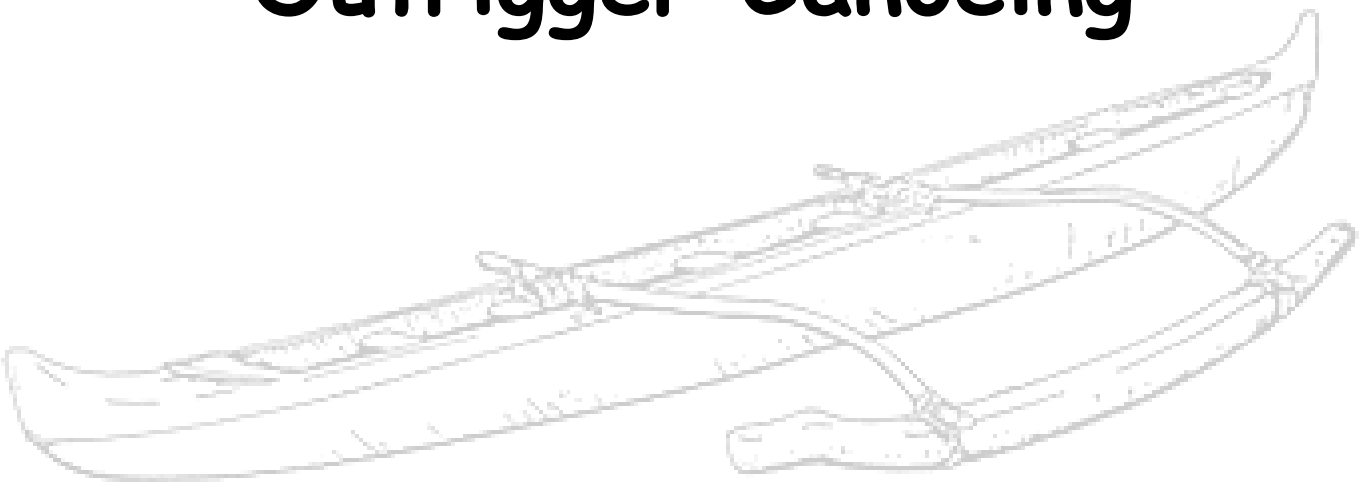
Web Guide
to
Outrigger Canoeing



Combined Knowledge off the Web from:

Hong Kong Paddle Club

Vernon Racing Canoe Club (Canada)

Canadian Community Dragon Boat Association

O Kalani Outrigger Canoe Club (Hawaii)

Delta Outriggers (Canada)

Ocean River Paddling Club (Canada)

Kihei Canoe Club (Hawaii)

Kent Island Outrigger Canoe Club (USA)

Gibsons Paddle Club (Canada)

Waikiki Yacht Club Canoe Team (Hawaii)

False Creek Racing Canoe Club (Canada)

Jude Turczynski (Hawaii)

Kawika Sands (Hana Hou Series)

Rich Lagrand (USA)

Compiled by Ron Smith

January, 2005

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Editor's Note

I compiled this manual from information available on the various club's websites during the Christmas break, 2004. These were the only websites I could find at that time with some form of training information. There are most probably other websites with more information.

There is also the website for the Pacific Dragons club (Sydney). They have an excellent instruction manual online but it is copy protected so I unfortunately could not include their info here. This manual should be read in conjunction with the Pacific Dragons'.

I do not necessarily agree with the information in this manual and, as you can see, various clubs have different ideas and ways of doing things. I intended this manual to be an introduction for new paddlers as well as a starting point for discussion. Each club needs to address every item in this manual for themselves.

Ron Smith

Port Douglas

Australia

Outrigger Canoeing

Introduction

Kihei Canoe Club

by Alika Atay, President

'Ho okele wa'a i ka nu'u'

Aloha,

These checklists were initially developed during the 2001 off-season to guide steerers involved in the Tuesday/Thursday Visitor paddle sessions. Each year since 2001, these steering safety check lists have been amended and updated to reflect the current safe practices expected by the Club.

This version of the Steering Safety Checklists has been approved by your Board of Directors as a steerer training standard **for ALL recreational activities.** Recreational canoeing opportunities are now scheduled for club members, 7 days per week - usually 2 or more sessions each day. During the conduct of **recreational activities** - the fully trained steerers are the Board's on-the-water supervisors, responsible to ensure safe practices and to maintain compliance with the Board's canoe use policy. Every recreational canoeing session must be Board approved, include a minimum of 2 canoes, and include at least 2 trained steerers.

This training standard is intended to:

- document and communicate Board and Club policy;

- provide an objective measure of a steerer's conformance with policy;

- act as a trainer's guide to preserve consistency session-to-session; from trainer-to-trainer;

- provide a written agenda - that many individuals require as a aid to learning (..for some, a written document is much clearer than the spoken word alone), and;

- be used as a response to a potential litigant's question, like - "how was the person in charge of the canoe trained?".

In practical use.....

1. Whenever this training standard is materially changed, it will be made available to every steerer involved in recreational activities.

2. Whenever a steering course is scheduled - these checklists will be provided to each candidate for pre-reading, in advance of the on-the-water sessions.

3. Trainers will be expected to question candidates - in the context of the various checklist sections. Like, - how do you determine whether the rigging is safe? - who is in charge of the canoe if the steerer falls overboard?

4. Trainers will be expected to challenge candidates, in regards to why we insist on certain things. Like, - why do we require all paddlers to sign a waiver? - why do we require all to paddle on the left - going to and from the beach?

IMUA.....

In this document, words importing the singular include the plural and vice versa; and words importing a male person include a female person.

Intended Audience

Kihei Canoe Club

This document is intended to provide information for potential steerers and steerers-in-training and, it can be used as a syllabus, (in regard to safe practices) for those who train steerers.

Welcome to Outrigger Canoeing

Vernon Racing Canoe Club

There are a lot of reasons people are drawn to outrigger canoeing. Over the years. you hear them all:

"I always wanted to try it."

"My friends said to come try it."

"I need the exercise."

"I like the water."

"I like the competition."

"I thought it would be exciting."

By far and away, however, the most common reason novices have for paddling is:

"It looked like fun."

Outrigger canoeing is fun, but it is also is hard work.

To do it well, you need a good (and patient) coach and a personal commitment to learning all you can about paddling technique, your role in the crew, and the dynamics that move the boat. You also need to commit the time to practice. Like any other skill, excellence comes from practice and the experience you gain from practice.

As a sport, outrigger canoeing is one of the least expensive. The only personal equipment you really need is a T-shirt, a pair of shorts and a paddle which is a lot cheaper than a tennis racquet or a set of skis or scuba gear or a surfboard.

Outrigger canoeing is a team sport but a unique type of team sport: each member of a crew has a job to do, the crew as an entity has a job to do, and individual commitment is necessary to have a successful crew, yet individual effort alone will not make a crew successful.

The successful crew is six people, totally synchronized and blending together to make the boat glide through the water.

Unlike netball or football where the team plays a game and each individual has a role in the game, the paddling team is a single unit that is only as strong as its weakest member. In an ideal crew, each paddler should be able to sit any seat including steering.

A Brief History of the Sport

Vernon Racing Canoe Club

It has been said: "Canoe racing has been around as long as there have been 2 canoes."

Although outrigger canoes were standard craft in the Indian and Pacific Oceans (over half the world's surface) since time immemorial, the contemporary sport of outrigger canoe racing has its origins in the Hawaiian Islands.

Outrigger canoe racing, along with most other aspects of Polynesian culture, were lost or nearly lost in the rest of Polynesia in the 19th century but fortunately survived in Hawaii.

It is the Hawaiian outrigger canoe which is the standard canoe principally used internationally for racing.

For this reason, it is common practice to use original Hawaiian customs, traditions and names for all aspects of the sport: the techniques, the parts of the canoes, the seat assignments, etc.

Many indigenous names exist for canoe, but the more universal names used in outrigger canoe racing include: Wa'a- Hawaii, Va'a- Tahiti, Waka Ama- New Zealand.

The Spirit of Aloha

Kawika Sands

In the beginning A (pronounced "ahh"), the eternal light giver, created Namaka O Ka Hai (the great power of the sea). But A saw the seas were alone, so he freed the force Pele. Pele created the lands. To keep them above her jealous sister, she constantly renewed them. The people who found these lands named it Hawai`i hailing it as a place of blessed "alo" or "aloha" meaning "in the presence of A." Life in old Hawai`i was a spiritual experience. There was aloha everywhere; in the people, plants, animals, rocks and reefs. Even in the canoes and paddles and the tools used to make them.

But aloha is more than a word, it's a way of life. If there is life, there is mana, goodness, and wisdom. If there is goodness and wisdom in a person, there is a god-quality. One must recognize the "god of life" in another before saying "Aloha." It means mutual regard and affection and extends warmth in caring with no obligation in return. It's the essence of relationships in which each person is important to every other person for collective existence. It's to hear what is not said, to see what cannot be seen and to know the unknowable.

To say "Aloha" to another with indifference is blasphemous, just as saying "Mahalo" ungraciously is profane. Therefore, when one says "Aloha" to another, one must mean it sincerely. If you are angry with someone, you must cleanse away all ill feeling before saying "Aloha." It is said, and given, freely and without condition or expectation and with the realization that it may not be returned but it is given without regrets nonetheless. It is this concept more than any other that distinguishes the Hawaiian culture. It also allows an outrigger club and its' members to grow and thrive. A club's leaders, more than any other, should understand, and be possessed of, this concept. It is not enough to be in charge, one must lead by example. Aunty Pilahi Paki described it in this unuhi laula loa:

Akahai	kindness, expressed with a feeling of tenderness,
Lokahi	unity, expressed with a feeling of harmony,

`Olu`lu	agreeable, expressed with a feeling pleasantness,
Ha`aha`a	humility, expressed with a feeling of modesty,
Ahonui	patience, expressed with a feeling of perseverance.

These are the traits that express the charm, the warmth, the sincerity, the generosity, and the love of an intangible substance or spirit known to many in Hawai`i nei as "ALOHA." - (restated in HRS §5-7.5, the "Aloha Spirit law.")

Aloha is appropriate when it comes to your hoa wa'a (canoe mates) and as your competitors. Every race is an occasion for the celebration of team spirit, meeting the challenge of competition, the test of determination, and the solidarity of club pride. So how do these traits apply?

Akahai	Kindness. Help others where you can, let others help where possible. Remember to give credit where credit is due and do not take credit at another's expense.
Lokahi	Unity. Unity is to a club, what water is to a farmer. Take away a club's unity, and the club becomes a lifeless desert. By maintaining club unity you maintain a common goal and individuals are possessed with a common motive.
`Olu`olu	Agreeable. Commend in public, condemn in private. Remember a good judge of character corrects what he hears by what he sees, a bad judge of character corrupts what he sees by what he hears.
Ha`aha`a	Humility. Pride brings destruction, humility brings honor. If you are humble, you consider yourself the servant of others. You do not act or feel superior to others. Remember that a leader who excels in employing others humbles himself before them.
Ahonui	Patience. Never remember small faults, never forget small favors. The development of patience challenges the strongest by the minute to break away and take the easy road. It is something to admire and respect in someone, but often over looked because patience is hidden in all of us.

Aloha no, a hui hou!

What to Bring

Be Ready to Swim

Waikiki Yacht Club Canoe Team

Boats can huli, and even the most experienced crews will sometimes find themselves in the water. Novices, of course, will be more likely to huli.

Also, during the course of a practice, coaches frequently call for crew seat changes which allow them to watch different "combinations" of paddlers and judge the performance of individuals in a boat. At those times, it's often easier to just jump out of a boat and swim to your new seat assignment, than to crawl.

Consequently:

Never carry anything in the boat you cannot afford to lose to the ocean. This includes glasses, jewelry, keys, water bottles, and clothing.

Once again:

Never carry anything in the boat you cannot afford to lose to the ocean!

What to Bring

What should I bring to practice?

Vernon Racing Canoe Club

Answer: A lot depends on your individual preferences, however, there are some basics you should think about:

PADDLE	Of course, you need your paddle. This assumes that your commitment to the sport is such that you have purchased your own "blade."
DRINK	Paddlers should bring a small bottle of water or sports drink to carry with them in the boat.
HEADBAND	Bring a headband, hairband or hat of some sort to keep your hair out of your face and sweat off your face.
A DRY T-SHIRT	It's up to you, but having a dry towel and a T-shirt or sweatshirt to put on after practice will be more comfortable for you. During early or late season, polypropylene is recommended as cotton is very cold.
SUNSCREEN	You really do need to protect yourself from the sun -- especially on race day at the beach and any daytime practices. Don't worry about it during weekday evening practices.
NEOPRENE	You'll see a lot of paddlers wearing neoprene (wet suit material) shorts. Neoprene is popular with paddlers because it cushions the hard seats of the canoe and minimizes chafing. Biking shorts also work well.
FOOTWEAR	All paddlers must help put boats in the water and bring them out. Early season, wetsuit booties, rubber boots, or running shoes and wool socks are recommended. Flip-flops or sandles are good for warm weather.
GLOVES	Sealskin,waterproof, sports gloves or rubber for early season. Biking gloves for later season.

What should I bring to practice?

Waikiki Yacht Club Canoe Team

A. A lot depends on your individual preferences, however, there are some basics you should think about::

PADDLE:	Of course, you need your paddle. This assumes that your commitment to the sport is such that you have purchased your own "blade."
DRINK:	Many paddlers like to bring a small bottle of water or sports drink to carry with them in the boat.
HEADBAND:	Bring a headband, hairband or hat of some sort to keep your hair out of your face.
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What to Bring to Practice

Kent Island Outrigger Canoe Club

Essentials

A change of clothes in case you are cold after practice, or in case we huli. There are showers at the yacht club. Ask someone for the code to get in.

Paddle	Some times we forget the obvious!
Hydration system	Water bottles are fine in the new and recreational paddler crews. They are not okay in the competitive program. We paddle long and hard in the competitive program. You will need fluids and calories.
Food	Nutrition and healthy glycemic levels are important. Whether on long distance paddles or surviving tractor pulls, make sure you have a couple Gus or Power Gells with you. You may even want to carry an extra Power Bar in your hydration pack.
Hat and sunscreen	Be sun safe…
Shorts	Board and river shorts dry fairly quickly. Some of us wear Neoprene paddling shorts.
Shirts	While cotton is good, we recommend technical fabrics that keep you warm when it's cold and cooler when it's warm. Many of the women wear bikini tops, bathing suits, or jog bras, depending on the temperature. We have team Capilene® shirts for sale. Contact Debbie Hall. When you are invited to move up to the competitive team, the women have selected a team suit fabric. Contact Liz Fischer for more information.
Shoes	Most of us paddle barefoot as it allows you to "feel" the boat with your feet. A few wear diving booties or water socks.
Paddling Gloves	This is a personal preference. Some of us use them and some do not.

Personal Belongings

Personal Safety and Security

Vernon Racing Canoe Club

You should not wear or carry anything in the boat that you are not willing to give to the ocean or lake. If the boat should huli, everything goes into the water. Car keys, slippers, bracelets, watches, earrings, water bottles, and money have all been lost after a huli.

All valuables can be left on shore, in your vehicle or the cabin.

Personal Belongings:

Waikiki Yacht Club Canoe Team

If you are going to leave your personal items in the paddling room, please leave them on one of the top three shelves immediate to the right as you enter the door. The tables on the left are for paperwork. The work table is for tools and paint; and the floor space is limited as it is.

Leaving Paddles in the Paddling Room:

If you leave your paddle in the room, you do so at your own risk. Make no mistake, other paddlers will use your paddle if they find it - and have very little respect for it.

Hydration

Water Breaks

Kihei Canoe Club

1. Steerer holds the canoe bow into the sea.
2. Seat 2 and seat 4 lean on the iako - remind them to do so.
3. Remind crew to drink water - to reduce the risk of dehydration.
4. If sea conditions are suitable - advise crew that they may go for a swim
5. Keep track of crew while they are swimming
6. Remind crew to enter and leave the canoe on the ama side
7. Instruct crew members to sit on the iako during the boarding of swimmers or when crew changes seats

8. At least one crew member must stay aboard at all times

9. When you are giving instructions to the crew, have them turn left to face you.

Water!

Hong Kong Paddle Club

It is vital to consume fluids at during long races or during race days specially if the climate is hot and humid. You can loose up to 3% of your body fluid in less than two hours on a hot day, which can cause severe trauma to you system. For some of us that means up to 3 litres of water which needs to be replaced even during a race! This is exacerbated by the demands that carbohydrate mobilization has on you water reserves.

NEVER underestimate the need for water. Hydration should begin hours or better yet days days before a race or long training run, even if it means getting up five times in the middle of the night for relief. Urine that is thick as syrup means your blood is probably just as thick, that can result in a high heartrate and renal shut down.

Water and the Athlete

Canadian Community Dragon Boat Association

Water is a basic necessity for all life. Without it, life can't exist. Even when water is limited, living organisms suffer. You are no exception. For young athletes like yourself, not enough water means you can't do your best. It can even cause serious health problems.

Our blood circulates like an ocean within us. The water in blood helps carry nutrients and energy to our body cells. It also carries waste products away from our cells for excretion from our body. Water helps regulate our body temperature, too--an important factor for all of us.

As an athlete, you have a special need for water. When you participate in a sport like dragon boating, you burn a lot of food energy (called calories). Some of that unleashed energy powers muscles. But some of that energy is released as heat. Water keeps you from overheating. Sweating and evaporation from the skin cools you down. However, water is lost in the cooling process. That can be dangerous if the water is not replenished.

If you run low on water, your body can overheat, like a car that is low on cooling fluid. Losing just two percent of the body's water can hurt performance. A five percent loss can cause heat exhaustion. A seven percent to ten percent loss can result in heat stroke and death. Dehydration can kill.

Dragon boating is an extremely physical activity, where athletes place huge strains on their bodies. And with all of the physical activity, some tissues need to be repaired. All of this metabolic activity requires an abundance of nutrients and energy carried to body tissues and waste products carried away. Water allows all of this to happen. Water is vital for your body's growth, repair, and physical activity.

Thirst is your body's signal that you need to drink water. By the time you feel thirsty, you may have already lost one percent to two percent of your water--and that's enough to hurt performance. But just drinking enough to satisfy your thirst may not supply your body's needs. If you drink only enough to satisfy your thirst, your body may take up to 24 hours to fully rehydrate its cells and regain maximum performance.

When you participate in a sporting event or practice session, follow these guidelines:

Don't wait until you are thirsty before drinking water.

Drink more than enough to satisfy your thirst.

Drink more than you think you need before an event or practice to make sure you are fully rehydrated.

Without enough water to cool itself, the body can overheat to dangerous levels.

The conditioned athlete is able to store and burn more energy in a shorter time. That means your body releases more heat, requires more cooling, loses more water, and needs more water to replenish its stores. Also, you may have increased your sweating response, which means you lose even more water. As an in-shape athlete, you need more water than other people.

When you feel exhausted and hot during a workout or race, drinking large amounts of water very rapidly may cause discomfort or stomach cramps. But that is not a good reason to restrict water. Drinking moderate amounts at frequent intervals is the best strategy during competition or practice. About one cup (six to eight ounces) of cool water every 15 to 20 minutes during an activity is about right for most athletes. Some athletes can drink a bit more than this at each interval. Cool water (40 to 50 degrees Fahrenheit) is best. Cool water helps absorb body heat. And it empties from the stomach into the intestine at a fast rate, which allows it to be absorbed rapidly into the body.

Some drinks that have caffeine, such as colas and iced tea, are advertised as thirst quenchers. Do not use caffeine-containing beverages as fluid rehydration drinks shortly before, during, and after a practice or competition. Caffeine acts as a diuretic. It increases urine output and can promote dehydration.

Your biggest concern is getting enough water--pure, cool water. Even the salt you lose while sweating can be easily replaced by adding salt to foods.

Plain, cool water is the fluid of choice when the actual exercise does not last longer than 60 to 90 minutes. And that includes most situations, even a tough practice session. You don't need an energy source in the fluid you drink to rehydrate. During these normal situations, if you have been eating and training properly, you should have enough energy stored as liver and muscle glycogen to power you through.

However, in some situations, such as festivals, where several races occur in a short period of time, sport drinks containing carbohydrates and electrolytes may offer you an advantage. During these situations, you may run low on energy and electrolytes.

There are many different commercial sport drinks available. They contain varying kinds and amounts of carbohydrates and electrolytes. For example, GATORADE is a glucose electrolyte solution of about six percent carbohydrate concentration. Exceed is a glucose polymer solution of about seven percent carbohydrate concentration. If you use a sport drink, pick one that has less than eight percent total solids (carbohydrates, electrolytes). More concentrated solutions can delay fluid absorption. They must be diluted with plain water before you use them as a fluid replacement drink. Also, avoid sport drinks that contain fructose as the only source of carbohydrate. Fructose may delay gastric emptying of fluid and cause upset stomach. And fructose must first be converted to glucose before it can be used for energy. This conversion means you can't use fructose as an energy source as quickly as other carbohydrates.

Fruit juices like orange juice should also be diluted if you're using them as a fluid replacement drink before, during, or after an event or practice session. Fruit juices vary from 10% to 17% carbohydrate concentration. Dilute them with an equal amount of pure water before you use them as fluid replacement. Of course, when you drink juices at other times, such as with a meal or snack, you don't have to dilute them.

Take every opportunity to drink water and other appropriate fluids. Drink fluids every day, even when you are not thirsty. That means drinking at mealtime--and snacktime, too! As a competition or practice approaches, follow these guidelines:

Drink plenty of appropriate fluids the 24 hours before an event. Give your body every opportunity to become fully rehydrated.

If you eat a pregame meal three or more hours before an event, make sure that ample fluids are included--at least two cups (16 ounces).

About 15 to 30 minutes before the start of competition or practice, drink a cup or more of fluids. This will help ensure that your tissues are fully rehydrated at the start.

During the activity, drink six to eight ounces of fluids every 15 to 20 minutes. Drinking moderate amounts frequently is the best way to keep fluid levels up. If you drink too much too quickly, you may develop stomach cramps and other discomfort.

Drink plenty of fluids after the activity. If you weigh in before and after activities, drink two cups (16 ounces) for every pound lost until you are within a pound of your pre-activity weight.

Remember to drink fluids before you get thirsty. If you wait until you're thirsty, your body may have already lost enough water to hurt your performance.

Getting it all down means you can perform at your best levels. Your endurance will be long lasting and you won't become as tired. You will have that extra edge when you need it most--whether it's the last few minutes of the contest or the last 10 meters before the finish line.

Remember to power up with good food every day so you can take full advantage of a well-hydrated body.

Pre-Journey

Stretching and Warmup

Warmup

Canadian Community Dragon Boat Association

Warm-up before practices should be done not only to get blood into your muscles but also to prevent the tearing, ripping, straining and spraining, not to mention the multitude of other gruesome things that can happen to your body.

WARM-UP IS VERY IMPORTANT ... and while a practice session may incorporate a warm-up component it is vital for people who come late to be sufficiently prepared before they are committed to heavy work.

On the water, 5 minutes easy paddling followed by 5 minutes of medium effort work will be adequate, though everyone should have worked up a good sweat before turning up the intensity.

Land warm-up exercises are good including everything from push- ups and jumping jacks to a 10-20 minute jog, which should COME BEFORE stretching exercises!...(stretching a muscle which has not warmed up is like pulling on a frozen rubber band). A stretching regime is a generally a good habit even in the middle of a practice, though exercises should not incorporate bouncing which promotes hyper-extension All stretches should be held for a count of 30.

Pre-launch Checklist

Pre-Launch Inspection

Kihei Canoe Club

1 Watertight compartment forward, is empty and watertight

2. Watertight compartment aft, is empty and watertight

3. The hull is sound, no visible cracks or fractures to the fibreglass

4. Wae (structure to which the ama is secured) is sound, no cracks evident

5. Wae rigging lines are tight and secure - no frays evident

6. Seats (all 6) are serviceable and secure

7 Iako are sound - no cracks or de-lamination

8. Ama is sound- no visible cracks and it contains no water Lift the ama - if it is unusually heavy, it contains water..... Look at the bottom of the ama - that's where the cracks emerge

9. Ama lines (2 sets) are tight and secure - no frays evident.

10. 2 bailers in good condition are properly secured (lines are tucked, no knots)

11. Ensure that there is at least one spare paddle aboard

Check Your Boat!

Vernon Racing Canoe Club

Before the canoe is put in the water, do a visual and physical inspection of the rope riggings. Ensure that they are tight. Try to wet the rigging so the ropes will contract and get tight.

If you find your rigging is loose at all, notify your steersman who will notify your coach.

Check your 'iako for cracks or structural weakness.

Check that bulkhead and ama plugs are in and tight.

Check that you have at least two bailers per boat. Each crew must be responsible to check to see that they have bailers in the boat before leaving shore. Tie at least one bailer to a rope on one of the 'iako.

Ice cream buckets are not adequate as bailers.

If any of the canoes need rigging before practice, all paddlers should help.

If you do not know how to rig -- watch, learn, ask questions and try it the next time.

When returning from a practice, make sure all equipment is stored away properly and that the boats are cleaned.

Check Your Equipment!

Waikiki Yacht Club Canoe Team

Once the canoe is in the water, do a visual and physical inspection of the rope riggings to make sure they are tight. Try to wet the rigging so the ropes will contract and get tight.

If you find your rigging is loose at all, notify your steersman who will notify your coach.

Each crew is also responsible to check to see that they have bailers in the boat before leaving shore. Tie at least one bailer to a rope on one of the 'iako.

After practice is finished and the boats are returned to the dock, crews should take turns rinsing the canoes (and especially the rigging) with fresh water (use the hoses at the dock).

If any of the canoes need rigging before practice, all paddlers should help. If you do not know how to rig -- watch, learn, ask questions and try it the next time.

Safety and Equipment

Kent Island Outrigger Canoe Club

Safety First

The first and foremost rule of the club is to paddle safety. If there is any doubt about equipment conditions, water conditions, or paddler skills DO NOT TAKE ANY CHANCES. Stay ashore.

All paddlers must have a life jacket in the boat! Wear the lifejacket if it makes you more comfortable! If you are not a strong swimmer, be certain that the person paddling near you and the steersman are aware that you might need assistance if we huli.

Anyone with a medical problem that may arise during practice (including, but not limited to asthma, diabetes, heart complications, or special medication) needs to inform the coaches.

All paddlers must provide emergency contact information to the club officers. This includes name, relationship, and phone number.

Visually and physically inspect all the rope and snap lash riggings to be certain they are tight. Wet the rigging so the ropes will contract and tighten.

Two bailers should be in the boat. Tie the bailers to both 'iako so they do not float away if we huli.

The US Coast Guard requires that the canoe carry one PFD per person. Do not leave shore without them!

After practice is over, return the canoes to their tires, rinse off the canoes, especially the rigging, place the covers on the boats, and return the PFD's to the storage area.

Required Equipment

Kawika Sands

- Personal Floatation Devices
- Emergency Signaling device
- Bailers

PFDS

To be legal (in the U.S., U.S. territories, etc.) you MUST have: One PFD for every person aboard, and a proper emergency signaling device. The PFD, or lifejacket/vest, is rather strait forward. You MUST HAVE ONE FOR EVERY PERSON ABOARD!!! and YES this INCLUDES Hawai'i! (Don't EVEN mention real or imagined "traditions" on this topic! Believe me, I've heard it all!). The "proper" emergency signaling device takes a little explanation but it's not complicated. They run about US$7+ each.

EMERGENCY SIGNALING DEVICE

What's "proper" depends on if it's day or night. You can use a flag or a smoke signal during the day, but obviously they are moronic (AND not legal) at night. Therefore flares make a good choice. There are day flares, night flares, and day/night flares. Obviously the day/night flares make the most sense.

U.S. Coast Guard reg's require that flares be rated at least with 500 candlelight power. I've yet to come across a statute that requires a specific number of flares aboard, however I'm told safety experts suggest a mix of ariel (US$5+) and hand-held (US$12+) types. The size of the flare usually depending on how far you go out to sea.

The main considerations are brightness of the flare and it's burn duration. The brighter the flare, the farther away it can be seen. The longer it burns, the more likely you will be spotted at a glance. Duration is also important when the seas are high and during daylight hours. I use day/night ariel flares that last about 10 seconds and hand-held flares that last about two minutes.

BAILERS

Then, of course, there is the bailer. You're a MORON if you need a law to tell you that you need these! I prefer to have four bailers in the outrigger. One each at seats 2, 3, 4 and 5. Many get by, and do fine, with just one. MY rationale is having one bailer is like having one flare, what do you do if you loose it? Having more than one bailer

allows several persons to bail simultaneously (distributing the workload and making it easier on everybody!). I like 1-gallon orange juice containers (it's orange, has a good handle and the plastic is tough enough).

Finally, EACH of these items are to be kept in serviceable condition AND readily available for use!!! NO TYING THEM DOWN in such a way that they cannot be EASILY and QUICKLY used!

Recommended Equipment

Kawika Sands

Most of these are, as far as the law is concerned, a matter of choice. I suggest the following:

- 1 VHF radio
- 1 Heat/Cold pack
- 1 Whistle
- 1ea Green/Red/White light sticks
- 1 Flashlight
- Tow line

VHF RADIO

A VHF radio needn't be kept with EVERY outrigger, but at least one per practice should be included even if not far from shore! It's not that you couldn't YELL at someone ashore, it's so you can speak DIRECTLY with an emergency service (the Coast Guard) saving critical minutes. Recently there was a discussion on VHF radio choices. They vary widely in cost (approx. US$125 to US$300+) depending on size and features. What was not discussed was 'waterproofness.' This is an issue with most older models but there are waterproofing bags made for VHF radios available at most marine supply stores (about US$5).

NOTE: Take the time to learn PROPER VHF radio usage and what channels are monitored by whom! Technically, you need a license to operate one but the paperwork is usually included. Unlike a cell-phone, a VHF signal can be traced back to its' source even if the battery is low. CB radios are NOT monitored by ocean-going vessels and entities. At least leave a float plan with someone with your estimated time of return.

HEAT/COLD PACKS

A heat pack may give the added time one needs to stay alive. Cold packs are basically "instant ice" you can keep with you and could prove invaluable in cases of hyperthermia (as opposed to hypothermia). About US$2+ each.

WHISTLE

When interviewed, the base commander of a U.S. Coast Guard station reminded me of an incident where five people went into the water for many days after their boat sank. SEVERAL times rescuers passed within a few yards of them. Each time close enough to hear the conversations aboard and yet the rescuers neither saw nor HEARD them. Given fairly good conditions you must be about five yards away from the rescuers to be reasonably sure of being spotted. FIVE YARDS! and you STILL may not be seen or heard! An emergency/survival whistle or horn can make you heard over wind, water, engines or distractions.

LIGHT STICKS

Or running lights, are to be used ANYTIME visibility is limited. This means that if visibility is anything LESS than "unlimited" (including daytime), and your outrigger is NOT displaying navigation lights (red= left, green= right, white= aft), the U.S. Coast Guard is perfectly within their rights to cite you (the steersman) and escort you back!

Light sticks cost about US$2+ each, and there are flashlight-type running lights. However they are prone to corrosion or require batteries which too often rundown.

FLASHLIGHT

A flashlight, flasher or a white lightstick should be carried. Note: Coast Guard reg's do not clearly categorize and OC-6 (something I'm working to correct!!!). Therefore, depending on how the authority du jour interprets the law, you could be cited for not using/having one aboard. It's a good idea to have one handy anyway!

TOW LINE

Not as important for saving lives as for saving your outrigger! A $1\frac{1}{2}$ inch x 80 foot nylon tow-line should suffice (keeping a knife handy to cut loose instantly in case of emergency is not a bad idea!).

OTHER EQUIPMENT

Packets of easily digested food (i.e. "Gu") may give needed energy at crucial times. Dye markers are so compact, inexpensive, and make spotting victims from the air easier. Reasonable clothing where possible is your last line of defense against hypothermia. A bright green/orange/red cap can help make you easier to spot (NO, you don't HAVE to wear it while paddling but having it handy on your person might be a good idea).

Obviously there are LOTS of other gadgets and gizmos you can get. Use your judgment on these but BE SAFE! THEN have fun!

Crew Briefing (canoe is in launching position - at the water's edge)

Kihei Canoe Club

1. Ensure that every paddler has signed a current HCRA waiver of liability - ask.

2. Ensure that every person is a capable swimmer - ask, to remove all doubt

3. Ask whether any paddler has any physical limitations or health issues to be considered

Advise paddlers with known limitations to cease paddling, if they experience any discomfort - pain, breathing problem, etc.

4. Reminder - if a huli occurs - ride it over to stay clear of the ama and iako

5. Reminder - if a huli occurs - **hang on to the boat** and listen for the steerer's orders

5. Reminder - if a huli occurs in the surf or in the shore break, get away from the canoe

6. Demonstrate proper boarding - proper water depth, sit on gunwales; rotate into seat

7. Reminder - stay ama conscious - keep weight towards ama at all times

8. Tell the crew what the trip plan is intended to include (considering conditions)

9. Assign crew to the remaining 5 seats - have each stand beside the assigned seat

10. Ensure that the stroker is trained to steer the bow - ask to be certain

11. Remind seat 5 to watch the ama and to shout "AMA" if it lifts

12. Remind the stroker to advise (shout warning), if a swimmer is spotted in the water ahead

13. Reminder- never stop paddling unless instructed to do so. Avoid the tendency to stop paddling when something out of the ordinary occurs - like, coming close to another canoe - like, when the canoe takes a big gulp of water

14. Instruct crew to start paddling on the left immediately - as soon as seated

Launching

The Launch

Kihei Canoe Club

1. Plan your trip in advance considering - weather, swell, wind-driven chop, and daylight If you feel uncomfortable, in regard to any of the above - **DON'T GO OUT**.

2. **Launch one canoe at a time** - remember the rules of the road above

3. Observe the wave pattern - wait for a small set

4. Lift the Ama - move the canoe towards the ocean - 'get it wet'.

5. Start the launch, as the wave approaches the shore - "ready crew? - IMUA"

6. Order all to paddle on the left - smartly, until 200 yards off the beach

7. Steerer sits on the left gunwales until crew is seated and paddling on the left

8. If you took on water during the launch, head into the sea, order seat 5 to bail

9. Proceed with the paddling plan

OC-6 Launching

Vernon Racing Canoe Club

1, 2, and 3 seats lift the bow.

5 seat places the cart under the middle of the boat - ask for a relift if not balanced.

4 seat removes the cradles.

While moving the boat, 1 seat controls the attitude and steering from the bow. Other paddlers should only need to push. (On the Advantage, do not push or lift on the seats!)

Using the boat launch (early season), guide the boat as close to the walkway as possible. Once started down the ramp, hold the boat so that it does not get out of control.

1 seat calls "HOLD THE BOAT", so that 1 and 2 seat can get into position with knees bent, to prevent the bow from scraping the ramp during the final entry into the water.

Seat 6 controls and holds the stern (from dock) while it enters the water.

Seat 5 pulls cart from under the boat with the ropes and puts the cart up on the beach (tie it up if possible).

Once in position along the dock, seat 6 call the loading order:

Seat 4 in and holding the Iaku

Seat 2 in and holding the Iaku

Seat 6 in and hold dock

Seat 1 in and hold dock

Seat 3 in

Seat 5 in

The Journey

How to Paddle

Outrigger Technique

Vernon Racing Canoe Club

Technique, technique, technique! Everybody has an opinion, secret, the right way, perfect stroke rate, etc. This is the style we are trying to develop in order to have a consistent club technique.

1. BRACE YOURSELF Get a good foot plant against the bottom of the canoe with the paddle side leg. This will help you transfer the power you generate into the canoe.

2. BRACE YOURSELF SOME MORE. Try to lock your off side under the seat, up against the side of the canoe or where ever you feel comfortable. This will help keep the lower body from twisting opposite to your upper body and again assist the transfer of power.

3.POWER FROM THE CORE. Most of your paddle strength will come from the core. Your back, stomach and shoulders are the driving force in your stroke.

4. STRONG TOP HAND. The top hand does two things. Firstly, it applies power forward and down at the beginning of the stroke (catch). This gives a leverage assist to the stroke. Secondly, it locks your paddle into the water and your complete torso into the twist of each stroke.

5. SMOOTH D STROKE. We want to exit with an outward sweep, forming a D with your stroke. The paddle will enter at the front, slicing into the water from the outside. As it enters, give the forward and downward thrust with the top hand. Imagine that after the entry of the paddle, you are trying to lift the boat and yourself with the initial force of your stroke. Now move into the pull portion of the stroke which is where the torso twist comes into play. Exit the blade just after it passes the knee and before your reach your hip.

6. PAUSE AT THE BACK AND GLIDE. During timing drills or practicing boat glide, pause at the back of the stroke rather than at the front. The theory is that if you pause at the front, you are adding to "boat dive", and restricting the unweighting glide sensation of the boat.

7. GO FOR THE GLIDE. An OC-6 with full female crew weighs 1200 lbs or more. This is a lot of weight to move or to stop. Think of how long the boats glides when you stop paddling and learn to use this glide.

8. STROKE RATE There is no perfect rate. There is a comfortable rate relative to your team's ability and size. Water conditions also come into play. We start off with a slow rate of 50 to 55 strokes per minute. From there, we will slowly increase the rate as our boat speed, skill and fitness increase. We will likely end up around 68 to 70 strokes per minute for women and 64-66 for men.

9. TIMING "In together, out together", you will hear time and time again. There will also be lots of same side drills. Every paddler from the largest to the smallest, must enter and leave the water at exactly the same time. Smaller people must try to reach their stroke out and larger people may have to shorten their stroke a bit. All paddles must go through the water at the same speed.

10. BOAT SPEED Get the boat up and moving as fast as you can, then start to back off power until the boat speed is seen to fall off.A smooth team can back off 3 to 5% in effort once the boat is moving and still maintain speed. Boat speed and stroke rate are directly relative as long as technique and reach are the same. When training at lower effort levels, the stroke rate and boat speed will be down.

Paddling Technique

Kent Island Outrigger Canoe Club

"AN EFFICIENT TECHNIQUE IS THE KEY TO ENJOYABLE AND FAST OUTRIGGER CANOEING. MARATHON AND OUTRIGGER RACERS WHO HAVE NOT ONLY TO SURVIVE MULTIPLE-HOUR RACES BUT TO FINISH STRONGLY, HAVE LEARNED A LOT ABOUT TAKING EFFICIENT STROKES.

"In any endurance sport efficiency is the key to getting the best results with the least amount of effort and of all canoeing, outrigger and marathon racing puts the highest premium on efficiency. Observing a canoe race, you'll notice the leaders go by looking relaxed and going fast. Sometimes they don't appear to be working very hard. Then the rest of the teams follow, each one going slower but appearing to be working much harder than the leaders. What's going on here? Do the leaders have a much faster canoe? The fact is, they are simply much more efficient in their technique than the teams which they are beating.

"Outrigger canoe racing is an endurance sport. The leaders of a cross-country ski race or a runner in a marathon or triathlon appear to be gliding along with minimal effort. Their motions are just enough to get the job done without wasting precious energy. Hence the rule in endurance sports: **WORKING HARD DOES NOT ENSURE THAT YOU ARE GOING TO GO FAST!**

"You can take your paddle and attack the water with it, straining every muscle in your body, throwing up big rooster-tails behind you, or you can slice your blade into the water, anchoring it solidly and using your entire torso, pulling it smoothly and evenly with much better results.

"Not only is good technique energy-saving and fast, it is easy to learn because it is so simple. Part of the learning process requires that you have a clear picture in your mind of how a paddler moves the canoe through the water.

"THE CANOE IS BEING PULLED FORWARD THROUGH THE WATER UP TO THE PADDLE, WHICH ACTS AS AN ANCHOR IN-THE WATER (AKIN TO A MOUNTAINEER CLIMBING UPWARD WITH THEIR ICE AXE). THE CANOE IS BEING PULLED FORWARD NOT PUSHED."

(The above material is excerpted from the 1995 edition of *Kanu Culture* by Steve West)

Remember to use your body in the stroke. Most new paddlers are all arms, attempting to generate all the power with the relatively small biceps and triceps muscles of the arms rather than using, in combination, the muscles of the torso and back which are far larger and more capable.

Having a good understanding of the proper technique and applying all your muscle groups will ensure prolonged and powerful paddling. You also need to understand and learn the proper techniques of entering and exiting your paddle blade and how and when to apply power.

STROKE TECHNIQUE

The stroke is broken down into three phases:

1. Catch Phase (Kau)

The catch is that portion of the stroke where you get the blade of the paddle into the water.

a. Lean slightly forward and using your stomach and back muscles rotate (twist) around your spine dropping your shoulder and extend the paddle forward keeping the shaft of the paddle parallel to the side of the canoe. (This twisting will enable you to use the larger and stronger muscles of your back and torso). Your lower arm should be fully extended with your elbow straight. Your top hand should be at your forehead with the arm fully extended and the elbow slightly bent.

b. Once you have extended the paddle (**reach**) place the blade cleanly in the water without stabbing or splashing. Do not start the power phase of the stroke until the blade is deeply in the water (this will cause cavitation and you will not get full power from your stroke).

If you slice the blade in cleanly and buried the whole blade in the water you will have a solid **ANCHOR** from which you can pull the canoe.

