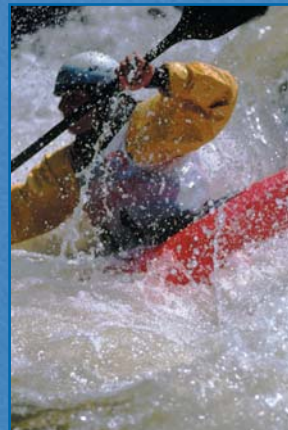


Know Your Limits

A special safety publication from the
American Canoe Association,
produced under a grant from the
Aquatic Resources (Wallop-Breaux) Trust Fund
administered by the U.S. Coast Guard

**INSIDE: Paddling safety tips; a case for PFDs;
reading weather and water; essential
safety equipment; and more!**



Paddle Smart... Know Your Limits



More and more people are getting into paddling. According to a 2000 study by the Outdoor Recreation Coalition of America, Americans are paddling in record numbers: 17.5 million paddled a canoe, 8.8 million went whitewater rafting, and 5.1 million kayaked during the study period (1999). That's not surprising, since paddling is a perfect way to enjoy the outdoors, have some fun and stay in shape.

Also not surprising, as paddling has skyrocketed in popularity, so has the number of paddlesport-related on-water accidents. For the last several years, paddlesport has consistently ranked second only to motor boating in contributing to the number of watersport-related deaths reported each year in the U.S. In 1999, the most recent year for which we have complete statistics, the U.S. Coast Guard reported 84 fatalities associated with canoe/kayak use.

Digging into these statistics, a number of trends emerge. Nearly 75% of those who die in paddlesport accidents are not wearing a lifejacket. Alcohol use is a contributing factor in almost 20% of the cases. Hazardous water or weather conditions are cited as a primary cause in more than 40% of fatal paddlesport accidents.

What do these different risk factors have in common? They're all things that a smart paddler can plan for and, in almost every case, avoid! By recognizing and accepting responsibility for the potential risks you face when you take to the water in a canoe, kayak or raft, you can eliminate or at least greatly minimize the chances of an on-water accident. There is MUCH you can do to manage the risks, including pre-trip preparation and planning, personal and equipment preparation, and, most importantly, being safety conscious while on the water and at the put-in and take-out.

This paddlesport safety booklet has been produced by the American Canoe Association (ACA), under a grant from Aquatic Resource (Wallop-Breaux) Trust Fund, administered by the U.S. Coast Guard, as a basic safety primer for use by all paddlers, old pros and novices alike. But it takes more than just reading about safety to make it happen. The ACA offers on-water safety and skills courses in all types of paddlecraft and for all levels of experience at locations across the country. Check out the ACA Web site (www.acanet.org) for more information on paddling courses in your area.

Most people feel that safety is a concern for the other guy: "It will never happen to me." While paddling is, in fact, a relatively safe recreational activity when considering its immense popularity, it can also appear deceptively easy and safe—and not just to novice paddlers. Operator inexperience or error is indicated as a leading cause of only about one in four paddlesport fatalities, and about a third of all fatalities, where experience was reported, are of paddlers with more than 100 hours of experience.

So, regardless of your level of experience—whether you're just starting out or you've been paddling your whole life—*know your limits* and always follow the basic safety precautions described in the following pages. And, have fun!

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cover photo by Jerry and Marcy Monkman
cover insets by Joel Rogers, Wiley/Wales and Scott Spiker
page 2 inset by Dunbar Hardy

Wear Your Lifejacket!

Expect to capsize and swim occasionally when paddling a canoe, kayak or raft—it's part of the fun! But when you hit the water unexpectedly, even strong swimmers need a personal flotation device (PFD), commonly called a "lifejacket." It allows you to concentrate on doing what's needed to increase your safety and improve your chances of rescue. Over 50 percent of all drownings involving canoes, kayaks or rafts would never have happened if the victim had been wearing a lifejacket!

