

Safety in Equipment

By Colin Irvine

This section has two aims:

1. To equip coaches with the technical equipment knowledge necessary to make sound equipment choices for themselves and advice for their students.
2. To identify the key items of equipment necessary for an instructor to effectively lead and teach groups in a white water environment.

Bear in mind that changes in materials, design and construction will quickly render parts of this section outdated. Instructors are therefore advised to consult manufacturers' websites and other web-based resources to stay current.

White Water Equipment

To keep things simple we'll divide white-water gear into 4 categories:

1) The Base Layer.

The layer that keeps you warm, allows you move freely and wicks moisture away from your skin.

Most paddlers prefer a close fitting, stretch **fleece**. Also available are rubber coated fleece or soft neoprene leyer. For hotter days a **rash vest** offers little warmth but will keep the chaff to a minimum!

Socks are available in neoprene, fleece and rubbery fleece - all guaranteed to stink. For really cold days a thin neoprene **skull cap** works well under the helmet. Also available are **gloves** and **pogies** (a mitt like sleeve that attaches to the paddle, allowing you to grip the paddle shaft with a bare hand).

If it's warm enough for **shorts** then a pair of board shorts are the first choice for most paddlers. Watch out for anything with back pockets though as they create painful pressure points! Another key pressure area is where the back-rest meets the waist on your shorts. Some paddling manufacturers have reacted to this by designing shorts with a higher waist and a fleece or neoprene inner. Don't worry, they still look cool!

2) The Shell Layer

The shell layer keeps your thermal layer as dry as possible and protects you from wind, rain, insects, rocks, poison ivy, brambles, rope burn - the list goes on...

The most important item here is your **cag or dry top**. The more money you spend, the more features you will get. A top of the range whitewater dry top might contain: breathable fabric, latex and neoprene wrist and neck seals, double waist seal, cordura or kevlar patches on key abrasion areas, semi dry pockets... All this stuff adds weight, so the competition paddler will scale this right down.

I suggest a minimum of a double waist tube (which links with your spraydeck) and latex wrist and neck seals. A neoprene seal over the latex protects it from wear and acts as a back-up when the latex eventually splits.

Good **dry trousers** have all the same features as a good dry top. Salopette versions are definitely dryer but have some access problems when it comes to toiletry needs. Some models now boast a waterproof “relief zip” which really is a relief, for the gentlemen at least.

For people into winter paddling, the ultimate piece of gear is the **dry suit** – a full body garment. To stay dry through a swim, it’s the only solution. Again, everything mentioned above applies here.

3) The Working Layer

Put simply, this is the layer that keeps you alive and in one piece. It’s the most important area of white water gear to get right.

Footwear – strong footwear with a solid grip means you can effect swift rescue and cope with awkward portages. A must.

Helmets – Materials vary from plastic to various composite alternatives. The key thing is fit. A peak can offer extra facial protection and ear guards help prevent the onset of surfer’s ear.

Spraydecks – you need a strong neoprene deck at this level. More money buys more features but again the fit, both on you and your boat, is key. A rand seal tends to be stronger than a shock-cord and some reinforcement (eg kevlar) around the rim will increase its life.

Whitewater Buoyancy Aids - Buoyancy is measured in Neutons – 50 being the minimum but 70 recommended, especially for bigger paddlers. The vest should fit perfectly, *before* tightening the chest harness. Stitching on shoulder straps and harness loops should be reinforced – basically the webbing on the vest should look as strong as a climbing harness. Bonus features include good pockets, reflective strips and non slip rubber to keep the vest from riding up.

For more on how to use a chest harness correctly, seek out proper training with the ICU. A good BA provides you with a rescue platform, from which you can launch a range of rescue tools.

4) Rescue Kit

The stuff you hope you never use...

Your choice of rescue kit depends heavily on your ability to use it, which in turn is reliant on training.

Start with a good **throw rope**, from a recognised manufacturer. You need minimum 15m of floating line. Diameters vary. Many people now carry 2 lines – a lightweight, waist mounted emergency bag and a heavier line for more complex rescues and hauls. Most ropes are polypropylene, but more expensive models have a spectra core.

Some large climbing **slings** and large screw gate **karabiners** will complement the rope nicely. As you become more competent in white water rescue you will find yourself adding **prussiks, pulleys and other hardware**. Go on a course for more info.

A **break-down / split paddle** to carry in your boat can either be a convenience or a life-saver. What everyone should definitely carry is a strong **knife**, easily accessible in an emergency and a good **first aid kit**. For more on what you need there consider the REC first aid course and ICU level 4 skills training. Some kind of “**hypothermia kit**” is also a good idea. This might include some spare clothes, nylon group shelter, survival bag, food and drink.

For longer trips consider packing some items to perform some basic **repairs** such as a broken back band or loose foot rest. A multi tool, some cable ties and a roll of duct tape will go a long way. Keeping all this dry requires a good **dry bag** but if you intend taking electronics on the water you’ll need to invest in a plastic pelican case or watershed dry-bag.

The principle is that you should match your rescue kit with the location, weather conditions and group ability. For exact equipment requirements for coach training and assessment courses, please consult the relevant syllabus, available to download from www.canoe.ie.

The Bonus Bits...

Nose plugs, ear plugs, elbow pads, face guards, zinc sticks, valuables pouch, GPS, 2-way radios, hand sanitizer, waterproof camera ... as you build in experience you may find yourself taking all this and more. And that’s before we even talk about overnight gear! What I’ve done here is just lay out the basics. I hope it helps.