REMEMBER A CLEAN SILENT ENTRY IS THE BEGINNING OF A GOOD STROKE. **RUN SILENT, RUN DEEP**.

2. Power Phase (Huki)

The power phase is that portion of the stroke where you move the canoe forward.

a. Make sure your body is firmly positioned in the canoe to fully transfer energy from the paddle to the canoe. You do not want any extra movement in your arms that will absorb or deflect energy from moving the canoe forward. (This is accomplished by keeping your arms in the entry position.)

b. Push down and across your body with the top hand and untwist with an explosive movement driving down with your top hand and back on your lower hand to about your mid thigh.

c. Once your lower hand has reached your mid thigh release power and begin the exit.

3. Recovery Phase

The recovery phase is that portion of the stroke where you get the blade out of the water and back to catch for the next stroke.

a. Once the blade is at your mid thigh release power and either pull the blade straight out or slice it out to the side. This is done by rotating your top hand down similar to turning the steering wheel of a car.

b. Float the blade forward through an easy return to the start of the next stroke. Remember to **feather** your blade during times of strong head winds. You feather the blade by turning it parallel to the water during the recovery, which will reduce drag.

Remember, the recovery should be easier and slower than the power phase. There should be a 2 to 1 ratio between the recovery/catch and power phase. One beat for the power phase and two beats for the recovery and catch.

HELPFUL HINTS:

Try paddling with locked elbows. This will force you to sit up and rotate. Add the minimum bend necessary to your arms for comfort later when you have mastered this.

Try to keep a flat back and keep your chin up, this will afford the maximum oxygen uptake and will help keep your shoulder and neck muscles relaxed.

Don't forget to get drive from your leading leg. Always keep the leg on your paddling side extended forward to help you brace – this means when you switch the paddle at a Hut, you must also switch which leg is forward.

Keep your face muscles relaxed and remember to breathe! Breathing in synchronization with your paddling helps you maintain an even stroke.

Keep your concentration in the canoe and remember that is it the thoughtful application of power that makes each and every stroke count.

Concentrate on your stroke technique at all times especially when you get tired. Your stroke is the first thing that will fall apart once you start getting tired.

Remember that the boat slows when the change is made, so make your last two and first two strokes on each side strong.

Paddling Technique

Canadian Community Dragon Boat Association

A tremendous amount of controversy revolves around the optimum paddling 'style', which is often couched in as much mystery as that of the winged keel. The rudiments of outrigger paddling boat technique, however, are common to most forms of paddling, such as kayaking, marathon canoeing, dragonboating or even rowing for that matter.

Outrigger canoeing is most closely related to C1 canoeing which involves a very similar pattern of movement and is a useful comparison due to the large amount of research data available on this particular stroke.

The basis of a good paddling technique is the emphasis on 'the forward stroke' ie. applying power in the water in front of your body. Many good paddlers keep it to basics and will tell you to 'just get the paddle in deep and clean and pull like hell with lots of length, as many times as possible'. Though this may sound simple enough, there are a complex series of movements required to execute 'the forward stroke' efficiently and effectively.

Understanding the components of stroke technique is vital to accurate analysis of an individuals?paddling style.

The four critical phases in the forward stroke are:

- the CATCH (anchoring the blade),
- COMPRESSION (the power phase),
- the FINISH (getting out of the water), and
- the RECOVERY (getting forward to a ready position).

The characteristics of different 'styles' may be due to variations in one or perhaps in every phase of the stroke, though the principles behind each phase are universal. We must accept that style may also vary from person to person depending on body size and stature which can work to the advantage of the team due to the different physical constraints of each seat position.

Equally important, we must recognize that 'style' changes as stroke rating increases and the stroke length is decreased. Many paddlers experience difficulties in attempting to apply the characteristics of a longer, slower technique to a faster rating.

A smooth running of the boat results from paddlers not only going into the water at the same time, but moving through each phase of the stroke in perfect unity. The complete stroke must also be seen as a cooperative product of its parts, executed in one unified motion, not as a series of independent movements.

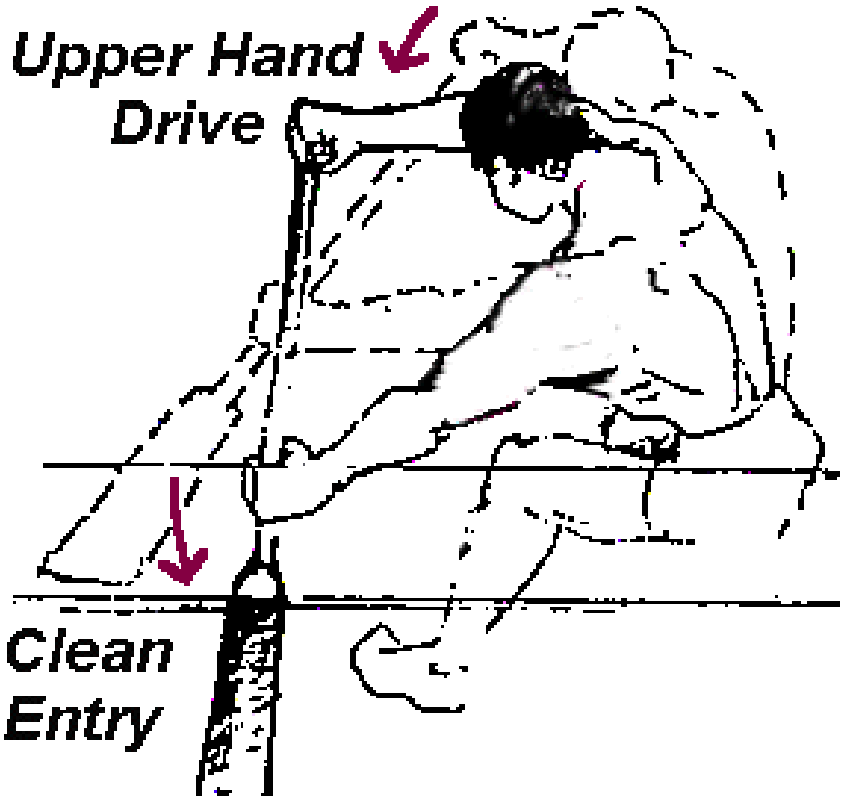
Individual paddlers should create a mental image of each stroke phase both on the water and off, understanding its components intimately and how they effect performance. Analysis of technique can be made easier by isolating the disposition of the paddle in relation to the boat and by tracking key reference points on the body, namely the wrist, the elbow and the shoulder. It is useful for paddlers to know the position of these points relative to their own stroke and in relation to an ideal model.

THE CATCH

Few sounds on the water generate as much satisfaction as 20 paddles plunging into the water in time and without splash; except maybe that sound a high platform diver makes when they cut the water surface with nothing more than a ruffle of bubbles.

Burying the blade in the water is called the 'CATCH' and it should be well in front of your body critical to initiate a powerful stroke. This where most novice paddlers are the weakest and it is the point at which even veteran paddlers fail when they start losing power due to lack of conditioning. The most common problem is to lose length

by catching the water too far back by not reaching far enough forward in the RECOVERY or start smacking the water with a misguided sense of aggression.



A good CATCH requires a deliberate and powerful drive downward by your top arm, which is made more effective when the wrist and elbow of your upper arm are above the inside shoulder making your forearm parallel to the water surface. Some teams utilize very high upper hands to emphasize a forceful drive into the water, though good control as the blade enters the water is important to avoid splash.

Good paddle entry is executed in either a vertical 'spearing' of the water or can be combined with a slightly diagonal 'slice' as the blade carves into the water. The slice is found to be very effective by locking the blade in fast and deep with less of a vertical lunge, though requires a greater participation from the bottom hand in combination with the upper arm drive. Your bottom arm must be fully extended forward, but not locked at the elbow to help ANCHOR the paddle in the water quickly and cleanly to its full depth and correct location relative to the side of the boat, without any splash or horizontal movement.

A common problem is that 'work' is often applied too late after the CATCH as a paddler may be well into the first part of the STROKE phase before full power is exerted (wasted potential is a paddling sin). A good CATCH technique must transmit power into the STROKE phase within a fraction of a second. This is also important to unify CATCH in the boat in order to maximize POWER with each paddler transmitting power into the STROKE at the same time, which is not always apparent. Getting into the water at the same time is one thing; beginning to pull together is another and is vital to a fast boat.

Excess splash or cavitation in the water (trapped air and disturbed water) is an indication that you are applying power with the momentum of the vertical drive, before the paddle is fully buried (lost energy is another paddling sin). The paddle blade at entry should be moving forward at the same speed as the boat in order to avoid such splashing. Smacking the water too aggressively can result in broken paddles and can lead to tension when your teammate behind you receives an unwanted face full of water. This type of problem is often created by a misapplication of aggression and is usually an indication that a paddler is getting tired or is unable to keep up with the pace. The CATCH is not a power phase, it's how you get into the water. Keep it fast and keep it clean.

Another common mistake is to lunge too far forward with your upper body or to bend excessively at the waist which starts the boat bobbing up and down.

"You want to run a quiet boat. You want a smooth running boat. Every time the boat wiggles left or right or bobs up and down, you lose a little. This can play havoc with your speed and efficiency - be fast."

- Peter Heed

Remember that the length of 'the forward stroke' is controlled by a fully extended bottom arm and a rotated torso. You only need to bend far enough forward to bury the blade to its full depth at the CATCH.

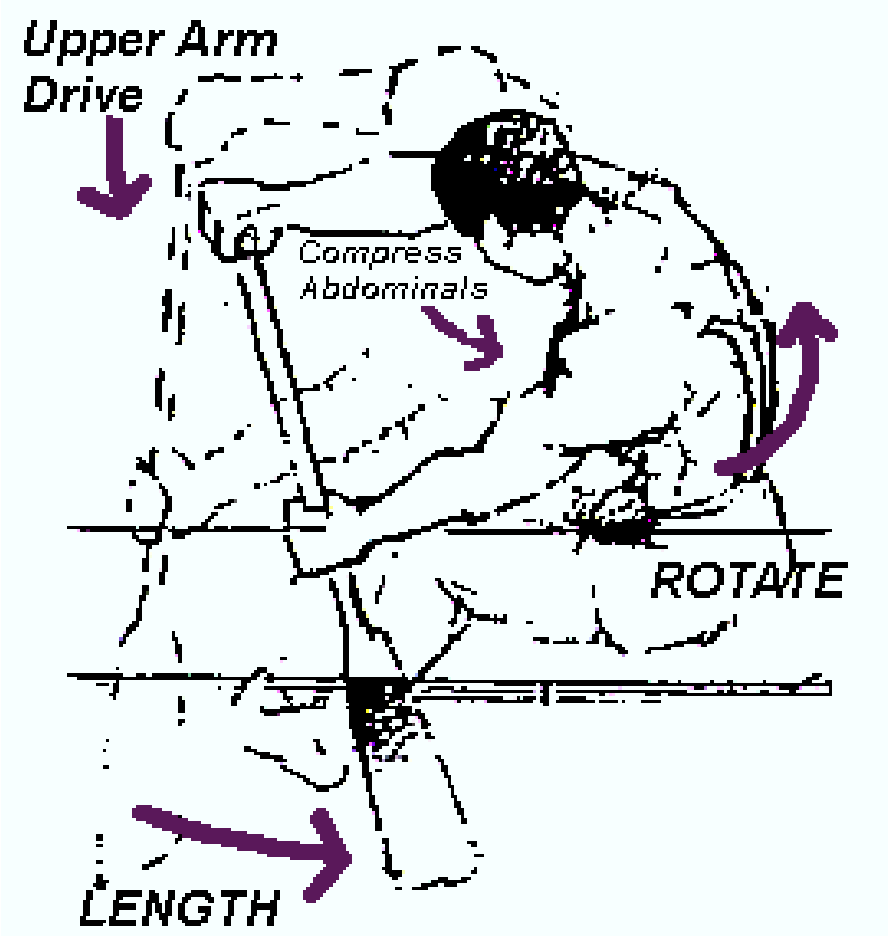
Remember also, a powerful CATCH comes from a strong upper arm drive into the water at a forward position which is sharp, clean and instantly transmits power into the STROKE. Once the stroke rating increases to 90 plus, emphasis on the CATCH becomes more important in order to deliver power quickly.

COMPRESSION

Many paddlers think that they are pulling water past their bodies to make the boat move forward; but this doesn't make any sense at all. In fact, the paddle, once its in the water, moves very little in relation to a fixed point in space and that the boat is actually pulled up to this fixed point during the COMPRESSION phase.

This is the power phase and it is a full body endeavor which must coordinate arm, leg and torso muscles into a singular and controlled movement, transmitting power into a linear forward direction. Keeping the paddle

relatively vertical and anchored in the water with the arms a paddler must use his/her torso to pull the boat forward. If too much enthusiasm results in pulling the paddle back through the water then energy is lost and a great turgid froth without much forward motion usually results. Much depends on a good solid CATCH, and the rest depends on solid control of power expenditure that accelerates the boat forward.



It helps to imaging that you are hurtling your body up and over the CATCH position by pressing the paddle vertically down. This requires a smooth and continuous motion compressing shoulders downward by crunching your abdominal muscles, at the same time rotating the torso at the waist utilizing the large back muscles ie. Lats. and Erectors. The upper arm must continue to be held high and drive down with the shoulders to keep the blade locked into its position in the water as the stroke develops. A minor forward push of the upper arm will transmit additional power into the paddle with your Deltoids and Pectorals, however you must keep the fulcrum point of the paddle high, about six inches below the upper hand 'T' piece.

The bottom arm must be strong to keep the blade on a straight track and transmit the power from the torso into the paddle, and will only bend slightly to push the FINISH of the stroke with your Biceps.

Following this motion, the paddle works as a third class level, with the upper hand remaining relatively fixed with the vertical drive of the shoulders and rotation of the torso providing force. Very often, paddlers get into the habit of pushing their upper arm over and downwards at the CATCH, thereby lowering the paddle fulcrum point to the location of their lower hand. The upper hand during this phase should not drop below your shoulders and your forearm should remain parallel to the water surface.

Another problem is that the paddle blade is often not deep enough to maximize the resistance area, particularly at the front end of the COMPRESSION phase. The paddler must bend forward to keep the blade buried right up to the shaft. Very often paddlers will also begin to lift their blades gradually out of the water towards the FINISH, which can be seen as their bottom hands rise in relation to the gunwale, starting midway through the stroke. Focusing on a good top arm drive and curling the torso over with your Abdominals to keep the paddle in the water will help.

Adding power to the end of the compression phase relies on a deliberate push just before the FINISH. The paddle must be kept as vertical as possible with forceful upper arm drive downward, as if you were attempting to plant the paddle straight into the ocean bed. This takes tremendous focus to do it well and do it consistently. Efforts must be made to train the deltoids and pectorals to deliver power at this part of the stroke.

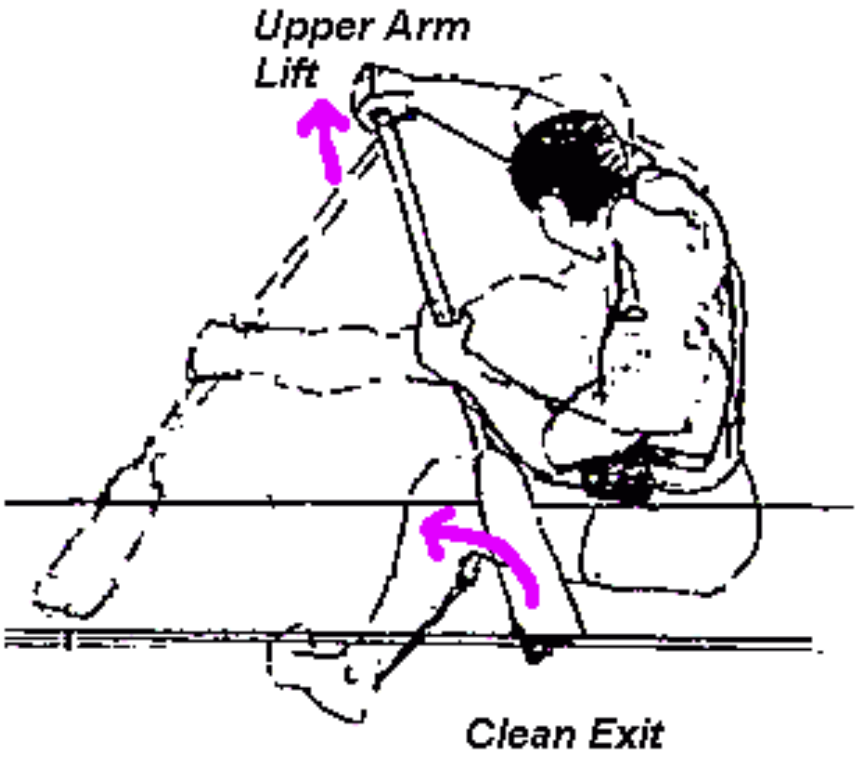
"Keep the paddle vertical during the power phase. The paddle should be in line with the keel line of the (boat). Too often, paddlers tend to follow the side of the (boat) with their paddle. Bow persons' paddle should enter the water away from the sides of the boat and come in so the paddle nearly touches the boat at recovery. Stern paddlers do just the opposite, planting the paddle right beside the boat and coming straight back."

- Peter Heed

The legs play a much more critical role than one would think as they are used to push the boat forward and lock the body into your seat. They must anchor the body into the boat to the point that your knees can suffer severe strain. Ideally all paddlers should align their outside legs against the gunwale and outside foot rest (or seat in front) so that a continuous line on force is directed into the boat. The inside leg should be tucked under the seat with the knee braced against the inside spine of the boat, which helps lock the body in and assist in an easier rotation. Sitting slightly forward to hang over the front edge of the seat will also help to lock in and provide resistance to the forward motion of the recovery.

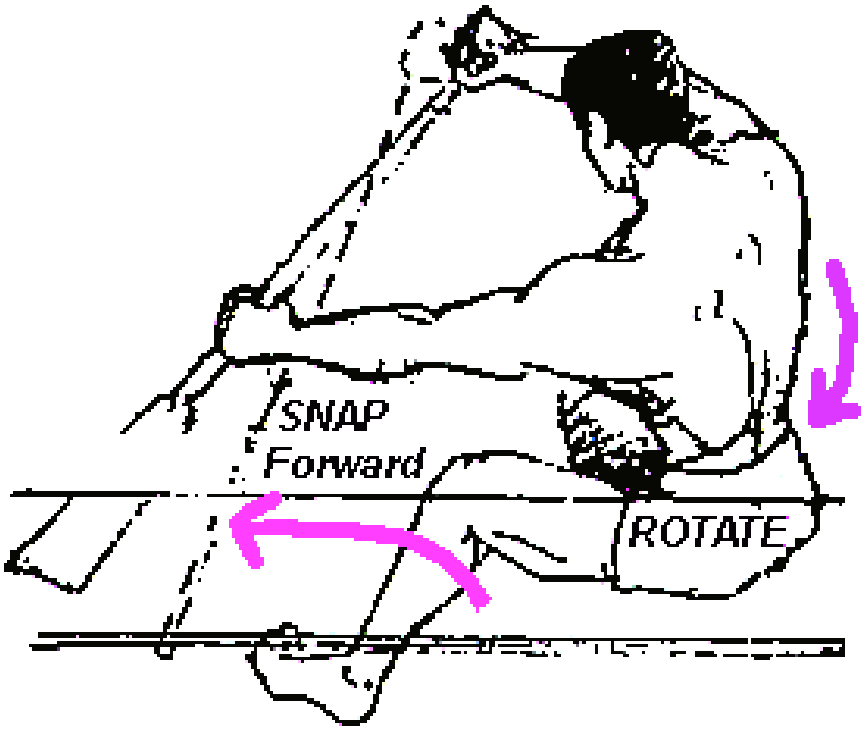
THE FINISH

The power stroke is brought to an end when the elbow of the lower arm is aligned with body and the shoulders are parallel to the seat ie. *the neutral position*, with the blade still fully in the water. Any power applied after this point, which is certainly possible, results from over-rotating the torso and more often will create a lifting force due to the angle of the paddle that will pull the boat down into the water and/or will ship water into the boat. This is an important point since the body is capable of exerting force beyond the neutral position, however, it is not an energy expenditure which will contribute effectively to the forward motion of the boat.



The paddle should be slipped diagonally up and out of the water leading with the upper hand as quickly and cleanly as possible with minimum resistance or splash (Deltoids). Many teams emphasize lifting the paddle high with the upper hand to keep the paddle as vertical as possible. This is good in flat water conditions and in boats with close seat spacing as it allows a paddler to reach up and around the paddler in front.

A common problem is that the FINISH is either initiated too early particularly when the stroke rating is high, or lacks any clear definition as the paddler begins to lift his blade out of the water half way through the COMRESSION phase. It is imperative that the paddler focuses on keeping the blade deep in the water and applying full power to the stroke right though to the FINISH position. Think of the vertical upper arm drive!

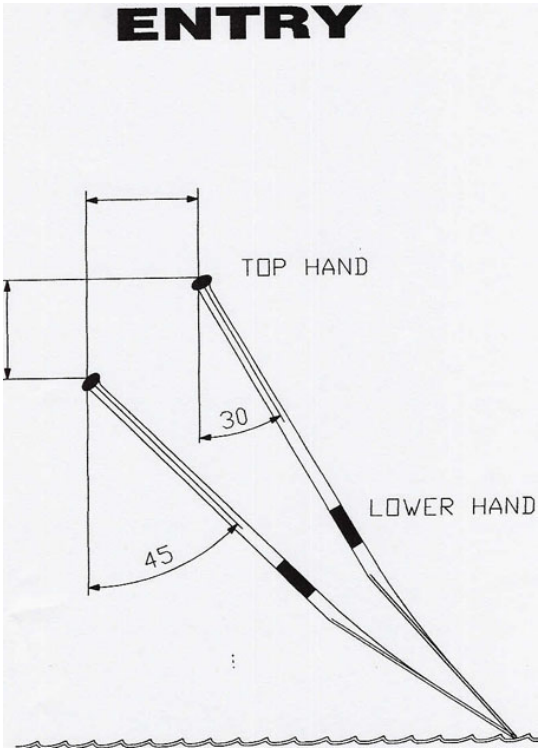


It's worthwhile to focus on a 'power punch' at the FINISH to provide a kick at the end of the stroke similar to the aggressive CATCH at the beginning. To achieve this, the outside elbow should be kept close to the body and the paddle blade should be feathered out with a powerful kick from the forearms and biceps. The paddle should be brought out fast and high to avoid drag and to initiate a speedy RECOVERY. This will also help to push water away from the boat as the blade exits.

The FINISH should be executed with the same aggression and precision as the CATCH, and with the same timing throughout the boat.

THE RECOVERY

The RECOVERY is the key to the forward stroke technique as it sets up the CATCH well forward of the torso.



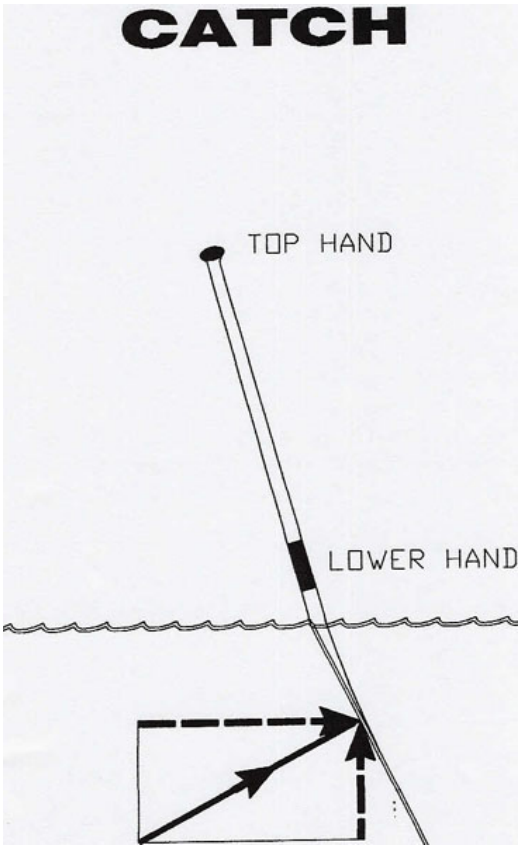
The most efficient RECOVERY is achieved by rotating the torso to push the outside shoulder straight forward while the inside shoulder is pulled to the back ie. in reverse of the STROKE. The lower arm must punch forward to create a long 'reach' while the upper arm is pulled the opposite direction and thrown back over the head to open up the chest.

This must be a quick and snappy motion since it is effectively 'down time' - when energy is not spent moving the boat forward; ie. the less time it takes 'get up front' the more time a paddler can spend pulling the boat. A fast recovery must be trained since it makes great demands on the Abdominal muscles, Deltoids and Traps, different from the efforts needed in the COMPRESSION phase. The key to a higher rating is a faster RECOVERY which allows stroke length to be maintained.

Precise timing in the boat is controlled by a coordinated RECOVERY where each paddler must execute a sharp and deliberate snap forward with the lower arm pushed from the shoulder.

Remember, a clean recovery is executed in a snap forward motion and is not achieved very well if the outside arm is carving great circles in the air. It is a relatively straight linear movement forward aligning with all other paddles in the team with outside elbows and paddle blades kept close to the gunwale.

A slight pause before the CATCH phase will mark both the end of the full stroke cycle and will help to synchronize the timing of the team; though at a high rating the 'pause' is more of a mental punctuation mark than any noticeable lapse in time



Though the movement forward should kept 'bright and crisp' the paddle should be held lightly to relax forearm muscles. Very often paddlers exert too much power getting forward. The RECOVERY should be fast but light. Over time it will become effortless movement, but it takes a lot of work to achieve speed and should not be neglected as part of a training regime.

Boat speed in the RECOVERY phase will slow down obviously due to the break in paddling, though the rate of deceleration know as the Check can vary from team to team as a result of different technique. As paddlers move forward, their centre of gravity (CG) can also move forward causing the boat to decelerate more. Strangely enough the boat will actually accelerate slightly on its own at the end of the RECOVERY phase once the paddler's forward movement ceases. In this respect, you should focus on minimal movement of the CG in the RECOVERY, and confine that movement to a forward and backward line, not up and down or side to side.

One common problem is that the upper arm is allowed to drop too much resulting in a horizontal RECOVERY. In a tight boat, this will be problematic and will also begin to hamper efforts to increase rating.

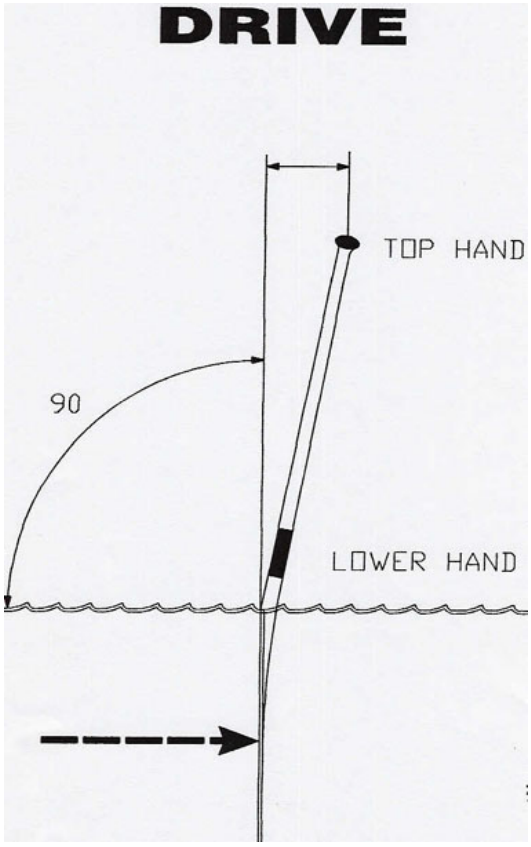
Bending the upper arm also leads to excessive movement which will limit performance at a higher rating and can cause the boat to jump around a lot. Neither the upper or lower arm needs to flex very much in the RECOVERY, or for any phase for that matter.

Variations in Stroke Technique

Canadian Community Dragon Boat Association

As previously mentioned, stroke technique will vary slightly from person to person due in a large part to differences in physiology and training background, and should be tolerated to a certain degree, particularly at a

local race level. While it is important to have everyone paddling the same technique, it is more important to ensure that each paddler is contributing to his or her highest potential. Even the best teams in the world show a variation in individual technique yet they all pull a lot of water and win.

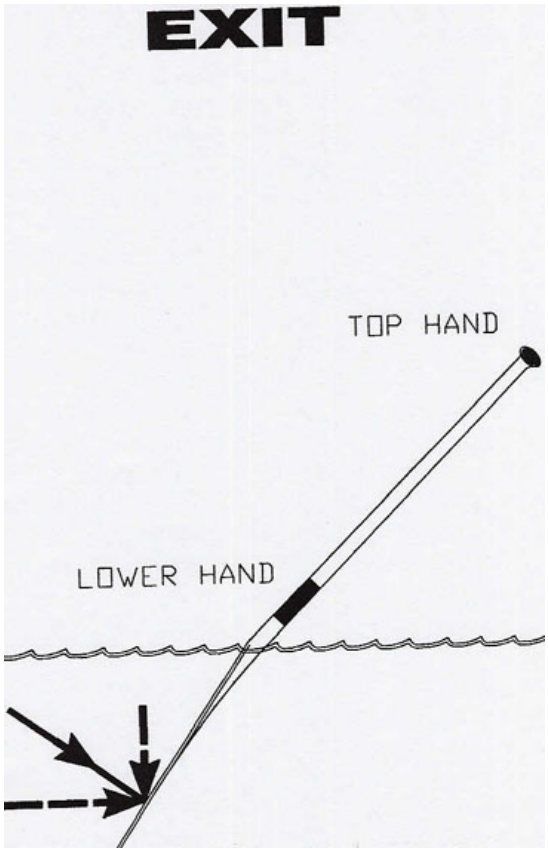


The critical issue is that each paddler hits each phase of the stroke with precise timing and that the movement front to back and side to side are consistent throughout the boat to maintain balance and smooth running. Even though paddlers may have slight differences in form, ie. some rotating more or others with a slightly higher blade on recovery, if everyone is executing each phase correctly and in time, it is doubtful that efforts spent on minor adjustments for the sake of consistency make any significant difference in boat speed.

It is more important to focus on the smooth transition of power from one phase of the stroke to the next and that the delivery of power is timed perfectly for each paddler at every point in the stroke.

The basics of technique that establish consistency among team members are recapped as follows:

- the consistent location of the CATCH and FINISH
- minimal splash or lifting of water
- uniform speed of RECOVERY and STROKE (some people move faster than others)
- uniform depth of paddle in the water
- uniform angle of the paddle as it moves through each phase
- the precise timing at which each phase is initiated
- the alignment of paddles with the direction of travel
- the elimination of excessive movement (bobbing your head up and down or side to side will not improve performance and only waste energy)
- fluid and unbroken movement through each phase
- uniform breathing pattern



The nature of the boat can also effect the characteristic of stroke technique due to shorter seat spacing, higher gunwales, the weigh of the boat or the size of the paddles. It is imperative to 'test' out a race boat by varying stroke length and rating to find the most effective combination to make the particular craft move the fastest. For example, an eight man colour boat responds much better to a longer stroke with a greater emphasis on a drawn out kicked finish, compared to a quicker dragonboat stroke.

Natural elements such as tide, wind or water conditions will impact on technique. Racing with a tailwind for instance should increase boat speed and allow for an increased stroke rating, whereas rating should decrease and a greater stroke length should be implemented when heading into a wind.

In choppy water it is important to have paddle blades higher on the recovery and to emphasize greater depth in the water to avoid going in too 'short' when a wave trough is encountered. Choppy water will also slow the boat down so it is important to be able to adjust stroke rating in order to suit the abilities of the crew to the particular conditions experience.

Technique

O Kalani Outrigger Canoe Club

LESSON #1

You get the reach by twisting. Lead with your shoulder. Lower arm extended.

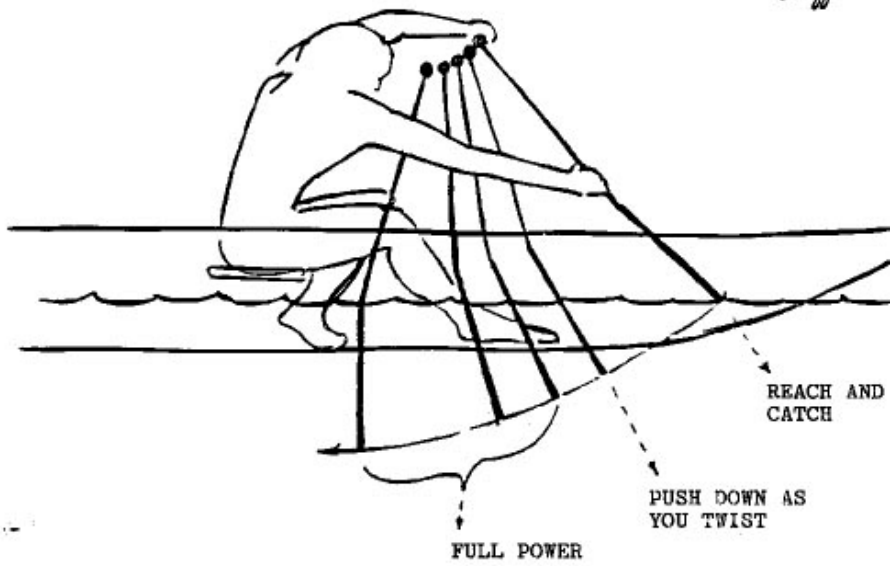
Catch the water then apply power by pushing down as you twist back upright.

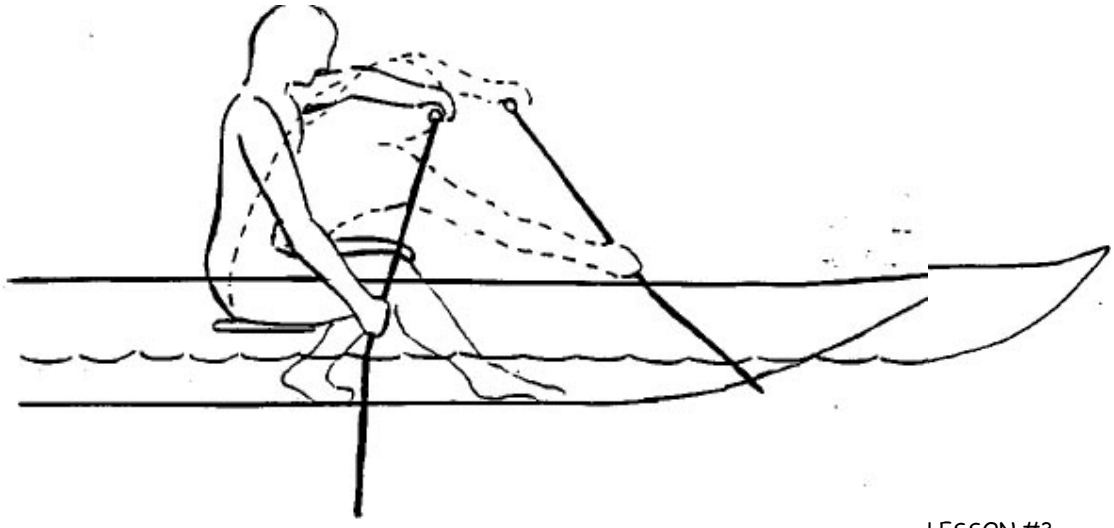
Do not stab the water.

Pull with a full blade along the side of the canoe.

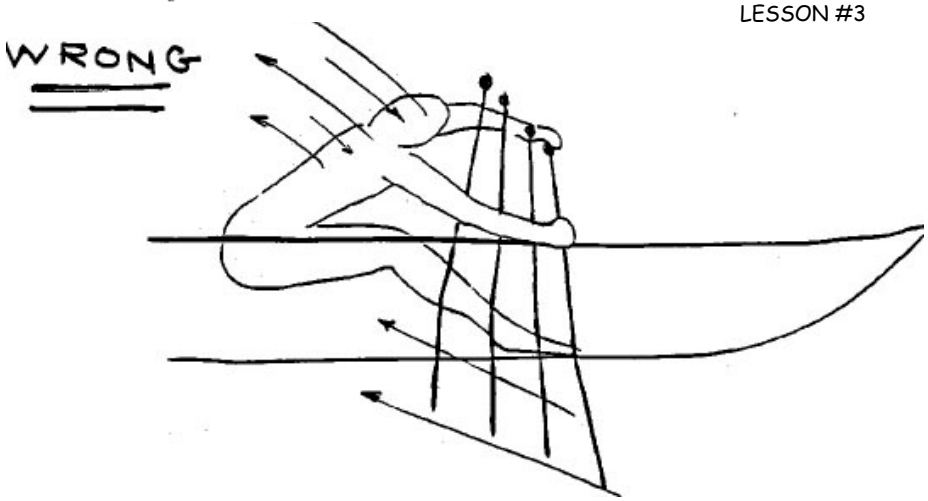
LESSON #2

Reach by twisting. If you get your reach by bending you won't be pulling through the water and you will cause the canoe to bounce.





LESSON #3



If you bend your lower arm too soon you will tire more rapidly and lose power by using your arm muscles instead of the muscles in your back.

You bend your arm to release the paddle from the water at the end of your stroke. If you bend your arm during the stroke the paddle will start to come out of the water and you will lose the pulling surface of the blade.

WHY ANGLE A PADDLE BLADE?

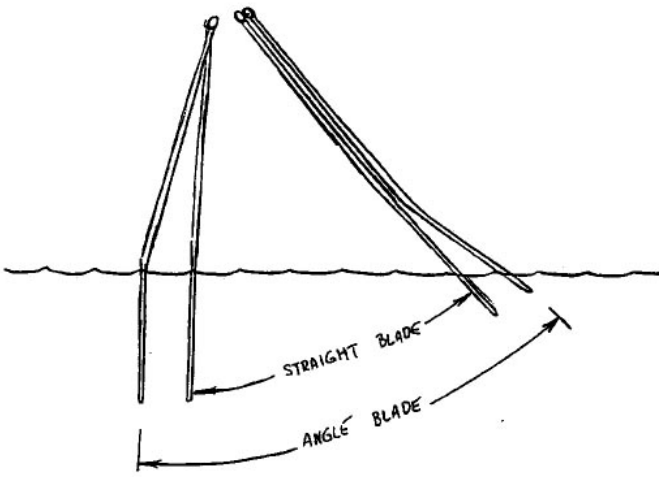
You can pull further back before you have a verticle blade, with more power through the water.

You get more reach in front of the stroke.

STROKE & TECHNIQUE

(O Kalani Outrigger Canoe Club)

From Andy Torro's Stroke & Technique class at the 2003 NCOCA Race Clinic.



Seat Roles

Outrigger Seat Jobs

Vernon Racing Canoe Club

Seat 1 sets the pace and the stroke. Seat 1 must maintain a good "feel" for the movement (glide) of the canoe, and adjust the pace accordingly. This means watching the water ahead, and paying attention to the feel of the boat. Seat 1 also changes the rate depending upon the conditions. This seat will often have a paddle 1/4" to ½" shorter than the back seats.

Seat 2 is responsible to work with Seat 1 maintaining the timing of the boat on the opposite side. Seat 2 will mirror Seat 1 in timing and stroke length. Seat 2 should be watching the water with Seat 1 and quietly communicating with them to confirm how the boat feels, stroke rate and length.

Seat 1 and 2 should establish short signals such as,"reach" for a longer stroke rate, "up" for increased rate, and others, as needed. If Seat 1 disagrees, say "NO".

Seat 3 (in VRCC) calls changes and always be aware of what is happening around the canoe (in order adjust stroke count). There will be times when the count must change - stay on one side to prepare for a turn, start sequences, riding waves, etc.

Seats 4/5 power the boat and maintain balance.

Seat 5 may be required to assist the steersperson in difficult water.

Seat 5 and Seat 6 must quietly communicate and work together.

Seat 4 is also the bailer, as required and watches the ama in rough water. Seat 4 must also pass messages up the boat.

When the crew shoves off, Seat 6 is responsible AND liable. Seat 6 first responsibility is crew safety; second - canoe safety; third is steering and navigation and fourth - keep the crew in time, focused and motivated. After that, Seat 6 is a paddler.

An additional responsibility of Seats 2 & 4 is to watch the 'iako. (Always lean back and out on the 'iako whenever the canoe is at rest and be "ama conscious" when the canoe is moving.)

An additional responsibility of Seats 3 & 5 is to steady the canoe. Seats 3 and 5 must also pass along commands from the Steersperson, if necessary. The steersman is always in command of the canoe, however, everyone is responsible for the safety of the crew and the safety of the boat.

Seat Jobs

Waikiki Yacht Club Canoe Team

What is the main responsibility of Seat 1? **set the pace/stroke**

What is the main responsibility of Seat 2? **call changes**

What are the main responsibilities of Seats 3, 4 and 5? **power the boat**

What is the main responsibility of Seat 6? **steer**

What are the additional responsibilities of Seats 2 & 4? **watch the 'iako**

What are the additional responsibilities of Seat 1? maintain a good "feel" for the movement (glide) of the canoe, and adjust the pace accordingly.