Many people think that a lifejacket has to be bulky and uncomfortable, but this isn't true any more. The U.S. Coast Guard places PFDs into five categories. Type I or II PFDs are safe and will turn an unconscious person face up, but they are generally too bulky for paddlers. Type III PFDs are designed to be worn all the time. They come in a wide variety of designs, colors and prices. Lifejackets for most paddlers fall into this category. Their minimum buoyancy is 15.5 pounds, although a few models are available with higher flotation (used primarily for very large paddlers). Type IV PFDs cover a variety of "throwable devices," like ring buoys and seat cushions. Type V covers a variety of "special purpose" PFDs, including whitewater rescue lifejackets, PFDs used by commercial rafters and even a new breed of inflatable lifejacket (low-profile PFDs built for comfort, but **not approved for use in whitewater**).

Because paddlers wear their lifejackets all day, make sure yours has a secure, yet comfortable fit. When wearing the right lifejacket you'll hardly know you have it on. Although all approved Type III PFDs meet certain strength and buoyancy standards, they're not all the same. Spend some extra money for a higher-quality model. It will have softer foam, a more comfortable cut, and improved adjustability. Make sure your jacket adjusts easily and fits snugly over clothing worn for different weather conditions. Few universal-sized lifejackets fit as well as models sized small, medium, large and extra large. Very large men will need to find an XXL version. Check the length to be sure that your lifejacket will be out of the way when paddling.

Women and kids can be hard to fit. Women are smaller, and shaped differently than men. They also have shorter torsos, making many unisex PFDs too long. Fortunately, several companies have designed special ladies' models that fit well. Kids also require specially sized lifejackets. You should be able to lift children by their lifejackets without having them fall out. With very young children with flat torsos, a crotch strap is a good idea to help hold the lifejacket in place. The Coast Guard places kids under 90 pounds into a separate sizing category; if a child is heavier than that, look for an extra-small adult jacket.

Most importantly, although many PFDs are sold in sizes such as *small*, *medium*, *large*, etc., the correct size is **always** dependent on the wearer's weight. Chest size and fit is very important, but so is the correct size by weight. Always check the PFD's label for size/weight limits and specifications.

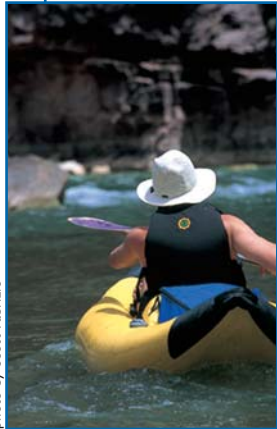


photo by Scott Fabrizio



Pull over jacket



Rescue jacket



Front zipper jacket



Children's jacket with head float and harness

Lifejackets Matter!

consider the following statistics:

* **98% of all canoe/kayak operators had a PFD with them**

* **63% of all paddlecraft operators wore their PFD all or most of the time**

** **75% of all canoe/kayak fatalities were not wearing a PFD**

* Source: 1998 National Recreational Boating Survey, conducted by JSI Research and Training Institute, Inc.

** Source: 1999 U.S. Coast Guard Boating Statistics.

Avoid Extremes of Weather and Water

For paddlers who wear lifejackets, extreme weather and water conditions are the usual source of trouble. If you encounter these conditions, stay off the water. Skilled paddlers with proper gear can handle some extremes safely—but even they know when to back off. Some of these conditions include:

High water

High water makes a river move faster and adds power to even the mildest drop. While a modest increase in flow may cover rocks and make a rapid easier, eventually the increased turbulence becomes difficult to manage. As the current gains speed, rescue becomes more difficult; a swimmer can be carried downstream for miles. As a river floods, water spills over the banks and rushes through the surrounding trees and brush, creating strainers. An impressive sight from the shore, but no place for the average paddler.

Rivers rise and fall with the seasons, and the flow varies with rain or snowmelt. Fluctuations of ten feet or more in a short period of time are not uncommon; the river you ran last year may be completely different when you return. Know what the river level is and what it means to paddlers before you get on the water.

High winds and storms

High winds or storms over open water turn the placid surface of a lake or bay into a wild, unfriendly place. The bigger the body of water, the rougher it gets. The ocean can be churned up by storms hundreds of miles away. Tidal flows and the inflow at river mouths may accentuate the hazards. Lightning also poses risks, as paddlers are often the highest point around. The weather's effects will vary according to your trip plan. Long crossings expose paddlers for extended periods, while other stretches can be protected from the prevailing winds.