Centre / Club Equipment

Equipment that coaches or centres provide for absolute beginners is often different to the equipment they would recommend people to buy privately.

When purchasing equipment for a centre or club it’s important to consider factors such as affordability, durability and adjustability for different body shapes.

1. Base Layer

Sleeveless “long john” wetsuit – easier to put on than a full wetsuit, provides insulation and buoyancy.

Cheap fleece thermal wear - to wear under the wetsuit for winter paddling

2. Shell Layer

Centre cag – a basic waterproof cag, with neoprene seals for durability and just a single waist seal.

3. Working Layer

Nylon Spraydeck – adjustable for different boats, cheap, easy to pull off during capsize.

Plastic helmet – adjustable plastic helmet. Available in different sizes.

Buoyancy Aid – Simple slab buoyancy, with wide range of adjustable straps, generally without zips (for durability).

Footwear – selection of basic neoprene boots.

Paddles

White water paddle design is changing all the time. What's important is that coaches have a good basic knowledge of the 5 fundamentals: material, blade shape, shaft shape, length and feather.

1. Material:

The ideal paddle is strong, stiff, lightweight and affordable. In reality most materials represent some compromise between these different qualities. Plastic is of medium strength but generally not stiff enough for advanced use. Carbon fibre is excellent material but expensive. Aluminium shafts are cheap but break easily. Fibreglass blades are stiff but wear down quickly....

Various combinations of the following materials may be used in a paddle's construction: plastic, aluminium, fibreglass, titanium, carbon fibre and Kevlar. The price of the paddle will mostly reflect the materials used, along with R&D and other costs.

2. Blade shape:

Different blade shapes suit different styles of paddling and paddler. A touring blade is designed for efficient strokes over a long distance. A freestyle blade is designed to provide instant power for explosive moves. Smaller paddlers sometimes find it hard to control a large, powerful blade.

One key difference is the symmetric / asymmetric division. Asymmetric blades allow a smoother entry when the paddle is at a normal paddling angle. Symmetric blades suit canoe paddles, where the paddle is mostly held in a vertical position.

3. Shaft shape:

The main choice here is between straight shaft and bent shaft. Bent or crank shaft paddles were developed as an injury prevention measure, to minimise the amount the wrist had to "cock" for each blade entry. A double torque crank is designed to improve reach for racing.

4. Length:

Two things are important when choosing paddle length: boat size and size of athlete. Long boats require long paddles to perform efficient turning strokes and long forward strokes. Likewise, large athletes require longer paddles to maintain a wide grip and encourage trunk rotation.

Different uses also have an impact. Short paddles are better for fast sprints such as kayak surfing take-offs. Short paddles are also better suited to freestyle, where there are rapid transitions between paddle blades, causing longer paddles to feel cumbersome.

5. Feather:

Feather is the angle at which the blades are offset. A traditional feather of 90 degrees is designed so that the leading blade cuts through a headwind. Modern white water paddles tend to have a much lower feather – often as low as 45 or even 30 degrees. A lower feather reduces the amount the wrist must rotate between strokes and so reduces the chance of repetitive strain injury.

More information from the Rough Stuff website – www.roughstuff.ie

White Water Boat Design

The white water kayak market has seen massive and regular changes in boat design and an increase in the number of manufacturers such as:

Dagger, Pyranha, LiquidLogic, WaveSport, Jackson, Fluid, Bliss Stick, Riot, Prijon and Dragorrossi.

Each manufacturer is currently (2006) producing 4-5 different types of kayak for their white water market. In this article, I will outline the main types of kayak on offer. Bear in mind that some designs will fall between categories and models will be replaced rapidly, as manufacturers compete in the marketing arena.

1) Creek Boat

Creek boats are designed for steep rivers where the main aims are to hold a line in turbulent water, accelerate quickly, perform an efficient boof (lifting the bow going over a drop) and to resurface quickly at the base of a falls.

Typical length is around 2.50m but shorter “spud” versions are also available for low volume creeks where speed is not of great importance. Hull profile is generally rounded, with soft edges, high volume, plenty of rocker and a water shedding deck.

Example: Dagger Nomad

2) River Runner

All the speed of a good creek boat and more, but with a flatter hull, sharper edges and a lower deck profile. This is to enable fast snappy turns in big volume water and more efficient carving across waves. Suitable for big rapids, rather than big waterfalls or steep slides.

Example: Wavesport Diesel.

3) Freestyle Kayak / Playboat

For out-and-out freestyle, but also suitable for some big volume river running. Short length, flat hull, aggressive rails, low volume ends. Length varies from 190cm to around 230cm.

Example: Bliss Stick Rad...

4) River-Running Playboat / FreeRunner

A cross between a freestyle boat and a river runner. Flat hull and low ends, but more length and speed than a full playboat. Designed for those looking for a playful kayak to use for intermediate river running. Some boats originally designed as playboats (eg. Pyranha InaZone) now fit into this category.

Example: Liquid Logic Crossriver

5) Old School

These are the long (over 270cm) boats which are no longer produced. They sometimes re-appear in certain extreme races due to their speed. They have little rocker and are often used as beginner boats in clubs and centres.

Example: Prijon Invader

Coaches should keep an eye on manufacturers' websites to see what new designs are being released. However, what is most important is that an instructor can recognise the strengths and weaknesses of any given design and make safe decisions on its appropriate use.