What are the additional responsibilities of Seats 3 & 5? **steady the canoe**

What are the additional responsibilities of Seat 6? **keep the crew in time and focused**

Who Does What and Why?

Kent Island Outrigger Canoe Club

Seat 1 (Stroke) Sets a consistent pace and keeps the strokes long; the rate varies from 60-70 strokes/minute depending on conditions. Has a natural sense of timing and rhythm and is aware of where the boat, the crew, and water are at all times.

Seat 2 Supports seat 1 and keeps the opposite side of boat in sync by mirroring seat 1. Alternate to Seat 3 in calling changes. Watches the ama especially when the canoe is stopped. Like seat 1, has good sense of timing and can mirror the body movements of seat 1. Keeps 1 motivated.

Not only must the stroke *rate* set by seat 1 be matched by every paddler in the canoe, but the stroke *form* needs to be the same throughout the canoe. Entering and exiting the water at the same time ensures that power distribution remains equal and synchronized throughout the canoe.

Seat 3 (Caller) Power seat. Calls changes, can alternate with Seat 2 if needed.

Seat 4 Power seat. Watches the 'iako in rough water. Bails the boat when needed ("lowest" point of boat at 4). The heaviest and strongest paddlers keep the canoe stabilized.

Seat 5 Power seat, watches ama; may share bailing duties if needed. May assist in steering in rough conditions. All around paddler who is able to work in concert with steer.

Seat 6 (Steersman) Boat captain when underway. Moves canoe in the desired direction, keeps crew focused and in time. Has excellent water skills and knowledge. Is responsible for overall boat safety.

Six Paddlers in the Canoe – Who Does What?

(O Kalani Outrigger Canoe Club)

Six paddlers in the canoe all working in unison, but each with a role to play. Each paddler from seat number 1 through 5 paddles alternately on the opposite side from each other.

SEATS ONE (STROKER) AND TWO:

The Stroker sits in the very front seat of the canoe. Paddlers in seats one and two are primarily concerned with ensuring the rhythm and pace of the paddle strokes which seats three through five will follow.

They paddle on opposite sides and as such neither has a paddle to follow. The Stroker at the front of the canoe must set a more or less consistent pace which varies according to the nature of the race and water conditions. The paddler behind in number two seat must follow in perfect time mirroring the Strokers pace so as the power distribution remains equal and synchronized down the length of the canoe.

The Stroker's job is crucial in ensuring the consistency of the crew working at an optimum pace and rhythm. When rounding markers, the Stroker and seat number two work together to turn the front of the canoe.

SEATS THREE AND FOUR:

Often referred to as the power seats or the "Engine Room", the heavier, stronger paddlers will generally take these positions. It is their primary task to provide the brute power required to push the canoe along. Number four seat generally takes responsibility for ensuring the canoe remains as dry as possible, bailing water when needed.

SEAT FIVE:

Again, a power seat they also need to have knowledge of steering to assist the Steerer when necessary. They are also referred to as the keeper of the Ama. This entails that they must eyeball the Ama (the outer float) to make sure it is stable. If it looks at any time to be lifting and threatening to capsize (Huli), they must quickly react to save it. Failing this, numbers three and four need to recognize the predicament and also try to save a Huli. Number five must also take responsibility for bailing should there be an excess of water in the canoe as by the time water is collecting towards the aft end of the canoe, there is definitely too much water onboard.

SEAT SIX (THE STEERER):

The Steerer, who is ideally the captain of the canoe calls the shots, motivates the crew and sets the canoe up for the best course and catching the swells. They plan and navigate a course and have a big responsibility during sprint races as they must set the canoe up for a good turn around the buoys.

They need to have a good paddling relationship with seat five in protecting the Ama and indeed with all the crew. Steering a 45ft/400lb canoe on the open ocean in rough water is an art form. Those that learn their trade well can be considered masters of a task which requires intimate understanding of the dynamics of the ocean and the nuances of the canoe and crew.

What are the characteristics of a good Stroker?

Being Stroker is first and foremost psychologically challenging as they have the position of not being able to follow anyone and must therefore remain at all times self motivated and alert. In many respects their role is mentally more challenging than any other in the canoe, with the exception of the Steerer.

They must have a natural sense of timing and rhythm and have "eyes in the backs of their heads", being able to intuitively feel how the canoe is traveling and respond by increasing and decreasing the stroke rate where necessary. They need to be aerobically very fit as they may not pull as much water as those behind but they will be working hard on an aerobic level. Above all they need to be good natural athletes with a capacity to read the water and have an understanding of what the paddlers behind can tolerate as an effective, efficient stroke rate.

WHAT ARE THE CHARACTERISTICS OF A GOOD NUMBER SEAT TWO PADDLER?

Much like the stroker, a good sense of timing and rhythm. It is crucial that number two stay in time with the Stroker, made all the harder by the fact that they cannot actually follow a blade in front of them, but only the paddlers body movement. Number two needs to talk to the Stroker to encourage and keep them on task at all times. A good paddling relationship at the front of the canoe will ensure the rest of the canoe is firing well. Numbers one and two are the source of all that happens in the front which then travels back to the other paddlers.

Number two takes responsibility for counting the number of strokes per side and calling out when it is time to switch sides (around 15 - 20 strokes). They should also note how the stroke rate is going, in terms of number per minute, and therefore can they can prompt the Stroker if the rate seems too slow or too fast.

WHY ARE PADDLERS THREE AND FOUR OFTEN THE HEAVIEST AND STRONGEST PADDLERS?

In order to create a stable canoe, it is preferable to have your heaviest paddlers in the middle of the canoe between the two spars (Iako). In this way their weight stabilizes the canoe by ensuring that it sits reasonably

deep in this mid section and therefore that the float (Ama) on the outer spar (Iako) maintains contact with the water.

Ideally seat three and four need to be concerned with little else, other than following the front two paddlers and applying maximum leverage. Beyond this the canoe is widest at its mid point and therefore physically large paddlers can fit in these seats but often have trouble fitting into seats one or two as the canoe is more narrow up front.

WHY DOES NUMBER FOUR TAKE RESPONSIBILITY FOR BAILING?

When water enters the canoe it will tend to pool first of all in the mid-section of the canoe. Number four can recognize this and react by bailing. They can also sit up on the spar (Iako) to do so, so that the canoe remains stable while they do this.

SO WHEN DOES NUMBER FIVE BAIL?

When there is a serious amount of water and the pool has extended to the rear of the canoe.

WHAT ARE THE CHARACTERISTICS OF A GOOD NUMBER FIVE PADDLER?

The number five paddler has a varied role and perhaps needs to be the most all around paddler. They should ideally be competent Steerers and of course strong paddlers. They need to be able to be totally flexible in their paddling ability, so as they can eyeball the Ama and protect it and change paddling sides rapidly and frequently if need be. They may also need to paddle for long stretches at a time, much like the Steerer, on the left side to protect the Ama, so as the steerer can concentrate on steering. Their reactions must at all times be fully intuitive, working in with the Steerer when it is needed. Also, new and inexperienced paddlers will generally be placed in this seat as there will be no paddlers behind them to be effected by their learning curve.

WHAT ARE THE CHARACTERISTICS OF A GOOD STEERER?

The Steerer has without question the greatest degree of responsibility within the canoe and one that is often overlooked by other paddlers. They must steer a good coarse, read the ocean and work the canoe so it interacts and travels at its maximum potential at all times. They most motivate the crew, call changes to stroke rates if they feel it necessary and ensure the overall safety of the canoe.

Experience counts for a lot in this position. Time on the water in all conditions is a must and an intuitive understanding of ocean dynamics is crucial to achieving maximum canoe speed. In this respect it is said that surfers often make the best Steerers. The best Steerers happen also to be excellent solo outrigger canoeists.

HOW IMPORTANT ARE TIMING AND RHYTHM TO THE CREWS PERFORMANCE?

One of the fundamental secrets to making an outrigger canoe travel well, is precision of the crews timing and rhythm. ALL paddles entering and exiting the water at the same time, ALL paddlers pulling in unison and ALL using the same technique. The power from the paddles which travels from the paddle along the paddlers arms to their butts, is what drives the canoe forward and the power surge must be synchronized. Time in the canoe as a crew and working on these fundamentals are paramount.

Canoe Responsibility Basics

(CORA)

These traditions insure respect and harmony in the boat.

Seat 6: Steersman

The Steersman is in charge of the boat. Responsibility for the crew's safety is of primary importance. Before going out s/he should:

• 1. Check that the boat has 2 bailers

• 2. Check the rigging is tight, fore and aft plugs are in and there is no puka in the ama or canoe..

• 3. Do not take the boat out if you are not sure that your skills are up to safely handling the weather and sea conditions! (Unless you have a more experienced coach or steersman to help.)

• 4. Assign seats. Be sure to rotate seats so that each paddler learns each seat.

• 5. Tell the crew what the plan is. (Where they are going, etc.)

• 6. When the wind is up, hug the shoreline and stay with the other canoes.

During paddling, the steersman should encourage the crew, reassure the crew (e.g. "I see that wave, we're fine", "ama concious, please") and correct the crew (tactfully!). It is better not to tell an experienced crew to "pull hard" since they already are and this will irritate them. Although the steersman has both ultimate responsibility and ultimate authority, s/he must take care to serve the crew in a way that makes the experience fun and rewarding.

Novice steersmen must strike a balance between their own imperfect knowledge of technique and their role as a helper coach for their crew by asking the Coach what to say in correcting their paddlers.

A rule of thumb in any type of training situation is that the ratio of your positive comments ("That's it!") to corrections ("seat 3: you're rushing") should be about 10 to 1. If you are finding yourself doing more correcting than encouraging and praising, it might be good to be silent for a while. Some experienced crews paddle in complete silence except when the steersmen quess them to catch a wave.

Seat 1 Stroker:

Seat 1 sets the pace and should strive to paddle at the same rhythm throughout unless catching a wave or doing a racing start. #1 can feel the paddlers, the waves and the conditions and experiment with the pace until the crew syncs up. It is the job of everyone else in the boat to imitate the stroke, rhythm and body motion of the stroker whether they think s/he is doing it "right" or not. By definition, the stroker's way IS the "right way". However, good strokers can feel the crew and conditions and adapt the stroke and pace to get the best out of all 6 paddlers.

While going upwind the stroke rate will be slightly slower than downwind. Pick up the stroke rate when going downwind or with the swells.

Seat 2:

#2 talks to #1 but only if #1 wants it. Before starting out ask #1 how much and what type of talking s/he wants. Some #1's just want encouragement. Some want to know when they are not reaching enough. Some don't want any talking. Find out. Seat #2 is one of the more important seats since if #2 is out of time, half the boat will be off. Seat #2 is also responsible for leaning on the 'iako when the boat is at rest or about to huli. Otherwise is silent.

Seat 3:

Calls the changes (Hut, Hu). Otherwise is silent. When the canoe is in surf, 3 should call changes when the nose of the canoe comes up and it wallows behind the wave. 3 should not call when the nose goes down and the crew is trying to catch the wave. You may call once the canoe is solidly being swept along on the wave. In the open ocean, the waves usually come in a regular pattern so that 3 can find the optimal number of strokes per call so that the crew is not changing when trying to bring the canoe down on the wave. Don't stubbornly call on 15 when the waves are coming on 18. In irregular surf, shorter (12 count) calls leave some room to hold the count longer (up to 20) when catching an unexpected wave. Try not to space out and leave your crew on one side for 25 or 30 counts. Tahitians call on 9. In Hawaii we call between 12 and 20.

Seats 4:

Seat 4 is responsible for leaning on the 'iako when the boat is at rest or about to huli. Is silent.

Seats 1-5:

Except as noted above, seats #1-5 should be silent. It creates friction and makes an unsafe canoe for seats #1-5 to correct other paddlers, argue with or contradict the steersman, give advice, or give orders. If you think a steersman is wrong, obey him/her anyway with a respectful attitude and talk to the coach once you've reached shore. On no account should you stop paddling unless the steersman calls "lawa" since the steersman cannot control the boat if the crew isn't paddling. This is of utmost importance in challenging conditions such as a wave about to hit the boat, the boat needing to make a sharp turn or when coming into shore.

To repeat: Crew should NOT give advice or orders, argue with the steersman, or stop paddling!

The safety and cohesiveness of the crew depends on the steersman being obeyed exactly and immediately. Do not weaken the trust of the crew by undermining the steersman's authority. Don't think that just because you have more paddling years than the steersman, that makes it OK to talk. It doesn't! A divisive boat is an unsafe boat. Traditionally, the steersman has the right to throw any paddler out of the boat (anywhere -- even offshore) if s/he is not cooperating.

Communication Protocol in the Boat

Vernon Racing Canoe Club

While paddling in both Outrigger and Dragon Boat there is appropriate communication standards that should be followed. These standards make sense to realize maximum team performance and minimum team stress!

The following are parameters we all should follow.

The Steersperson	Similar to DB, this is the only person in the boat other than the coach who should be giving orders or directions. Only he/she calls timing, calls paddles up, asks for draws left and right, rate changes etc.

Five Seat	Five seat can quietly communicate with the steersperson to assist in guarding the Ama. Five may be asked to pass on messages up the boat if the steersperson is looking to give direction in a way that can not be heard by other crews.
Four Seat	Can take over the count if three seat or six requests them to do so. Can also call "Ama" if they see a problem coming. Calls "Four bailing" when out to bail.
Three seat	Three seat calls the Hut for the team in VRCC. Some other clubs use Two or One. We prefer three as they are more central to the boat and it allows two and three to focus on their duties. Three seat may adjust the stroke count on their own choice based preparing the team for a buoy turn or in attempt to get one three and five on Ama side to stabilize the boat.
Two seat	Communicates quite encouragement to one seat. Two seat may asked one seat to consider an adjustment in rate or stroke style depending on the feel of the boat. These requests are suggestions only. One seat will ultimately decide along with six if a change is warranted. Two seat will also pass on messages sent up from six seat via the back of the boat.
One seat	One seat does not need to talk to anyone other than two seat. He/she may ask two seat for advice on the feel of the boat or she may ask for a message to be passed back to six seat if she is considering a change that six should be aware of. One seat should have some "secret" signals developed with her team to indicate, upping the rate, increasing the intensity for a pass (Pauline's "Grunt"), lower rate more power and other such strategy signals.

No one other than six seat and the coach should be giving directions in the boat. They are the only ones who can call "timing" comment on technique.

All others in the boat should only be offering positive encouragement to their fellow paddlers.

Talking

Vernon Racing Canoe Club

ARE THERE TIMES WHEN WE CAN TALK TO EACH OTHER?

It is appropriate to call out positive encouragement during a race or training session. Chit chat should be saved for water breaks, cool down and after paddling. We only have a short time on the water during our two to three practices per week, lets make the best use of this time.

ARE THERE TIMES WE SHOULD NOT BE TALKING AT ALL?

Only call out your encouragement or appropriate directions after three seat has called a change or in sufficient time before the next call. It is very frustrating when someone calls out something just as three calls a change and members of the team miss the call.

It is also frowned upon by fellow team mates if you are able to recite your weeks activities during a hard training or race situation! If you are able to say more the two or three words under these conditions you are probably not working hard enough.

Commands

Common Commands

Waikiki Yacht Club Canoe Team

When the steersman calls "UNI," The person in seat one holds the paddle against the RIGHT side of the canoe -- creating resistance on the right side of the boat. This action will move the nose of the canoe to the left. All other paddlers should paddle normally.

What does the command "KAHE LEFT" mean? Seats 1 & 2 pull canoe to the left

When should you "KAHE RIGHT?" NEVER (note, if your steersman wants help moving the boat to the right, seat 1 may "Uni Left" which moves the nose to the right.)

When you hear "PADDLES UP" you should: lift paddle to "set" position.

(Some steerspersons may call "READY OARS," "Ho'omakaukau," "Ready All," or just "SET")

To "HOLD WATER" you put your paddle in the water and hold it there to stop the canoe.

You usually "BACK PADDLE" to park the canoe or maneuver into position.

Your steersman will call "TIMING" when paddlers are not pulling together.

Boat Command

Kent Island Outrigger Canoe Club

Other than change calls, all commands will be called by seat 6, the steersman (**ho'okele**). The steersman is in charge of the canoe at all times.

Steersman's Commands:

"Paddles Up"

Seats 1 – 5 lift their paddles out of the water and rest them on your lap or across the gunnels.

"Paddles Across," "Paddles Set," "Paddle Easy," *or* "Hit"

This sequence occurs to get the canoe started.

Paddles Across indicates that all paddlers should place their paddles across the gunnels on the correct side of the canoe—odd seats on the left, even seats on the right.

Paddles Set indicates that seats 1 – 5 should lift their paddles in the set position.

Paddle Easy means to begin paddling in time with seat 1. Paddle Easy is used for warm up, while.

Hit is used to start a race.

"Hold Water"

Seats 1 – 5 place their paddles in the water perpendicular to the hull, holding the paddle in place to slow or stop the canoe. Brace against the hull and the gunnels.

"Back Paddle"

This is used for maneuvering the boat into position, usually when coming ashore or lining up for a race. Seats 1 – 5 paddle backwards in time. Be certain to turn your paddle so it is angled backwards. Your blade is stronger this way and you won't risk breaking it.

"Timing"

The steersman will call "timing" (**makia**/ focus) when the paddlers' strokes are out of sync.

"Power 10"

The steersman calls for higher power strokes to get the hull speed up. These are limited to 10 strokes each side for the number of sets requested by the steersman.

"Kahe Hema" (Crab Left)

Seat 1, and sometimes 2, reaches out to the left, plants the paddle blade deep in the water, and pulls the bow to the left. This assists the steersman in getting the boat turned.

"Kahe Akau" (Crank Right)

Seats 1 and 2 pull the canoe to the left or crank the canoe to the right. DO NOT PULL TO THE RIGHT. YOU RISK HULI-ING THE BOAT!

"Uni"

This is the first of two commands used for racing turns around buoys or other obstacles. Seat 1 holds (i.e., pokes) his/her paddle at an angle against the right side of the canoe. This action will move the nose of the canoe to the left. Seat 2 pulls left at the same time. All other seats paddle normally.

"Kahe"

This is the second of the two commands used in a racing turn. Upon hearing the steersman call Kahe, seat 1 comes across from the right side to the left side and joins seat 2 in pulling (or "crabbing") left. As soon as the canoe is almost out of the turn, the caller calls a Hut and everyone except seat 1 switches sides. The caller then calls another Hut in 10 strokes or so, so seat 1 can switch sides and get relief.

Caller's Commands

The caller, or **kahea**, (typically seat 3) ensures changes are made from one side of the canoe to the other to keep the paddlers from overtiring. The steersman may override the caller at her/his discrepancy. For example, the steersman feels the need to avoid huli and calls, "hoe ama" (everyone paddle left side) or needs to get the hull speed up and calls "2 sets, power 10."

"HUT!"..."HO!"

KIOCC uses a one "hut" change call. The caller will holler a crisp "hut" to prepare the paddlers for changing paddling sides. On the next stroke, everyone says, "ho," and everyone switches the side on which they are paddling.

The call needs to be absolutely consistent. Some get bored saying "Hut!" and change it to "Heeup!" or some other noise. This is confusing to the other paddlers (...especially if they're concentrating on their perfect stroke and not "whuts fer dinner" or their girl/boyfriend and the great time they had last night/gonna have tonight, etc.).

Additional Commands

Vernon Racing Canoe Club

When the steersman calls "UNI RIGHT," the person in seat one holds the paddle against the RIGHT side of the canoe -- creating resistance on the right side of the boat. This action will move the nose of the canoe to the left. All other paddlers should paddle normally. (Conversely, UNI LEFT or KICK LEFT will push the nose to the right.)

On the command "DRAW LEFT" seats 1 & 2 lean out to the left and pull canoe to the left.

You should never "DRAW RIGHT!" (note, if your steersman wants help moving the boat to the right, seats 1&2 may "Uni Left" which moves the nose to the right.)

To "HOLD WATER" or "HOLD THE BOAT" you put your paddle in the water and hold it there to stop the canoe.

You usually "BACK PADDLE" to park the canoe or maneuver into position.

Your steersman will call "TIMING" when paddlers are not pulling together.

When you hear "PADDLES UP" you should: lift paddle to "set" position.

Some steerspersons may call "Ready All," or just "SET"

In Hawaiian, "IMUA" means Go Forward and "HUKI" means Pull. Either of these commands may be used in place of "hit" as a command to begin paddling.

"TAKE IT AWAY" is also acommon start command.

The command to stop paddling may be "HOLD UP," "HOLD," "EASY" or other variations.

Some Likely Problems

Canoe Takes on Water

Kihei Canoe Club

1. Order seat 5, and if need be, seat 3 to bail too

2. Caution, **the vessel is unstable** - remind the crew to lean towards the ama

3. Turn and hold (light paddle) the canoe headed into the sea, until most water is removed

4. Seat 3 resumes paddling; seat 5 finishes bailing

Canoe Swamps Next to Beach

Kihei Canoe Club

1. Drag/push the canoe as high up the beach as possible (it's very heavy)

2. Instruct 2 crew members to lift the ama until the iako are vertical

3. As an outgoing wave recedes, lower the ama to right the canoe

4. Push/drag the canoe fully onto the beach

5. Bail until the canoe is free of water

Ama Lifts (canoe is headed for a huli)

Kihei Canoe Club

1. Seat 5 shouts "A M A" and lunges for the aft iako

2. Upon hearing the alarm, seat 3 lunges for the forward iako

3. The remaining crew all lean towards the ama

Huli!

The Huli

Kihei Canoe Club

1. A huli usually (almost always) results from a trained steerer's failure to communicate with his crew.....

HULI RECOVERY

1. Locate (and keep track of) each crew member in the water

2. Remind the crew to - **HOLD ON TO THE BOAT**

3. If a crew member is injured - assign another crew member to stay with him

4. The following crew assignments are ***normally ordered***

- seat 1 collects the paddles

- all others, 'swim' the canoe so that bow heads into the sea

- seat 2 and seat 4 stand on the iako tongues; lean over the canoe; grab the iako

- seat 3 lifts the iako; seats 2 and 4 rock back to roll the canoe upright.

- seat 5 catches the ama then sits on (or hangs onto) it to stabilize the canoe - take a moment to have everyone look for personal belongings in the water

- 2 crew members at a time enter the canoe and bail like crazy - the remaining crew members continue to 'swim' the canoe towards the shore (while keeping the bow headed into the sea)

5. ***Normally ordered*** above, means not etched in stone. The orders given by the steerer must be direct and specific, to instill confidence. Exactly which seat does what is unimportant.

6. The steerer must keep track of each crew member at all times.

7. Resume paddling - continue with the paddling trip plan

The Huli

(Ocean River Paddling Club)

Capsize/recovery of the 6-person outrigger canoe

To ensure a safe and efficient recovery from a huli or capsize in the six-person outrigger canoe, paddlers must be knowledgeable on the following steps.

The boat has capsized. Check that the people around you are O.K.

The captain should call out all the seat numbers to ensure all are well.

• Each seat number has a job to do:

• Seat 1 and 6 are to collect the paddles.

• Seat 2 and 5 are to go to the ama.

• Seat 3 and 4 go over the hull of the boat by stepping on the aikos then placing their feet on the mukus on the opposite side of the boat. They lean over the hull and grab on to the aikos.

When the team is ready seats 2 and 5 push the ama into the air; seats 3 and 4 pull the aikos up and over the hull; seats 1 and 6 either steady the boat in the waves or assist on the ama (depending on weather conditions) while holding onto the paddles.

Once the boat is upright, seats 3 and 4 stay with the ama pulling their bodies out of the water onto the aikos at the ama end; seats 2 and 5, and 1 and 6 get into the boat and start bailing right away.

Seats 3 and 4 get into the boat once it is more stable. Always bail and lean left.

Put on dry clothes and paddle to safety if required.

Huli

Vernon Racing Canoe Club

In Hawaiian, the word "huli" means to turn over. If you huli your canoe:

First and foremost, count heads to make sure everyone is OK.

Seat 6 is in command and gives all commands.

Check for partners: 1 and 2; 3 and 4; 5 and 6. If anyone if missing, seat 6 will assign a paddler to take two lifejackets and search for the missing paddler.

Next turn the boat back over.

Position the boat sideways to the prevailing swell.

Seats 3 & 4 position themselves over the hull on the side opposite the ama to help pull the boat over (stand on the ends of the iakos)

Seat 1 collects the paddles swimming front to back.

Seats 2 & 5 position themselves at the ama, push down on the ama and then lift the ama to help turn the canoe over

Seat 6 controls the actions.

When you have turned the boat over,

seat 5 gets back in the boat to start bailing.

Everyone else should move to the ama side and keep the boat steady.

Trade off bailing duties until the boat is at least 75 percent dry.

During this time, 1 seat should be putting paddles back in the boat.

When the water is about ankle deep get back in the boat from the left (ama) side and begin paddling (don't worry about finding the "right" paddle. At this point only Seat 6 needs the correct paddle. For now, 1, 2, and 3 paddle, 6 steer, 4 & 5 KEEP BAILING. Note that if you need to switch paddles later, turn to your left (ama) side when passing paddles back and forth.

Huli

Waikiki Yacht Club Canoe Team

In Hawaiian, the word "huli" means to turn over. If you huli your canoe:

First and foremost, count heads!

Then remember, DON'T PANIC. Your boat will float just at the surface for a little while at least.

Move your nose or tail into the swell, then:

Seats 1 & 6 position themselves over the hull on the side opposite the 'iako to help pull the boat over

Seat 5 collects the paddles

Seats 2 & 4 position themselves under the 'iako, then lift the 'iako to help turn the canoe over

Seat 3 positions in the middle of the canoe on the side opposite the 'iako to help pull the boat over

When you have turned the boat over, the smallest or lightest person gets in to start bailing.

Get back into the boat when your steersman tells you to.

Huli Fix Procedures

Kent Island Outrigger Canoe Club

Sooner or Later, You Huli

ALWAYS BE READY TO SWIM. DO NOT CARRY ANYTHING IN THE BOAT THAT YOU ARE NOT READY TO LOSE TO THE WATER. This includes wallets, pagers, jewelry, watches, clothes, cell phones, etc). Make no mistake about it, at some point in time you will find yourself in the water!

1. First and foremost, do not panic. Find your paired seat.

Seat 1 and 2 find each other.

Seat 3 and 4 find each other.

Seat 5 and 6 find each other.

2. Collect paddles and hand them to Seat 1 or Seat 6. It's particularly important to do this as soon as possible in rough or windy conditions.

3. The steersman is in charge.

S/he will call for a headcount. It is imperative that the steersman account for everyone on the crew.

Each paddler calls out their seat number in sequential order beginning with seat 1.

Depending on conditions you may need to put your PFD on. If you want it on, put it on regardless of conditions!

4. The boat may need to be repositioned if there are large swells. Listen for directions.

5. Seat 1 collects the paddles, if possible.

6. Two people position themselves over the hull on the side opposite the 'iako to help pull the canoe over. The other two people are on the 'iako side to help lift the 'iako to turn the canoe over.

7. Once the canoe is righted, one person will get in and start bailing.
Get back in the boat when the steersman tells you to. Do not hang on the boat while it is being bailed.

<u>If we huli during a race, safety is the first priority</u>. After that the steersman will be trying to get the boat going again quickly. Bailing needs to be done with a purpose. People may alternate bailing as arms start to tire. The steersman may have all but one seat start paddling as the last few inches are bailed.

Huli Lite

Gibsons Paddle Club Outrigger Division

We have learned how to right the outrigger without causing stress and damage to the ama. The most important aspect of this process is to lower the ama slowly and Gently to the water. The damage to the ama occurs on righting the outrigger after it has rolled. When practicing take your time. A practice should not be a timed event. With experience this technique should be as fast or faster than the traditional method.

The counter-weight technique has the advantage of only slowing the rotation of the canoe once the side has come out of the water, so it adds little time delay and should not add extra water to bail. The amount of water to bail can also be mitigated if every paddler has a 20 litre dry bag stowed under their seat. This adds buoyancy and displaces a large amount of water that would other wise have to be bailed. The dry bag should contain all loose items and should be tethered to the seat with a 4-ft flat strap. This enables the bag to be accessed without creating an entanglement problem.

Be sure to remain hydrated throughout your paddle. Dehydration, caffeine and alcohol do not mix well with cold water swimming. If you have any kind of heart condition please be aware that cold water immersion can cause dramatic physiological changes. Please consult your physician before participating in this sport.

Regular swimming from the canoe during the warmer months and beyond helps by habituating you gradually to cold water swimming.

With habituation your rate of core heat loss is reduced, you are in a familiar environment, your dry bag starts to contain the right stuff, and you learn how to efficiently get dry and get on dry clothing. Containing the wet stuff in a plastic bag within your dry bag. Don't kid yourself get dry! Core temperature drop over time can be subtle and deadly. Who wants a second Huli.

Before leaving the dock two groups seats 1, 2 & 3 and seats 4, 5 & 6 should decide among themselves who will hinge, counterweight, collect/steer in the event of a Huli.

One of the most common causes of a Huli are hesitation and paddles out of the water. If you feel the amu lifting make your next two strokes strong ensuring that forward foot is centered in the canoe. A hip check to the ama side of canoe can also drop the ama as can bracing your paddle towards the canoe on the ama side.

If the canoe does Huli, don't anticipate it, roll with it. Chances are you will be in the water before you know what happened. Seats 2 and 4 should pay particular attention to keeping their head down and rolling forward as the canoe goes over. Remember the iaku is right behind you and moving forward. Be aware so that it does not hit you as it comes over or as you surface.

1. Buddy count 1&2 3&4 5&6 Check that everyone has surfaced and is OK.

2. Collect paddles. Seat 3 & 4 hand paddles to 2 & 5 and then to 1 & 6.

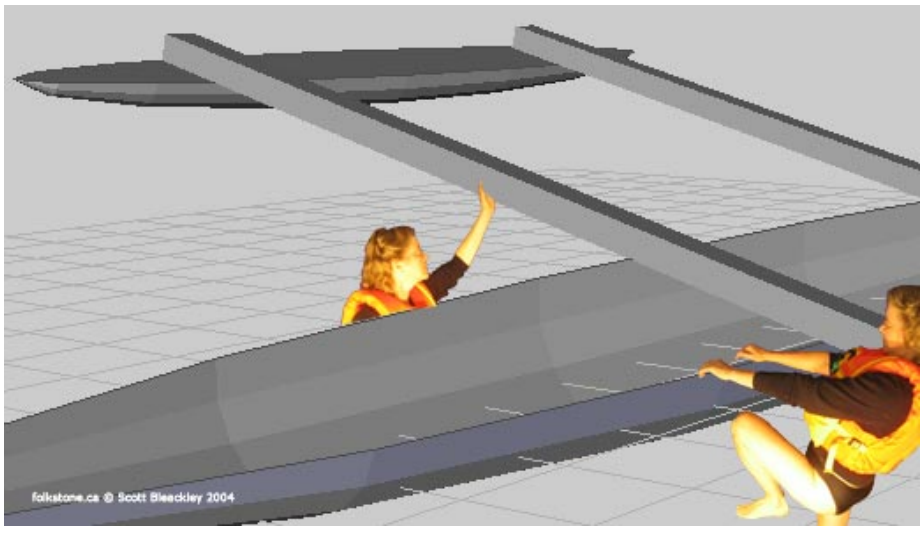
3. Steer the outrigger into oncoming wind and wave action.

4. Take your time. Don't Panic. Think about what you are doing carefully. If you have been swimming on a regular basis your cold water habituation should kick in.

5. Two people hinge. On the ama side: climb onto the Iaku and over the outrigger while holding onto the Iaku. Sometimes a wrist lock with the person acting as Counter-Weight will make this maneuver easier.

6. Two people Counter-Weight. Once the hinge are in position draped over the canoe and holding on the the iaku. The counter-weights should reach under the canoe and establish a grip on the opposite side of the canoe. Once you have this, get your body in position and push up gently on the iaku to start righting the canoe.

7. As the outrigger starts to roll over and the Iaku becomes vertical, the counter-weights catch the non-ama edge of the outrigger with both hands with their knees on the side of the canoe. (this happens very fast) This edge is low in the water, and rolls up out of the water as the outrigger rights. To slow the fall of the ama, the people holding the non-ama edge lean way back, bracing their knees on the side of the outrigger (acting as counter weight to the ama). This causes the rotation to slow only just before the ama hits the water. The ama then can be lowered gently to the water.



8. Once the rotation of the canoe is established the hinges should push up on the ama. The hinges use their floation in the water to help guide the ama gently to the surface of the water. If done correctly there should be no smack on the water at all. Practice this slowly. With increased skill it can be done very quickly. Better to have an ama that floats than one that is cracked and takes on water.

9. Place paddles back in the canoe at there repective locations.

10. The hinges will end up on the ama side of the canoe, while the counter-weights will be on the non-ama side. If the water conditions allow it, the hinges can hold the ama down while the counter-weights get out of the water and into the canoe from the non-ama side. This can only happen if the ama is being held down by the hinges.

Normally all entry should be on the ama side. This cooperative entry reduces the requirement to swim around the canoe in cold water.

11. Bail the outrigger. Adding hinges and steer/collection people to the bailing crew as floatation and water conditions allow. Bail the water only to the ama side to avoid another Huli. Bailing from outside of the canoe will resulting in brusing.

12. Once the canoe is dry and out of rough water. Take off wet clothing and replace it with dry clothing from your dry bag so that reheating goes to you and not drying your cloths. If no dry clothing is available fleece can be wrung out to reduce its water content and increase its warmth.

13. Use the plastic bag that you carry in your dry bag to contain your wet gear in your dry bag.

14. Paddle On. Good paddling technique after a Huli is important. Using big muscles generates the heat necissary to rewarm the core of your body. Placing your forward foot (paddle side foot) in the very centre of the canoe, push the canoe forward with your foot. It starts with your foot and travels up using your leg, hips and abs before the upper body and finally the paddle in the water provides the bracing necissary to complete pushing the canoe forward. An imaginary string from your hip to the blade of your paddle pulls your hip forward on the paddle's recovery so that you can again push the canoe forward with your foot. Use big muscles to keep warm. Feel the rest of the canoe as you do this. Remember when you first learned to pump a swing, the only difference is now you have six people are on the swing, or in this case in the canoe.

Practice Technique

With the outrigger full of water you can practice the "counter-weight" position by attempting to re-huli the boat.

Even with two people acting as counter weight, it is surprisingly difficult to re-huli.

Practice raising and lowering the ama at your leisure until you feel like you could do it in your sleep.

Be aware that cognition changes with cold water immersion. Memory and sequential processing functions differently. These changes are an evolutionary adaptation/habituation that we don't often exercise. Becoming comfortable with these changes over time reduces panic in the event of an accidental Huli.

Hypothermia is not an option. A well practiced recovery will minimize time in the water and in wet clothing. After a Huli do several verbal checks, over fifteen or twenty minutes, up and down to canoe to ensure that everybody is dry and re-warming. Remember that your body was warmed up and working when you hit the water. Use that to your advantage to re-warm.

Practice Swimming in the ocean. Practice getting dry. Be comfortable in our waters, with your crew, and level of experience. Learn the weather & water.

Share your Delight!

The Flip Side

Kawika Sands

NOTE: Each club/coach/steersman has their own procedures on righting a capsized outrigger. These are the procedures I teach my keiki:

In the old days, Hawaiians reviewed ho`olana [to float/righting] procedures with model canoes and knew a variety of ways to right a canoe including the use of ropes and nets. For them it was a matter of survival. Today it should be COMPULSORY to everyone who sets foot in an outrigger! You may use a model, a set of diagrams or better yet, a drill with the right prop. In actual conditions the REAL danger is panic/fear which usually comes from the unknown. Practice helps to mitigate this danger.

Once dry-land training is done, you must now practice with an actual luma`i [capsize] (huli means "turn") and ho`olana in CALM water. After that, practice under actual conditions should be done. Consider also creating contingent plans in case something goes wrong.

When the crew shoves-off, the STEERSMAN is responsible AND liable. The first responsibility of the steersman is the safety his crew, second is the safety canoe, the THIRD is the competent steering and navigation of his craft.

Before leaving shore, the Steersman should check the canoe's hull, `iako, ama, lashings, and emergency equipment which includes: One PFD for each person aboard, signal flares (3 day/night type), a survival/emergency whistle, one extra paddle, light sticks and a VHF marine radio. The objection that it is "so much stuff" is NONSENSE! Apart from a tow rope, everything you need can be easily fitted into the average hip-bag!

1. **ILIWAI** [surface]: Everyone surfaces on the AMA side for protection and coordination purposes. Take a quick look aft for oncoming canoes and be prepared to submerge QUICKLY in case a hull or ama is headed your way! Everyone checks for their partner (1 and 2, 3 and 4, 5 and 6). If your partner has not surfaced, BEFORE going after him, let someone ELSE know before you go under. NOTE: If you must swim/duck under the canoe, remember to have at least one hand on the mo`o [rim] at all times to keep from hitting your head! If everyone is fine, the Steersman will shout and signal "GO!"

2. **KULANA** [position]: #1 swims to the forward manu watching for oncoming canoes and the entire team for any sign of concussion, injury, etc.. The Steersman swims forward collecting paddles and other gear (it helps to have something to tie the gear together with in your pocket especially if ALL the paddles have "T" grips). When he gets to the bow, he waits and watches with #1 until the outrigger has been righted. #2, #3, #4 and #5 take position along the hull/`iako.

(Assuming swells UNDER six feet)

3. **KIKAHA** [maneuver]: #5 tells the crew to bring the ama into oncoming swells, if necessary, which will later help the crew right the canoe and also during the pauma phase. The necessity of this step has to be weighed against the time it would take to accomplish it.

4. **KUPONO** [upright]: #2, #3, #4 and #5 climb the `iako, grab the mo`o, go over the ka`ele [hull], slide down the muku [side opposite the ama] side of the hull and roll the outrigger over (three keiki or two teens or one adult are usually sufficient to do this). If this step is done fast/well enough, the pauma/ka wa`a phases may not be necessary.

5. **PAUMA** [to empty the canoe of water]: After getting the canoe right-side-up, #2, #3, #4, and #5 stand on the ama to force it down as the swell approaches. This turns and raises the canoe enough that it can be emptied of most of the water. At the right moment, #5 shouts "LAWA" [enough] so everyone stops and gets off the ama at the same time.

6. **KA WA`A** [bail]: While #1 continues to observe everything aft, #2, #3, #4, and #5 begin bailing. #6 swims aft along the ama side of the hull replacing equipment as he goes (Steersman or #1 might wait at the ama to prevent another luma`i). When enough water has been bailed, the Steersman orders the team aboard one at a time (since the water will be deepest in the canoe at the #4 or #5 seats, one or both might continue to bail after "paddles-up" is called. Usually #5). If the Steersman sees that it may be impossible for the crew to right the outrigger, he will call "LIFE JACKETS!" then signal for assistance.

(Assuming swells OVER six feet)

3a. **KIKAHA** [maneuver]: #5 signals the crew to bring the BOW into the oncoming swells.

4a. **KUPONO** [upright]: Same as step 5 above.

5a. **PAUMA** [empty canoe of water]: As the swell lifts the bow, #5 shouts "ON!" everyone forces the aft down letting the water awash aft. When #5 shouts "LAWA!" everyone lets the canoe go.

6a. **KA WA`A** [bail]: Same as above. If the Steersman sees that it may be impossible for the crew to right the outrigger, he will call "LIFE JACKETS!" Then he will signal for assistance.

In righting the outrigger, and following the above steps (from the time the ama slapped the water to the time it was righted), it took my keiki less than 12 seconds. There's no reason why adults shouldn't do it faster.

Flipping (and pointing a finger)

Kawika Sands

There you are, skimming right along without a care in the world except for the water near the canoe. You reach for the water again when you somehow notice it seems higher on one side than the other. By the time you feel your seat tilting, you catch a glimpse of the ama when something tells you... "It ain't comin' down any time soon!" SPLASH!

What usually happens next is a lot of finger-pointing. This examines the assignability of "blame" when it comes to a luma`i (capsize. Otherwise referred to inaccurately as a "huli"). In the long run, it doesn't really matter what the circumstances are. Everyone almost instinctively looks at the steersman. In light of all the other things he/she must assume responsibility for, this might seem unfair, but it's part of being a backseat driver. For starters, here's how I generally see it:

Seat Culpability

#6 ±50%

#5 ±28%

#4 ±6%

#3 ±5%

#2 ±6%

#1 ±5%

The first thing you notice here is blame is shared by the crew. Then, that #5 has the next largest share.

I assign some responsibility among the crew because they can collectively both help cause a luma`i or prevent it. By paddling incorrectly or on the wrong side, it makes the steersman's job more difficult. Perhaps causing him to steer more on one side or even too late. However, with good training and practice, a strong even stroke along the

canoe can perhaps even allow the steersman to "fly" the ama therefor decreasing drag. If a quick maneuver by the steersman is required, without speaking a word, the crew may be able to compensate.

You might notice that I've assigned #2 and #4 only slightly more "blame." More because without a "huli" line (a line attached from the forward `iako to the aft `iako), these two paddlers are in the best position to place a hand on the `iako and lean left to counter the ama's momentum. On the other hand, their primary job (like #1 and #3) is to move the canoe. #5 and #6 are supposed to keep it afloat.