Experienced lake and coastal paddlers monitor the weather closely, checking forecasts beforehand and watching the sky when on the water. They're not afraid to postpone their trip if necessary, or to head for shore if conditions deteriorate.

Cold water

Cold water is extremely dangerous to unprotected swimmers. It quickly robs the body of its strength, diminishes coordination and impairs judgment, a condition known as hypothermia. A hypothermic paddler remaining in the water eventually becomes helpless. Cold water is often encountered during the winter, early spring and late fall. In places with high, mountain snowmelt the water remains icy throughout the summer; the air temperature may be quite comfortable while the water remains frigid. Some experts use the "100 Degree Rule": If the air and water temperature combine to less than 100 degrees F, a wet- or drysuit is mandatory and the river should be considered one class more difficult than normal.

To protect against the effects of cold water, select and layer clothing properly. Try to spot the hypothermic accident before it happens and plan the trip appropriately. Good paddling skills and equipment can often help prevent the situation which may lead to hypothermia. Check the water temperature before you paddle by sticking your hand in it. If the water is too cold for comfortable swimming, you have two choices. One is to take precautions. You can wear protective clothing, like a wetsuit or drysuit, and travel in groups trained to pull someone quickly from the water. The other is simply to wait until the water warms up. Get as much information as you can on conditions in the area you plan to visit. Guidebooks contain much information on weather and water conditions, as do the Web sites of the American Canoe Association and other organizations listed on Page 8.

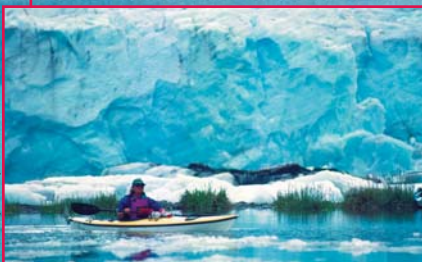


photo by Wiley/Wales

International Scale of Difficulty

The following rapid-rating scale is only a guide and is often interpreted differently by different people. Since many rivers don't fit neatly into a system, check several sources before assuming you have the ability to run the sections. Fluctuating water levels caused by rainfall or river releases may change the class rating. Temperatures below 50 degrees F should change a rating to be one class more difficult than normal.

Class I Moving water with a few riffles and small waves. Few or no obstructions.

Class II Easy rapids with waves up to three feet and wide, clear channels that are obvious without scouting. Some maneuvering is required.

Class III Rapids with high, irregular waves often capable of swamping an open canoe. Narrow passages that often require complex maneuvering. May require some scouting from shore.

Class IV Long, difficult rapids and constricted passages that often require precise maneuvering in very turbulent waters. Scouting from shore is often necessary, and conditions make rescue difficult. Canoeists and kayakers should have the ability to Eskimo roll.

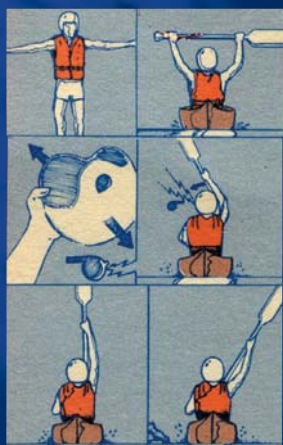
Class V Extremely difficult. Long, very violent rapids with highly congested routes, which nearly always must be scouted from shore. Rescue conditions are difficult, and there is a significant hazard to life in the event of a mishap. Ability to Eskimo roll is essential for boaters in kayaks and closed canoes.

Class VI Difficulties of Class V carried to the extreme of navigability. Nearly impossible and very dangerous. For teams of experts only, after close study has been made and all precautions have been taken (Source: American Whitewater).

Did You Know?

- Not wearing a lifejacket in a boat is like not wearing a seatbelt in a car; when you need it, it's too late!
- Many boating-related fatalities involve alcohol. Stay sober and stay alive.
- Standing up in swift current is dangerous. The fast water can push your foot under a root or into a crevice and hold it there. Then it can push you over and hold you under the surface. Keep your feet up!
- Water pulls body heat away from a person hundreds of times faster than air.
- Cotton clothing holds water next to the skin, making hypothermia more likely even on a hot day. Wear synthetics, like nylon or fleece, for the best protection. Don't wear cotton!
- Thousands of people suffer serious cuts on their feet every year by wading barefoot. Wear shoes or sandals while boating and while in the water.
- Paddlers don't often notice that they're thirsty when having fun in the water. But your body loses lots of moisture, even when wet. Take plenty of potable water with you and drink frequently.
- Remember the sunscreen. Shade can be scarce out on the water.

