fire department and the fireman lifts the child off the apparatus. Again, it is a rescue by someone outside of the group, in this case the rescue squad.

If no one rescues the victim, additional *injury, damage, or loss* usually occurs. Even if the climber is not injured by the initial fall, he will experience additional injury or even death without intervention. The paddler who is not rescued may eventually flush through the rapids and naturally wash up on the shore. If no one rescues the driver, he may be stranded in a desolate area. On the playground, it is difficult to envision someone not eventually coming to the rescue. Most likely the child will eventually stop crying and attempt to climb down the apparatus (self-rescue). The child will most likely successfully climb down and go home. Or the child will fall and injure herself and need treatment. Or, the mother will come to her senses, and help the child off the apparatus (rescue by others in the group). This example illustrates the principle that the previous stages can be re-entered again.

Available Resources and the Rescue Curve – The rescue curve is useful in helping to explain the resources available to or influencing the rescuers. The rescue squad is in the business of performing rescues. As a general rule, the rescue squad has lots of personnel and equipment at their disposal to perform a rescue. In addition, they have trained extensively in rescue procedures. In contrast, people participating in the recreational activity are interested in performing the activity. Rescue is what happens when something goes wrong performing the activity. It is not that they are interested in rescue. They are. However, they are more interested in performing the activity. Often they think in terms of how they can adapt the equipment used in performing the activity to a rescue situation, or they will bring along with them simple devices as long as these items don't interfere with the performance of doing their activity. In terms of personnel, they are limited by who is in their group unless, of course, they are doing the activity

alone. In that case, they bypass this phase for the next phase. The following examples illustrate the difference in resources between participants in the activity interested in rescue, and the rescue squad who is prepared to rescue others. In terms of personnel, a group of climbers might consist of 2 instructors and 10 youths. Although the group comprises 12 people, only 2 are well trained (1 if the victim is an instructor). In a paddling group of 5 people, 4 people must conduct the rescue assuming that 1 person in the group is the victim; this is a small group for a whitewater rescue. In contrast, a rescue squad could have 20 to 30 trained rescuers available to them for a rescue.

Regarding equipment, climbers usually do not bring rescue pulleys and a Stokes litter with them; the rescue squad does. The paddler group might have two carabiners per person and several rescue bags. This makes any rescue involving a lot of carabiners or several hundred feet of rope difficult. In contrast, the rescue squad usually arrives with large amounts of specialized rescue equipment.-

The difference between equipment and personnel in terms of the rescue curve is illustrated by the child stuck atop of the climbing apparatus. If the children become stuck on a bouldering rock (climbing apparatus) similar to the one depicted in figure 5.7, it is not expected that the mother supervising the children will have brought a ladder along with her in case she needed to rescue the children. However, if the fire department is called, they would bring a ladder. In this case, the rescue squad (rescue by others outside your group) would have the equipment and personnel necessary to perform the rescue in contrast to the children (self-rescue) or the mother (rescue by others in your group) who wouldn't.

911 Syndrome – The 911 syndrome focuses on the difference between inexperienced and experienced participants. More experienced, specialized participants tend to begin their rescue efforts with safety and prevention. They focus on their equipment and on developing their skills and rescue techniques. They know that if a potential incident occurs, their first line of defense is self-rescue, and that if do not self-rescue, they can move very quickly through the stages of the rescue curve and run out of options. Experienced participants tend to front-load their activity with safety and prevention because they know their survival depends on it.

In contrast, inexperienced or “activity for a day” participants usually do not have the necessary skill, knowledge, or training to perform a rescue, and they most likely do not possess or know how to use rescue equipment. They tend to quickly skip over the first three phases of rescue (i.e., safety and prevention, self-rescue, and rescue by others in the group) and immediately go to the fourth phase—rescue by others outside the group. They call 911 and hope that someone comes to rescue them. Usually, they believe that it is the responsibility of someone else to rescue them (Kauffman, 1992; Kauffman et al., 1991, and rely almost completely on the resource manager or the rescue squad for their survival.

References:

- Kauffman R., and Carlson, G., (1992). The Rescue Curve - A Race Against Time. *American Canoeist*. March. 10-13.
- Kauffman, R., Taylor, S., and Price, R., (1991). *A Recreational Gauging and Information System to Alert Potomac River Users of Dangerous Water Levels*. Annapolis, Maryland: Department of Natural Resources, Boating Administration, Planning and Policy Program. 305 pp.
- Kauffman, R., (2003) The Rescue Curve. *Proceedings of the 2003 International Boating and Water Safety Summit*. Alexis Park Resort , Las Vegas, Nevada, April 13-16, 2003
- Kauffman, R., and Moiseichik, Merry., (2013). *Integrated Risk Management for Leisure Services*. Champaign, ILL: Human Kinetics.