As if #5 doesn't already have enough to do, his nick-name is "Keeper of the Ama." This is in reference to the facet that he is in the best position to keep an eye on the ama and call for assistance to keep it down. He is closest to the steersman and can be easily warned of quick changes in direction (particularly toward the right). But most important is that #5 should have steering experience. This experience helps him anticipate and coordinate with the steersman.

And finally, the steersman. In a way, the most under appreciated seat in the boat (until you sit there) but a high-profile one. The person who sits there should have a sure hand, a clear mind, a command presence, and a thick skin! Whether flat water or open ocean, the crew has to trust what's going on in the back. Each time a steersman proves himself, that trust grows into respect. That trust/respect is what will keep the team together in a crisis, but then, it's a two-way street. The thick skin is priceless when things don't go as planned!

One note, the 50% formula I suggested above is merely a starting point. If conditions are particularly tricky, if a paddler strokes on the muku side when he should be on the ama side, if 5 is not watching the ama or has not come to the point where he knows (without being told) when to stroke/lean/poke on the left or shout "AMA" in time, etc., then yes, it is fair to place LESS responsibility on the steersman for a capsize. On the other hand, learning how to read the sea and other conditions, strategy/tactics, maneuvering, and so on are the steersman's responsibility. A good number 5 (and 1 through 4) can make an INCREDIBLE difference.

What to do when you Huli

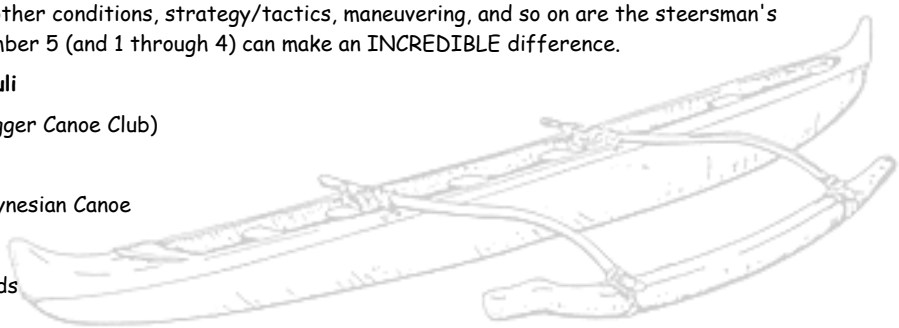
(Capsize) (O Kalani Outrigger Canoe Club)

Kama I Ka Huli Pu

The Art of Righting a Polynesian Canoe

Text: Bud Hohl

Illustrations: Bobby Woods



If and when you do huli pau (capsize), follow these steps and you should be back hoeing (paddling) again shortly.

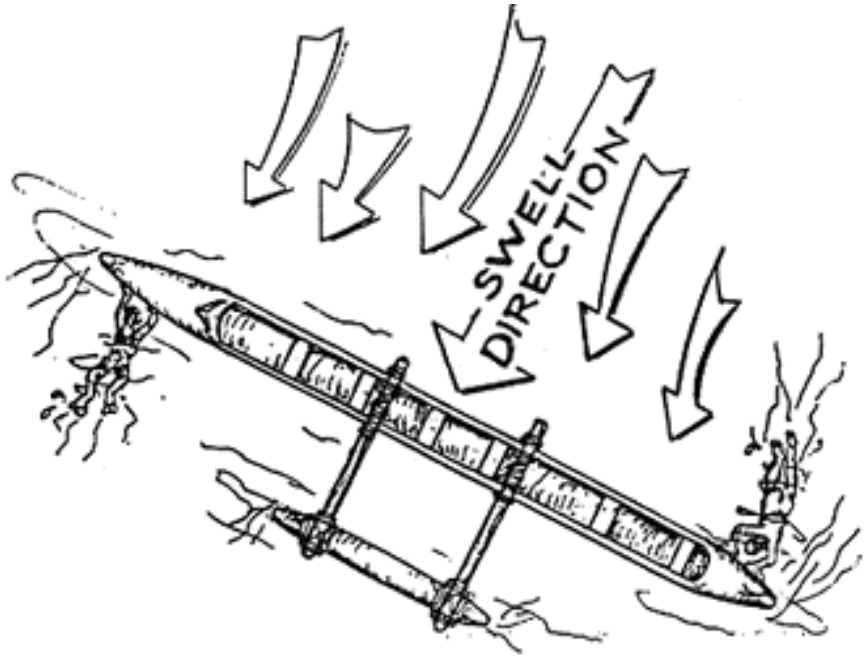
Taking into consideration that you haven't gone out in 'ale nui (very big waves, 6'+) and in 20 knot makani's (winds) and your pikaos (flotation tanks) are in proper working condition (more than one p'uka (hole) in a tank allows water to enter and air escapes), this method can be used when you are out paddling with your hoa'lohas (friends).

1) Count heads - Steersperson take control and have each paddler count off. If you come up one number short, start searching under va'a (canoe).

2) Have one person collect the paddles (hoe), usually steersperson, before they drift away. Also any items left in canoe and not tied down,

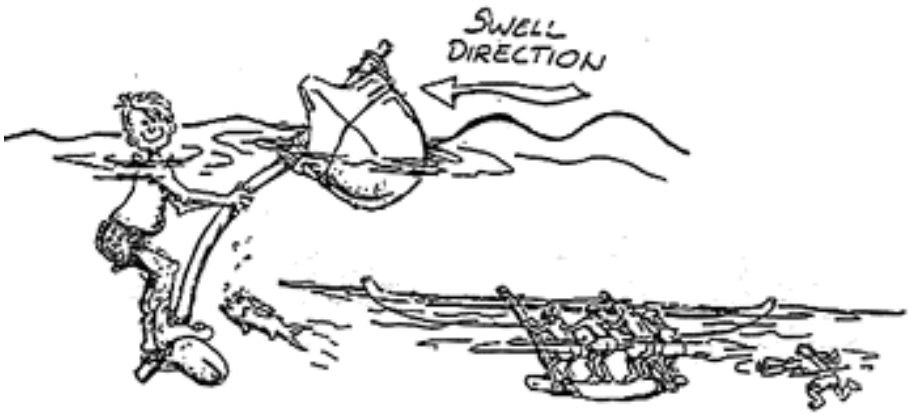
water bottles, buckets, etc.

3) Get your two or three biggest to go to the outer edges of the iakos (muku) and stand on them while reaching over the hull (ka'ale) grabbing onto the gunnel (mo'o) or iakos and lift (make sure no one is in the way of the ama - as it is heavy and your skull is soft).

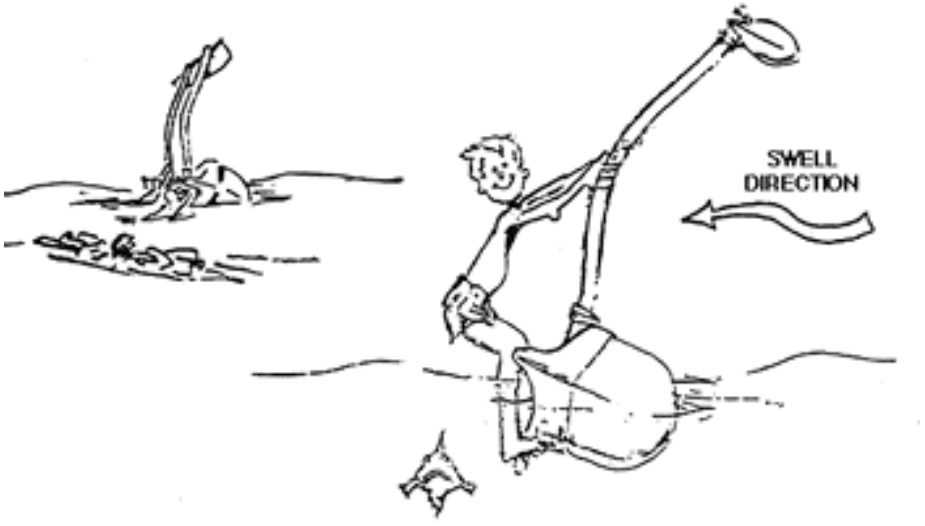


4a) If done quickly enough, you can minimize the amount of water that fills the canoe. Have someone ready with a bailing bucket to start bailing (ala ha ha o ke kai).

4b) If not, consider swell (ale ha' ha' o ke kai) height and direction, and position the canoe so that the canoe is parallel to the swell and it is coming from the right side of the canoe.

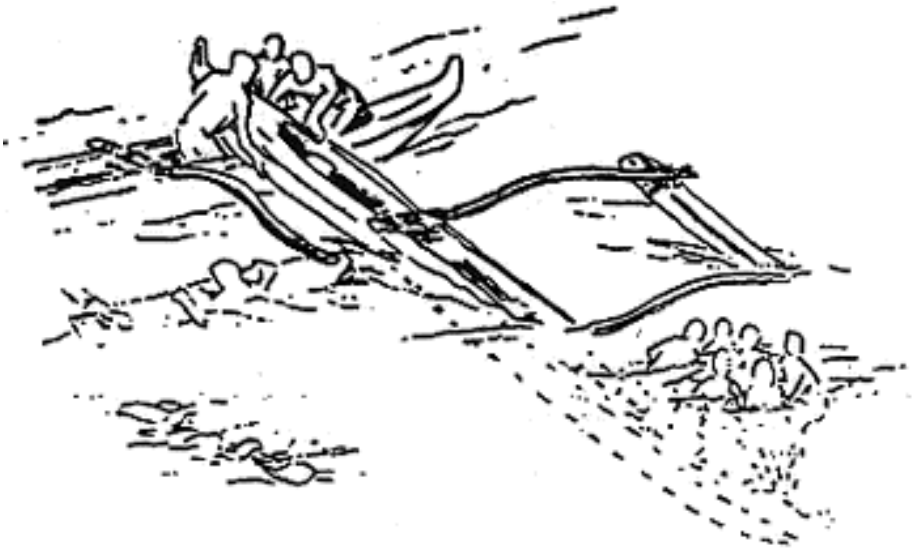


5a) At least 4 persons are needed for this step, (unless you have 2 of the Rams Offensive linemen paddling with you). What you are trying to accomplish is to sink the ama, but not the canoe, so don't hang on the canoe. The deeper the ama goes (making the iakos perpendicular to the water surface) the higher the canoe will float.



5b) This can also be accomplished in reverse. That is to say, lift the ama in the air, remembering swell direction so as not to fill the canoe as you are trying to float it as high as possible. Realistically, 2 people can steady the canoe and float it (drop ama) when water is at a minimum in the canoe.

6) The next step takes timing with the swell and the canoe float, and quickness to get off the ama and start bailing - like FAST!

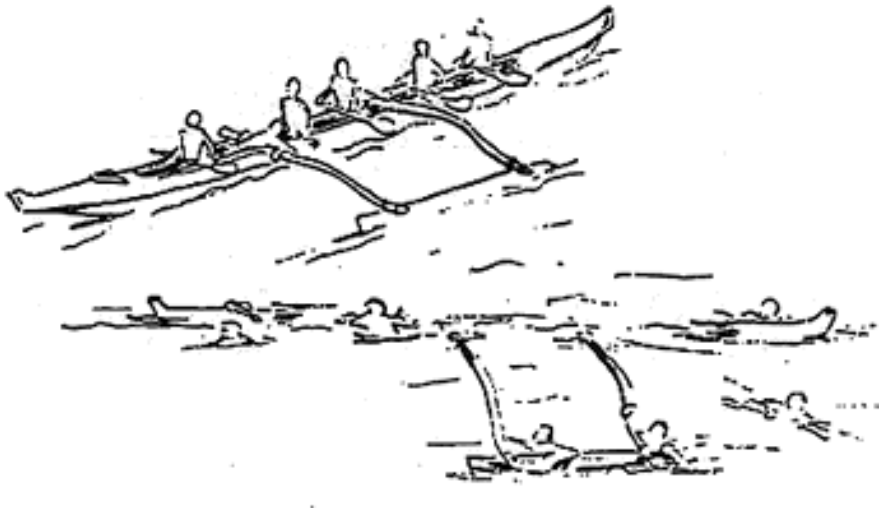


7) If successful, and your gunnels aren't awash, you can bail out your canoe. When you have a sufficient amount of the water out of the cane, you can put someone in #3 and/or #5 (because of the large bailing area and they are nearest the center of gravity of the canoe).

Keep someone on the ama so it doesn't go over again.

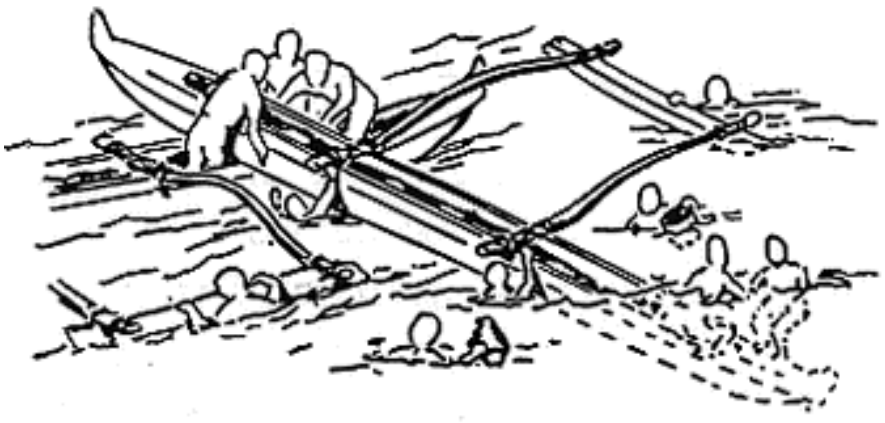
8) While this is going on, have the extra people change with #3 and #5 to help bail, and have the person holding the paddles start putting two each into seats 2,4, and 6.

9a) If you have another canoe around, you may use it to help bail out water.



9b) One method is to pull the bow of the victim canoe onto the rear of the assisting canoe. (this is one of the largest displacement of the canoe and there is more room for pulling). Make sure you keep sufficient weight on the ama or the situation may become more complicated.

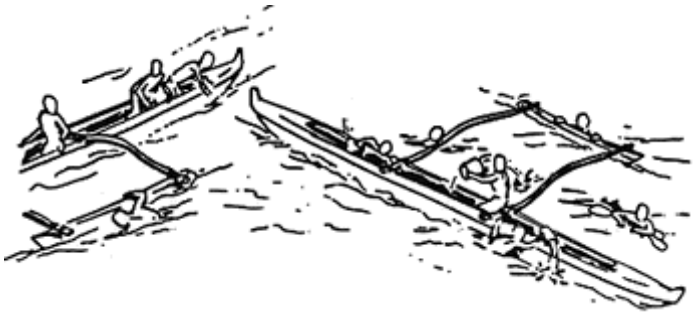
9c) Either the bow or the stern, it is entirely up to the situation, but have the crew sit on one end of the victim canoe. This should help raise the other end so it can be pulled out of the water onto the assisting canoe. Be aware at all times of swell direction and bodies in the water.



9d) When you've pulled the victim canoe out of the water partially, have persons slip off the bow of the victim canoe to further get the canoe out of the water.

9e) When sufficient water is removed, push victim off assisting canoe and bail out remaining water.

10) When you have removed enough ka moana (ocean) from the vessel you love, you can get back to doing that thing which you hate to do, but do it anyway.



Some related ike akea (information) to consider before disaster strikes:

- A big bucket will cut your bailing time down.

- Two make canoe dryer faster.

- 1' x 4' piece of inner tube (rubba ban) can repair any loosened rigging, a broken iako or ama, and can tie paddles together.

- If a canoe is in disrepair, such as faulty flotation tanks, loose or worn rigging, weak or broken iakos or ama, jagged edges or bolt, etc., it should not be used until all are in proper working condition.

Crew Member is Injured or Incapacitated

Kihei Canoe Club

1. If the steerer is the victim - the stroker assumes command of the canoe

2. Send a close-by 'buddy boat' (canoe) to the nearest safe beach, to **call 9-1-1**

3. First aid, ranked priorities: 1. no heart-beat, 2. no breathing, 3. bleeding 4. anything else

4. Take immediate first-aid/CPR action (right in the canoe), per the above priorities

5. Paddle to the closest safe beach with road access for the emergency services vehicle

6. Continue first-aid/CPR until professional help arrives and takes over

7. Immediately, on return to the Club - have at least 2 crew members each write a complete statement, describing the incident circumstances, actions taken, identity of the victim, place, time, etc.

8. Contact the Club President and/or a Divisional Coach, to report the incident. NB. In an ideal world, every KCC stroker and every KCC steerer would be first aid and CPR trained and currently certified in those disciplines.

Unruly Crew Member (relatively unlikely, but it has happened)

Kihei Canoe Club

1. Anyone in your canoe who challenges your commands or repeatedly disregards your instructions, is an unruly crew member.

2. An unruly crew member is a safety hazzard to all aboard.

3. Stop the canoe - maintain a heading into the sea.

4. Speak directly to the unruly crew member - address him by his seat number.

5. Ask him if he understood your orders and if so, why he disregarded them.

6. Explain that his conduct is a safety hazzard to all aboard and cannot be tolerated.

7. Resume paddling.

8. If the crew member continues his unruly behavior - take the canoe ashore on the nearest safe beach or return to the beach at the Club site.

9. Once ashore, eject the unruly crew member from the canoe - (with the support of your crew)

10. Report the incident ASAP to the Club President and/or a Divisional Coach

Coming Back

OC-6 Recovery

Vernon Racing Canoe Club

Returning to the compound, reverse the procedure and then Seat 6 controls the attitude and steering of the boat from the stern. In the compound:

1 seat pushes down on the bow

4 seat position the rear cradle under the 5th seat

1, 2 and 3 seats then lift the bow

5 seat removes the cart

4 seat positions the front cradle under the 2nd seat and the ama cradle

6 seat checks the boat position in the compound and calls for correction, if necessary. 6 seat ensures that plugs are loosened from the bulkheads and ama.

Landing

Landing the Canoe on the Beach

Kihei Canoe Club

1. Within a 1/4 mile of the Club (or other intended beach) - conduct a brief back paddling exercise, - all paddling on the left.

2. Instruct the stroker keep the bow headed into the sea.

3. Explain to the crew that it is a practice exercise is in preparation for going ashore.

4. It is critically important that the stroker and the steerer keep the canoe pointed into the waves, while approaching the beach, backwards.

5. Gain enough momentum and speed to keep the canoe running straight

6. ALTERNATIVE - instruct the stroker to turn 180 degrees in his seat, so he is facing the beach. From this position, the stroker can see well and 'steer' the canoe right onto the beach. The steerer remains in command.

7. The rest of the crew concentrates on back paddling - ALL ON THE LEFT

8. If the bow falls off badly during the approach - immediately paddle forward back out to sea and start the approach over again.

9. The heavier the wave conditions, the further out from the beach you line up, to start back paddling. Typically you have 6 second between waves - that's a short time.

10. Land one canoe at a time, to eliminate the risk of collision

11. Watch the waves and pick a small set to ride in on.

12. To judge the size of the waves in a set from off-shore, watch the beach to see how far up the foam goes.

13. Time is in your favor - don't rush it

14. When the wave you intend to use is say, 100 feet off the bow, order back paddling – keep talking to the crew, to control the pace - "back paddle" "back paddle" "back paddle"

15. Ride the wave towards the beach into shallow water - knee-deep water.

16. ALTERNATIVE for high surf - land the canoe by paddling straight in (bow first) [later, rotate canoe 180 degrees on land - away from the breaking waves]

17. Immediately order, "everybody out!" (leave all paddles in the canoe)

18. Slide the canoe up the beach until the bow is on shore beyond the waves

19. Have 1 crew member mind the canoe heading seaward - order all others to help with the carrying of the other canoes up onto the beach.

Beach Assistance

Beach Assistance

Kihei Canoe Club

1. During the launching and retrieving of canoes, when higher surf conditions exist, one or two 'helpers' situated in waist-deep water can make things safer for all.

2. For the launch - the crew can be boarded and seated in the canoe positioned inside the break - ready to paddle on the left.

3. The 'helper' or 'helpers' keep (hold) the canoe perpendicular to the beach then, at the command of the steerer the canoe is pushed forward directly into the sea.

4. Similarly, when surf is up, the canoe is paddled onto the beach heading forward. The 'helpers' in this situation hold the canoe perpendicular to the beach until the crew disembarks then, they help slide the canoe up the sand well clear of the ocean.

5. **Clear the beach promptly.** Get the canoes moved away from the shore up onto the tires as quickly as possible to make room for the canoes still on the water to land without encountering obstructions.

Courtesy

Kihei Canoe Club

1. It is customary to wash every canoe, its iako, and its ama with fresh water after use. The steerer should wash - the stroker should bail.

2. It is customary to have every paddler (including visitors) assist with the carrying of canoes to and from the ocean - no paddler should leave the beach until all of the canoes are placed on tires high on the beach safely beyond where they could be washed out to sea at high tide.

3. Our 9 older canoes are lodged at the south end of the beach - Malias, Rockets; all others are lodged at the north end of the beach towards the hales.

4. Paddling sessions should start and end at the scheduled times.

5. Nothing should be left in the canoes - like, personal items, water bottles, paddles, etc.

6. If some canoes are moved temporarily to a remote beach for an event - they should be returned to the Club site promptly, after that event.

7. Every paddler should be prepared to assist with the rigging and de-rigging of canoes.

8. Visitors and guests are welcome on Tuesdays and Thursdays; all other scheduled paddling sessions are intended for experienced OC paddlers only.

OC-6 Cleaning

Ocean River Paddling Club

Organise the boat cleaning kit found under the OC-1 seat pods. It should contain Sunlight detergent, plastic scrubbies and a couple of sponges or rags.

Remove and rinse the sun cover and spray deck.

Wash the boat on the dock not while in the water. Empty the boat of all items including bailers, safety lines and flare packs.

Clean the inside of the boat with a small amount of detergent and fresh water then rinse with the hose.

The outside of the boat should have the spray deck scrubbed lightly with detergent and fresh water. The deck and hull require a lot more elbow grease using the detergent and fresh water. The ama should be cleaned the same way. Rinse off the aikos with fresh water but do not scrub them.

To the do the underside of the hull tip the boat up on its side. Some of the crew will need to support the ama and aikos while others scrub the bottom.

Rinse the entire boat (inside and out) with fresh water. The easiest way to empty the inside is to keep the boat up on its side then sponge-out the last little bit of water.

Please notify Ocean River Sports if there is any damage to the boats.

Re-tie the safety line and flares back into the boat. Make sure there are at least three bailers back in the boat. If we are short of bailers bring an ice cream bucket or detergent bucket from home.

Every once and a while a crew will be asked to wax a boat. When this is needed Brian will contact the crew captain and provide directions.

Thank you everyone for helping to keep our boats in good order.

Club Stuff

New Member Information

Ocean River Paddling Club

Ocean River Paddling Club is dedicated to the development of paddlers for racing and fitness purposes. Goals for races may be local events or reach around the world for international challenges.

Our Club aims to support our paddlers through the use of equipment, coaches, training and resource material. ORPC is a member club of the Canadian Outrigger Racing Association (CORA). The Club hosts two annual CORA sanctioned outrigger races: the Island Iron (17km OC-6; 8km small boat race) and the Bridges Race in October (6km OC-6; 6 km small boat race). We also have a dedicated group of surf ski and K-1 paddlers.

Membership dues at Ocean River are $120 for six months or $220 for one year. A junior membership (under 18 years old) is $60/six months or $110/year.

Guests are invited to try out Ocean River Paddling Club. A guest is to be accompanied by a Club member. There is no charge for the first visit. A $10 fee is applied to subsequent visits (up to four in total).

Access to the Ocean River Paddling Club boathouse during the days is either through the breezeway between Ocean River Sports and Capital Iron or along the walkway behind Value Village during the evenings.

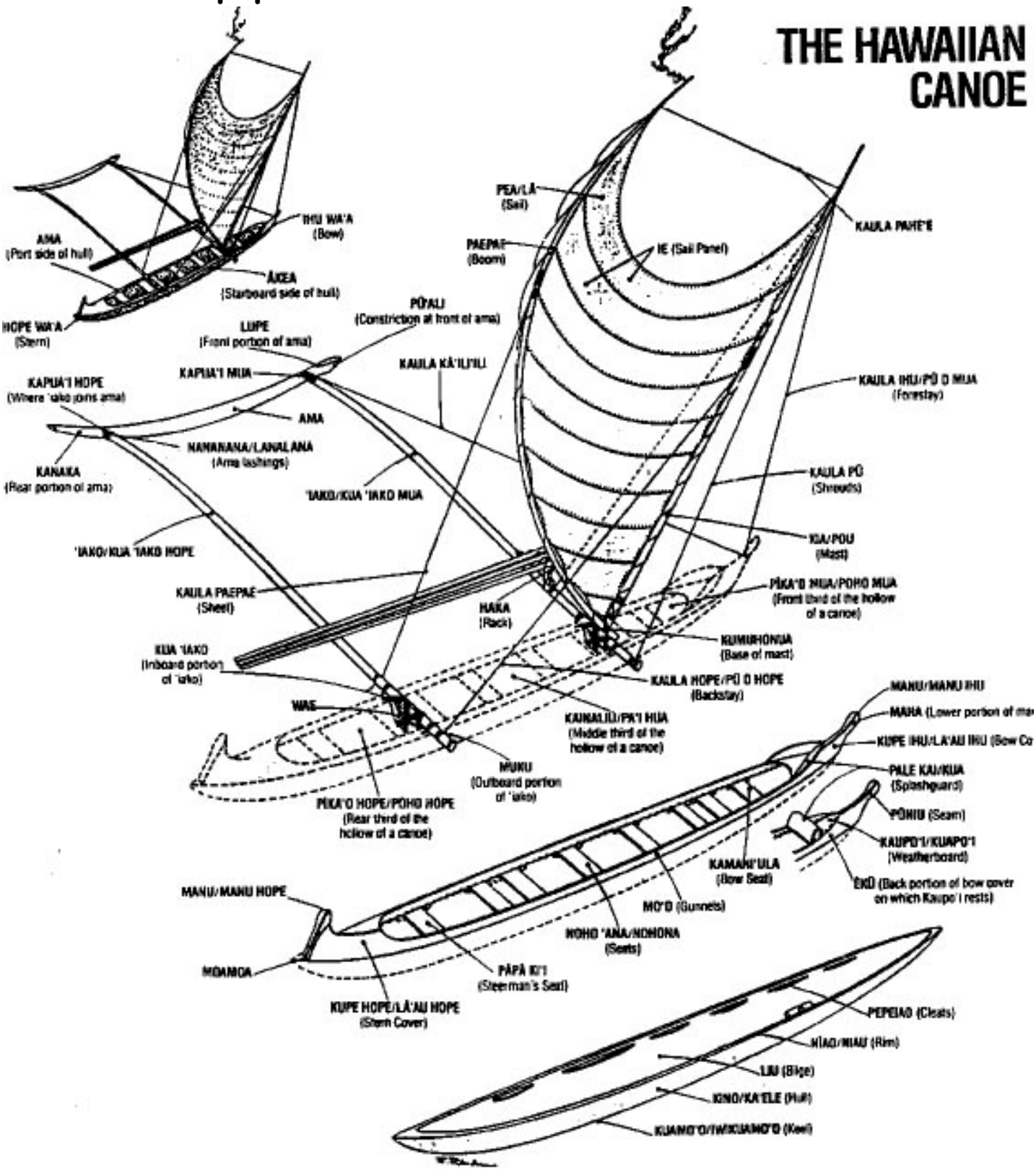
Dues/Fundraiser Payments

Waikiki Yacht Club Canoe Team

Dues are due March 1 for regatta, August 1 for Long Distance, and October 1 for Winter Season.

Fundraiser payment deadlines will be set by the committees in charge. Failure to pay fundraiser money will result in being asked not to paddle in a WYC boat.

Canoes & Equipment



Canoes

The Canoe Fleet

Kihei Canoe Club

PAKALANA. named for Dutchy's favorite flower MALIA 1965 (Kihei's 2nd)

MIKI ALA "Alert" MALIA 1968 (Kihei's 3rd) S/W

'white canoe' (Not yet renamed) MALIA 1968 (Kihei's 19th) S/W

KA MAKANI O KIHEI "The Wind of Kihei" MALIA 1970 (Kihei's 4th) S/W

MANU KAI "Sea Bird" MALIA 1970 (Kihei's 5th) S/W

PULELEHUA "Butterfly" MALIA 1972 (Kihei's 14th)

HOKU WELU WELU "Shooting Star" ROCKET 1985 (Kihei's 6th)

HELU EKAHI "Number 1" ROCKET 1986 (Kihei's 7th)

HOE MANA "Spirit of the Paddlers" ROCKET 1991 (Kihei's 8th)

O KALINI NANI "O Beautiful Karen" FORCE 5 1996 (Kihei's 10th)

LELE I KE KAI "To Fly or Leap Across the Sea" BRADLEY RACER 1999(Kihei's 11th)

LELE I KA LEWA "To Fly or Leap to the Sky" BRADLEY RACER 1999(Kihei's 12th)

KU KOA MANUTEA KOA 2001 (Kihei's 13th)

"White Bird, Goes Swiftly to its Point of Destination"

LELE WALE AKU LA MIRAGE (Kihei's 15th)

"Flying Towards the Sun or Towards the Future"

LELE MANU KAIKO'O BRADLEY STRIKER 2002 (Kihei's 16th)

"The Flying Bird that Stands or Supports You"

HOKU A'O "Morning Star" BRADLEY ENCORE 2003 (Kihei's 17th)

HOKU HO'OKELE WA'A "A canoe's guiding star" BRADLEY STRIKER 2003 (Kihei's 18th)

THE KCC FLEET NOW CONSISTS OF 17 CANOES

(S/W means 'oversized wae' - a Malia, suitable for rigging as part of a double hull)

OC-6 Care and Safety

(Ocean River Paddling Club)

Please make yourself familiar with the Ocean River Paddling Club (ORPC) six person outrigger canoes before taking them out on the water.

We highly recommend that all paddlers wear PFDs at all times. The law requires every paddler to have a PFD in the boat. You should also carry a "louder than voice hailer" e.g. a whistle tied on to a PFD zipper.

Review the outrigger capsize (huli) and recovery procedure with your crew. See procedure following this document. If you have not done a huli, make sure you sign up for the next practice or make inquiries.

Ensure that the boat has at least three bailing buckets, a red throw bag that holds 15 metres of line, and a spare paddle. If you are paddling in windy conditions or are going past the breakwater make you take a flare pack which are stored in the boathouse above the lights.

Be aware that the zippers on all the spray skirts are tear-away zippers.

This means that you only have to pull the fabric apart to exit the skirt. Always leave the top two inches of the zipper open so it does not jam when exiting during a capsize. The tops of the zippers sometime get salt encrusted. Practice undoing the zipper in an upright position. If you are at all concerned about exiting in case of a capsize leave the zipper undone enough for you to exit without resistance.

Any crews going out when dusk is falling are required to have lights on the boat; fore and aft. Be diligent about lights. It is the law!

Kanaka and Camosung run the best with heavier paddlers in the middle seats. When paddling with only five paddlers Kanaka tends to be stern light so leave seat one open to keep the weight toward the stern. Camosung is somewhat the same but not as obvious. The Mirage runs best with the heavier paddlers in front of the center.

When storing the OC-6's on the dock, work as a team to pull the boats through the U-shaped frames at the end of the dock onto the blue covered 2 X 6 boards. Leave a few inches between the bow and the boathouse. One OC-6 is to be stored with the ama hanging over the water with a chair used to support the aiko. The next OC-6 is to

be stored with the resting on the tire on the dock. The third OC-6 is to be stored with the ama resting on the center OC-6 aikos.

Please, remember to put spray deck covers and secure well with the straps and buckles. The deck covers keep the harmful rays of the sun from rotting our spraydecks prematurely. They also help keep the spraydecks clean.

Crews are expected to volunteer time occasionally to clean, buff and varnish boats as needed. If your boat is dirty after practice take the time to rinse if off as it will save time later.

If any damage has occurred to a boat please e-mail Brian at 381-4233 so the required maintenance work can be scheduled. Crews are responsible for any immediate and significant damage.

General Outrigger Canoe Knowledge

Vernon Racing Canoe Club

A modern Hawaiian Racing canoe weighs 400 pounds (w/o 'iako and ama).

A new fiberglass canoe costs between $8,000 and $11,000.

There are many different hull styles for canoes. Some are Malia, Hawaiian

Catamaran, Hawaiian Racer, Bradley, Force Five, Clipper.

The canoe racing association in BC is CORA: Canadian Outrigger Racing Association.

You should only sit in a canoe when it is in the water.

Why?

Stress may crack a fiberglass or wood hull.

Always enter and exit the canoe from the left (ama) side

SO YOU DON'T FLIP THE CANOE.

HAWAIIAN TERMS:

Imua	Go Forward
huki	Pull
wa'a.	canoe
ama	the outrigger float
'iako	the bars that hold the ama to the wa'a
hoe	to paddle.
hoe wa'a	canoe paddler

General Canoe Knowledge

Waikiki Yacht Club Canoe Team

What is term for the outrigger float? **ama**

What is the term for the canoe outriggers? **'iako**

What is the Hawaiian word for canoe? **wa'a**

What is the Hawaiian` term for canoe paddler? **hoe wa'a**

In Hawaiian the word **hoe** means to paddle.

Always enter the canoe from the **left (ama)** side.

Always exit the canoe from the **left (ama)** side.

The **steersman** is always in command of the canoe.

Unless absolutely necessary do not **talk** in the canoe.

How heavy is a modern Hawaiian Racing canoe? **400 pounds**

How much does a new fiberglass canoe cost? between **$8,000 and $9,000**

There are many different hull styles for canoes. Some are Malia, Hawaiian Catamaran, Hawaiian Racer, Bradley, Force Five

What are the two canoe racing associations on Oahu? **OHCRA and Hui Wa'a**

What association does Waikiki Yacht Club belong to? **Hui Wa'a**

What does "imua" mean in Hawaiian? **Go Forward**

You should only sit in a canoe when it is in the water.

Why? Stress may crack a fiberglass or wood hull.

Equipment

Waikiki Yacht Club Canoe Team

Take care of the equipment.

Report all boat damage immediately (the boats must be used every day, and each day they are out for repair is a day someone doesn't get to paddle).

Keep the paddling room neat. Use your initiative to clean up.

Throw away your rubbish. Clean out the canoes after practice. THROW AWAY YOUR WATER BOTTLES - DON'T LEAVE THEM ALL OVER FOR THE COACHES TO CLEAN UP.

Paddles:

All paddlers should have their own paddles. No one should depend on club paddles for racing. Club paddles should only be used in emergencies after May 1.

If you break a club paddle, you should replace it. We get good prices on paddles, but they're still not cheap.

We do plan to make a club order on a mid-range quality paddle sometime in May. The prices may be discounted - or be at least competitive with local stores.

The rules of our association and the HCRA are clear that no graphite or even partial graphite paddles are allowed.

This rule is up for reconsideration, but has not yet been passed.

HAWAIIAN WORDS, PHRASES, CULTURE

Basic Vocabulary

'e'e	get in the canoes
aloha	hello, goodbye
anuenue	rainbow
awa	harbor, port, cove
hanohano	glorious, dignified, worthy of praises
Hawai'i nei	alternate reference to Hawai'i; Lit. "this Hawai'i"
heihei wa'a	canoe race
ho'oama'a	train,work hard; practice
ho'okele	attention
ho'omakaukau	get ready
hoe wa'a	canoe paddler, or to paddle canoe
huki	pull, get into it
huli	to turn or flip over
ihope	backward
imua	forward
kahea	caller
kahuna kalaiwa'a	canoe builder/carver
kane	man
kau	place, plant the blade
le'ale'a	fun
mahalo	thank you
mo'olelo	history
'ohana	family
'okole maluna	bottoms up!
paliuli	divine place
pilialoha	friendship
wahi paua	spiritual place
wahine	woman

The Canoes

Kent Island Outrigger Canoe Club

CANOE ETIQUETTE

It is believed that canoes have a life to them. Each has a distinct and separate personality on the water. The canoe is part of the team, and carries all paddlers safely onto the water and home again. We expect all paddlers to treat the canoes with respect and never take them for granted or treat them discourteously.

Never sit or lean on a canoe except in the designated seat area once the canoe is in the water. Even sitting in the seat on land can cause the canoe to crack. When canoes are lifted, be sure the ama and 'iako are supported and off the ground. Canoes should not be dropped, but set down lightly.

Don't step over the body of the canoe. If you need to move to the other side, walk around the canoe. It is a gesture of courtesy to the canoe to do so.

CANOE PARTS

Photo courtesy Outrigger Rio Clube (Brazil) - http://www.outrigger.com.br/

aha	braided or twisted cord used in lashing the canoe
ama	float/ outrigger
hoe	a paddle; to paddle
'iako	spars, boom
lupe	bow end of ama
kanaka	stern end of ama
kapua'i	part of 'iako between hull and ama
kua 'iako	portion of the 'iako lashed to the hull
kuamo'o	hull, keel
manu *kupe*	curved end pieces covering the fore and aft parts of the hull; to steer a canoe
manu hope	stern end piece
manu ihu	bow end piece
mo'o	gunwale
muku	ends of 'iako that extend beyond the hull
pale kai	splash board
pa'u	storm covers, spray skirts
pikao	hull
wae	spreaders
wa'a, va'a, waka	canoe
wa'a kaukahi	single-hulled canoe
wa'a kaulua	double-hulled canoe

CANOE CLASSIFICATIONS

OC6 – Outrigger Canoe Six-Person

- Force Five
- Bradley
- Hawaiian Racer
- Malia
- Patterson

- Catamarany

OC4 – Outrigger Canoe Four-Person

Duke

OC1 & OC2 – Outrigger Canoes: One-Person/ Solo & Two-Person

Various Manufacturers/Models

Club Fleet

Kent Island Outrigger Canoe Club

KIOCC currently fields two Force Five OC6 canoes:

Maka Uli Kukana (Black-Eyed Susan) and

'Aina 'Olu Ola (Land of Pleasant Living)

as well as a Duke OC4 canoe:

Pukini (Puddin') owned by Jim and Debbie Hall and shared with the club.

And our 2003 arrival - a Mirage OC6 canoe:

'Ohana O Ke Kai (Family of the Sea)

The club fleet also includes a number OC1s and an OC2, all of which are owned by individual members.

Respecting Your Outrigger

Hana Hoe Series

1. Respect every canoe as a family member. From the time a canoe is made and blessed, the canoe becomes an entity unto itself. Care for it as a loved one by maintaining it before setting out to sea and cleaning it after you return. Never sit on, or step over, a canoe (exceptions are sometimes made for dry-land training or demonstration purposes). If you must, support the hull along the kua`e/keel (the center line along the outside/bottom of the hull) in a way that will distribute the weight evenly to avoid placing too much stress at any one point. In Hawai`i, it is believed that to step over another is to cut their life shorter, therefor, the same applies to your canoe.

2. On land, the canoe always faces the ocean. This relates back to ancient Hawai`i when canoes were frequently used to repel attacks from other islands. "Stacking" is sometimes necessary to accommodate available space (placing the ama of a subsequent canoe on the `iako of a previous canoe).

3. Care should also be taken for the area surrounding the canoe. Pick up opala (rubbish) on and around your paena wa`a (canoe landing), halau wa`a (canoe house), or auha (canoe shed). Put things away that need to be stored without being asked.

Hoe aku i ka wa`a (do your share - [litterally] move ahead the canoe)

4. Everyone helps when the canoe is being carried, covered, cleaned or cared for. This includes loading and unloading the canoes, covering or storing them, cleaning them and washing them down with fresh water (especially the lashings) when they are dirty or after practice, and checking all parts of the canoe before and after practice. This applies to every member of the club from the first time novice to the president. From ancient times, whenever there was a large undertaking, everyone would help by doing whatever they could. The strong would do the work, the old would offer encouragement and advice, and the young would bring the water and food, but everyone would participate.

A`ohe hana nui ka alu`ia. (No task is too big when done together).

5. Customarily, a prayer is always said before every launching no matter how long or short the voyage. The prayer needn't be long and perhaps not in Hawaiian, nor does it have to be religious in nature. Doing so helps center the crew mentally and spiritually (no religious reference).

6. On water, avoid standing, arguing and swearing in the canoe. Standing is rarely a good idea for stability and safety reasons anyway. Arguing and swearing only serves to upset the entire crew's efforts and create animosity instead of aloha. Avoid tracking dirt and sand into the outrigger when you climb aboard.

`Ike aku, `ike mai, kokua aku, kokua mai. Pela iho la ka nohana `ohana (Recognize others, be recognized, help others, be helped. Such is a family relationship).

7. Learn the particular duties that go along with the seat you sit in. Once you step into a canoe you are part of a team. Therefor every hoa wa`a (canoe mate) must work together by doing his share. The only way to know what is expected of each member is to have clearly defined assignments before hand.

Komo mai kau mapuna hoe (Dip your paddle in. Join in the effort.)

8. See to it that personal issues are put to rest quickly instead of letting them collect and fester in your mind. Remember; what happens on land, stays on land, what happens at sea, stays at sea. Show respect, enthusiasm and

commitment to your hoa wa`a by arriving on time to practice (steersmen, coaches and other leaders should ALWAYS arrive early). -A leader is never on time, he is always early.