Safety Tidbits



STOP

HELP

ALL CLEAR

Universal River Signals

STOP: Potential hazard ahead. Wait for "all clear" signals before proceeding or scout ahead. Form a horizontal bar with your paddle or outstretched arms. Those seeing the signal should pass it to others in the party.

HELP/EMERGENCY: Assist the signaler as quickly as possible. Give three long blasts on a police whistle while waving a paddle, helmet or PFD over your head in a circular motion. If a whistle is not available, use the visual signal alone. A whistle is best attached to the zipper of the PFD.

ALL CLEAR: Come ahead (in the absence of other directions, proceed down the center). Form a vertical bar with your paddle or one arm held high above your head. The paddle blade should be turned flat for maximum visibility. To signal direction or a preferred course through a rapid around an obstruction, lower the previously vertical "all clear" by 45 degrees toward the side of the river with the preferred route. Never point toward the object you wish to avoid (Source: American Whitewater).

Spotting a Potential Accident

Accidents don't just happen. They usually result from the interaction of a series of smaller events or misjudgments, which culminate in a major accident. Experts analyze accidents in terms of their human, equipment and environmental factors. Usually, any one factor will not lead to an accident. However, the presence of three or more factors in a paddling situation is a sign of serious trouble.

HUMAN FACTORS:

1. Consumption of alcohol
2. Not wearing a PFD
3. Lack of familiarity with river
4. Insufficient skill level
5. Out-of-shape
6. Paddling alone or in a group with less than three boats

EQUIPMENT FACTORS:

1. Poorly maintained equipment (i.e. cracked paddles, leaky rafts)
2. Little or no flotation

3. No spare paddle
4. No first aid kit
5. Improper or inadequate dress

ENVIRONMENTAL FACTORS:

1. High water
2. Cold water
3. Dams (hydraulics)
4. Strainers (downed trees)
5. Undercut rocks
6. Remoteness
7. Changing weather conditions

Throw Rope Bag

The throw rope bag is a rescue device that can be thrown quickly to a swimmer or used to unpin a boat. It can be easily stored in a boat ready for quick use. It should contain between 50 and 70 feet of 3/8", soft-braided polypropylene rope, stuffed randomly into the bag and extending through the bag to form a loop. When throwing the bag, first loosen the drawstring. Hold the endloop in one hand (don't put your hand in the loop) and throw the bag at or behind the victim in the rapids. A second bag works best if you miss with the first. If you have only one bag and have another chance to make a throw, drop the rope as it lies at your feet when you retrieve it. Leave some water in the bag for ballast and throw it again to the victim. If the victim grabs the rope, "belay" yourself (sit down, brace yourself and run the rope behind your hip) and let the victim swing to shore.



Self-Rescue

When spilled, check on your partner, get to the upstream end of the craft and swim to safest shore (a 15-foot canoe hurled against a rock by a current of 10 mph can exert a force of over four tons). Leave the boat only if it will improve your personal safety. If a rescue is not imminent, if the water is numbing cold or if a worse set of rapids is approaching, strike out for safest shore. To lessen your chance of injury, adopt the safe swim position by floating on your back with your feet pointing downstream and at the surface of the water. Don't attempt standing in moving water at knee-deep levels or deeper because of the possibility of foot entrapment, even in relatively slow-moving water. Many drownings have occurred when a novice paddler has had a foot or leg caught between rocks in a strong current.

Layering Your Clothes

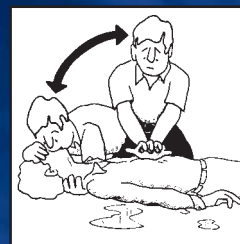
Layered clothes insulate in cool weather better than a single garment of the same thickness (two medium-weight sweaters offer more protection than one heavy sweater). Cover the sweaters with a paddling jacket for more warmth. To trap heat and keep water out, the paddling jacket should fit tightly around the neck, wrists and waist. Layers can be mixed to maximize the strengths of each layer. Some paddlers use a farmer john-type wetsuit (no sleeves) coupled with a sweater and paddling jacket, allowing freedom of movement and extra protection while swimming. The layering system also allows you to easily adjust your body temperature.

