

# APRES Swift Water Rescue training notes

## Safety Rules for Swift Water Rescue

1. Don't wear bulky clothing, overalls, fire helmets etc
2. Do wear a life jacket and helmet always
3. Do not enter moving water unless as a last resort (call, reach, throw, go!)
4. Do not tie yourself to a rope if you do go into the water
5. Always consider 'what if?'

## The power of water – some sobering theory

Doubling the depth of the river will double the force exerted on you, and doubling the water's velocity will increase the pressure by a power of two! Also, as the water gets deeper, a standing person's grip on the bottom lessens because buoyancy starts to lift you off the bottom (humans are 5% less dense than water).

**Fig. 1 Pressure exerted on human body in moving water (in kilograms).**

Velocity	Knee deep	Waist deep	Swimming
1 km/h	1.4 kg	1.8 kg	6.6 kg
2 km/h	5.8 kg	7.2 kg	26.5 kg
3 km/h	13.1 kg	16.4 kg	59.8 kg
4 km/h	23.3 kg	29.1 kg	106.3 kg
5 km/h	36.5 kg	45.4 kg	166.1 kg
6 km/h	52.5 kg	65.4 kg	239.3 kg
7 km/h	71.5 kg	89.5 kg	525.7 kg

Chart created from information at <http://www.grow.arizona.edu> and in the Wilderness Medicine Institute First responder Manual (Second Ed).

## The speed of water

Even rivers not in flood move with surprising speed. Consider this when planning a rescue or searching for a missing person below their last known point (LKP). The Waimakariri in normal flow typically runs at around 3-4km/h. In flood that velocity will easily double or triple.

## Managing a swift water rescue

Speed is of the essence. Make sure you have all relevant information at hand and the required equipment before departing, but act with haste. If necessary send an initial team with radios to begin sizing up the situation or attempting a rescue while more

resources are being organised. Designate someone as an Incident Controller.

## **Upon Callout**

1. Collect River Rescue Pack with throw ropes and helmets from SAR store at police station. If available at short notice also take PFDs.
2. Question any witnesses to find out
  - How many people in the water?
  - Last known point of missing people?
  - How long have they been in the water?
  - Age and swimming ability of people in the water?
  - Type and colour of clothing worn?

## **River Search**

1. Establish potential distance travelled by victim from point/time last seen and speed of river. Concentrate your search within this area remembering that it grows larger by the minute!
2. If possible split into two teams, one to check Last Known Point and release a couple of markers (half full water bottles with orange tape streamers), and the other to move straight to the down stream end of the search area and wait for the victim or a marker to float into view. The downstream team should be allocated the River Rescue Pack and throw ropes. The first team should check the area immediately downstream of last known point then continue quickly downstream if missing person not found.
3. Remember to keep up communication between teams.

## **River Rescue**

1. Locate the person and if they are moving with the river, identify and establish a rescue point downstream. Remember that it may take 2 to 3 minutes plus travel time to set up a rescue. Make sure you travel far enough downstream to allow time to prepare before the person passes you.
2. If possible establish 2 teams (minimum useful team size is 2 persons) and space these teams on the river bank to allow multiple rescue attempts. If the upstream team is unable to successfully rescue the person, they should immediately pack up and leapfrog to a new position downstream.
3. Maintain communication between teams and continue to call in more resources as required. Keep trying!

## Undertaking a swift water rescue

Treat the water like radio-active dog s\*#t. Only get in the water as a very last resort and if you are completely confident it is safe to do so.

1. **Call:** Communicate with the person in the water. Reassure them. Try to get them to swim defensively (feet downstream, on back, watching for hazards). Try to get them to self rescue by swimming towards rescuers.
2. **Reach:** Use avalanche poles, branches, handtools, rope or fire hose looped down from a bridge etc to reach the person and pull them to shore.
3. **Throw:** Throw a rope (preferably a throwbag) with a stopper knot at the end (no loops that people might get hands caught in!). Throw the rope underhand across the victim, not ahead of them, and be ready to quickly make another attempt. Instruct the victim to hold the rope over their offshore shoulder (the one on the opposite side from you) so that they pendulum into shore faster. Belay the rope behind your waist. Never wrap it around your hand or attach it to anything, you must be able to let go of it if required. If you don't have a rope, throw or drop anything to the victim that will help their floatation.
4. **Go:** If all else fails and you deem it is safe to do so, you may enter the water. Always take this option very very seriously - one in nine drownings involves a rescuer - and ensure that there is a good run out downstream free of major hazards such as logs or branches, fences, large boulders, bridges, sputniks (concrete blocks), rapids or waterfalls. It is essential that never put yourself in a situation where you can be pinned against or wrapped around any fixed object in the river! You will need to be a very strong (not recreational) swimmer.