9. Take the time to study and learn the proper Hawaiian names and pronunciation of the things you use. On this issue, if you choose to use English (usually the case), or Tahitian, etc. that is entirely fine. But if you choose to use Hawaiian terminology, take care in its' pronunciation (and use). Many Hawaiian words have multiple meanings or have different meanings if pronounced incorrectly. Lest you be guilty of "`olelo ho`ohepa" (idiot talk).

Canoe Blessing

The following was written by Iwalani Christian, priestess, in a message to member Ina Talalemotu prior to the canoe blessing ceremony held at the Na Po' e Hoe Lokahi Double Hull Race, hosted by Mountain Home Canoe Club may 10, 2003.

CANOE BLESSING CEREMONY PROTOCOL

* A Blessing is a consecration to invoke divine care for those things and/or persons who fulfill our lives through prayer and ceremony. A means of honoring, giving thanks and well wishes and positive energy and to dissipate any ill wishes and negative energy. To give approval and encouragement.

* Ceremony is a formal act or series of acts as prescribed by ritual, protocol or convention.

* Protocol is a code prescribing strict adherence to correct etiquette and precedence.

* Ritual is the established form for a ceremony. A ritual observance is a system of rites, a ceremonial act or action.

SOME GENERAL NOTES FOR A CANOE BLESSING

Wa'a to be blessed are to be on the beach with the manu ihu (nose) towards the water just a bit over the very edge of the water. Beach should be cleared and free of any other paraphernalia. Everyone on the beach during ceremony is considered a witness/participant and will form a semi circle around the canoe. (That's everyone on the beach). Will need to facilitate 6 paddlers (they should all be kane (men), sorry wahine (women), but tradition, you know.) to paddle the wa'a out with the puolo (offering). The canoe is to go straight out, then a turn towards the East (left turn), the offering is dropped, then back to the ceremony site bringing the right side of the canoe parallel with the shore. Paddlers get out of the canoe and hold it in place till ceremony is ended. Then the wa'a is beached once again with the nose facing out. I suggest the honoree take the kapena position (steersman) and a young member in noho 'ekahi (seat one or stroker) with a kupuna (elder) in the center. This will symbolize the generations, full circle. Bring your paddles to Blessing Area on the beach; leave your casesand paddle covers and other ukana (baggage, coats, shoes, purses, etc.) locked in your cars. Carry your paddle with the blade up, not down (so the mana does not flow out and absorbed by the sand). There is no unnecessary talking during the ceremony.

So here's the protocol (Order of things):

Clearing and Purification (so the ceremony may begin) Pa'akai (sea salt) will be passed to all witnesses/participants while the purification/clearing chant is done. Take a pinch of salt and put it under your tongue. Salt is a symbol of purification and prepares the witness to be pure in thoughts and feelings for the ceremony.

Permission Here a prayer is offered to ask the tree for forgiveness in the taking of its life and celebrating the dawning of its life as a wa'a (canoe). A lei is placed on the manu ihu of the canoe during the prayer. A prayer to ask the ancestors presence is then done.

Blessing The canoe is blessed with a blessing and honor chant. Noho 'Ekahi carries the offering. After the blessing chant is completed and the manu ihu is consecrated (with the pouring of 'awa and salt and water over the nose), the paddlers may recite a prayer, chant, or do a haka.

Offering The paddlers get into the canoe and paddle out to make the offering. Paddle straight out a ways. Make a left turn. During the turn, the offering is dropped into the water. Canoe then heads straight back to shore, nose first. The paddlers get out of the canoe and stand beside it for the final prayer.

Closing the Ceremony The paddlers get out of the canoe and stand besides it for the final prayer. The paddlers will push the canoe back up on the beach with the nose facing out. The ceremony is ended

Rigging

Rigging

Kent Island Outrigger Canoe Club

Sennet, hand twisted from natural fibers, was the original cordage used to lash the 'iako to the ama and the main hull. While many lashing styles were used, the primary purpose was to ensure the canoe's safety. If lashings broke, they would not unravel because of the cord's interlacing and cinching.

Rigging is what keeps the main hull, the 'iako, and the ama together. An important part of paddling is to learn the culture. This includes learning traditional Polynesian lashing techniques. The KIOCC Force Fives and Duke are each primarily lashed using these methods. Secondary, or temporary, lashing can be made with modern snap-lashes. However, each paddler is expected to not only learn but to assist in rigging the boats. A video is available for team member use.

'iako to wae and mo'o showing other important tools – tape measure, level, and line wax

'iako to ama showing a clean and strong connection in the final wrapping and knot

Photos courtesy Outrigger Rio Clube (Brazil) - http://www.outrigger.com.br/

Rigging

Vernon Racing Canoe Club

All paddlers should know how to rig a boat. If you get to practice and find your boat has loose rigging, you should take the initiative to re-rig the loose section.

Among some clubs there is only "one way" to properly rig a canoe. However, in looking over the rigging on the boats at major races like the Queen Liliuokalani race in Kona or the Molokai Hoe, it's clear that the folks from Maui rig differently than the folks from Oahu, and the rigs from New Zealand crews are radically different from the Hawaii crews. Even the North Shore Oahu clubs rig differently from the South Shore clubs.

So, pragmatically, an acceptable rig on a canoe is one that holds the parts together in "moderate" ocean chop. Or put another way, "If it doesn't fall off, it's fine."

In our club, Nancy Schneider's way is best.

That's not to say one technique isn't better than another. Those paddlers and coaches who have years of experience have developed lacing systems that can stand up to very rough ocean conditions.

When boats are being rigged, come and watch and learn. Then the next time, try it yourself.

The Legend of Mo`ikeha

Kawika Sands

The sailing canoe Kaulua was a magnificent vessel, measuring nearly 100 feet long and her hulls painted red. While leading the fleet of five southward along the coast, there was a sense of forlorn anticipation as the voyagers left their island home for the endless expanse of sea and sky before them.

Having observed the sun's path as it set, the ship's navigator beckoned Mo`ikeha and La`a and asked "Do you see the stars Kaulia and Ka Mole Honua?" "Ae" they answered. "Do you see how the distances between them and the horizon are the same? (each about 6° apart)" "Ae." Measuring an imaginary line upward in the sky with the width of an outstretched hand, Kilokilo continued "When Kaulia crosses there (50°alt. above the horizon) and Ka Mole

Honua crosses there (44°alt. above the horizon), and the navigation star `A`a is nearly over head and sets with Nana Hope, we will be in Kahiki and near Opoa.

In due time, `Olopana, Mo`ikeha and the rest of the voyagers, landed on **Ra`iatea** and forcibly took the District of Moa`ulanuiakea. `Olopana was accepted as king of the district and became a ruler of opulence and distinction. Mo`ikeha, still his chief advisor, built himself a grand residence and temple called Lanikeha (Heavenly Resting Place). It was a great house with posts built of the hard, reddish kauila wood and battens of bird's bones. Mo`ikeha soon became noted for his hospitality and lavish style.

The days and nights in Moa`ulanuiakea were much the same, warm and pleasant. Each day and evening starting and ending like most any other. During this time, Mo`ikeha and Lu`ukia began to spend more and more time together and soon began to fall in love. `Olopana had no ill feeling toward Mo`ikeha, in fact, he approved of the two being attracted to each other. Although she remained a loyal subject, her marriage to `Olopana was, after all, a political one which had long outlived it's usefulness.

There was the usual daily commotion about court as the chiefs vied for `Olopana's favor and even his throne, but `Olopana maintained control with a strong hand. For the next five years, the brothers lived and governed harmoniously together. Until one day, when a meddlesome native chief named **Mua** grew jealous of Mo`ikeha's property, popularity, power and love for Lu`ukia.

Mua had ambitions of replacing Mo`ikeha as lover to Lu`ukia and as the chief in great favor of `Olopana. When his ambitions grew into jealousy, he began to plot. In the weeks that followed, Mua made advances toward Lu`ukia, however, Lu`ukia would have nothing to do with him and discouraged his approaches. "Mahalo for your attention, but my aloha is for Mo`ikeha alone" she said. But Mua was determined to have everything he sought.

While Mua continued to conspire, Mo`ikeha and Lu`ukia lived happily for a long time until one day, Mua found his opportunity during the ali`i games. Mo`ikeha was fond of sports and often played pahe`e (sliding or skipping a wooden dart for distance) and `olohu (rolling a stone wheel for distance). At the fields where **games** were held, people gathered to place bets on the contestants and cheer the winners. Mua slipped away and soon found Lu`ukia in the village as she sat near a calabash of water, composing a song and gazing into her mirror (a flat piece of wood, highly polished and darkened with a vegetable stain and an earthy pigment).

Fully expecting yet another advance on Mua's part, Lu`ukia asked still observing her reflection "Why are you not at the games?" "I was bored and hungry" Mua said as he sat across from Lu`ukia. When he heard the cheering again, Mua asked "Do you hear the cheering at the ali`i games?" Lu`ukia answered "Ae" as she dipped her mirror once again to refresh the image. Mua continued "I don't think the cheering means well for you. I think Mo`ikeha is openly defaming you!" With Lu`ukia's attention finally captured, Mua began to speak of Mo`ikeha's affluent style of living and his popularity among the people and chiefs while suggesting his goal was to become king in `Olopana's place. Mua's plan worked, Lu`ukia believed his lies. Angry and alarmed at last, Lu`ukia stormed back to the house where they slept together. Before Mo`ikeha could return, Lu`ukia had ordered her attendants to bind her up with cord from her waist down to mid-thighs, and the ends of the rope were hidden in the lashing so it couldn't be undone. Then she had her attendants help her with her pa`u (a skirt made of five thicknesses of **kapa** from the waist to the knee).

After Mo`ikeha had enjoyed himself at the games, he returned home to rest and be with Lu`ukia. From the moment he saw her, he knew from her wide-eyed glare that something was wrong. He began to wonder why she was unhappy. "Have I done something wrong?" he pondered. "Perhaps she is mad at something I did not do! But what?" Mo`ikeha decided he would say nothing and bide his time in the hopes that Lu`ukia would tell him.

That night, while preparing to sleep, Mo`ikeha was surprised to find Lu`ukia still wearing her pa`u, which had not been her habit in the past. "She must be mad at me for something, but perhaps she is too mad to talk to me about it." So, Mo`ikeha waited, intending to find out in good time the reason for Lu`ukia's unusual behavior.

Another day and night passed, then another. Meanwhile, Lu`ukia had told `Olopana about the fears and suspicions she now had. Fears and suspicions Mua had planted in her. `Olopana soon couldn't help notice Mo`ikeha's increasing popularity and extravagant style and a coldness developed towards Mo`ikeha from `Olopana.

The next day, `Olopana reprimanded Mo`ikeha for his extravagance and strongly suggested he assume a more modest way of living in keeping with his station. Mo`ikeha, who never had an evil thought toward his brother and was loyal to the end, was deeply hurt and saddened at these words.

On the fourth night, Lu`ukia still wore the pa`u to sleep. Mo`ikeha unfastened the pa`u, and saw the lashing of sennit cord binding her. Mo`ikeha asked "Why are you bound up like this?" But Lu`ukia refused to speak. From evening until midnight, Mo`ikeha urged her to tell him the reason for this lashing, but she remained silent. All through the rest of the night, Mo`ikeha pondered over this change in her. He complained "I don't understand! Here, we were living happily, and now you won't speak to me. What have I done?" There was no answer.....(to be continued)

Comment on the Legend:

In this legend, there is reference to a lashing called the "Pa`u o Lu`ukia" (the Skirt of Lu`ukia), said to be similar to that used in the lashing of water gourds. The finishing steps of the lashing sound to be very similar to the whipping knot used on the ends of ropes to keep them from fraying/unraveling.

This particular lashing is thought to be a very ornate, flatwater lashing made of sennet (coconut husk). It is one of forty lashings once known and one of several reserved STRICTLY for royal use. The "Pa`u o Lu`ukia" was so sacred that to use it without permission, or even view it's tying, was punishable by death.

Ron's Comment: "That said, the personal fishing canoe of King Kamehameha IV hung for many years in the Bishop Museum sporting this very lashing. Dr. Haddon, in his epic work "Canoes of Oceania" describes the legend and the lashing and features both a line drawing of the lashing and a photograph of lashing on the king's canoe."

Equipment

Paddling Expenses and Equipment Costs

Kent Island Outrigger Canoe Club

Equipment

PADDLE: $120-$200

It is best to have everyone in the boat using the same style of blade. As a result we encourage new paddlers to purchase the *Gillespie Standard 10^0*. However, you will notice that not all of the competitive paddlers are using this. We are working towards uniformity, but are not quite there yet.

Single vs. double bend: Some members use a single bend paddle while others use a double bend.

Wood vs. carbon fiber vs. hybrid: Most team members use wooden paddles that weigh from 16-24 ounces. Others use carbon fiber paddles that weigh around 10 ounces. A newer paddle type is a hybrid with wood shaft and carbon fiber blade.

Paddle Width: Most paddle blades are 9-9.5" wide.

To size yourself for a paddle, you need to sit in the position you are in the canoe. Sit on a hard flat surface with your feet bent. Raise one arm straight up into the air and have someone measure from the floor to the first joint at the top of your middle finger. Check out "Measuring for a Paddle" Xylo Bladz <www.xylobladz.com/measurepaddle.htm>. Be certain to ask other paddlers and try a few blades before you purchase one.

Gillespie paddles can be purchased from Pacific Rim Paddle Company <http://www.pacificrimpaddle.com/> (we have their catalog, just ask) or directly from Brad Gillespie <http://www.gillespiepaddles.com/>. He sells some used and discounted paddles.

STEERING BLADE: $120-$200

All paddlers will be asked to learn to steer the canoe. If you are assigned to steer on a regular basis, please purchase a steering blade.

HYDRATION SYSTEM: $20-$100

We paddle long distances. As a result hydration is a critical aspect of this sport. A break in your stride to hydrate is a disruption to the entire boat. It is just as important that you learn to take fluids while paddling as it is to learn the proper stroke. Please use your hydration system during practice. Loose water bottles sliding around the bottom of the boat are unacceptable.

Other Expenses

RACE FEES: $25-$50 PER EVENT

Currently, all race fees are the responsibility of the individual paddlers. Obviously, the total will be consistent with the number of races you enter. All race fees must be paid in sufficient time for our officers to submit the entry by the required date. Officers are not responsible for paying the total fee and collecting after the application is submitted.

TRAVEL & LODGING: $AS REQUIRED

We usually share hotel rooms to help defray the cost. Paddlers need to make the arrangements necessary to arrive in sufficient time for a race.

ENERGY FOODS: $AS REQUIRED

Gu and Power Gel, Power, Luna, and Cliff bars, Cytomax, Mannatech, and others. These foods are important on distance paddles to help you recharge and "stay in the boat." Most bars and gels cost a dollar each, although the cost goes down when purchased in quantity. Talk to experienced paddlers to get a better idea what works.

VACATION/ANNUAL LEAVE

Take the day off before the race!

There is more than just racing that needs to be done.

The boat needs to arrive the afternoon before, to be unloaded from the trailers, and rigged. One car will be asked to follow the trailer to each race venue and back. This helps with (a) lane changing and (b) flat tires.

It is wise to tape in your gels (Gu, Power Gel) the night before. Dew makes it difficult to do this in the morning.

If we are renting a boat to another team, we need to help them to ensure that (a) they will rent from us again and (b) our boat is rigged and handled appropriately.

We also need everyone after the race to unrig and load the canoes on the trailer.

Double Canoes

Kawika Sands

Some time ago, I helped create the first outrigger camp for kids on the East Coast (it was a GREAT month-long experience especially when you consider we had an entire island to ourselves!). The only catch was we had to get from the mainland to our island, about 3 miles away, on our own twice a week. Not just with kids, who had never even seen a canoe (let alone paddled one), but with the weekly supplies we needed. The answer was to lash our two canoes into one double-hulled canoe. This rigging allowed us to pack literally EVERY cubic inch of hull space with supplies, equipment and people INCLUDING atop the iako. You might expect this would almost swamp the craft but the draft of the hulls was negligible. The iako were not overly stressed because the primary function of iako is simply to keep the hulls upright. The weight of passengers and cargo was supported by hull displacement. The craft was perfectly stable and the maneuverability was not so different than that of a single hulled outrigger.

For new clubs, training can be done with a single OC-6 and if you have a little more money, a coach can "hitch" a ride on an OC-1 placed between the iako and the ama and hull (of course he could sit just behind the steersman, though this could make for an unstable ride or on/near the wae though this could be uncomfortable). With a few more dollars (and members), get a second OC-6. There is no real need for specialized strait iako (though this would be preferable especially if training on slightly rougher water). The double-hulled rigging is extremely stable and is the best configuration for training (especially for unifying paddling styles and training steersmen).

The Hulls

The double hulled configuration is absolutely ideal for training purposes especially where novices are concerned. Do they need to be identical? Not really, though this would be ideal. No real "toeing-in" is necessary with different hull designs. On the other hand, if you want to see how compatible they are, you need a patch of glassy water. Have everyone take a few strokes and gunnel the paddles. If the canoe continues on a strait course, it's fine.

The Iakos

Again, specialized strait iako are preferred (particularly in anything but very flat water). These are iako with essentially the same construction as iako used for single hulled configuration, but they are laminated giving greater strength. If these are not available, you could use four 2"x4" pieces of wood (two forward, two aft like I did) or two 4"x4" pieces of wood. The wood should be clean, that is, absolutely NO knots. Knots may be harder than the surrounding wood, but it is actually a weak point!

Iako Length

The length of the iako depends on you. I find allowing for enough room between the hulls for a paddler to do to paddle is enough. For me, that is about 4 feet overall iako length (about 1 foot over each hull and about two feet between the hulls).

Distance Between Hulls

It has been suggested in the past that greater distance between the hulls gives greater stability. Though this is true, I find it is unnecessary to have iako that are more than 4-5 feet in length. The reason is the double-hulled configuration is so inherently stable. I have taken a double-hulled canoe out onto open ocean (about sea-state 3) using 2"x4"s with no problem.

It has also been suggested that more distance between the hulls helps to prevent a luma'i (capsize). This may also be true, though I suggest if you are out in seas heavy enough to capsize a double-hulled outrigger you shouldn't be out there in a double canoe in the first place! Be that as it may, should the double-hull capsize, it would be easier to right a double-hull that is lashed closer together rather than farther apart.

Then there is the practical reason for lashing the hulls closer together. When training new paddlers with their strokes, an experienced paddler can easily show technique up-close-and- personal, even reaching across to position the novices paddle if necessary. If it's time to reshuffle the paddlers into different seats, having the hulls closer together makes this much easier too. Teaching new steersmen is also much easier for the same reasons stated above. The only time I can think where spacing the hulls farther apart is an advantage, is when demonstrating water changes or having both hulls paddle on the inside.

Lashing

Start with your standard lashing at each wae. If you have the specialized iako I mentioned above, you're done. If you are using the wood dimensions mentioned above, I would also use a "round-lashing." This is basically a lashing that ties the two pieces of wood to each other (assuming that's the route you choose). There are several styles of this kind of round lashing and when I get around to drawing a diagram and mailing it to Danno, we'll have it posted for you. The reason for a round lashing is precautionary. It helps distribute the stress/tourqe the iako may have to endure. It incidentally, not only keeps the "pieces" and hulls together in the unlikely event the iako should break, but if someone needs to walk across them it keeps the surface from being slippery.

Handling and Maneuverability

Handling a double in slightly rolling seas is fairly easy. Taking a swell from the front/back or port/starboard is a piece of cake since the canoe is experiences no unusual stresses. It's taking a swell from the corners that can be worrisome. As a swell passes, the hulls do not naturally move in unison. There is a kind of torquing/twisting that happens (however slight. The danger is not just to the iako, but to the lash- points of the hulls themselves at the wae. Prudence dictates that the steersman/men should be aware of this at all times!

Maneuverability is also fairly easy. One steersman is all that is needed though is some odd situations it is conceivable that two could be better. If paddling and steering alone in the left #6, you notice that you take more steering strokes on the right. This is because there is more drag on the right hull so a stroke on the left will swing you right faster. Steering is like wise effected. A deeper/longer poke on the right will have a more profound effect than on the left.

Righting a Double-Hull

In the highly unlikely event a double should capsize, the crew should line-up on the outside of one hull. Then simultaneously, mount the hull and force it under the other while reaching for the far gunnel (be sure everyone stays on the outside of the hulls, not between). When the canoe is righted, you can start bailing.

Crew Stuff

Recreational Paddling Addendum

Kihei Canoe Club

1. The ama should be rigged high to cause the canoe to lean towards the ama. This is achieved by the insertion of blocks under the iako.

2. An unusually heavy crew causes the canoe to sit lower in the water and causes the ama to sit higher. The crew should be advised to take extra care in these circumstances to lean to the ama side, to minimize the risk of a huli.

3. The heaviest crew members should be seated in seats 3 and 4; the next heaviest in seats 2 and 5; and, the lightest crew members should be seated in seats 1 and 6. This keeps the canoe (bow and stern) responsive to larger waves and minimizes the taking on of water particularly when the bow does not respond quickly.

4. The trip plan should travel in such a direction that the return leg presents the wind at the paddlers' backs.

5. Never ever paddle the canoe in shallow water near the 'break' except for departing or returning to the beach - a time when canoe is kept perpendicular to the beach.

6. The steerer is always in command - his crew should never take instructions from anyone else - on shore, in another boat, etc. If a Beach Captain must give instructions - they are to be assessed and dealt with by the steerer, only.

7. Never call for all paddlers to paddle on the right.

8. Never intentionally cause the canoe to huli - it is not worth the risk of injury that can occur.

9. Whales must not be approached closer than 6 canoe lengths (100 yards). Should a whale swim closer to the canoe than 100 yards, all paddling is to cease until the whale moves beyond 100 yards.

10. Never go out (or get caught out) during the hours of darkness.

Time Requirements

Waikiki Yacht Club Canoe Team

Paddling in a competitive club is a commitment of time, money and effort. The biggest obstacle and most-often the major barrier to participation in a club is the commitment of time.

As a paddler, you will be expected to show up and participate at all practices (at least three times a week), as well as showing up for races, and occasionally for a club "work day" to fix boats or clean up the club site. That's at least four and possibly five times a week.

Coaches and club officers, of course, invest much more time preparing paperwork, organizing club activities, representing the club to the canoe associations, and making sure all the equipment is ready for practice.

It is understood that all paddlers are amateur athletes and all of us have jobs and family commitments that must be given due consideration. In the final analysis, however, it will be those who have invested the time and effort to become good and dependable paddlers who will be chosen to fill racing crews.

Paddling with Yacht Club can be a rewarding social and personal experience, if you are able to invest the time necessary to make your participation worthwhile.

If, however, you cannot make the commitment in time to this sport, you should not be disappointed when those who do invest the time advance in both skill and crew placement.

Crew Chant

Kent Island Outrigger Canoe Club

Every race is an occasion for the celebration of team spirit, the challenge of competition, the test of determination, and the solidarity of club pride.

'E kahi, 'e lua, 'e kolu... imua lokah!!

"One, two, three... onward together!"

'Ohana o ke kai!

"Family of the sea"

(KIOCC's spirit cheer).

Two Pule For You

Kawika Sands

Back in Mid-January, Blake Conant asked me if I had "a little pule to share" for the ECORA meeting in Maryland. "Something thankful to Akua (God) and in sync with the paddling community." I responded immediately with these:

FIRST, give thanks to Akua. The prayer to Akua is to acknowledge that he is the one true God (remember? "Thou shalt have no other gods before me"?). By giving thanks and acknowledging Akua first, you are saying that you love Akua, and that what you do next is only to acknowledge Hawaiian tradition.

THEN, you may do an oli to the four main Hawaiian gods: Ku, the god of war and the male generating power; Kane the god of sunlight, fresh water, and natural life; Lono, the god of peace, fertility, winds, rain and sports; and Kanaloa the god of the ocean. Please note, that technically, Hawaiian tradition calls for a pule to be given before every voyage. No matter how short. Also, it is said that Kanaloa was originally evil and that he was later given positive attributes. Some might say he STILL has a mean streak! That said, I now share these pule with my aloha:

This pule I offered in my email regarding the January outrigger tragedy:

KA PULE NO MALUMALU

Ka malamalama o ke Akua e ho`opuni mai ia kakou,

(The light of God surrounds us,)

Ke aloha o ke Akua e kipuni mai ia kakou,

(The love of God enfolds us,)

Ka mana o ke Akua e ho`opakele mai ia kakou,

(The power of God protects us,

Ke alo o ke Akua e malama mai ia kakou,

(The presence of God watches over us,)

Ma kahi a kakou, e hele aku ai he Akua no.

(Wherever we are, God is.)

Amene.

(Amen.)

This is the same oli I did at the SECOND annual Liberty Challenge:

KA HOLO ANA

O Ku ke kupuna o ka wa`a,

(O Ku the ancestor of the canoe,)

E ae mai i ka mahalo o kakou.

(Accept our grattitude.)

O Kane o ke ao holo`oko`a,

(O Kane of the universe,)

E ho`omakaukau i na hoku iloko o ka lani.

(Prepare the stars in the heavens.)

E Lono o na ao e ho`alaneo ka lani,

(O Lono of the clouds,)

E ho`akaka na hoku alaka`i.

(Clear the heavens.)

Moakaka na hoku alaka`i

(Make clear the guiding stars)

E Kanaloa o ke kai.

(O Kanaloa of the sea.)

Top Tens

Kent Island Outrigger Canoe Club

Top Ten Things We Don't Want to Hear in the Canoes

Am I the only one paddling here?

Your timing sucks!

Is anyone steering this thing?

Who invited him/her?

Reach this!

Where are we going?

Who cut the cheese?

Who threw out the anchor?

I'm tired of hauling your ass!

What's the ama doing over our heads?

Top Ten Signs You Know You're in Trouble

Paddler #5 is slumped over his seat, passed out.

Paddler #3 looks like she's stirring cream in her coffee.

Everyone is leaning left and wearing life jackets.

Your life jacket has a ten-pound weight attached.

The DNR inspects your new beach and the Army Corps of Engineers shuts your launch ramp down.

You pull into the parking lot and count six cars and see no canoe.

You're on Rt-50 and people are playing Frisbee on the median.

The stroker (or steersman) is blowing chunks.

The Coast Guard is yelling, "You WILL put your life jackets on!"

Moloka'i Hoe weather report: "Hot & Flat!"

Tips

Vernon Racing Canoe Club

Tips for Veterans

Paddling with a beginner may renew your enthusiasm

ENCOURAGE: Likely one dozen people that you know, would like to give paddling a try but have no idea how to begin. They will not likely approach you, for fear of slowing you down. Invite them for a paddle - do a shorter, slower workout.

HOLD BACK: Beginners may need to go slowly at first. Building a base of fitness requires 4-8 weeks. Many beginners increase distance or speed too quickly or paddle too many days/week, resulting in aches, pains, loss of motivation, and longer recoveries.

Don't push the stroke rate with beginners. Technique must come first.

TAKE BREAKS: Incorporate breaks into your paddle with a novice.

Tips for Beginners

JUST ASK: Don't feel intimidated or uncomfortable asking questions of veterans. We were all beginners. Veterans love to answer questions about paddling and once started, you may find they are sometimes hard to stop.

WAIT UNTIL YOU ARE READY: If you haven't paddled before, do not try to keep up with a veteran's pace and distance. If you are out with a veteran crew, don't kill yourself - take a break for a couple of changes even if the crew keeps going. Catch your breath and have a drink.

DON'T GET CAUGHT UP IN THE STROKE RATE: This can take away from your enjoyment of learning the technique. Focus on technique, consistency and smoothness.

The Rules

Canoe Use Policy

Kihei Canoe Club

1. The Club Board of Directors determines the official paddling schedule. The practice portion of this approved paddling schedule is published on the Club's internet site (www.kiheicanoeclub.com), printed in the Club newsletter, and it is routinely written on the chalkboard at the Club site.

2. The Club Board will consider, and if fitting approve, requests for extraordinary paddling sessions for events, etc. But, every paddling session must be formally approved by the Board, before a canoe takes to the ocean.

3. Every recreational paddling activity requires at minimum - 2 canoe crews and 2 trained steerers.

4. Any steerer who takes a canoe onto the ocean at time other than a time approved by the Board, will be held personally responsible and risk disciplinary action by the Board.

Sea Safety

Safety

Waikiki Yacht Club Canoe Team

First and foremost rule of the club is to paddle safely - fully conscious of ocean conditions and the experience levels and physical capabilities of our paddlers.

If there is any doubt about equipment conditions, ocean conditions, or paddler skills, do not take chances. Stay inside the harbor.

The Sea State Code

Kawika Sands

Contrary to what you may think, the Sea State Code has nothing to do with law (concerted sigh of relief ensues!). It is actually a recognized classification of sea conditions. Here, I have inserted the corresponding Hawaiian terms and definitions along with what I think are reasonable qualifications for those conditions.

It may be interesting to see if, at some future time, something like this is used in establishing a system of ranking steersmen and crews. Perhaps even matching them with the prevailing conditions at practice (and perhaps races?). Otherwise, I thought some may find it interesting.

NOTE: The sea conditions listed here are a comparison of the sea states with its' Hawaiian equivalent and a suggested level of Steersman competency.

FEET DESCRIPTION

Beginning Steersman:

#0 0ft. Flat seas, like a mirror -Kai malolo: Quiet sea, as in a calm cove

#1 0-0.3 Smooth seas; ripples, no foam -Kai olohia: Calm tranquil sea [lit] peace of mind

Novice Steersman:

#2 0.3-1.7 Slight seas; small wavelets -Kai wahine: Calm, gentle seas [lit] feminine sea

Intermediate Steersmen:

#3 1.7-4 Moderate seas; large wavelets, crests begin breaking -Kai kane: Strong seas [lit] male sea

Advanced Steersmen:

#4 4-8 Rough seas; moderate waves, many crests break, white caps -Kai `upoho: Breakers, whitecaps [lit] resounding sea

Expert Steersmen:

#5 8-13 Very rough seas, waves heap up, forming foam streaks -Kai ma `oki`oki: [lit] streaked sea, ref. to Kona seas

Master Steersman:

#6 13-20 High seas, definite foam streaks and considerable spray -Kai pili `oaiku: A churning, gasping sea

TOO DANGEROUS FOR OC-6!

#7 20-30 Very high seas,steep waves,wind-driven overhanging crests -Kai pupule: Crazy, restless, wild, agitated sea

#8 30-45 Mountainous seas; very high breaking waves, foam-covered -Kai mauna: Mountainous sea

#9 45+ Very mountainous seas; air filled with spray, foam-covered -Kai akua: Raging sea too dangerous for man to survive [lit] supernatural sea

2 Boat Policy

(KCC, PD)

Safety in Numbers

Kihei Canoe Club

1. Without exception, a minimum of two canoes head out for a paddle.

2. The two (or more) canoes are to keep together within a half a mile or less, remaining in close proximity, to be able to provide assistance to the other, if required.

3. If a huli occurs, the other canoe(s) should converge to provide whatever assistance is required. And, at least one canoe should standby until recovery is fully completed.

4. The 'stand-by canoe crew' does just that - it is up to the huli boat crew to right the vessel and to bail it free of water.

Open Water

(ORPC, PD)

Destination Open Water

(Ocean River Paddling Club)

Open Water Use of Club Small Boats

The following guidelines are for use when club members transport club solo or double boats away from Ocean River Paddling Club for non-race activities.

A club member will be able to sign out a boat only once they have gone through an open water orientation with Brian. This will cover transportation of the boats, safety lecture and trip planning.

Only club members in good standing can take boats away from Ocean River.

There is a $10 fee for taking club solo or double boats away from Ocean River. This covers single day rental (from early morning until that night). This fee would include a paddle and PFD if needed.

Club members can only use this privilege one time each month.

A rental form must be filled out and signed before taking a boat.

Contact Brian at Ocean River Sports to confirm your boat.

Members are solely responsible for the craft that they sign out. This includes the safe transportation of the equipment as well as safe and careful use of the boat and equipment. The member is responsible for the costs of any damage that occurs to the equipment while it is in their care.

The club member is responsible to examine and determine if the boat is suitable and in good condition. They should not take the boat if it is not in appropriate condition.

It is understood that the Club Member:

• Is familiar with the area and waters they are paddling in.

• Files a float plan with a friend or with Ocean River Sports.

• Has adequate skills to handle the conditions they are likely to encounter.

• Will not paddle alone in open water conditions, we recommend a buddy system.

• Will dress appropriately for the conditions.

• Will wear their PFD in open water conditions.

• Uses a boat leash.

• Carries a set of flares within the group and knows how to use them.

• Carries a spare paddle within the group.

• Carries any other specific safety equipment necessary for the type of trip they will be on, i.e. compass if fog is likely.

• VHF if it is in a remote and dangerous area.

• Accepts the risks involved in open water paddling.

Paddling in the Dark

(Ocean River Paddling Club)

All boats must have lights on from dusk to dawn. This is the law. If you go out just before dusk make sure you have a light so that you can be seen when you come back to the dock when it is dark.

Small boats (OC-2's, OC-1's, K-1's, surf skis, marathon canoe) require paddlers to bring their own lights. Ideally you will want to attach a light that is visible for 360 degrees or have two lights fore and aft. Otherwise, a clearly visible light clipped onto a cap, an armband, the aiko or boat deck will suffice. These lights are not for you to see with but rather for you to be seen by other boaters.

When paddling in the dark with a light on it is still prudent to steer clear of all other boat traffic. Our boats sit low in the water and our lights blend in very easily with the background city lights. Even with our lights on there are times when we cannot be seen clearly.

Exercise caution at all times when paddling in the dark.

OC-6's: All three OC-6's have solar powered lights fore and aft.

The lights are triggered to turn on at dusk and off at dawn. Please check to see that they are working. If there is a problem, take an additional light with you. Report the problem to Brian at Ocean River Sports.

Lights in the dark are critical. Members' privileges may be revoked if the light policy is not followed.

Windy Day Warning

(Ocean River Paddling Club)

If you are planning on paddling in the wind and waves in the outer harbour or past the breakwater on stormy/blustery days, **call the** marine rescue co-ordination centre at 363-2994, to let them know where you will be paddling.

Be prepared for the weather conditions: dress appropriately; take a spare paddle, extra clothes, flares, bailers, tow-line and a boat leash (small boats); tell someone on shore where you are going and approximately what time you plan to be back.

Rules of the Road (intended primarily, to avoid a collision at sea)

Kihei Canoe Club

1. A swimmer or less maneuverable vessel has the right of way - YOU GIVE WAY

2. A vessel being overtaken, has the right of way - YOU GIVE WAY

3. A vessel on your right, has the right of way - YOU GIVE WAY

4. A vessel not under command, has the right of way - YOU GIVE WAY (aground, without ability to manoeuver, tied to a mooring buoy)

5. During darkness - ensure the ability to show an all-round white light.

6. On entering a harbor, leave the red buoys to the right (green buoys to the left)

NB. A collision during the launching or the beaching of a canoe is inexcusable

Stay Alert

Vernon Racing Canoe Club

The waters on the lake by Paddle Wheel Park are particularly crowded, be mindful of power boats, sail boats, water skiers, and swimmers. There are a number of points that all members of a crew should remember:

When you're on the lake, WATCH FOR OTHER BOATS! Be ready to change direction suddenly and always be ready to hold water hard.

Watch for boat wash.

Make sure you are familiar and comfortable with the Huli drill. All coaches must demonstrate the Huli drill to the crews.

Boats must not leave the dock without two bailers. Ice cream buckets are not sufficiently rugged to count. Each boat must carry enough life jackets for each paddler. If the water is below 60 deg. F, every paddler must wear a lifejacket.(NO OPTION)

Early season of April and May, stay in the bay, near shore.

OC-1 and OC-2 paddlers must bungie life jackets to their boats when going out.

If the lake is extraordinarily rough, stay in the bay and at least 100 m off shore. Spray skirts should be worn to be really safe in very rough water. The steersperson must gage the experience of the crew and decide on how rough they can handle.

If caught in rough water, bail constantly.

The safety of the boat is EVERYONE'S responsibility. If you are heading into a dangerous situation, your steersman may be distracted or unable to react quickly enough. Other members of the crew must take the initiative to stop or divert the boat.

Coaching

Coaching

Vernon Racing Canoe Club

At VRCC, our commitment is to give every paddler as much coaching as possible and all the coaching they need. This means that some people will get more attention than others.

Remember that it is not necessarily the best paddlers that get all the attention. But whenever a coach is giving advice to one paddler, listen and evaluate whether it may apply to you as well.

Once you understand the basics of technique, timing and seat assignments, a lot of the "coaching" you'll get is in the form of reminders. You may, for example, have a tendency to not twist your body enough when you get tired or aren't concentrating. Your coach may just yell "twist," and you should be alert enough to get the twist back in your stroke.

Sometimes, rather than single out one person, a coach may just tell the crew to "watch your timing." Getting everyone focused on timing is never bad, so just calling timing is enough to bring everyone back into sync.

There are only so many minutes in a practice, and it may seem those that need the attention the most get an inordinate amount of coaching. This does not mean that no one is watching you. This does not mean no one cares whether you succeed or fail. If you have questions about your own performance or are unsure about some aspect of the technique or the overall practice, please ask.

Most coaches hang out after practice to talk one-on-one with individual paddlers. Take advantage of this time, especially if you feel you have not received adequate attention during practice. Chances are you're doing fine, but it never hurts to be reassured.

When should an Advanced Paddler give direction to an Inexperienced Paddler?

Vernon Racing Canoe Club

You bet! When and if they ask, when and if the coach asks you to work with someone, and on the rare occasion that you are out for a paddle without a coach and someone is in obvious need of some help. If you are offering unsolicited advice you are venturing into dangerous ground and should be extra tactful and sensitive in your approach. Comments such as "Can I offer you a tip?" "You are doing great however you could make one change such as _____"

You must be extra careful to not make the paddler feel intimidated, inadequate, persecuted or any other negative sensation. As you can see giving advice is risky business!

OC1s & 2s

OC-1 and OC-2 Usage

Vernon Racing Canoe Club

Please carry all the boats and parts to the grass near the water for rigging. No matter how careful you are in the compound, you will end up scratching the boats on the gravel.

Place the boats so that the rudders hang over the edge of the grass towards the lake. The rudder is the most common thing to be damaged on these boats.

If you find the Nai'a too difficult to carry alone, make sure you use the small cart provided in the shed. Strap the cart near the front of the Iaku mount and wheel the boat like a wheel barrow to the grass.

Please put the cart away while paddling as it may be stolen. Return the cart when you return for the ama.

Watch the rudders while putting the boats in and taking them out of the water. Rudders get damaged when they do not have enough water depth and someone climbs on the boat.

Never put weight on the boats when they are out of the water. They will crack like an egg. They are designed for strength in the water, not shore.

Notify KEN CROMBY of any damage or maintenance required. Accidents happen and if you let Ken know how something got broken, then he can get a notice out to help prevent someone else from having the same problem.

Boat Leashes

(Ocean River Paddling Club)

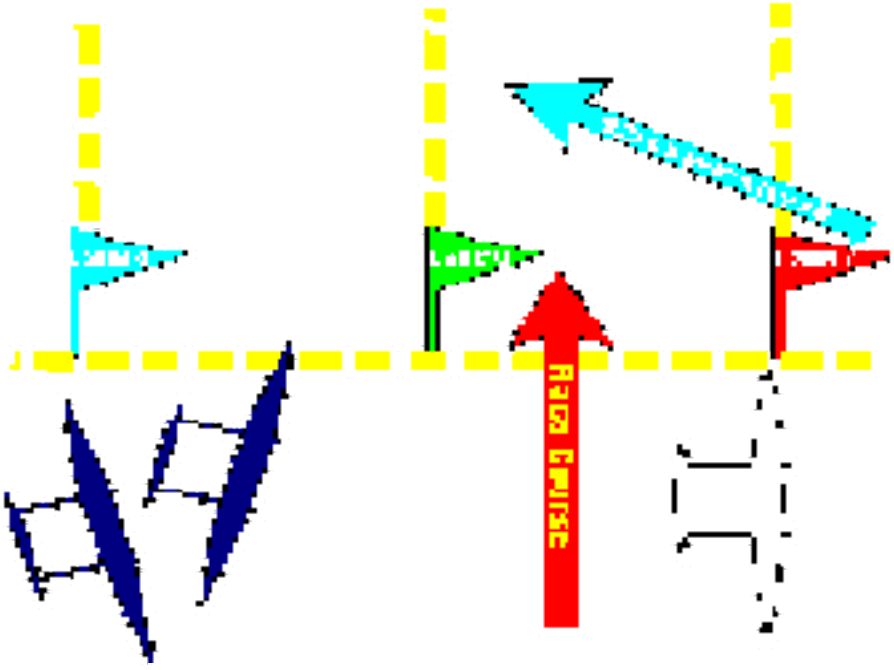
All paddlers of ORPC small boats are required to use a boat leash if paddling past the oil tanks or breakwater. A paddle leash is simply a means to keep the boat with your in case of a capsize. Both commercial and homemade leashes are acceptable. Attach one end of the leash to the boat (perhaps around the forward aiko) and the other end around your ankle.