Participants' Preparedness and Responsibility

1. Be a competent swimmer with the ability to handle yourself underwater and in moving water.
2. Be certain to have a properly fitting PFD, and WEAR IT.
3. Be suitably equipped.
4. Keep craft under control (control must be good enough at all times to stop or reach shore before reaching any danger). Know your boating ability. Don't enter a rapid unless you're reasonably sure you can safely navigate it or swim the entire rapid in the event of capsizing.
5. Keep an appropriate distance between boats (distance will vary depending on water conditions; a good rule of thumb: keep the boat behind in view). Never get ahead of the assigned leader or behind the assigned sweep boat. Both lead and sweep positions should be held by experienced paddlers with knowledge of the water being traveled.
6. Keep a lookout for river hazards and avoid them.
7. Respect the rights of fishermen and landowners while boating.

Know CPR

Cardio Pulmonary Resuscitation (CPR) is an emergency first aid procedure that allows the rescuer to maintain life until a victim recovers sufficiently to be transported, or until advanced life support is available. It involves recognizing respiratory and cardio arrest and starting the proper application or resuscitation. CPR procedures following a near drowning should be performed as quickly as possible. Optimally, only seconds should intervene between recognizing the need and starting treatment. CPR is a basic form of life support that can be taught to anyone. If you've been trained in CPR, review it periodically and make sure your registration is current. If you haven't, contact your local Red Cross as to when to enroll in the next course. Your paddling partner's life could depend on it.



Safety Tips

Coastal Kayaking



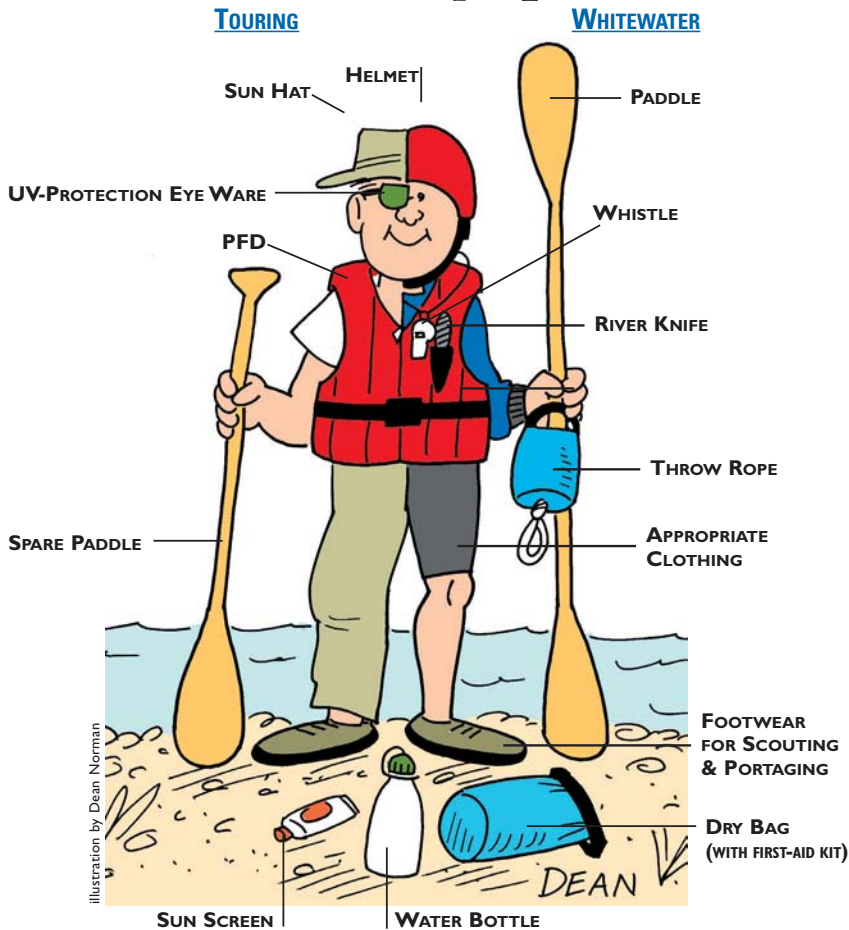
Whitewater: kayaking & rafting



Canoeing



Essential Equipment



Other Safety Equipment (by discipline)

