



Flotation and Paddling

(Our thanks to Greg Bennett from Bennett Surfboards for this article)

Compiled by American shaper / designer Rich Harbour

As a shaper and surfboard designer, I'm frequently asked questions regarding flotation. The best package for you as many elements, and ultimately you will assemble all of the variables and make the appropriate choice. There are, in addition to flotation, several other closely related subjects that need to be covered. These relate to the damage done to the body and to the surfboard with different kinds of paddling, as well as the difference between a good paddling board and a high performance surfboard.

The first rule of flotation is: the mass of a surfboard is directly related to its manoeuvrability. Mass is described as the resistance to inertia. Plain and simple: the bigger it is, the more mass a surfboard possesses, the more flotation it has.

Most surfers want the most manoeuvrability. Make it shorter and it turns better. There are some variables here, and different shapers will give you their own arguments. One school of thought says make a board thicker or wider to compensate for reduction in length. Those who argue against this says that thicker boards have less sensitivity and wider boards have less rail and action, making turning sluggish. As long as you don't go overboard, going wider or thicker will help a shorter board float. However, you will always give up something in order to get more float.

A board designed specifically for paddling has unique characteristics. It will have less rocker than the more manoeuvrable board made for surfing, less curve in the bottom, and a fin several feet from the tail. Studies have shown that paddling at 3.5 knots the amount of wetted surface accounts for approximately 85% of the drag. However, at about 5 knots, the curves of the outline and rocker now account for about half of the resistance, and friction on the wetted surface accounts for the other half. We also know that a full-arc shaped bottom will displace water much more efficiently than a flat bottom. A very pointed, long, narrow shape glides rather easily through the water. But at 12' long and 20" wide, this almost rockerless, efficient paddling machine is not going to do many roundhouse cutbacks. The point I am making is that you should make the decision about how much manoeuvrability you are willing to sacrifice in order to paddle well. In general, go for size increase for better paddling instead of design changes that many detract from surfability.

Catching waves easily seems to be one of the more frequent design requests. I never have thought that the nose has any great influence on wave catching. A narrow nose will certainly be more efficient in off-shore winds, and excessive rocker will push water. The bigger the board the easier it catches. Yet one board will catch waves better than another of the same length. Why? Without getting into a bunch of technical possibilities, look to the obvious. A wider tail will capture more of the wave's energy than a narrow one. A 15" square tail (always measure tails and noses 12" from the ends) will certainly capture more wave energy than an 11" pin tail. But remember that turning is tipping the board on one rail to create a resistance. This resistance pulls the board in the direction of the tipped rail. Of course rocker, rail curve, and tail thickness will also have a bearing on the turn ability. Too wide and it won't turn well, and too narrow and there will be no curve for it to relate on.

I have a theory about the popularity of knee-paddling surfboards. At age 15, and 150 pounds, I started on a 9'8". To surf on a 6'2" in the middle of the winter before full suits were invented would have taken a tougher guy than I was. With no wetsuit you had to kneel, completely dry, on top of the board while



waiting for the next set. You would see a few guys with their feet dangling in water, but most of us paddled out and sat in the lineup in the kneeling position while waiting for that perfect wave. With the advent of comfortable full wetsuits and the down sizing of surfboard length happening almost simultaneously, one begins to wonder.

So you want a knee patch on your boards? I think there's a better idea. The foam boards of the 60's were made of much denser foam, about 3.9lbs per cubic foot and glassed with at least two layers of 8 oz. cloth top and bottom. Today's typical surfboard foam is 2.44 pounds per cubic foot (or less) and probably no more than double 6 oz top and single 6 oz bottom. It doesn't take a brain surgeon to figure that this new high tech, ultimate turning surfboard you want to buy has sacrificed something to make it so mobile. It's lighter because it's weaker. But that's what makes it work so good. The old foam is available on special order. It can take, at certain times, several months to get.

Ordering the old-style foam will solve the denting problem, but you just went 30 years backward in time, designing a board that could weigh as much as 30 lbs. I have a better solution. If you must knee-paddle, go for a couple of sessions. Now strip the wax off where you kneel and you should find 4 dents where your knees and insteps have pressed the glass and foam. The glass is now being stretched and is trying to cling to the foam. Take your board to a qualified repair centre and ask them to put several layers of 4 oz glass in the curvature of the dent and hold the old glass down. You have just added strength to the exact balance points with very little weight to your board. The cost was probably less than the cost of an oil change for your car.

Prone paddling, stroking arm over arm, always puts one arm in water. Now many time surfers are suffering from back and neck problems due to the constant arching of the back that prone paddling requires. Knee-paddling also has its drawbacks. You put both arms in the water when you take a stroke. Therefore, you must rely on the board's coasting ability to keep up the momentum before the next stroke. Thus, anything less than a "full nose and tail out of the water" board is not an effective knee-paddler. Clearly a board of these proportions will restrict the handling characteristics. Not only will the performance of your board suffer, but so will your insteps and knees. Those unsightly cartilage buildups, also known as surf knots, are not as cool to have today as when you were 15.

That 9'6" that floated just fine when you were 18 may not support you today. No, the displacement of a 1962 surfboard is not significantly different from today's 9'6". But your personal displacement may have increased enough to make a major adjustment to achieve similar flotation.

As one gets older and spends less time in the water the need for flotation increases. At some point in one's surfing career, the ability to do floaters, off-the lips, and radical cut-backs begin to diminish. Paddling starts to become more important. Your primary thing is to have fun. If hassling paddling is not fun, or you have medical problems, tell your sales-person. Any qualified longboard shop deals with these questions on almost a daily basis. If you are dealing with a shop that has a "too cool" salesman for longboard flotation problems, find yourself some place else to spend your money. For the most part, those jerks were all fired in the late 80's.