Please be diligent about boat leashes.

Winning from the START

Jude Turczynski

In OC-1 sprint racing , there is no more important moment than the start and the few seconds that follow. When preparing for your race, get out on the water early. Do your warm up as you check the course for current, wave direction and wind. Practice holding your canoe on the starting line, minutes before they call you up to the line.



If you line up next to the line marker that is on the upwind, up-current, up-wave side of your race lane, you'll be able to more accurately tell where the start line is. This way, you won't bump into the marker/flag if you can't

keep up with the drift. And, as you travel down your course, you won't be wasting as much time, effort and energy ruddering and correcting for drift in your lane. If wind/current has you drifting across the start line, it's best to learn to keep your canoe in place, rather than back paddle several feet behind the line and drift back to the line right at the "Go" signal (this works about once in several tries), hardly worth it.

When waiting on the line, keep an eye on the race starter. You should've been studying this person's habits during the preceding races and so will be able to count down to "Go," just by reading his/her body language. Be absolutely certain, you're in the correct lane before they call you to the line. This will be where lots of people get confused, loose concentration on the process, and loose the race before it begins.

When they call you to the line, stop conversing with the other paddlers. You have a lot of things to worry about when there's a strong wind blowing one way, and current moving another. Don't waste precious faculties arguing with another racer over who's lane you're in. You determined that for yourself earlier.

When you see the "paddles up" signal, keep the edge of your blade close to the water so there will be almost no delay in your catch when the "Go" signal comes.

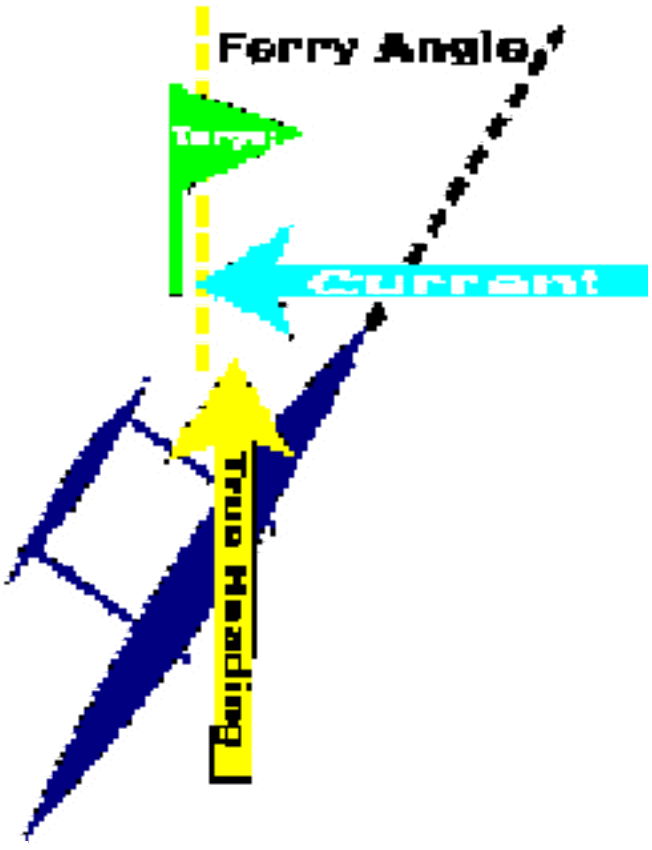
Once the "Go" signal has arrived, your blade should be deep and biting. Each stroke must be both deliberate and quick. Your goal is to get the canoe moving at full speed as quickly as possible. If your opponents have delayed their start by half a second or are slow in getting up to speed, this is your chance to make some distance before you break a sweat. Here, in these first several strokes, skill, luck and alertness may provide you with precious inches that may not otherwise be obtained by training & stamina.

Racing across Currents

Jude Turczynski

In one race or than another, we find ourselves paddling across tidal current or currents of various size, speed and direction. We might be crossing perpendicularly, diagonally with, or diagonally against these currents. In any of these cases, strategy can easily save us lost time and distance.

When we "ferry" across these currents towards our target (turning marker/finish line), we oddly must point our canoe "away" (up-current) from the target in order to travel the "Bee line" between two points (our target and where we are "now"). This pointing of your boat away from your target in order to arrive at your target is called "ferry angle" and is illustrated below.



Click on figure to enlarge.

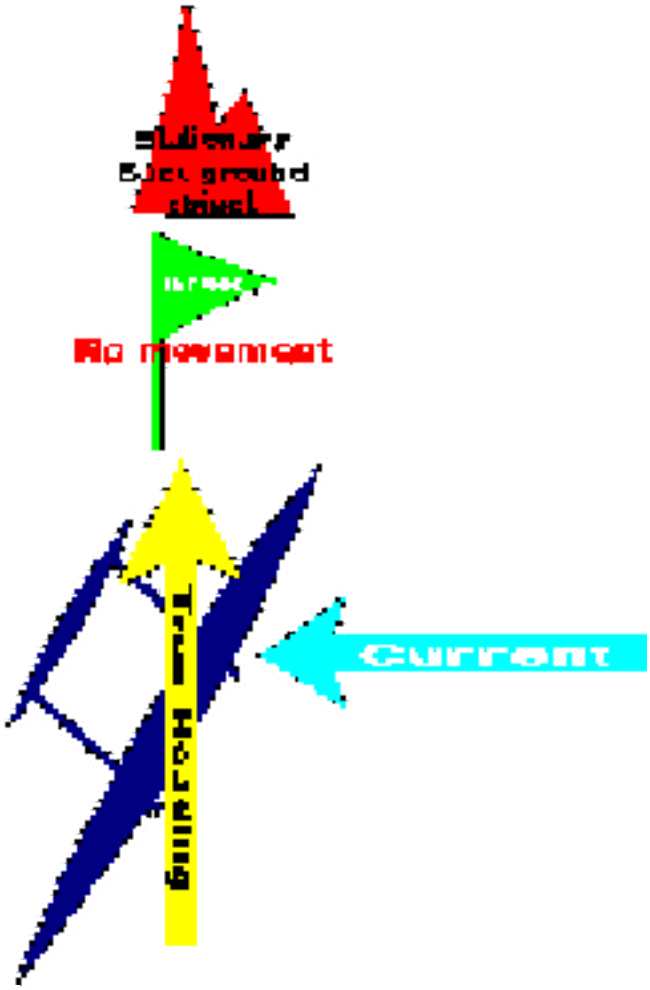
The actual direction in which the canoe is traveling, no matter which direction it's pointed in, is called "True Heading."

Calculating the perfect ferry angle for any situation is a simple task...as long as you have a stationary object in view behind the target. Like, a mountain or an anchored boat, a piling, a bridge, or a coastal formation. Even non-stationary objects will work when there's nothing else, like a slow moving cloud!...Can't use birds, moving cargo ships or other canoes.

For example, you're headed for a buoy that is your turning marker ("Target") and let's say, "the current is coming from the right." You know that you must point your canoe up-current to the right in order to approach your target. Let's also say that there's a mountain in the distance behind your target. Align your target between you and the mountain...and try to keep it there. If your target "appears to move" to the right (towards the current), then you must increase the ferry angle until you've stabilized the position of the target between you and the mountain. See the figure below.

Above, the canoe must point farther to the right in order to slow or stop the "Apparent Movement" of his target towards the current (to the right).

Below, the ferry angle has been adjusted so that the target remains between the canoe and the "stationary background object."



Note: A stationary object "between you and your target" can serve just as well. But in this case, you'll have to think of the stationary object as the "temporary target" and your eventual target as the "temporary stationary object."

Another Note: Do not allow the ferry angle to be "greater than" 45 degrees from your target. If the current is so great that 45 degrees is not enough, you'll be better off ending up slightly down current from your target, paddling directly into the current to get to your target.

When to power up & Using your power wisely

Jude Turczynski

You hear it all the time in races, "On the next change, ...Power up!" And, a grueling race gets even tougher. As you power up, precious resources are being used up at an alarming rate. Your self confidence is tested to it's core. How do you know the right time to power up? Or, is there a right time? You hear some paddlers say, "you should pace yourself so that you're spent by the end of the race and exceeding that pace leaves less energy for the finish." Some say, "speeding up and slowing down is a waste of energy."

There are a number of occasions when "powering up" can provide substantial gains during a race. Most of the time, powering up will get you tired and give you only four or five feet. Since you can't effectively power up more than a hand full of minutes during any hour of racing, you must choose wisely the moments when your investment will recoup the best returns.

The start is your first opportunity. You have a chance to place yourself and/or your crew in a dominant position early on, so that everyone else behind you is almost automatically placed on the defensive. The faster you get your canoe up to full speed, the more distance you'll place between yourself and those who would take your position. And, just think of that person who is just ahead of you (if you aren't leading), who is as stressed as you from the hard start and who thought you were going to be left behind. Your good start [can] shake an opponent's confidence for a moment...but only for a moment. If you're going to win against a person of equal physical ability, you have to out smart them and out skill them.

In the OC-6, watch your opponent's steersperson to see if they're ruddering excessively. If so, you can power up whenever the steers person stops paddling. Often, this can be several strokes in a row. Every time your whole

crew powers up while their crew is powered down, you get great gains for the energy you spend. When the steers person stops paddling, the power drops by 17 percent. When the steersperson "pry's" a rudder against the hull, the power drops by over 20 percent. If the steersperson "Posts" a rudder out away from the hull, power drops by over 22 percent. (And these are conservative figures.) These are the moments when your investment will pay off in high percentages. When your opponent is zigzagging, you can power up to take advantage of their slowed progress as well.

If you're racing into the current/wind to get to a turning marker, the first boat to get around that marker will gain the most distance from the rest of the pack and they'll gain this distance in the period while the next canoe is still bogged down in that wind/current and stuck in the turn. Once you round the marker and are going with wind/current and while your opponent is still moving against wind/current, you can power up here to gain enormous distance against them. Once your opponent rounds the marker and has their boat up to speed with yours, you can drop down power into your hard race pace. It is in this situation that one can gain so much distance that an opponent can not possibly overtake your position. It is not uncommon in most tidal bays and large rivers to gain three to eight boat lengths in this situation. An upwind marker can increase the spread between all boats in a race.

When you see an opponent experiencing discomfort or trouble with their gear, they'll likely be slowing to some degree, and that is your moment to speed up. Sometimes, you can tell that your opponent is in a slow moment where he has lost concentration or is experiencing a momentary lull in energy, again take all advantage of such situations. They may get their second wind just as suddenly.

When rounding a coastal outcropping where you must steer a large arc around an object or a point-break, if you can take an "inside" position while your opponent is paddling farther out in the arc. At this time, you will be traveling a lesser distance that canoe that isn't cutting the curve so close. You can power up here to increase the advantage of your position.

Of course, you can simply pick a random moment to power up, but the difference between your boat speed and your opponent's speed will not be as great as when you carefully pick the right moment. And, you don't want to be spent when that opportunity arrives.

Choosing the right Paddle: Carbon Vs Wood

Jude Turczynski

Some people say, **"Wood paddles flex more, so there is less stress on your joints."** Some say, **"All Hawaiian paddlers choose wood over carbon."** Others say, **"Carbon paddles are too delicate."** Still others say, **"Light paddles are more difficult to control in a strong wind."** Maybe you're beginning to see where this is going.

I've built "dozens" of wooden paddles myself, the lightest of which was a 14 oz wood paddle with a fiberglass skin that lasted through three years of nearly daily use. I've experimented with differently shaped blades, shafts, grips, various woods and composites. I've purchased and paddled with nearly every commercial outrigger paddle made in the world, both carbon and wood.

Firstly, **weight** is an extremely important factor in paddling a fast stroke rate and maintaining that stroke rate over a period of time, sometimes hours. It's obvious, a heavy paddle will slow you down and wear you out. Each time you lift your 22 ounce ultra light wood paddle up out of the water and throw it forward four and a half feet to make the catch, you are expending a huge amount of energy to do it...Let's guess that you're expending about 8 ft/lbs of energy just in this single portion of movement (I believe the actual amount to be closer to 20 ft/lbs). If you take 70 strokes per minute and paddle a two hour race, you've expended 8400 ft/lbs of torque for just the purpose of exit and return to catch. If your paddle weighed half as much at 11 oz, you will expend approximately half as much energy. That's a ton of savings....actually, two tons! **You can "feel" the difference if you switch back and forth between paddles over a two hour workout.** Anyone can notice that they're able to rev their stroke rate much higher when using a carbon paddle. This can come in handy in a sprint for the finish.

Let's discuss the advantages of **"flex" in a paddle.** There are basically two places where flex occurs on a paddle, in the blade and in the shaft. If you cause the blade & shaft to flex as you apply pressure in your "pull," it's like compressing a spring. A spring is an "energy storage device." You take energy from your body and transmit it to the paddle where it is stored until you allow the spring to decompress, at which point the energy is released. So, **you've rerouted and reduced the torque in your most powerful and efficient phase of your stroke, only to release that torque in the exit phase where it's all wasted energy.** Some people can notice a snappier movement of their OC-1 when using a carbon paddle instead of wood.

Also, this flexing blade movement causes an inefficient shape to develop on the pressure side allowing water to slip away and fluctuate the pressure/vacuum ratio between surfaces. This causes the blade to flutter.

When it comes to joint injuries, **I've been injured more than twice when switching FROM my carbon paddle TO a borrowed wooden paddle, and never when returning to the carbon paddle.** I attribute this to a body that was developed under stress of a 9 or 10 oz paddle, and being shocked by a 24 oz paddle. Flex means that you must apply more pressure and have a longer power phase to get an equal amount of energy into the movement of the canoe, as when you have no flex. Am I saying, "You don't have to pull as hard with a carbon paddle."...? No, I'm saying, "Your pull phase doesn't have to be as long to be more powerful."

Many racing associations around the Outrigger world require paddles to be all wood, or mostly wood and this explains preferential use of wood in these locations. **In some racing associations, canoe paddles of any material are permitted, and you will find the common preference to be carbon.**

Most carbon paddles will last four to ten seasons, depending on use and abuse, where the best I could expect from wood was three to five years. A sharp slap of a wooden paddle shaft against a hard object will usually only dent the shaft, but such a sharp strike against a carbon shaft can crack it and render it useless.

Lastly, a heavy paddle will have so much inertia that wind will have little effect on it's movement in the return to the catch, where a very light paddle responds to every vortex of air. You simply learn to handle either paddle and after several sessions, you've forgotten all about it no matter which paddle you're using. If you have a choice between wood and carbon, it's got to be a fine carbon paddle in the end. A super fine wood/carbon hybrid at the least.

Choosing the right rudder for the race

Jude Turczynski

Every builder generally has one rudder available for their canoes...and that's it. Just how important is the shape and size of your rudder to the final performance of your boat?

Technique Page and Training tips

How to "Fly the Ama"

Jude Turczynski

Developed years ago by the top paddlers in Hawaii, "Flying the Ama" has become the standard Outrigger version of Surfing's "Hang Ten." These days, many "placing" racers everywhere fly the ama when crossing the finish line. During races and workouts, it's fun and exciting to catch a wave and ride it without taking a stroke for many yards, all the while flying that ama high as you can...bracing ever so lightly on your paddle as it skims over the water. It's a balancing act of confidence verses wet hair. My belief and hope is that this is the first of many tricks to come from the adventurous pioneers of Outrigger sport.

Learning to fly the ama is fun, simple and wet. Technique is based on the standard paddle "Brace" used by Surfskiers, Kayakers and marathon canoeists alike. Only here, we use much more control to keep the canoe in balance without placing too much pressure on the dragging blade.

Body & paddle position are important to learning quickly and with "fewer" dunks into the drink. When bracing, sit in the normal paddling position and grip the paddle exactly as you would when paddling on the right side. Place the blade behind your seat, with the paddle's front face "down" and just above the water. Rest your left fist against your thigh, near your knee. (Later, you'll learn to rest the shaft against your thigh, and let go of the top-grip!) Keep the blade "out" away from the canoe, so you'll have leverage against your falling

weight. And, tilt the leading edge of the blade up higher than the trailing edge so it will "skim" the surface instead of "dive" under and pull you over.

Click on picture to see details on body/paddle position

I hope you realize, "the canoe has to be moving in order to fly the ama or effectively brace against your paddle." If you're not moving, you'll go, "plop!" And, it's best to learn on glassy water rather than waves, for obvious reasons.

Now that you've got the whole position thing down, it's time to get the ama up, off the water. First, get the canoe up to full speed. Then, assume the "Brace" position. And, now slowly begin pressuring your right hip down, or just lean to the right. As the canoe just begins to "huli" (go over), brace on your paddle to prevent it. Repeat this over and over until you become confident in your brace. As you become more confident, watch to see how high you can fly the ama, and how long you can keep it up. Now as your skill develops, try to lean less on your brace. Balance the canoe, so that your paddle is barely touching the water, causing very little splash as your blade gently skims the surface.

By now, you'll have made lots of use of your canoe leash and will be plenty quick at climbing back on from the right. You may need a couple hours of practice, just to stay up for several seconds. It's like learning to ride a bike. Once you learn, you'll never forget. As you become more proficient, try bracing on a moment's notice. Learn to switch to a bracing position quickly from paddling on the left. So that now, after days of practice, you're ready to try it on some waves.

So, now you're able to fly it [ama] in pretty rough water...eh? It's time to learn three new variations of the same trick.

The first of the more difficult tricks is **bracing "one handed."** Here, you place the top end of the paddle shaft or handle on your thigh...and let go with the left hand. Keep a steady grip with the right hand keeping pressure on the shaft, so that it doesn't move from your thigh. This takes about no time to learn and it comes in handy when you "throw a shaka" at the same time you fly across the line.

The next and far more difficult trick is **bracing "on the left"** (ama side). Here, your body and paddle positions are exactly opposite what they normally would be. But, balance is far more critical here. This trick will take hours to learn. It's easier to do if you get the whole paddle and body as low to the water as possible and place the blade as close to the ama as you can.

The last and most difficult ama flying trick is **"paddling as you fly"** (right side). Here, it's best to own a wide canoe with a low seat. This will take weeks to learn. And, I can only fly the ama for about 7 strokes MAX (before I huli). It requires bracing during the "catch" and "pull" portion of the stroke. Then, a balancing act during the return, always ready to brace if you start to fall over.

Offshore Surfing in an OC-1

Offshore Surfing is difficult to learn because of the endless stream of situations that one can find at sea. We'll cover several of the more common situations that can be approached with the greatest yield and gain for the paddler.

First, **we'll be talking about wind chop**, the kind you find in 15-30 mph wind. There may or may not be a larger/faster swell running through or a current affecting the peaks and frequency, but in this case it doesn't matter here. Our concern here is the slower moving **2-5 foot waves** (around 1 meter) that are traveling at a speed (**8-15 mph**) that we can catch and ride by powering up at the right time.

Catching a wave that is moving faster than your canoe requires **power, a sudden burst that can accelerate the canoe** beyond a speed that is fast enough to allow the canoe to catch and stick to the face of the wave. This line in speed between catching and not catching is called "catch." There are tricks to lower that threshold speed for any particular canoe on any particular wave.

Choosing the right time to accelerate is not an easy choice to make, when you're trying to conserve energy. From your prospective in the cockpit, you can **watch the rise and fall of the waterline at the stem of the bow.** As the waterline drops away from the bow, the wave is passing under your mid ship, which is not a good time to begin the power up. At this point, you should've been powered for a few strokes already. Wait for the waterline to start raising up the side of the hull towards the high spot of the stem, You can predict just how high it will go because you've been watching all along. As the waterline peaks out, you should've taken your first full thrust stroke. You can take that stroke a few seconds early, so that you won't be late, as long as you can afford to spend the energy with limited return in acceleration. You can also time your acceleration later, if you can get your canoe up to speed in just two or three strokes. Continue to hammer full-on until the canoe catches and you're skidding downhill, or until the crest passes under you and the nose starts to come out of the water again. Never give up if you think you can squeeze a little more out of it.

The most common method for lowering that catch speed is by **tilting your upper torso and head forward as you sense the wave lifting the tail of your canoe up.** This puts you in an awkward position for applying "top-end" power, but it can be done for a few strokes without hurting your output. This drops the nose down and creates the down hill surfing position of the canoe at the earliest possible moment. Another commonly used trick for those with a sliding track seat, is to **scoot forward a few inches** to achieve the same "nose-down" positioning of the canoe. This method of forcing the nose down is called, "goosing" the nose down into a trough. **Sometimes, the difference between catching and not catching a wave depends on this ability to "goose" the nose early.**

If the wave is big enough and moving at the right speed, you'll power up and catch. Coming down the face is a good time to see if you can stop paddling, catch your breath and relax your muscles. You can **reduce hull drag as you skid down the wave by "not leaning on the ama."** Place your paddle shaft on your right lap to do a basic right side brace and lean right just enough to let the ama skim lightly on the water, always ready to brace if you go too far.

If you fly the ama at this point, you'll increase the lift at the front of the canoe, preventing the bow from pearling early. The side of the hull near the nose is cross-sectionally flat and highly rockered. When this wide flat surface is tilted over, it has the effect of a wide bow, like a surfboard that keeps the front of the canoe skimming on the surface. This is the place to be and the thing to do. By rolling your canoe onto it's side, you're changing the dynamic shape and configuration of your craft in order to manage energy...It's friggen awesome!

Once you've slid down the face, **you may find yourself pearling into the backside of the wave ahead of you. Try to lean back at this point**, and get the weight off of the bow to prevent washing over the fore deck, which will slow the canoe so much that you might loose the wave. If you think you can overtake the wave ahead of you**...Go for it! You might have enough speed to jump the bump and grab another face.** If you don't think that you can overtake the wave in front of you, stay in the trough and watch for it to open left or right and slightly ahead of your current position. You can then jog a couple feet to one side in order to get slightly ahead in a new trough and place yourself on another wave to start the process all over again. **It's not unusual to hit speeds of 20 to 25 mph in great surfing conditions.**

The Craft:

Then there's the equipment. **Power to weight ratio is the single most important factor in surfing**, more important than hull shape and size. There's nothing like a light canoe that you can get up to speed in just a couple strokes. Grass-shedding/**swept-back rudders don't work well**

for surfing steep chop. You must have an adequately **large rudder, preferably"high aspect ratio" (straight down) and around 9-10 inches long** and 4-4.5 inches wide with a "high coring ratio foil" of about 12.5%. Most rudders are too thin and flat to have appropriate lift and will stall in rough surfing situations, especially at slower speeds.

Weight:

The sum of your weight and your canoe's weight will be one of the three biggest factors in your ability to catch a wave. The lighter your canoe and paddler as a whole, the easier it will be to catch a wave, no matter what your strength, no matter which hull design. You'll be more able to get the canoe up to full speed from only a couple strokes instead of several.

Torque:

Your physical **ability to cause a canoe to jump up to full speed with only two or three strokes** is crucial. If it takes four, five or six strokes, you'll miss the bulk of surfable waves. Torque is sheer power, not endurance. It is produced by a properly planted blade and a lot of force in a single pull.

Power to Weight ratio:

The combination of your Torque and the total weight that your pulling are the "Power to Weight ratio." The greater the amount of power and the lesser the weight, the better your surfing will be. **Increasing the ratio should be your constant effort** during training and assembling equipment. Weight lifting of the sort that will increase your pulling strength and boat time are two prime ways to increase power. "Purchasing power" will solve part of your weight problem, by buying light canoes, paddles, clothing and other gear you can reduce the weight end of the ratio. Personal **body weight is where most people can gain the greatest reduction in the weight side of the ratio.** Eating minimal meals that provide just enough calories and fats to sustain your physical development. For those of us who are only 10 or 15 pounds over prime fighter's weight, that's more than you can save by buying the lightest canoe on earth. **Every single pound will make a significant, detectable difference.** Every ounce of torque will also change everything for the better.

Safety Ideas

Jude Turczynski

Packing for safety:

Perhaps more important than a life jacket, is a quality canoe leash and a whistle.

In colder waters, if your canoe/surfski is blown one inch beyond your reach, you could die within an hour while wearing your life jacket. There are a few stories "floating around" Northern California concerning canoes blown from paddlers forgotten behind the pack during workouts. Luckily, all of the stories have happy endings.

Sky flares and orange smoke are very cheap, light weight and water proof. You can buy these kinds of items at most boating stores. They can be contained within a fanny pack along with a tow rope. None of these things will do any good if they're bungeed to the boat, and that boat gets away from you.


When selecting a canoe leash, you want one with a quick release system or Velcro where the leash attaches to you. The leash can attach to your ankle, upper calf, waist or where ever...excluding your neck. The other end of the leash can attach to the front iako, or rear iako, or a loop on the deck of the boat. You can use a surfboard leash, but they usually have an uncoiled cord that can drag in the water. Boogie board leashes can work but the cords on those are usually too short to stretch close enough to the bow if you should try to swim around the canoe.. It's best to buy a canoe leash from an Outrigger Canoe or surfski supplier. You'll find excellent leashes in the "Stuff" section of this website.

When using an ankle or knee (upper calf) leash on an outrigger canoe, you will find that it's best attached to the right side. This way, you won't tangle when you climb back on from the right side (side that you fell in from). Most people find that they don't need to swim around the bow to the ama side of the canoe, in order to climb

back on. Even in rough conditions, most people just get on from the side that they fell in from. In any case, learning to use a canoe leash safely takes practice and thought.

When using a leash with a surfski, it's often best to attach the leash to the paddle. Most people never let go of their paddle when they fall off, so if the boat is tied to the paddle, you've got the boat. Coiled paddle leashes seldom wrap around your legs. Leg leashes often tangle around your legs if you fall off a couple times while trying to remount...This could needlessly end your life. The HUKI leash can be used as a leg leash or a paddle leash. Just remove the leg cuff and tie that end to your boat, wrap the small velcro enclosure around your paddle shaft.

Wearing your PFD (Personal Floatation Device) or Life Jacket is probably the most obvious way to protect yourself. Bungeeing it to the boat is a dangerous practice, all be it legal in most States of the U.S. Many individual Outrigger paddlers in Hawaii don't own a PFD, nor do their racing regulations require life jackets to be on the canoes. In other places where colder waters are found, paddlers are required by law to keep them on their craft. Many paddlers wear their PFD when they're alone or when they get separated from the pack. Most, tie their PFD to the boat where it usually stays, even when they huli (turn over). When looking for a PFD, buy one that is not restrictive of your paddling movements and that is as compact and light as possible. There are some very nice inflatable PFDs that are also very light and offer little wind resistance. If you're comfortable in your PFD, you'll more likely choose to wear it instead of bungee it down to the deck.

Since sky flares stay up for only a few seconds, I carry three...they can be quite entertaining. Orange smoke is a good, long lasting attention getter. These sticks produce enough thick orange smoke to choke you to death if you don't drown. You'll only need one.

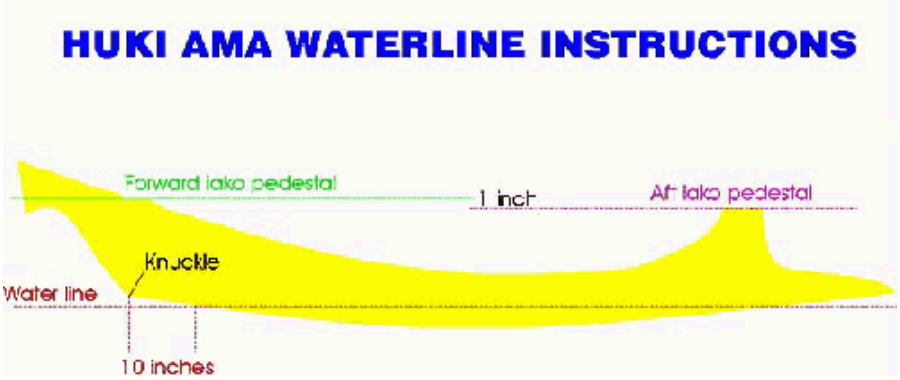
A tow rope is a simple, light and versatile device that can be used for so many unanticipated situations. 1/4 inch nylon twine doesn't absorb water and it floats. I carry 25 feet. Tie one end to the front iako, do a loop around the nose (to guide the canoe), and find someone to pull you across the finish line.

A small hand held VHF Marine radio can be a good thing for coastal cruising and touring. It may be a little too heavy and bulky for racing, but with a range of up to 20 miles, it's uses are obvious.

At a recent race, I loaned my safety pack to a first time racer who looked like he might need it more than I...He huli'd far from shore and was unable to get back on the canoe in the rough water. The leash kept the canoe next to him so he could retrieve the PFD and put it on. He summoned the safety boat with the whistle, tied his canoe to the power boat and made it back without loosing anything...including his life.

These safety items can be carried on the 6 person canoes as well as the small canoes. We not only have a responsibility to ourselves and our families to stay alive but we each represent this sport, each time we go out on the water.

Rigging



Risks and Liabilities

Risk and Performance Paddling

(Ocean River Paddling Club)

Be aware that outrigger canoeing is a high-risk sport. Equipment, weather, time of day, length of outing and paddlers' skill levels and energy must all be considered before venturing out. Please be aware of the following recommendations for all Ocean River Paddling Club members to follow.

We highly recommend that all paddlers wear PFDs at all times. The law requires every paddler to have a PFD in the boat. You should also carry a "louder than voice hailer" e.g. a whistle on a PFD.

Crew should be aware of each other's swimming ability as should paddling partners.

Be familiar with the "capsize and recovery" drill for the boat(s) you paddle. If in an OC-6, review the huli procedure regularly with your crew. This is posted on the bulletin board at the boathouse.

If your team practices huli drills away from the ORPC dock please make sure the Coast Guard is alerted to this "practice only" scenario. The number to call is 363-2994. Provide the Coast Guard operator with as much detail as possible.

Obey the direction of travel as determined by the Victoria Harbour Master. Refer to the chart on the bulletin board for details. Give way to all other craft. It is safer to yield than to challenge.

Victoria's harbour is an active airport as well as a busy marine way.

Do not cross the harbour runway when the strobe lights are on at Laurel Point, Songhees Point or the small island with the windsock (Pelly Island).

Any crews going out when dusk is falling or later are required to have lights on the boat, fore and aft. Be diligent about lights. It is the law!

Do not attempt to the run the Gorge Bridge rapid if you are not experienced with moving water. It can be dangerous and/or you may get stuck and unable to paddle back through the narrows.

OC-6 canoes must not go out past the breakwater unless skirted. Inexperienced crews should not go out past the breakwater in rough seas unless guided and accompanied by a more experienced crew or the Club zodiac. Experienced crews going out in rough seas are encouraged to paddle with another boat or to have a well thought out emergency plan.

OC-1 and OC-2 paddlers who wish to paddle in rough seas must have leashes for their boats. This is a simple connection from the foot well area of the boat to your ankle. It will prevent the boat being blown or pushed beyond your reach in case of a capsize.

A small waterproof bag (dry bag) containing spare clothes is recommended for each OC-6 crew to have in the boat. All paddlers are encouraged to a have complete change of dry clothes left in the boathouse or their vehicles.

All paddlers should avoid cotton clothing and dress in appropriate wear for the conditions (synthetic tops and bottoms, neoprene, wind jackets, hat, etc.).

The steerer in an OC-6 is ultimately responsible for the crew's safety. Become knowledgeable about the weather, water, equipment and your crew's abilities. Take control when necessary.

Medical Problems

Waikiki Yacht Club Canoe Team

Any paddler with any medical problems which may arise during practice (asthma, diabetes, or special medication) should make sure that your coach is informed.

Swimming Ability

Vernon Racing Canoe Club

You should know how to swim at an intermediate level before paddling. If you cannot swim or cannot swim well, make sure you notify your coaches and wear your lifejacket. And make sure you remind them occasionally.

Hyperthermia

Kawika Sands

Three things determine a hot day: Temperature, humidity and wind speed. When the Temperature approaches 90 degrees, the humidity approaches 90%, with little wind, there is the danger of heatstroke or heat exhaustion. Hyperthermia is a sudden and uncontrolled rise in body Temperature caused by the inability of the Temperature-

regulating cells in the brain to increase the body's mechanisms of dissipating heat. The greater the degree of dehydration, the more likely heatstroke will develop. The harder you exercise, the less dehydration you can tolerate.

Dehydration decreases blood volume to the point where there's not enough blood for both the skin and internal organs, including the brain. The body must make a choice and it chooses the organs and muscles so the blood to the skin is shut off and the body Temperature rises uncontrolled.

Heat Stroke

Heatstroke doesn't just happen, your lungs "catch fire," breathing becomes short and labored, your mouth becomes parched, your vision blurs, your skin may be dry and clammy, and there may be dizziness and nausea with irrational thoughts and/or actions and the victim's tentative may rise as high as 110°F. By this time the brain is being "cooked" and can be severely damaged. Blood volume, already less than normal, continues to decrease to the point shock may set in. Since the elevated Temperature keeps the blood from clotting, blood may leak into the liver, kidneys and brian. Death may occur unless immediate medical attention is received.

HEATSTROKE SYMPTOMS

An abrupt onset is sometimes preceded by prodromal headache, vertigo, nausea and fatigue, small pupils and very high fever. The victim may become extremely disoriented or unconsciousness with possible convulsions. Sweating is usually but not always decreased, the skin is hot, flushed, and usually dry (sweating has ceased). The pulse rate may be strong, increase rapidly and may reach 160bpm.

Respirations usually increase, but blood pressure is seldom affected. Disorientation may briefly precede unconsciousness or convulsions. The temperature climbs rapidly to 41°C and the patient feels as if they are burning up. Circulatory collapse may precede death, after hours of extreme hyperpyrexia, survivors are likely to have permanent brain damage. Advanced age, debility, or alcoholism worsens the prognosis.

HEAT STROKE FIRST-AID

If you suspect a canoe mate is suffering from heatstroke, call for medical help IMMEDIATELY! If a heatstroke victim doesn't revive in a few minutes he may be dying! By then, a trained medical person must administer special fluids intravenously.

Remove the victim to a cooler location, out of the sun. Loosen or remove clothing and immerse victim in very cool water if possible. If immersion isn't possible, put the victim in the shock position with his head down and feet up (this will help supply the brain with blood). Pour cool water over the body and fan for quick evaporation and lower body Temperature while rubbing the skin to help open blood vessels in the skin; or use cold compresses-especially to the head & neck area, also to armpits and groin.

Stop if the victim is awake, alert and out of pain. If you drop his temperature TOO quickly you can kill him. Do NOT use an alcohol rub and do NOT give any medication to lower fever, it will not be effective and may cause further harm. It is not advisable to give the victim anything by mouth (even water) until the condition has been stabilized.

Once the victim's condition has stabilized, encourage the victim to drink large amounts of fruit juices and other potassium-rich drinks. Continue to watch the victim for at least an hour. If he becomes unconscious again or starts to complain of headache, nausea or dizziness, repeat the treatment (this means his Temperature is rising again). Recovery depends on heat duration and intensity.

Seek medical attention immediately, and continue first aid to lower Temperature until medical help takes over. The victim should be taken to a hospital as soon as possible after the emergency methods have been started for further management. Temperature should be taken every 10 minutes and not allowed to fall below 38°C to avoid converting hyperthermia to hypothermia. Bed rest is desirable for a few days after severe heatstroke, and temperature lability may be expected for weeks.

Heat Exhaustion

Heat exhaustion is more difficult to diagnose than heatstroke, but its prognosis is far better unless circulatory failure is prolonged. It is due to a loss of water and can come on over several days with tiredness, weakness and malaise. If you continue to lose fluid you may go into shock. 69% of your body's weight is fluid stored. 56% in the cells, 37% outside the cells, and 7% in the blood. Water from sweating, breathing and urinating comes from inside the cells. Even if you need eight glasses of water your cells can supply enough water so that your blood volume remains normal. If you continue to loose water your cells reach a point where they can't give up any more, blood volume drops and you may not have enough blood to circulate effectively so your Temperature rises and shock develops.

Usually heat exhaustion is not an emergency condition but it's presence makes you more susceptible to heatstroke. Simply drink large amounts of water and mineral-rich fluid like fruit juice. Well trained athletes can function well on lower fluid levels because their hearts pump blood more efficiently. Simple dehydration takes place when an athlete sweats heavily. If he doesn't replace his fluids he can develop heat exhaustion in a few hours.

HEAT EXHAUSTION SYMPTOMS

Nausea, fatigue, dizziness, weakness, headache and possibly fever. The skin may be pale and moist with heavy perspiration. The temperature may be low (possibly normal) or weak. Dilated pupils, disorientation or fainting spells.

HEAT EXHAUSTION FIRST-AID

Remove victim to cooler location, out of the sun. Loosen or remove clothing and cool victim with water, fanning for quick evaporation. Use cool compresses especially to head & neck area, also to armpits and groin. Do NOT use an alcohol rub and do NOT give any medication to lower fever (this will be ineffective). Give the victim an electrolyte beverages to sip or slightly salted water (½ teaspoon salt and ½ teaspoon of baking soda per quart/liter of cool, NOT ICY, water, ½ cup every 15 minutes). Do NOT give any liquids containing alcohol or caffeine as these may interfere with the body's ability to regulate it's internal temperature. If the victims' condition does not improve or worsens seek medical attention immediately. Have the victim drink large amounts of fluids (fruit juices are okay).

Treatment is aimed at restoring normal blood volume and improving brain perfusion, thus the patient should be placed flat or with their head slightly down. When they start responding, small amounts of sugar water may be given.

Heat Cramps

Heat cramps are a form of muscle cramp brought on by exertion and insufficient salt. Symptoms include muscle cramps, usually in the abdomen & legs, heavy perspiration, light-heartedness, weakness, and exhaustion.

HEAT CRAMP FIRST-AID

Replace salt and fluid, stretch the muscle. Kneading and pounding the muscle is less effective than stretching and contributes to residual soreness. Follow the same measures as for heat exhaustion.

Hypothermia

Kawika Sands

Hypothermia is subnormal body temperature, a lowering of the body core temperature. When you lose enough body heat, you become hypothermic. Cold water robs the body of heat 25-30 times faster than air. Depending on the waters' temperature, 10 or 15 minutes, your core body temperature (brain, spinal cord, heart, and lungs) begins to drop. Your arms and legs become numb and useless. You may lose consciousness and drown before your core temperature drops low enough to cause death. Unconsciousness can occur when body core temperature drops from normal (98.6°F/37°C) to about 86°F/30°C. Safety experts estimate that half of all drowning victims die from the fatal effects of cold water, not from water filled lungs.

Hypothermia can be fatal and occurs in most survivors extracted from water under 68°F. Cold water does not have to be icy, just colder than you are to set water hypothermia in motion. A person who is wet, improperly dressed and intoxicated can become hypothermic in 70°F weather. The rate of body heat loss depends on water temperature, the clothing worn, percent body fat and other physical factors, and most importantly the way you conduct yourself in the water:

Predicted Survival Time (average adult in 50°F/10°C water)

Drown Proofing - 1½ hours

Swimming slowly - 2 hours

Treading water - 2 hours

Holding still - 2¾ hours

H.E.L.P. position - 4 hours

Huddle - 4 hours

Wearing a PFD - 7 hours

Body Hot Spots

Certain areas of your body are "hot spots" that lose large amounts of heat faster than other areas. These hot spots need special protection against heat loss. The head and neck are the most critical areas. The sides of the chest, where there is little fat or muscle, are major areas of heat loss from the warm chest cavity. The groin region also loses large amounts of heat because major blood vessels are near the surface.

Surviving in Cold Water

1. Minimize body heat loss. This is the single most important thing you should do. Do not remove clothing, instead, button, buckle, zip and tighten collars, cuffs, shoes and hoods. Cover your head if possible. A layer of water trapped inside your clothing will be slightly warmed by your body and help insulate you from the colder water, slowing your rate of body heat loss.

2. Put on a PFD. Act quickly before you lose full use of your hands and limbs.

3. Getting out of the water. Climb onto a boat, raft, or anything floating. Right a capsized outrigger and climb in. Most outriggers will support you even if full of water. If you can not right a capsized outrigger climb on top of the hull. The object is to get as much of yourself out of the water as possible.

DO NOT SWIM!!!

Unless it is to reach a nearby boat, another person, or a floating object on which you can climb. Unnecessary swimming "pumps" out warmed water between your body and your clothing circulating new cold water to take its place. Unnecessary movement of your arms and legs pumps warm blood to your extremities, where it cools quickly, reducing your survival time by as much as 50%!

If you can't get out of the water try one of the following survival techniques:

1. Heat Escape Lessening Position (H.E.L.P). hold knees to chest to protect trunk of body from heat loss. Wrap arms around legs and clasp hands together.

2. Huddle. Huddling together with 2 or more people will extend survival time 50% longer than swimming or treading water.

3. Remain still. However painful, intense shivering and severe pain are natural body reflexes in cold water which will not kill, you but heat loss will.

Hypothermia Symptoms

Watch for the "Umbles." Stumbles, fumbles and grumbles. These may indicated the brain is being effected by cold being pumped through it.

Symptoms include intense shivering, loss of coordination, mental confusion, cold & blue (cyanotic) skin, especially around lips or fingers, weak pulse, irregular heartbeat and enlarged pupils. Once shivering stops, core body temperature begins to drop critically.