- **Sea kayaking:**
bilge pump; paddle float, sling, sponsons or other self-rescue device;
map/chart and compass; signal mirror; tow line.
- **Rafting:**
patch kit (with glue, patch material and scissors); pump; spare lifejacket; wrap
pulley system; bow line.
- **Canoeing:**
bail bucket; float bags and pulley system (for whitewater); painter lines.
- **Whitewater kayaking:**
float bags; bulkhead or beam; drybag with spare clothes; break-down paddle;
Z-drag system; rescue harness.

for All Disciplines

Safety Tips



- **Choose a route**
 - Close to shore
 - Without fast currents
 - With protected coastlines and surf under one foot

- **Check the weather and other local conditions**

Fog
Wind



- **Dress for an unexpected flip**
 - Hypothermia is a serious threat in kayak touring—wear a wetsuit or other protective clothing
 - Wear your PFD-fastened and snug



- **Learn re-entry, and practice in controlled conditions**
 - Slide your belly across the boat, then your butt, then your legs
 - Assisted rescue
 - Paddle float for decked kayaks

- **Know your Hazards**

Tidal currents
Landings in surf
Other traffic

- **Keep your group close together**
 - File a float plan



Safety Tips



- **Pick an Appropriate River**

Match your skills and experience to the difficulty of the river

- **Use Proper Equipment**

PFD-fastened and snug
Helmet-use varies by river difficulty, water level, and local custom
Adequate flotation for kayaks and canoes
No loose lines-avoid entanglement
Protective footwear and cold water protection

- **Recognize and Avoid Hazards**

Trees, branches and other strainers
Rocks and low-head dams
Backwash in hydraulics
Stay on the inside of bends



- **Swim Aggressively**

Away from hazards (toward calm water, shore, or your raft)
If rafting, pull swimmers aboard immediately

- **Defensive Swim**

Feet up and pointed downstream
Backstroke to maneuver
Don't stand up

- **If in Doubt-Get Out and Scout!**

Walk or carry around danger spots
Keep your group close together



Safety Tips



- **Choose an appropriate lake or river**

Cross big lakes and run swift rivers only if you have the necessary skills

- **Hazards can exist even on quietwater**

Watch for changing weather and water conditions
Keep an eye out for other boat traffic
Pay attention to all safety warnings

- **Wear the right gear**

Keep your PFD fastened and snug
Wear appropriate clothing for the conditions
Keep your shoes on—sharp objects abound near shore

- **Take the right equipment**

Make sure you take plenty of water and food
Carry lights if you'll be out in low light conditions
Carry an extra paddle
Carry flotation if you're paddling whitewater



Safety Resources for Paddlers

Looking for more information on paddlesports safety? Contact any of the following organizations for more advice on paddling and safety:

American Canoe Association

7432 Alban Station Blvd., Suite B-232, Springfield, VA 22150
(703) 451-0141; www.acanet.org

America Outdoors

P.O. Box 10847, Knoxville, TN 37939
(865) 558-3595; www.americaoutdoors.org

American Whitewater

1430 Fenwick Lane, Silver Spring, MD 20910
(301) 589-9453; www.americanwhitewater.org

Professional Paddlesports Association

7432 Alban Station Blvd., Suite B-244, Springfield, VA 22150
(703) 451-3864; www.propaddle.com

Trade Association of Paddlesports

P.O. Box 84, Sedro Woolley, WA 98284
(360) 855-9434; www.gopaddle.com

United States Canoe Association

606 Ross St., Middletown, Ohio 45044-5062
(513) 422-3739; www.uscanoe.org

U.S.A. Canoe and Kayak

P.O. Box 789, Lake Placid, NY 12946
(518) 523-1855; www.usack.org

The following organizations provide general information on boating safety:

United States Coast Guard—Office of Boating Safety

www.uscgboating.org

United States Coast Guard Auxiliary

www.cgaux.org

National Association of State Boating Law Administrators

www.nasbla.org

National Safe Boating Council

www.safeboatingcouncil.org

United States Army Corps of Engineers

www.usace.army.mil