Core Body Temprature Loss

Mild	-1°F Speech becomes slurred
	-2°F Fingers become clumsy, nub, weak and shiver
Moderate	-3°F Feet loose strength, difficult to stand
	-4°F The brain affected, thinking becomes difficult
Severe	-9°F Shivering is replaced by muscle rigidity
	-14°F Unconsciousness and heart becomes irregular
	-23°F Death from heart failure

Mild Hypothermia

Shivering, "goose bumps," hands may be numb with an inability to perform fine motor skills.

Moderate Hypothermia

Intense shivering, coordination is slow or labored with mild confusion. If the victim cannot walk 30 feet in a strait line he is moderately hypothermic. Later stages include persistent or violent shivering, slurred or difficult speech, dizziness or sluggish thinking or amnesia, fumbling or impaired gross motor movement and an inability to use hands, and irrational behavior or disinterest or depression.

Severe Hypothermia

Shivering may occur in waves with the pauses getting longer. Skin is blue or pale and puffy. Very little muscle coordination. Confusion, incoherent/irrational behavior (but the victim may LOOK aware). Muscle rigidity. Semiconsiousness, loss of awareness, pupils may have dilated. Decreased heart rate and heart fibrilation (victim may appear dead), then unconsciousness. By the time the core temprature is down to about 78°F and pulmonary edema, cardiac and repertory failure may occur but death can result before this happens. Death is imminent if breathing becomes shallow and erratic.

Hypothermia First Aid

Any person pulled from cold water should be treated for hypothermia and ignore protests from the victim. Your goal in treating hypothermia is to prevent further body cooling. Severe cases call for rewarming by trained medical personnel. In all cases, arrange to have the victim transported to a medical facility immediately.

Gently move the victim to warm shelter.

Check breathing and heartbeat very closely for as long as two minutes.

Start CPR if necessary.

Remove victim's clothing with a minimum of movement, cut them away if necessary.

Lay victim in a level face up position with a blanket or other insulation beneath them.

Wrap victim in warm blankets, sleeping bag or other warm covering. If there will be a long delay before victim arrives at a medical facility use the following rewarming techniques. Take all wet/cold clothes off and wrap the person in the blanket. Use the tarp/plastic and the survival blanket to insulate the victim from the ground or keep him dry.

Apply heating pads or hot water bottles (wrapped in a towel to prevent burns) to the head, neck, chest, and groin.

Do not apply heat to arms and legs or give them a hot bath. This forces blood out through the cold extremities and back to the heart, lungs and brain, which will further drop the core temperature. This can cause "after drop" which can be fatal. Apply the hot packs at the neck, kidneys and crotch (do not apply directly, the hot packs can become VERY hot and injure the victim!).

Do not massage or rub the victim, rough handling may cause cardiac arrest.

You may apply warmth by direct body to body contact. Have someone remove their own clothes and lay next to victim skin to skin. Wrap both in blankets (note: do NOT do this if the victim is TRULY hypothermic or you may have TWO victims).

If person is alert enough you can give them hot drinks (NO caffeine or alcohol!). If they are unconscious or stuporous do not give them anything to drink. It's normal for the person to want to urinate (you may have to help) but keep giving water (warm if possible, hot would be better), soup, anything HOT.

Paddle & Swim

Gibsons Paddle Club Outrigger Division

Mid May to late October, peaking in Aug. appears to provide the warmest swimming. Lowest water temperatures occur between the beginning of December and the beginning of March.

After any swim or huli changing to dry clothing is recommended. Wet suits are good for the cooler months. Keep in mind that with no protection you will loose 1.5°C of core body temperature in 1 hour in 15°C water. Your chances of surviving a 50 meter swim in the same conditions is 50/50 due to circulation and distribution of core body heat. Below 10°C, November - March, feels cold.

It appears that you can retain about 20% of the heat otherwise immediately lost if you are habituated to swimming in cold water. You don't get that initial shock response that dumps so much heat.

We found that swimming off the canoe tunes the content and order of packing of our dry bags. Do you have a towel in your dry bag ? How about a plastic bag for containment of wet gear ? Are they at the top of your dry bag ?

References: "Cold Water Therapy" & "Triggering the Human Diving Response"

Cold Water Drowing

Kawika Sands

Some apparent drowning victims may look dead, but may actually still be alive! A phenomenon called the "mammalian diving reflex" can be triggered by cold water. This reflex, common to whales, porpoises and seals, shuts off blood circulation to most parts of the body except the heart, lungs and brain and slows the metabolic rate. What little oxygen remains in the blood is circulated where it is needed most. Do not assume that a person who is cyanotic and who has no detectable pulse or breathing is dead. Administer CPR and transport the victim to a medical facility as quickly as possible for specialized rewarming and revival techniques. People have been revived after having been submerged for extended periods, some in excess of 45 minutes! So DON'T GIVE UP!

Possible Injuries

Hong Kong Paddle Club

Injury can result from factors other than a lack of sufficient warm-up, however, and it is important to be aware of what these may be and what to do if an injury is sustained.

Improper technique, for instance, is the usual cause of injury by unduly stressing joints, tendons and muscles. Sudden damage occurs when a tendon, cartilage or a muscle is torn, but more often injury in outrigger canoeing is the result of improper technique due to small amounts of stress adding up over time to adversely affect the body. Other injuries result from simply over use of a joint, muscle or tendon.

Shoulders

Shoulders are the usual areas subject to injury caused by excessive movement which goes beyond the natural range of motion (if there ever is such a thing in this sport). For example, there is a tendency to over reach and apply power to the stroke without first stabilizing the shoulder with the adductor muscles around the shoulder blade (scapula), particularly when a paddler gets tired at the end of a session. Or on the recovery, if the upper shoulder 'hunches up?too high rather than staying 'locked down?by the scapula abductors, it can cause an impingement problem and pain.

Most problems associated with shoulders, in fact, are usually related to rotator cuff and subacromial bursa impingement. This can happen either in the boat or most commonly in the weight room. Bench Press and Military Presses are the worse offenders particularly when the shoulder muscles 'bunch?up at the top end of a repetition.

Wrists and Forearms

Pain in both upper and lower wrists usually results from cocking the wrist one direction or another during the power phase or recovery of the stroke. This practice can add tremendous strain on forearm flexors causing inflammation of tendons particularly close to the elbow not unlike tennis elbow. Tunnel carpal syndrome can also develop causing a numbness to fingers.

The best way to alleviate these problems is to develop a 'softer?grip on the paddle with your lower hand and to minimize wrist movement during the stroke.

Lower Back

Herniated disks or strained muscles can result from improper technique of inadequate stretching, particularly as we grow older. The principle means to mitigate lower back pain or injury is to develop a strict exercise regime that target strengthening back muscles and provides for flexibility.

More often than not, lower back pain results from a strength imbalance where for example the abdominals may be stronger than the erectors; or perhaps where the lower abdominals are not as developed as the upper abdominal muscles. Other stabilizing muscles should not be overlooked in training such as the Gluteus maximus, hamstrings and Quadriceps. Weakness or lack of flexibility here can result in back pain as well. But take care! Doing sit-ups while holding weighs is a sure way to invite injury.

Knees

Strangely enough paddlers often have knee problems associated with over-development of the Quadriceps or off centre loading. The intense isometric load on the quads when paddling combined with dryland training such as squats, rowing machines or running can create an imbalance between the Quads and the Hamstrings at the back of the thigh. This can result in excessive wear on the cartilage as the kneecap is pulled upward due to a weak resistance from the opposite direction. Hamstring curls to strengthen the back of the leg will alleviate the problem in a short time.

Chest

Intense deep pain in the lungs sometime occurs when your not getting enough oxygen and can be expected if your pushing the limits of performance, however, it can also be a symptom underlying heart disease. Peer pressure in a dragonboat can be intense, so before pushing it to extremes, individuals should know whether their bodies are capable of such work. Similar pain can result from strain to the tendons connecting the sternum to the pectoral muscles. The bottom line is that if you are experiencing chest pains of any sort, its worth having it checked out by an physician immediately.

Be aware that during a workout is not the best time to assess a pain or injury since the body naturally manufactures endorphins which can block even severe pain during exercise.

(Box) Jellyfish Stings

Kawika Sands

Jellyfish have been around for 650 million years. Before sharks and dinosaurs. The largest ever recorded had a bell eight feet across and tendrils over 100 yards long (I saw one off Calf Island, Long Island Sound, New York, with a bell about 2-2½ feet across!).

Efficient predators, they use sting cells called cnidocyteseach containing tiny harpoons called nematocyst. When triggered, they also activate nearby cells to inject their toxin. The painful sting sometimes causes scaring, possibly anaphilactic shock and in some rare cases, cardiac arrest.

There are more victims of the box-jellyfish than there are of sharks, particularly in Hawai'i and Australia. Some species in Australia can kill in as little as 30 seconds! Box-Jellyfish are clear 1-3 inches tall, with tendrils 2 feet long and can be found on the leeward beaches of Hawai'i 8-10 days after a full moon with occasional strays at other times. Portuguese man-o-war are purplish-blue, 2 inches high with tendrils about 30 feet long and can be found on windward beaches during trade winds, and leeward beaches during the "Kona winds."

(Box)Jellyfish Sting First Aid

Put on gloves to protect yourself from any residual toxin then examine the affected area to be sure that all the tentacles are gone. Any remaining parts of the jellyfish are to be removed with forceps or tweezers. Treatment may involve a 30-60 minute immersion of the affected skin in water as warm as can be tolerated comfortably. Salt water is better than fresh because it helps to break down the toxin. This soaking is followed by a rinse with household vinegar (5% solution of acetic acid to dissolve the toxin). Large welts that sometimes rise from a particularly bad entanglement are sometimes treated with steroid creams or antihistamines.

Some people are convinced that meat tenderizer can soothe the pain. Here's the "household remedy" approach: Pour vinegar on the area infected to remove the stingers. Use of a Benadryl® cream, or oral antihistamine is also

recommended. After 20 min., rinse with salt water. Using meat tenderizer (i.e. Adolph's Natural Meat Tenderizer®) on jellyfish stings might be safe for those who rarely experience them. However, for those who work in and around water and experience stings more frequently, it could be harmful. Keep in mind that meat tenderizer can tenderize your skin too. Plus, there may be a new ingredient in some of the products that might even be harmful. If you're a MANLY man (or woman), I hear urine works too.

Sharks

Kawika Sands

Sharks have been around for 200 million years. In Hawaiian culture it was kapu to kill or eat it particularly in certain Hawaiian districts that worshiped it as an aumakua (a family god). It was once thought to be the incarnation of the dead, possibly a deceased relative, but the practice ceased for the most part after the introduction of Christianity. It's skin is used in making drums.

Hawaiian legend held that some sharks never harmed, and even protected, those who fed and petted them (need I say NOT to try this?!!!). A mano ihu-wa'a ([lit] bow shark) was a shark said to rest its' head on the outrigger of a canoe and was loved and fed by Hawaiian fisherman. Niuhi is the name given to a shark that is a man-eater.

Very little is known about what makes them work, but one thing is certain, they are NOT the menace portrayed in Hollywood films. They are important to the ocean's ecosystem and are simply animals looking for food. They are to be respected, not feared.

When sharks DO attack, they may not know they are attacking a human. A hand or foot may look very much like the tail of a fish to them. Surfers run a risk of attack (from underneath, the usual approach of an attacking shark) because they look like a seal (a favorite food of the shark). Especially when they wear black wetsuits. Yellow may not be a good color in Hawaiian waters because it's the color of the bottom side of the green sea turtle.

40% of the world's shark attacks occur in an area off the Northern California coast called "The Red Triangle" stretching from Bodega Rock, to the Farallons, and down to Monterey. Actually, the possibility of a shark attack is unlikely in the extreme (you stand a better chance of being struck by lightning). However, there are some things you CAN do to improve your odds:

1. If you have a bleeding cut, get out of the water as soon as possible! (this also applies to women who are menstruating). Sharks can sense blood at one part per billion or up to a ½ mile away.

2. Stay together! Sharks are more likely to attack an individual than a group because a group looks less like a fish.

3. Do not panic! Erratic movement or impulses attract sharks because it may be similar to the impulses of an injured fish which it can sense up to a mile away (sharks may be drawn to children and pets for the same reason).

4. Keep clear of commercial fishing lines, kelp beds, out croppings, reefs and other shore areas where sea life may be plentiful. These are favorite feeding grounds of sharks.

5. Stay away from metal or electrical equipment in the water. Sharks move toward these because they give off certain electro-magnetic fields that attract them.

Shark repellents? Science is continuing to research the matter with a low-tech solution derived from the excretion of a sole-type fish, with limited results. And, a high-tech device called P.O.D. (Protective Electronic Device). It sends out an electronic field attacking a point on the shark called the "ampule of lorenzini." It met with some success . . . until a shark ATE it! Of course, this was just a few years ago so they may have made some refinements. Any volunteers? To date, there remains only ONE clear answer: Education and common sense.

Common Injuries

Hong Kong Paddle Club

The following is a description of common injuries to paddling and the associated care for rehabilitation:

Tendinitus

Tendinitis is the inflammation of tendons which connect muscles to bone, and is usually the result of overuse of an extremity. Generalized nagging pain is experienced rather than pain in a specific location and is often associated with light swelling. Pain is most intense after exercise.

The problem with this injury is that continued use of the extremity will aggravate the injury further, therefore total rest is the key. Starting back into training too soon will only prolong healing. Vigilant rest, ice and sometimes anti-inflamatories or aspirin will help the recovery.

Strains

Strains result from a stretched or torn muscle or tendon. Generalized pain, mild swelling and occasional bruising are the symptoms. Given the complex nature of shoulders, the actual location of pain may in fact not be the source of the problem. Rest, ice, compression and elevation are the best forms of treatment followed by easy

exercise within a week or two. It is important to work such an injury back in slowly rather than leaving it alone totally to avoid excess build up of scar tissue and potential restriction of movement.

Sprains

The infamous 'POP?sometimes heard at the moment of an injury is the rupture of a ligament which connects one bone to another, resulting in a sprain. Sprains are rare in dragonboating due to a restricted range of motion, but have very similar symptoms to a sprain, ie. generalized pain, mild swelling and possible bruising.

Bursitis

There is a fluid-filled sac in the shoulder which separates muscles and tendons from bone that can become inflamed causing acute pain, or can become completely deflated causing chronic pain. Pain will be point specific centred around the joint and will often flare up after activity. Acute bursitis can be treated with rest, ice and anti-inflammatories, while chronic bursitis is much more severe and may require more drastic treatment such as fluid injections etc. Rest is advised.

Shoulder Dislocation

Rare, but when it happens you'll know it! Paddlers have been known to pop their shoulder back into place and keep on paddling. This is not advisable. Light traction is used to 'relocate' the shoulder joint and then the arm should be put in a sling. With rest paddling can resume in a short time. Chronic dislocation may need surgery to correct.

In summary some basic rules should be applied to avoid injury

keep movements ***strict*** either in the boat or in dryland training by constantly evaluating technique and adhering to prescribed movement patterns;

never work through pain in the joints, rather ease off or rest and stretch until the pain subsides and it is comfortable to paddle;

try to develop muscles opposite of those use to paddle in order to balance strength and ability;

never overload your body beyond its ability;

build up 'strength' gradually, in controlled phases to avoid over-reaching;

restrict 'strength' training to pre-race or earlier stages of a training programme to provide a solid 'base?and minimize risk of injury effecting race preparation;

be disciplined in 'stretching down' after practice or warming up before;

seek sports massage or manipulation therapy as a preventative measure;cross-train to develop muscles for a broader range of physical activity.

Staph Infection

Waikiki Yacht Club Canoe Team

At most times, the Yacht Harbor at Magic Island has good water. However, after a heavy rain the runoff from town literally flushes the Ala Wai Canal into the yacht basin and our site is polluted. Also, on days when wind or sea conditions make it unsafe to practice on the ocean, your coach may decide to work out on the Ala Wai Canal. At these times you must be careful of staph infection.

According to Dr. Ben Tamura, head of medicine at Kaiser Honolulu and a long-time paddler and kayak enthusiast, staph begins as one or more tiny red sores or pimples -- especially at the pant or bra line, although they can appear anywhere.

Some paddlers will pass this off as a friction rash from rubbing against the seat or side of the canoe. It is really the staph bacteria infecting the pores of the skin.

To prevent the infection from spreading deeper into the layers of skin, or even into the muscle, it is important to wash immediately after your practice and changing into loose fitting clothing. If a staph infection does start, treat it with over-the-counter bacterial creams.

According to Dr. Tamura, most people's immune systems will fight off the staph bacteria. Sometimes, however, the infection takes off and the "pimple" or "rash" will become swollen and painful. The center of the infection may even become blackish in color and the infection may spread into the muscle tissue.

If the infection progresses to this stage, it is critical that you seek medical attention immediately.

As amateur athletes, many paddlers treat small irritations like a minor rash as something to ignore. More than one paddler has missed an important race or even an entire paddling season because of a staph infection.

If an injury is sustained

Hong Kong Paddle Club

- Apply ice to the affected area immediately to reduce possible swelling, prevent further damage, and promote blood flow;

- see a physiotherapist to determine exactly what is wrong;
- rest the injured area or exercise it in accordance with the advice of the physiotherapist;
- work an injured area back into your training programme easily, with minimal loading to start, gradually bringing back to full strength;

BE PATIENT; it does no good to get back into action too early and undo all of the repair.

Lastly, it is important to understand the effects of intense training on a body also go beyond physical damage. As an athlete becomes more fit and fat levels decrease, the risk of infection and illness caused by exposure to viruses becomes greater due to a weaker immune system. Good nutrition and adequate rest are fundamental to good health particularly as the athlete approaches peaks stages of conditioning. A simple cold can spread like wild fire through a team working together in such close proximity, so its worth a little extra care, and a few more vitamins.

Physiology, Training & Nutrition

Training Information

Vernon Racing Canoe Club

PADDLING IS AN AEROBIC SPORT!

The following are some tips that pertain to off-season training and work well throughout the season.

THREE BASIC WORKOUTS THAT CAN BENEFIT ALL OF US

1. Spring Training. Design your own, use your favourite, or get a qualified coach to set something up. One example: do a 15 minute warm up, then 90 second sprints with a 30 second rest in between. When your heart rate jumps up or performance drops off by 10%, stop the workout and do a 10 minute cool down. Record your workouts. Watch that performance improves. If it stops improving or drops off, you may be in need of a rest.

2. LSD. Long Slow Distance works. Paddle at a low heart rate (110 - 130 bpm) for extended distances.Increase the distance each week by 10 % until up to about 3 ½ hours. Remember, these are long, easy workouts.

3. Muscular Endurance Training. This can be weights doing 100 to 150 reps per exercise. Another way is on the paddle machine with the power level set high. Simulate the paddle action as close as possible. One arm dumbbell rows,incline bench,and cable rows are next best. Example workout: 15 minute warmup at level 1; paddle machine set at 10 for 4 minutes times 4 sets; 2 minutes rest in between sets; then 10 minute cool down. Increase the time of each set by 10 % each week.

IMPORTANT TIPS

1. Cycle your training. An easy one to follow is a four week cycle. Three weeks of hard training, increasing volume or intensity each week with the fourth week being an "easy" week. Start the first week of the next cycle at the level you left off in the previous third week.

2. Keep hard workouts hard and easy workouts easy.

Muscle Composition

Hong Kong Paddle Club

Type of Fibre

The basic composition of muscles involves three main types of fibre, namely:

25 - 45% Slow Twitch (aerobic)

48 - 38% Fast Twitch Oxidative (aerobic/anaerobic)

28 - 16% Fast Twitch Glycolytic (anaerobic)

All of us have varying percentages of each type of fibre within our muscles, which is highly dependent on our genetic make up. We cannot change that basic composition as its something we are born with. Each type of fibre is good at doing a certain type of work and responses to a specific level of intensity. This explains why some paddlers may be better at sprints than distance.

For low level intensity work, *Slow Twitch Muscle* is predominantly used. It is small in size and functions efficiently in the presence of oxygen without suffering fatigue primarily due to the higher density of capillaries and mitochondria enzymes. This why it is know as Red muscle (like the red meat on a turkey leg). This also allows it to utilize fat for fuel easily and why more fat is burned during low intensity exercise than glycogen.

The draw back is that *slow twitch fibre* produces a low force and is slow to contract, hence the name *slow twitch*. The glycogen capacity is also low, relying on blood to import necessary fuel. Whilst it may be ideal for long distance racing, it is not very useful for sprinting.

Fast Twitch Muscle on the other hand contracts fast and produces a much greater force when the intensity of work requires it. It is a larger muscle type with greater capacity for glycogen storage. The down side is that it fatigues quickly. This type of fibre can produce a lot of power, but not for very long partly due to the low capillary density. Hence the term White Muscle (like the white meat from a turkey breast).

Fast Twitch Oxidative muscle has a greater density of capillaries and mitochondria than *Fast Twitch Glycolytic* muscle which a gives it the capacity to function aerobically to a certain degree. It cannot produce the same force as *Fast Twitch Glycolytic* muscle, but it can resist fatigue better.

Fast Twitch Glycolytic muscle relies almost entirely on local glycogen stores for fuel and, though it produces the greatest force, it is the quickest to fatigue. This type of muscle will not be utilized until the intensity of work is maximal, such as in a short sprint or finish of a race.

Fibre Recruitment

Recognizing the differing characteristics of muscle type and realizing that different races demand use of different muscle type is of fundamental import to developing a training regime for a team or individual. *Slow Twitch* fibre cannot be converted to *Fast Twitch* fibre, but to a limited degree, *Fast Twitch Glycolytic* fibre can be converted to the more aerobically prone *Oxidative* type if the training is right.

Each muscle type only responds to a specific intensity of work and therefore demands a training programme which will vary the work load to target different fibre type. Low intensity work will only train *Slow Twitch* fibre. *Fast Twitch* fibre will only be recruited when the intensity of work ie. speed increases beyond a point when the *Slow Twitch* can no longer keep up. *Fast Twitch Glycolytic* muscle will not be recruited until the work load reaches maximum intensity. If maximum intensity is never achieved, this muscle type will remain untrained and will not contribute to a better performance.

Long distance marathon runners utilize little *Fast Twitch* fibre and therefore rarely need to train for long at maximum intensity. For very short dragon boat or outrigger sprints, on the other hand, training must predominantly target *Fast Twitch* fibre recruitment. As races are usually 2 - 5 minutes long, training should ideally focus on developing *Fast Twitch Oxidative* fibre to the extent that exercises should seek to convert *Glycolytic* fibre to *Oxidative* fibre through interval work.

Even in long distance outrigger races, paddlers will never-the-less confront a full range of demands which require extreme effort, such as catching a wave or breaking out of a pack. Whilst *Fast Twitch Glycolytic* fibre is not as important, *Fast Twitch Oxidative* is. In distance races, however, there will be a much greater reliance on *Slow Twitch* muscle fibre.

The effects of training cause muscle fibres and their associated nerves to be recruited in a specific pattern. The effects of training with good technique allow for the minimal number of fibres to be recruited for the desired level of work and thus not waste energy committing to unnecessary movement.

Another implication of specific fibre recruitment is that warm up exercises should target ALL fibre types which will be required in a race. To neglect say *Fast Twitch Glycolytic* fibre during a warm up may interfere with maximal performance and could result in injury during the race when this fibre type ie recruited into action.

Warm-up before practices should be done not only to get blood into your muscles but also to prevent the tearing, ripping, straining and spraining, not to mention the multitude of other gruesome things that can happen to your body.

WARM-UP IS VERY IMPORTANT ... and while a practice session may incorporate a warm-up component it is vital for people who come late to be sufficiently prepared before they are committed to heavy work.

On the water, 5 minutes easy paddling followed by 5 minutes of medium effort work will be adequate, though everyone should have worked up a good sweat before turning up the intensity.

Land warm-up exercises are good including everything from push- ups and jumping jacks to a 10 minute jog, which should PRECEDE STRETCHING EXERCISES!...(stretching a muscle which has not warmed up is like pulling on a frozen rubber band). A stretching regime is a generally a good habit even in the middle of a practice, though exercises should not incorporate bouncing which promotes hyper-extension

"No pain, no gain" is no longer a smart or responsible attitude to training. Pain generally is an indication that something is wrong and it is advisable the athletes learn to listen very carefully to their bodies to avoid injury or prevent smaller injuries from growing bigger. All pain represents a potential for something bad and knowing what minor pain means can allow an athlete continue training without causing greater damage.

Most commonly experienced are the effects of a very intense training session which can result in microscopic tears in muscle fibre and over stretched tendons among others. This can result in a general muscular pain and swelling that is most intense 36 hours after the workout, known as DOMS (Delayed-onset of Muscle Soreness) and can last up to 5-10 days. Convention wisdom of the past prescribed working DOMS out your body by hitting it hard the next day, though this may only result in breaking the muscle down further, and while not causing a serious injury, will impair training. At its mildest, DOMS is the muscular stiffness and discomfort experienced after a workout; at its worst, the effected area will be red and swollen, feel hot, and hurt like hell. Encouraging blood flow to the effected area through a mild workout, massage or cross training activities is the current treatment for DOMS.

With a proper warm-up and stretch before and after a training session, as covered in Section 3, injuries can be minimized. It is important to remember that the duration of warm-up depends greatly on the ambient air temperature. The colder it is outside, the longer the warm-up and vice versus. Warm-down is vital since muscles and tendons often experience motion which is limited to some degree during a workout and need to be stretched out to full length again to avoid strain once they 'cool down'.

Lack of spinal flexibility, particularly in the Thoracic region, can also result in damage to trapizius and rotator cuff muscles and even deltoids, as they all work together as a correlated system. Nagging neck pain or uncomfortable stiffness in the middle back is more than often the result of limited movement between joints in the spinal column. Stretching exercises, therapeutic massage and spinal manipulation goes a long way in treating a

problem which have developed. More importantly, however, it's worth considering such therapy for injury prevention or improved performance as much as for rehabilitation.

Physiology & Training

Training Tips

Hong Kong Paddle Club

Training is not a simple of working harder and going farther each consecutive practice. It requires a clear understanding of how we physically adapt to matter different work loads and needs to be approached carefully with a considered plan if we are to perform effectively for a specific sport. For us this is not just paddling, it's training to paddle fast.

As we adjust our level of work and the type of work we do, different aspects of our physiology and metabolism are correspondingly altered to suit the new demands we are putting on our bodies. This is the fundamental consequence of training. Knowing what changes are required and how to go about achieving them is the central objective of a training programme.

For example, muscles require energy to function and will acquire that energy from different chemical sources within the body depending on the INTENSITY and VOLUME of work. How quickly and efficiently these energy sources are mobilized can be changed through a proper training regime. It's all a matter of calibrating or re-calibrating ones physiology to adapt to the energy demands of a specific race; which does not necessarily need take a long time if there is a good fitness base.

Knowing how your body spends energy during a race is absolutely vital so that your work-out develops the appropriate energy system to its best potential; paddling till you drop will not necessarily make you paddle fast! Adjusting your carburetors to get the best speed or mileage out of the engine you have will often have a greater impact than going for more horsepower. There is no doubt a big engine is good, but only as far as it has staying power and can convert muscle to speed. This depends the training the rate of energy expenditure and the means to deal with the waste products that tend to accumulate.

The following sub-section on ENERGY SYSTEMS is provided to outline the basic metabolic processes involved in muscular activity in order to better understand what kind of work needs to be done and how that work will contribute to a faster boat.

Another factor, which effects our performance is the basic composition of our muscles themselves. The actual size of muscles is not as important as how much or what type of that muscle is being used. The sub-section on MUSCLE COMPOSITION will review this aspect and discuss how to best 'wire in' muscle fibre to suit specific performance demands.

ENERGY SYSTEMS

Hong Kong Paddle Club

Ultimately muscle cells gain energy from the chemical breakdown of ATP (adenosine triphosphate) to ADP+P (adenosine diphosphate + phosphate). Since muscles store very small amounts of ATP, a regular supply is provided by resynthesizing ADP+P back to ATP, which is broken down again by muscle action, and so on. This activity primarily relies on three sources of fuel to chemically generate energy, namely:

Phosphocreatine

which is stored in the muscles and is available immediately but only for a few seconds of work;

Glycogen

which is stored in our muscles and liver and provides the main energy source for short and middle distance events; and

Fat

which stored around the body and will be the main source of energy once glycogen stores are depleted only after a long duration such as in a marathon race.

These fuels are derived from the food we eat and when they are broken down, will produce energy needed to provide a regular supply of ATP to our muscles.

The key to a good training programme is to determine the energy demands of the race and train to improve the efficiency by which the particular sources of fuel are converted to power. The different fuels are mobilized at different times depending on the duration and intensity of work, allowing our bodies to perform a great range of activities, from sprint races to ultra- marathon events.

The greatest concern from a training point of view relates to the limitations of each fuel, the corresponding effects of the by - products which result from energy expenditure and the time it takes to restore the fuel supplies. This is of paramount significant in short and middle distance races where the primary source of energy is Glycogen.

The breakdown of glycogen occurs either in the absence of oxygen, which is called the ANAEROBIC system or in the presence of oxygen which is called the AEROBIC system of energy production. The INTENSITY and duration of work done will determine the degree to which each system will be utilized, which largely effects how quickly glycogen stores are spent and the extent to which biochemical by- products will induce muscular fatigue.

THE ANAEROBIC SYSTEM

Hong Kong Paddle Club

As we do work, muscle cells possess the ability to resynthesize ATP from their own phosphocreatine stores for about 8-10 seconds, which is about the duration of a Dragonboat race 'start' (i.e. getting the boat up out of the water and hydro-planing) and/or may be used for the final 'kick' at the end.

Up until approximately 1-2 minutes of work, energy is produced primarily by breaking down glycogen in the absence of oxygen, which chemically results in the by product called Lactic Acid. During high intensity work, Lactic Acid accumulates in the muscle tissue which eventually results in that uncomfortable burning fatigue sensation, loss of coordination and finally cessation of physical activity within a very short period of time, depending on the tolerance levels of the athlete. This is a local muscle fatigue and will dissipate quickly after a rest. It is not to be confused with a central fatigue where your body just runs out of its principle energy stores ie. glycogen.

Expenditure of energy ANAEROBICALLY will allow for a much higher level of performance and greater speed, however, the process is much less efficient, making huge demands on glycogen stores. Glycogen stores utilized in the presence of oxygen can last up to 2-3 hours, in a low intensity long distance race, whereas at a sprint pace total glycogen stores would be depleted in about 7 minutes; which makes it important to replenish fuel stores quickly between a series of sprint races.

The ANAEROBIC system dominates a work-out once the lactic acid level in most athletes blood reaches about 4mM/litre which is referred to as the ANAEROBIC THRESHOLD. Corresponding heart rates are about 150-170bpm (beats per minute), depending on the age and conditioning of the athlete. The maximal levels of lactic acid before ceasure of international ranked paddlers are upwards of 12-13mM/l over 500 and 1000M distances, with corresponding heartrates reaching 195bpm.

In order to improve performance and overcome muscle fatigue an athlete must train largely to cope with excesses of Lactic Acid. By training muscles to adapt to a regular pattern of stress brought on by high intensity work, bodies 'learn' to cope with different energy demands and still function effectively while approaching fatigue due to high levels of lactic acid.

Typically short pieces of high intensity work increases the rate of glycolysis significantly and builds up Lactic Acid very quickly. This must then quickly be dissipated with low intensity muscle movement, followed again by high intensity work etc. This type of work is generally referred to as INTERVAL Training and effects 'Lactic Tolerance' forcing muscles and the body's metabolism to undergo significant changes in order to speed up the rate of glycogen production and to buffer higher levels of lactic acid.

THE AEROBIC SYSTEM

Hong Kong Paddle Club

Physical work which results in lactic acid levels lower than 4mM/l ie. the ANAEROBIC THRESHOLD, is normally dominated by the AEROBIC system of energy production. Training which keeps the athlete's heart rate below 150-170bpm, again depending on age and fitness, will result in development of this system.

After about 1-2 minutes of work, the heart and respiratory rates will increase sufficiently to carry an adequate amount of oxygen into the muscles which will allow energy to be produced utilizing the AEROBIC system. The greatest benefit of oxygen presence during the breakdown of glycogen is that energy is produced much more efficiently, without the lactic acid by-product which causes fatigue in the ANAEROBIC system.

An overlap between the ANAEROBIC and AEROBIC systems actually begins at about 60-70 seconds into the race. Since most Dragonboat races are between 2 1/2 minutes (650m) to 4 minutes (1000m) the AEROBIC system will contribute to about 50% of the energy demands of the event.

Improvements in an athletes *'Aerobic Capacity'* generally results from a regular routine of larger VOLUME, low intensity exercises compared to what would be experienced in ANAEROBIC training. The general effect is in development of the cardio-vascular system which will provide for greater volumes of blood to be pumped by the heart carrying larger quantities of oxygen from the lungs to the muscles. The heart muscle can be developed much in the same way as skeletal muscles increasing the heart's capacity for blood and its stroke volume by pushing work loads to maximal effort, relying on rest intervals to clear the products of anaerobic metabolism.

Superior development of the cardiovascular system alone, however, will not bring about higher performance if the local muscles doing the work are incapable of accommodating the large oxygen supplies. '*Specific Aerobic Capacity'* must be trained as well by increasing the blood capillary density and making other physiological changes to the specific muscles involved in paddling such as in the arms and torso.

A greater *'Aerobic Capacity'* will increase an athlete's energy resources for the race and will allow faster recovery time after a high intensity work-out during the training season. It is for this reason that teams are encouraged to include longer distance running, rowing or paddling into an off season exercise regime.

In order to get any AEROBIC 'training' benefits of exercise an athlete must work-out at a level of intensity which is between 70% to 85% their maximum capacity for work. In precise terms 70% would relate a lactate concentration level 2mM/l with a heart rate of about 130bpm for most athletes and 85% intensity would produce a lactate level of 4mM/l with a corresponding heartrate of 160bpm to 170bpm. This can vary from athlete to athlete as some individuals will have a threshold level of 3mM/l while others are higher. In practice, few athletes can "feel" the difference between energy systems and very often work at an intensity which is too high or too low for a specific training goal, thereby reducing the positive effects of the workout.

In this regard it is helpful if each athlete could know their own personal heart rate range so that they can work according to prescribed levels of intensity.

A rough guide to an individuals personal work-out range can be roughly calculated using a the following equation

[220 - (your age)] x .7 = your minimum work-out heart rate

[220 - (your age)] x .9 = your maximum work-out heart rate

The level of intensity experienced in a work out can be measured in relation to this range. Typically an athletes heart rate paddling is about 90% to 95% of their maximum possible, with an oxygen intake of about 85% their maximum potential.

Attention to heartrate levels is one of the better methods of measuring work within a practice and it is worth determining the precise lactic levels associated with heartrate readings either with a C1 ergometer or a paddling tank analysis. It is important to regularly re-test these figures since an athlete's Threshold heartrate will increase as they develop a greater aerobic capacity, though generally maximum heartrate will remain constant. For a well trained athlete, the difference between Threshold and Maximum heart rates is between 5 to 20 bpm, while untrained individuals will vary between 20 to 27 bpm differences.

It is equally important, however, for an athlete to learn to feel for the level of intensity they are trying to train to. Heartrates can vary considerably due to the effects of stress, climate, illness and just plain "cardiac drift" where the corresponding heartrate for a given intensity of work can increase slowly during a practice.

GENERAL NUTRITION AND ENERGY CONCERNS

Hong Kong Paddle Club

'We are what we eat' and on the training front what we eat seriously effects our performance both during our work-out and in a race. A detailed nutritional programme can get rather complex and is subject to personal interest, however, there are some basic fundamentals which will help to maximize your energy resources for training and generally make you feel better.

The best energy source is from ***complex carbohydrates*** such as breads, pasta or rice (and BEER if it's the thick and heady type). In fact a high carbohydrate diet can increase your energy resources for 2-3 hours of training time whereas a low carbohydrate high fat diet can have you running out of steam within 1 hour of work. It is important to drink plenty of water along with such a high carbohydrate intake since the metabolic processes involved with this fuel source can leave you dehydrated.

Fats generally have a low training benefit and we get too much of those without even trying. The problem is that the utilization of Fat as an energy source demands a much larger oxygen requirement which will become a limiting factor to performance. "Hitting the wall" in a long distance event occurs when glycogen stores are depleted and continued activity must draw solely on fat stores for energy, which inevitably slows the race pace since oxygen input becomes less efficient. There is an argument, however, that too much reliance on carbohydrates and no fat will under train your body's natural ability to use fat as fuel, and therefore limit performance when it's needed in longer distance events. A good balanced diet seems to work the best.

In any event, it is advisable to lay off of foods which contain fat during race day since the body's natural tendency is to first utilize and fatty acids floating around your blood before mobilizing glycogen for energy. Since this process requires more oxygen, your performance in a race could drop by 10 or 15% of your maximum capability in order to compensate for the less efficient metabolic activity. A carbohydrate rich snack 1 to 1 1/2 hours before each race or practice is advisable to offset this tendency by acting as a 'fatty acid' buffer.

Common sense dictates that you should avoid training within 2-3 hours after a large meal, though a light snack which contains no fat, such as fruit which is digested quickly and easily, can be beneficial to a long workout (coffee also can give you a good caffeine buzz). Simple sugars such as those in a chocolate bar or coke will give you a quick burst of energy, but is followed soon afterwards by a glucose decrease in the blood stream; and its difficult to anticipate when this will happen - you may get all pumped up ready for an event only to find that you are all tapped out once you get in the boat.

Protein in your diet has little effect on performance though it is vital to repair the bodies muscles which are damaged after a work out. It is important, particularly after an intensive practice, to have a small snack such as

peanuts or a milkshake to quickly replenish the body's stores immediately after exercise (you can do your serious eating an hour or so later). Also a quick ***carbohydrate*** rich snack within 1 or 2 hours after a training session will be extremely beneficial to replace depleted glycogen stores in the most efficient manner.

Alcohol consumption will impact performance partly due to dehydration but more importantly as it interferes with recovery processes particularly if consumed right after a practice.

FUEL CONSUMPTION AND FLUID REPLACEMENT DURING RACING

Hong Kong Paddle Club

Racing for distance involves a fuel management and fluid replacement regime which goes beyond daily nutritional patterns. This would also become an issue when training particularly for long distance outrigger or dragon boat marathons though it is also important during sprint race regattas where the energy demands far exceed normal daily activity or training.

While a sprint race may be only 3 minutes long the energy demands are great, and the cumulative effects of events which last up to 4 days can be taxing on energy stores. It is helpful begin to increasing carbohydrate consumption as early as 5 days before a big event or training session so your body can make the most out of its potential energy stores. The most critical period is 48 hours before a race where 95% of your diet should be carbohydrates and you're snacking hourly! Regular intake should continue throughout the race day.

Carbohydrate rich drinks or snacks are also available to provide a quick energy source before and after races and can provide a valuable source of fuel during a race or large volume practice. You can count on carbohydrate stores lasting up to 2 or 2.5 hours during a race, so if the expected race or practice session exceeds this duration it will be important to take on fuel as you paddle.

The pattern for fuel expenditure is generally as follows:

blood glucose will first be spent within 30 minutes;

glycogen stores in the muscle are depleted within the next hour;

glycogen stores in the liver follow and are depleted by 2 - 2 1/2 hours of work;

fat becomes the only source for fuel after 2 1/2 hours.

As a rule, for long distance events, carbohydrate replacement should begin about 1 hour into the race and should be continued at 15 minute intervals to provide a direct source of fuel in the blood. Determining the rate of caloric expenditure should give a pretty good idea of the amount of fuel required to keep you going. Every athlete is different, however, and it is important to each person in the boat to know when they need fuel and how much they need.

Of course everything depends on the intensity at which you are paddling. At very low levels of intensity fat is utilized as the principle source of fuel, not glycogen. Glycogen is required only when the work level is more extreme. Often marathon runners will train for long duration's at a low intensity to develop a metabolism which utilizes this fuel source early, saving their glycogen stores for the big push in the race. Most marathoner's will start out at a low intensity and then build, rather than starting out fast and settling in. This will conserve vital glycogen stores and avoid early accumulation of lactic acid which your body will labour to breakdown at the front end of the race.

Endurance

Canadian Community Dragon Boat Association

Early development of 'General Endurance' for long duration activities is necessary to allow us to train more efficiently, overcome fatigue during long competitions and to improve recovery time. This is why a pre-season low intensity AEROBIC fitness regime is so important. It is also important slow down and maintain 'General Endurance' levels during off season by cross-training so that the body can recover from the extremes of race season exertion.

In preparing for a race, however, work must focus on a more *'Specific Anaerobic Endurance'* of medium duration, which resists the onset of Oxygen debt experienced in a Dragon Boat race; where the oxygen supply cannot totally meet the demands of the paddler. For this reason both AEROBIC and ANAEROBIC conditioning is of paramount importance to the Training Programme.

Specific Power Endurance is also partly related to high strength development which will be discussed further in the section covering Strength.

Speed Endurance relating to our ability to overcome fatigue under conditions of maximal intensity will also be discussed further in the section covering Speed

Other factors which normally effect endurance are the *Central Nervous System* (CNS) conditioning, athletic willpower and development of the *Speed Reserve*.

AEROBIC CAPACITY

Canadian Community Dragon Boat Association

Aerobic Capacity effects the amount of oxygen transported to the muscles which controls how much energy is available during a race and how quickly you can recover from work in a training session. The oxygen demand of the upper body and arms when paddling is only about 85% of that for the legs when the same athlete is running. This suggests that good cardio-vascular base can be provided by off-season running, rowing or swimming since these forms of exercise will build up heart and lung capacity faster and more efficiently than paddling. The focus of a water training programme should be more on *Specific Muscle Endurance* related to local muscle Aerobic Capacity. This will relate to how much oxygen the specific muscles can actually utilize when working by training to increase blood capillary density and as well as the number of local mitochondrial enzymes which are necessary to transfer oxygen into the energy making processes.

Normally a training programme should develop Aerobic Capacity early on in the training season and gradually replace these workouts with higher intensity Anaerobic activities. One should be careful, however, that too much emphasis on maximal intensity stressful work may reduce consistency of Anaerobic performance from one day to the next. This will impacting the stability of an athlete's capacity for speed and will ultimately reduce Aerobic Endurance due to the damaging effects of high levels of lactic acid on muscle cells. It is good practice that an Aerobic training component of varying intensities alternate with periods of high intensity Anaerobic in weekly *micro-cycles* to allow muscles to regenerate and increase the durability of Anaerobic Power.

a) Long Interval Training (Maximal Aerobic)

A good exercise to perfect Aerobic Endurance early in the training season are long repetitions of work for 3-10 minutes when oxygen consumption is maximal ie. at the Anaerobic Threshold. Intervals of this duration will make improvements to cardiac output, the control of blood distribution and the control of the rate of glycogen mobilization in the muscle. Long intervals should be performed as fast as possible without causing total exhaustion so that several repetitions are possible ie. high heart rate but no burn.

Intensity of work for long intervals should result in lactate concentrations just over 4mM/l where heart rates will typically measure between 150-164 bpm. Be aware that as fatigue sets in, an athlete's heart rate will increase, even though the intensity of the work-out does not change. The work-out should cease if heart rates reaches 180 bpm.

The rest period between intervals should involve low intensity muscle movement, at about 50% capacity, to stimulate biological recuperation and be sufficiently long to flush out any lactic acid. A rest period longer than 3-4 minutes will begin to effect the quality of work in the next interval since the blood capillaries will begin to shrink.

This type of training is extremely beneficial to making improvements in performance for longer distance races and marathons by ultimately raising Threshold heartrate levels. In many respects long intervals could form the basis of a marathon distance training programme such as for outriggers, relying on longer distance workouts to improve energy management aspects.

b) Short Interval Training (Lactic Tolerance/Maximal Aerobic)

Surprisingly very short interval training aimed at developing 'Anaerobic Capacity' plays an important role in building up 'Aerobic Capacity' since it appears the greatest improvement to the aerobic system is achieved when muscles are used close to their maximal aerobic limit. Even work intervals as short as 15-20 seconds with a 30 second rest will improve 'Aerobic Capacity' if performed at a blood pumping, aerobically fast pace, but just below lactate generating intensities. The levels of oxygen consumption will be very high, forcing the body to adapt by improving oxidative pathways in the muscle structure.

Longer 'short' intervals of 60-90 seconds will stress the oxygen supply system to the muscles increasing capillary density and increasing blood flow to the muscles effecting the rate at which lactic acid is dissipated. At this intensity of work, a degree of anaerobic metabolism is affected and an exercise will inevitably become impaired due to lactic acid intolerance. The importance of the 'Interval' rest is vital where continuous muscle movement with 50% effort assists in flushing out lactic acid to prepare for the next interval.

These interval training sessions may last for 1-2 hours and appear to have the greatest beneficial effect on 'Anaerobic Threshold'.

c) Steady State Paddling (Anaerobic Threshold)

Longer training distances of 15 min. to 1 hour steady state paddling performed at 'Anaerobic Threshold' intensity will train factors related to the removal of lactic acid from the blood and ultimately increase the Threshold level. These sessions must be performed at lactate concentration levels of 2-3 mM/l corresponding to a heartrate of 130-145 bpm and will improve the integration of all aerobic processes. Training intensity should be uncomfortably hard work but sustainable.....barely.

Very long distance training would be required in preparation for dragon boat marathon races, where steady state training sessions reach a duration of 3-4 hours and are performed once every two weeks. The training effect of these distances is to induce Central Fatigue or 'Hitting-the-Wall' by depleting glycogen stores and forcing the body to mobilize fatty acids as a source of energy. Extra long distance training will help to stabilize the biochemical processes associated reliance on fat as an energy source and avoid a rapid onset of fatigue caused by

a system which is unfamiliar to such demands. Careful management of diet is an important factor when training to this volume. Some athletes will keep their carbohydrate intake low before a long training session in order to induce Central Fatigue earlier and reduce their volume of work.

When paddling, proper breathing is also important where an athlete should make an effort to sit upright allowing full expansion of their lungs. One should learn to forcefully exhale all used air out the lungs to increase the quantity of oxygen rich air which can be inhaled. It is even suggested that hyper-ventilation just before the beginning of a race will significantly increase the amount of oxygen available in the blood earlier.

Again, one of the major benefits of a high Aerobic Capacity is to affect a high Anaerobic Capacity by providing a more efficient system flushing out Lactic Acid build-up faster and allow muscles to function longer at high intensity.

d) Fartlek

Fartlek training is similar to interval training, without a prescribed duration of work or rest, and the intensity of work reaches much higher levels, but only for a brief moment. The athlete or team must progressively build up intensity to reach an absolute maximum and then quickly reduce effort to 50 or 40% intensity until heart rates drop to about 130 bpm and its comfortable to begin work again. Several surges should be executed over a 1 to 1 1/2 hour training session. This will push heartrate levels higher than in intervals to stress the limits of the AEROBIC system, but will not induce excessively high lactate levels. The intended result is to raise the Anaerobic Threshold and to become intimate with the full range of intensity potential.

THE ANAEROBIC CAPACITY

Canadian Community Dragon Boat Association

The main effect of training Anaerobic Capacity is to increase an athlete's Lactic Tolerance where higher levels of lactate concentrations can be experienced for longer periods of time. Anaerobic Capacity is best improved by cyclical short interval training where the intensity of work is to such an extreme the paddler can no longer continue to go beyond a short duration.

A work interval of anywhere from 5-120 seconds is adequate depending on whether the level of intensity is super-maximal (100-98%), maximal (90-95%) or sub-maximal (80-85% capacity), though each repetition is 'pushed to failure' Too long a duration of work at high intensity or too many intervals can exceed the limits of lactic acid tolerance which will reduce boat speed and result in dominance of the aerobic system, which will not benefit anaerobic training. This will depend on the overall capacity of the team.

Workouts should be grouped into interval sets of 4 to 6 with 30 seconds to 2 minutes of easy paddling of 50% intensity between work periods. A full recovery of up to 10 minutes between sets is necessary to allow the build-up of lactic acid to oxidize and fully dissipate.

Two approaches to Lactic Tolerance training are beneficial:

Lactic Tolerance 'B' intervals are structured so that the rest interval is short, about 1/2 the duration of the work interval. The athlete will experience a constantly rising level of lactate concentration, while being forced to sustain high intensity work under increasing conditions of fatigue. This will take a tremendous amount of mental concentration and will-power to overcome the desire to stop or ease off the intensity.

Lactic Tolerance 'A' training on the other hand allows an athlete to experience even higher levels of intensity by increasing the rest period to twice that of the work period. This type of training will maximize boat speed and allow an athlete to develop their application of power with quick muscle movement. The emphasis should be to achieve extreme levels of lactate concentration of 12-13mM/l, also pushing an athlete's heartrate to their maximum levels.

Very short intervals of 10-15 seconds flat out work will increase the rate of glycolosis 1000% above that in a long distance run and will help to recruit muscle fibre, increasing strength. The down side, however, is that very short intervals will over time tend to decrease the number or capillaries bringing blood into the muscle, reducing aerobic conditioning.

Slightly longer intervals of 15-20 seconds will improve the use of phosphocreatine (PC) as an energy source to be used gradually over the duration of the race ie. enabling the power normally reserved for the 'start' or end 'kick' to provide a small but continuous contribution. It is important that the rest interval be kept long, close to 2 minutes, so that the work interval is kept alactic and sufficient time is provided to build-up PC stores. It only takes about 22 seconds to replenish 1/2 of PC stores and 44 seconds to replenish 3/4 total capacity. Work must be to absolute intensity so that the training effects will be confined to expenditure of PC and not glycogen. This type of training is ideal the week prior to race day since it avoids the longer term effects of fatigue.

Intervals of 60-90 seconds result in an increase in the amount of glycolytic enzymes improving the rate of glycogen mobilization and the muscles ability to tolerate the products of anaerobic metabolism. This duration of work interval will also help to smooth out the edges between the effects of different shorter distance training.

 In Anaerobic training you must realize that the greatest improvement is made if you push each exercise piece to failure since it is at this point the body forced to adapt (No pain - No gain)

 to combat Lactic Acid fatigue you must train hard, really hard which is a painful process (if it didn't hurt so much more people would be doing it - you need discipline to go beyond the pain).

As previously mentioned, too much stressful work can impair performance and can reduce Aerobic Endurance. It is therefore critical to organize a training programme to include longer Aerobic workouts within an Anaerobic training regime

Resistance training such as seat pulls or dragging tyres is also often used for anaerobic conditioning, however, it has been suggested that this is often associates with drawbacks to speed development and can create risk of injury.

THE CENTRAL NERVOUS SYSTEM

Canadian Community Dragon Boat Association

The Central Nervous System (CNS) effects muscle coordination and a breakdown of the working capacity of this system is a principle cause of fatigue resulting in loss of concentration and coordination, sloppy stroke technique etc.

The body as an organism is endowed with certain defense mechanisms which are activated if there is an apparent threat to its functioning. For example, fatigue brought on by the anaerobic metabolism is necessary since if the muscle were to keep on working at a maximal intensity, levels of lactic acid would increase to the point that it would become fatal to living cells. The CNS will also limit the amount of force muscles are able to exert in order to protect ligaments, tendons and the muscles themselves from damage.

Continuously stressing the body with heavy loads will allow the CNS to become more confident and correspondingly lower this 'margin of safety'. Regular repetition of a specific movement pattern under load also builds up the neurological pathways between muscles and brain thereby developing coordination and turning stroke technique into a motion which is second nature.

Training with uniform work of moderate intensity will improve the Central Nervous Systems' working capacity and improve the nervous connections required for coordinated function of organs and systems. Intense training will also teach your body to redistribute blood supplies efficiently from the stomach and intestines when there is a greater demand on specific muscles.

Waiting a good 2 to 3 hours after a meal will assist in training this aspect and will help to avoid the indigestion and nausea associated with training 'on a full stomach' when the digestive system is forced to shut down due to a lower blood supply.

STRENGTH

Canadian Community Dragon Boat Association

"Strength is defined as the neuro-muscular capability to overcome an external and internal resistance." The bio-mechanics and physiological characteristics of 'Strength' are extremely complicated, though following some basic principles of strength training will help to improve performance dramatically. This is particularly relevant as we age, since strength begins to diminish after we reach 35 years old, unless we make an effort to maintain it. It is quite easy to reach a performance plateau early in the season without a good strength base to enhance improvements.

For the purposes of paddling, strength is required for powerful acceleration and maintenance of speed throughout a race. To develop strength for paddling we will need to focus on selected muscle groups which are utilized in the paddling stroke.

It is normally more effective to increase strength with resistance exercises such as weight lifting, pull-ups/push-ups etc. and fixed resistance ie. isometric contractions. These are better and more efficient means to improving strength than resistance exercises conducted on the water.

Resistance paddling, such as pulling tires or seat races etc. have value as a specific application of strength, however they should be carefully be mixed up with speed exercises to prevent crews from getting in the habit of paddling slowly. In the event that paddlers cannot commit to a dryland weights training regime, resistance work on the water would be critical.

Strength training involves more than just hitting the gym and pumping a bit of iron. It must be planned out as carefully as a paddling programme. It is necessary to begin with a less specific level of general strength development and physical fitness as a starting point. For this reason 'pre-season' or 'off-season' training is vital to provide a good fitness base and maintain the gains made during 'race season' Sport specific training is not necessary in the 'off-season' in fact cross-training activities such as swimming, running, windsurfing etc., can be very beneficial to a competitive training regime. Non-specific muscles often get neglected towards the competitive phase of a paddling programme and can use a little work.

Strength Training Periodization

A strength development programme should be structured work together with a paddling programme. The effects of a maximum strength training regime can have adverse effects on specific endurance or speed, resulting in

frustration and a premature notion to scrap strength training all together. The final product of a properly structured strength programme, however is *'power'* and not *'strength'* alone. Power will make us paddle fast, but strength will not. Power is converted from strength though a carefully arranged process.

Typically there are four phases to a strength programme, namely:

Hypertrophy (4-10 weeks);

Strength (4-6 weeks);

Maximum Strength (2-3 weeks); and

Power (3-4 weeks)

a) Hypertrophy

Hypertrophy refers to building muscle mass. This is done with small loads of about 50-60% maximum capacity (1rm) repeated to failure, which should occur between 10-15 repetitions. For example if you can lift 100kg only once, then you should be able to lift 50 to 60kg 10 to 15 times in this phase until you can lift anymore. This is referred to as a set.

Repetitions should take 4 seconds with a 2 count lifting and a 2 count lowering weights. Care should be taken when lowering weights as this is often where many of the injuries occur. Rest periods between sets in this phase need only be 1 minute. It is also important in this phase to develop good technique to isolate the specific muscle exercised. If exercises do not adhere to strict technique, you can easily sustain an injury.

b) Strength

Strength results from recruitment of muscle motor units ie. muscle fibres and their associated nerves. This is done by increasing work intensity by adding weight and increasing rest periods. Weights in this phase should be about 80% 1rm so that failure is achieved in 6-8 repetitions, again at a rate of about 4 seconds per rep. Technique should be very strict to avoid injury. Rest periods should be 2 minutes between sets.

c) Maximum Strength

Maximum 'Strength' results from training at extremely high loads reaching 100% 1rm capacity with very few repetitions of 1-3, performed slowly. Maximum fibre recruitment is achieved in this phase, thereby affecting maximum strength.

Great care should be taken in this phase, with adequate warm-up precautions and warm-down to follow. It's best to focus on the primary muscle groups namely the Pectorals, Quadriceps and Latissimus Dorsi. Work on the secondary muscle groups such as the Deltoids, Trapezius, Biceps and Triceps etc. should continue with higher repetitions and lower weigh. Rest periods should be up to 3 minutes between sets.

Strict technique is an absolute must. Most shoulder injuries sustained by paddlers result from training with excessively heavy weights. Unless there is a real need for maximum strength, it is advisable to forego this phase and opt for more specific resistance work in the boat.

d) Power

Muscular 'Power' results from exercises that include a load which is about 30-50% capacity with 8-10 repetitions where contractions are performed at an explosively high speed. Care should be take when the muscle is extended ie. lowering the weight and a long rest interval of up to 5 minutes with relaxation exercises are advised.

This is the phase which ultimately converts strength to power by adding the speed component. Strength has no value in paddling unless it can generate force quickly. The result from this phase will be a slight loss in maximum strength, however the contribution to boat speed will be noticeable.

Endurance of power results from a high number of repetitions at a load of 40-50% capacity performed to failure (30-50 repetitions) at medium to fast speed with a 30-45 second rest interval.

The following weight training programme is provided which compliments the paddling programme in Section 2.6.

The types of exercises are diverse to focus on the principle muscle groups used in paddling. It is also important to note that exercises also work opposite muscle groups from those which are normally used in paddling in order to provide some stability and improve on maximum gains. Sets are organized antagonistically also to promote better gains and reduce training time.

For those who have time limitations in the gym, a more general programme should focus on Bench Presses, Lat Pulls and Squats as the primary exercises since they involve 80% of the muscles you will use in paddling. A caution to shortcuts, however, is that development of only the primary muscle groups may result in a muscle imbalance exposing some of the smaller stabilizing muscles to potential injury.

A variety of free weight exercises are preferred for this reason in order to promote stability and control in the smaller muscles such as the rotator cuff group.

In each phase it's important to stress strict technique in order to maximize recruitment of the appropriate muscle fibre. Relying on fibre from another muscle will not train the target group, and reduce the effectiveness of the exercise.

Speed

Canadian Community Dragon Boat Association

'Speed' is a function of reaction time, the number of strokes per minute (the rating) and the velocity the boat travels as a result of a paddle stroke.

The percentage of fast twitch muscle fibre effects an individual's speed potential, though it still must be trained properly to produce the desired force quickly and effectively. There are a number of factors which effect boat speed in a race which should be addressed independently, namely:

Reaction Time;

Acceleration;

Terminal Speed;

Maintenance of Terminal Speed; and

Speed Endurance.

Training for Speed

a) Reaction Time

Reaction time is a function of the Central Nervous System and can be improved by learning to respond to audible or visual stimuli. This might mean developing a quick response to drum beat changes in the dragon boat or fast switches from side to side in the outrigger. Reaction drills are critical for a good start, changes in race conditions or water conditions which require quick adjustments to stroke depth or body position. And of course avoiding a huli in the outrigger. Developing good technical skills to minimize movement in each stroke phase will help to reduce reaction time to changes.

b) Acceleration

Building up boat speed quickly is vital to sprint racing or to catch a wave in an outrigger. The ability of a paddler to accelerate depends a lot on his or her power to weight ratio. Dryland training will develop strength and power needed to get the boat moving fast in the shortest time.

The motor units in our muscles, however, must learn how to deliver a force quickly. More specific work in the boat such as acceleration drills for short distances is important or use of plyometric activities such as jumping drills or heaving medicine balls around helps to develop the necessary power. These are short-response shock type exercises.

c) Terminal Speed

Specific 'Speed' training results from repetition of a movement where speed ie. stroke rating, is increased progressively until maximum performance is achieved; short distance absolute speed or 'flying'sprints of 5 to 10 seconds, innervation drills (ie. paddling flat out with four ultra-fast strokes put in on command) or overspeed training such as down wind or with an engine all help to push the maximum speed of the boat up. Short bursts of speed following a resistance training session, once the load is removed, will result also result in performances at a higher 'Speed' for short distances.

Technical precision becomes important when approaching maximum speed, particularly when the rating is high. Without it, power is not delivered efficiently. The critical concern is learning to deliver maximum force while the boat is running at a high speed . In a fast crew, this can be difficult for more inexperienced paddlers.

d) Maintenance of Terminal Speed

Maintaining maximum speed relies partly on the development of the neuromuscular pattern of quick twitch contractions. It’s one thing the exert power to catch slow moving water, but when the boat is running fast it requires great effort to apply force consistently. You could compare it to trying to keep your legs moving fast enough when running downhill. The results can be spectacular!

Interval training where performance of maximum 'Speed' throughout a work-out can be carried out once the technical precision is attained. A higher rate should not sacrifice the length or quality of the Stroke, so it is important to coordinate increases in 'Endurance' and 'Power' to cope with the increases in 'Speed'.

It takes a tremendous mental effort to maintain high pace activities with a crew in unison. Maintenance of maximum speed results from your central nervous system learning to coordinate a faster muscle activity and adapt accordingly. Rhythmically alternating high and low intensities allows you to develop a sense of potential speed maximums or minimums and adjust your sense of rhythm to suit.

Ultimately the speed that the boat will travel through the water is a function of stroke rating and power; too high a rating will can result in loss of power unless the stroke technique is adjusted to suit the faster movement.

The optimum stroke rating depends on the conditioning of the team and their ability to adapt to the demands of a higher speed stroke technique. Measuring boat speed using a hull speed indicator, or timing the speed to cover a fixed distance is the best method to determine the effectiveness of different stroke rates.

e) Speed Endurance

Speed endurance relates more to the physiological aspects of performance and less on neuromuscular demands. Lactic tolerance development utilizing interval training, strength endurance work in the gym and specific training such as race rehearsals all contribute to a higher level of endurance for speed.

The Speed Reserve

The Speed reserve represents the ability of an athlete to perform at a higher speed over a shorter distance than that of the race. In simple terms, the faster you can cover a shorter distance, the greater endurance you will have over the longer distance. This important to realize when training for paddling marathons.

Even for 500m or 1000m sprints, by focusing on the development of a greater speed reserve ie. by increasing speed at even shorter distances, you can ultimately improve your performance over the longer distance of the race.

Care should be taken so that the gains made in shorter interval training are converted effectively into the longer distance race pieces. Becoming too familiar with a shorter distance of 50 to 100m may cause the team to 'hold back' on the longer distance for fear of burning out too soon. It is important to know your race piece intimately and how much power reserve you can draw on over the longer distance.

Nutrition

Small Ways to Lose a Big Gut

Canadian Community Dragon Boat Association

When you're trying to drop pounds, little things make a big difference. Here are 15 diet tips guaranteed to add up.

Drink a glass of skim milk as soon as you wake up. Some quick protein before you even step into the shower will energize you and end those morning cravings for Egg McMuffins and pastry.

Do 2 minutes of pushups every morning. It's tough to exercise as soon as you roll out of bed, but you can burn off 21 calories a day--2 1/2 pounds in a year.

Butter your muffin. A study at Ohio State University found that men who ate a little fat in the morning ended up with fewer fat cravings during the day.

Toss a quart of water in your briefcase. Water helps you burn calories--96 calories just by carrying a bottle while you walk for 20 minutes. Serve it over ice in your office and your body will burn 31 calories warming it to 98.6. Then there's the aerobic effect of all those bathroom runs.

Dilute your fruit juice. Fruit juice is sneaky fattening--a 16-ounce bottle of cranberry-grape blend contains 340 calories. Dump half and store it, then refill the bottle with water. You'll barely notice the difference, and you'll cut half the calories.

Brush your teeth when you're hungry. Sometimes the toothpaste flavor can take the edge off a sugar craving. Worst case: You'll have a dazzling smile.

If you feel famished, flex your abs for 15 seconds. Firming up your abdominals can cut the flow of chemicals that cause hunger pangs.

Eat in the right order. Eat your vegetables first, then the starches, such as potatoes and bread. Leave the fattiest items, like meat, for last. You may fill up before you finish the sirloin.

Hold your fork with your left hand. Using your nondominant hand will slow you down and help you eat less. Okay, it's a stupid tip, but not as dumb as showing butt cleavage in your husky jeans

Listen to slow music while you eat. Studies have shown that people who listen to relaxing music during meals chew at a more leisurely pace and eat less than people who have "Johnny B. Goode" in the background. If you can't stand slow music, think of cows grazing. Really thin cows.

Don't go fishing at the drive-thru. Fish has a health-food reputation. But let it swim by at fast-food franchises. McDonald's Filet-of-Fish has 450 calories and 25 grams of fat, twice the calories and three times the fat of the basic burger.

Go light on the starch. It can cause an insulin surge, which favors your body's fat-storing mode. The result: Excess calories go right to your gut. Lay off starchy foods unless you're thin, and do at least an hour of aerobic exercise every week.

Keep a glass of water and some grapes by your bedside table. If you're the type who wakes up hungry in the middle of the night, the fruit and water will save you a trip to the kitchen, where the last piece of chocolate cake awaits.

Use condiments. One important secret of weight loss is making bad foods taste good. Slather the right grainy mustard on a vegetable sandwich and it becomes downright delicious. Use Worcestershire sauce to spruce up steamed broccoli and other healthful foods. Brush barbecue sauce on grilled vegetables and you'll actually crave that eggplant fillet.

Smell your food. Studies have shown that once you start eating, smelling your food can make you stop eating sooner by satisfying you faster.

Steering

Water Safety

Hana Hoe Series

Risks and Responsibilities

It is a sad fact of human nature that until we are forced to face the fact (and although every person in the outrigger is responsible to some degree for insuring their own safety), steersmen, coaches, clubs and club presidents, associations and association presidents, race promoters/organizers and even outrigger manufacturers ALL have a moral AND LEGAL responsibility to address safety issues! (pertinent laws and legal theory will be covered in a separate installment).

ROUTINE REDUCES RISK

Arrive at the outrigger having already listened to the official weather report and observe local conditions. Since the steersman is legally responsible while underway, put that person in charge of safety. If they fail to see that ALL required equipment is going out with the paddlers, YELL AT THEM!!! The steersman may assign certain duties amongst the crew, but he/she is STILL scrutinized FIRST.

Consider the Circumstances

Are the conditions rough? If so, are you going out in a Malia-Type outrigger or a Bradley-Type outrigger? Should you use a cover? Are you and your crew dressed (particularly if cold) properly? Do you have the right emergency equipment aboard? Is there a possibility that you may be on the water after dark? Was a float plan left with someone ashore (in case you are overdue)? Does everybody know what to do in case of an emergency? ANY emergency? If you, as a steersman OR a coach, do not consider these and similar questions EVERY time you launch? Perhaps your replacement will?!

Safety Training

Do you have at LEAST one person at each practice who is currently certified in first-aid and CPR? Steersmen? Coaches? PRESIDENTS? Perhaps your replacement will?!

A Good Steerer:

Kihei Canoe Club

- is a good communicator - he talks to his crew continually - to motivate them, to advise them of his intentions in advance, to correct them, and to train them in paddling technique;

- does his fair share of paddling - he is not a 'passenger';

- participates with enthusiasm in the cultural aspects of the Visitor Paddle - learns the common Club chants and, explains their meaning and significance to his crew;

- is a team player - his crew's success is his success - his Club's success is his success;

- anticipates his crew's needs and limitations, and accommodates them, as best he can;

- is tactful in his use of words and directions to avoid embarrassing any individual;

- admits his own frailties, limitations, and lack of knowledge of certain subject material;

- graciously gives up seat 6 to train a willing paddler to become a steerer;

- who has been away from paddling for a several months or longer - avoids steering responsibility until he has sharpened his paddling edge during a couple of paddling practice sessions;

- puts crew safety above all else and when need be, errs on the side of caution, and;

- at all times enjoys a leadership role - he represents the Club - he supports the Board - he maintains familiarity with Club policies and procedures, within which, he sets a good example for all to follow.

Water Knowledge

Introduction to Wake Riding & Drafting

(Jude Turczynski)

In this series of diagrams, it's my attempt to provide information on wake riding and drafting that the reader can easily understand and put to immediate use in almost any craft, and especially in OC-1 though OC-6s. I do

believe that using this knowledge can result in boat lengths of advantage, and that every crew & solo finds their self in a position inescapably close to another canoe on more than one occasion during a race, usually at the start & finish and near the turning points as well as when rounding coastal outcroppings/obstacles.

The following paragraph is of great importance to remember while learning to wake ride:

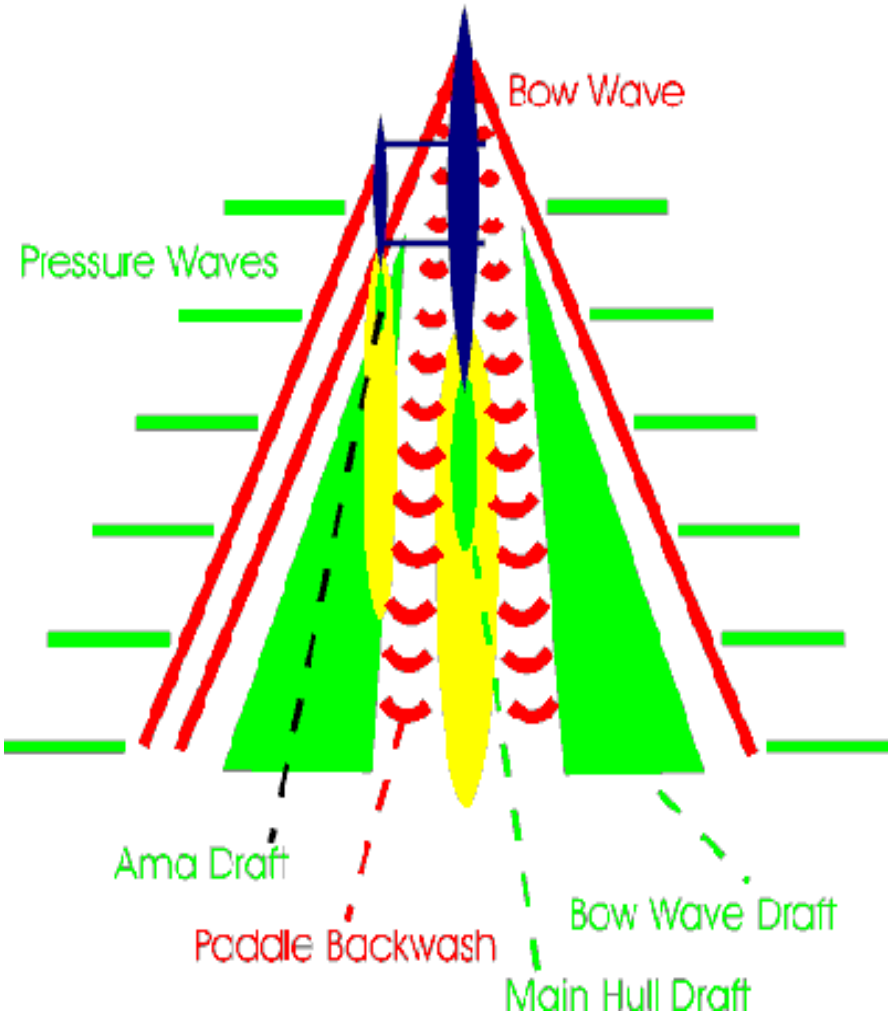
It's important not to plan your entire race around the use of these tactics. **These tactics should be used only when you must stay close to another canoe due to conditions and situations in the race course.** It can be more productive to depend on yourself or your crew's ability to pull your way past another canoe without entering their wake field. Some paddlers may loose concentration when trailing behind another canoe and so the speed may drop. Some paddlers get discouraged and some just won't like what you're doing and won't contribute when you take them real close to another canoe.

Another important factor is the ability of yourself and your opponent. You have to be able to maneuver your canoe without over-steering or missing too many strokes. The steersperson in the other canoe should be able to keep the canoe from zigzagging so much that you won't be able to control your position in his wake field. And if you get in real close, you don't want to be playing bumper boats or getting caught up in each others rigging. Remember that these waves, drafts and backwash exist even in rough water though their effect may diminish when the surrounding swell and wind waves are much larger.

In order to better communicate positioning and location, I've developed terminology for certain waves and currents found around a moving canoe. Click on the figure below to view a diagram of these currents & waves and their names.

HUKI
OUTRIGGER CANOES
SACRAMENTO, CA (916) 730-JUDE

DRAFTING TERMINOLOGIES



Climbing the Wake Field

The race coarse may be narrowing ahead and you may have found yourself trailing an opponent by just a few boat lengths. At some point, a decision is made to try to take advantage of your opponents wake since you cannot escape it. You should have been sizing up that steerspersons ability to keep his/her boat on coarse and their tactical savvy and desire to recognize your efforts and put a stop to what you're doing. Then, it's time to move inside the wake field.

First, climbing onto the pressure waves that run ahead of the bow wave. These are quite small and have little value, but they definitely don't slow you down. They're largest near the bow wave and they're traveling in almost the same direction that you want to go. If you're going to hang out here, try not to let any part of the canoe touch the bow wave.

Crossing the Bow Wave

Having the bow wave pass under your canoe is disrupting to the glide and trim of your waterline. It can cause the canoe to porpoise and roll as well as turn from side to side. When the bow wave is under the forward half of your canoe, it has the effect of making you climb up a wave (up hill). When the bow wave is under the aft half of your canoe, it can make control so difficult that anything gained from riding the wave is lost in excessive draw strokes and ruddering. It's best to just get off of it as quickly as possible. It's not going your direction anyway. Remember, that the bow wave is traveling to the side and not directly forward down course, so a good ride can be had but you won't be going in the right direction. Which ever part of the canoe that touches the bow wave will be drawn up onto it, especially when you're in front of the bow wave (the closer you are, the worse it is). Sitting on the bow wave is not a good place to be!

Riding the inside wake

The Inside Wake waves are between the two bow waves behind the canoe. These wake waves are traveling in the same direction as the canoe making them. The biggest and easiest wake waves to ride are within two boat lengths of the leading canoe.

As you get closer to the lead canoe, your room between the backwash and bow wave narrows. When this happens, you can place your ama in his draft with your main hull between the backwash and bow wave (straddle the back wash). If you're on the left side of the backwash, trailing the tail end of the ama draft, it won't hurt much to let your ama climb up on the left bow wave. Remember not to get the bow of your canoe too close to the Bow Wave which will draw your bow towards the wave causing loss of control. You'll be pulled to one side, you'll over correct to the other... the next thing you know... ZIGZAG.

If you can't take the heat...GET OUT! Look for undisturbed water somewhere else, nurse your wounds and get on with winning. If your race coarse offers no where to hide, make the best of your bad situation by using these tactics to the best of your ability. You can do this.

Crossing the Backwash

The paddle backwash current is traveling in the opposite direction of your desires. This is obviously is not the place to be. It will wear you down quickly and discourage your crew. If the steersman in the leading canoe keeps turning his head to look at you, he may be trying to position himself so that you stay in that back wash. Don't let them "give you the backwash."

Be careful of your steering corrections. The draft behind his main hull will draw you in and could cause you to zig to one side (overshooting your goal), and overcorrect to the other side, zag!

In the Draft

You hear a lot about drafting. You may seldom experience it for long in a race, especially in an OC-6. Weather and water conditions should be right as well as the crews ability to pull under stress. When in the draft, practice and talent will payoff. Drafting is most effective when racing into a head wind. It's then that you can take full advantage of your trailing position in the race. For instance, if the wind is passing over their starboard fore quarter (right front), you'll want to draft in the lee of their canoe (the side that's protected from the wind), at their aft port quarter (left rear). The main hull draft exists for about one boat length behind the leading canoe, just enough room for you to slip in and catch the ride.

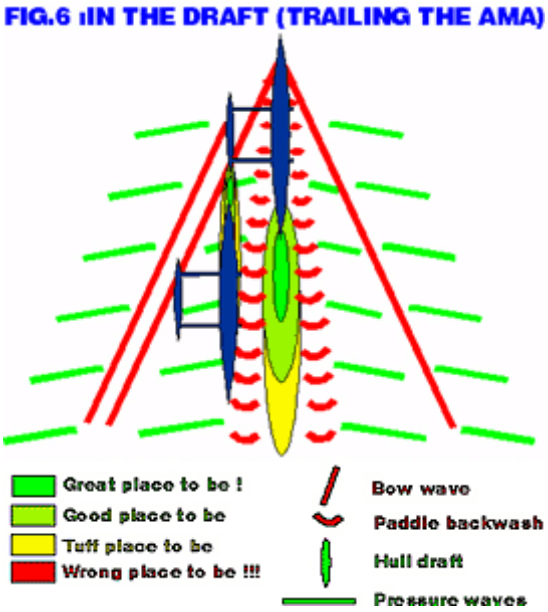
Here, it's important to have a telepathic connection to your stroker. Hopefully, you both think alike and communicate with few words. He can make steering in this tiny space a lot easier by slightly drawing the bow into the desired position. To avoid collisions, you can ask him if the bow of your canoe will clear the stern of the leading canoe by yelling a single word request, like "CLEAR?". When the steersman keeps asking, "CLEAR?" the stroker can assume that his/her steersperson wants the canoe to back off enough to clear the leading canoe and so the stroker can ease back on the power just a little to back off enough to clear (only the stroker should back off).

It's okay to overlap with the leading canoe for just a foot or two. There is an advantage to doing this in that when his stern swings into your bow, your canoe will be in the right place. When his stern swings away from your bow, you can't overcorrect when you try to match his movement because his canoe will stop you. This is generally regarded as extremely uncool and if you should accidentally spin them, you'll be disqualified. The draft does actually exist as far forward as the rear iako. Drafting like this can lead to collisions and tangles that aren't worth it. They could decide that they've had enough of this dangerous interference and push you away. If they do, you deserved it. Don't put people in danger!

Though you can't see the main hull of the leading canoe very well from this position, you can see their ama just fine. By looking at the ama, you can tell which way your opponent is turning and how far ahead they are.

If the conditions are right and the crew is experienced, you can let the draft pull you along over great distances allowing your people to catch their breath in preparation for the power-up to pass. I've seen canoes draft for miles and then, pass in the last mile to win. No doubt, it can work!

In The Draft, (Trailing the Ama)



In the Draft, trailing the ama. This is a really great drafting position to be in, even in head winds. Watch the main hull to tell where your opponent is going. The ama draft extends some 30 feet behind the rear iako and very close behind that draft are the wake waves, so you always have very favorable stuff behind the ama. Be careful not to catch your bow under their rear iako. You can easily get tangled with the other canoe here.

The draft is best within a foot of the ama and is worth trying to ride if the conditions are right. This is an especially good place to be if there's a head wind coming from the right fore quarter.

All other techniques here are the same as when drafting the main hull of your opponent.

Riding the Outer Wake

These waves are traveling with your direction and can help you if they don't cause you to spend too much time drawing and ruddering. The closer your stern is to the bow wave, the more difficult it is to control the canoe.

If you're in shallow water, say, less than 20 feet deep, you might be better off moving far enough away from your opponent as not to be in his outer wake waves. I believe they are pressure waves that can bounce off the bottom and slow down your canoe if the distances and positions are right.

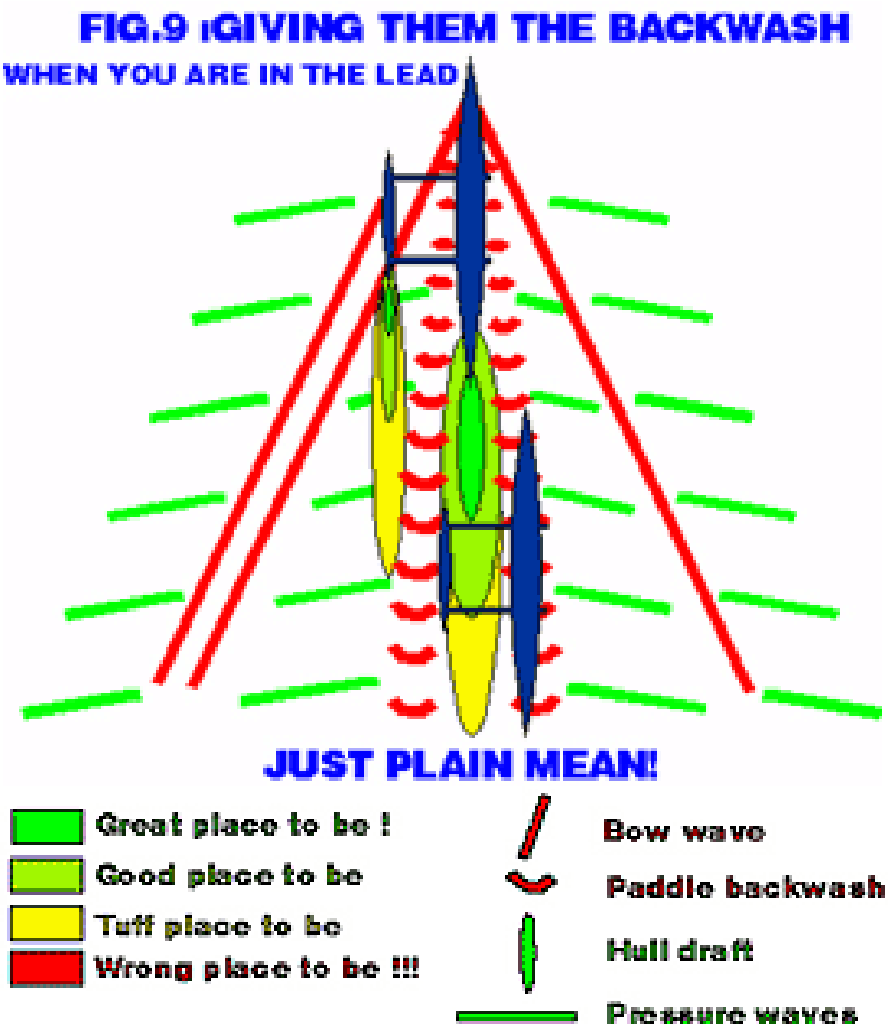
Dropping a Bow Wave

When you're in the lead canoe, you can still use the knowledge of wake riding and drafting to your advantage! It's important to remember not to let this strategy carry you off coarse. If you can limit your side to side movement to 50 feet over a half mile of race coarse, that's fine.

Dropping a bow wave across seats one and two of your opponents canoe will cause his boat to porpoise and climb the wave. Don't spend too much time and attention looking behind you. If you dropped it on him for a moment, that's plenty. If they're unaware enough to wallow in it, give 'em all they'll take. But let me remind you, stay focused on YOUR progress, not theirs.

If you're in a head wind from over your right bow, you might drop your right bow wave on them. Keeping them from finding your lee and making sure they stay exposed to that wind during all their attempts find a good position. This tactic is probably the most effective method of impeding the progress of an opponent. Intentionally performing this tactic may be against the rules of some racing associations! If so, let me know which association you're with.

Giving them the Backwash



As much as we try to anchor our paddles in the water and not let them push water behind us, we do ...a lot! This water is moving at such a significant speed and volume that it can be used to slow your opponent. Here again, don't get off coarse. Your race coarse is always in front of you.

This strategy works best when your opponent is within a couple boat lengths of you. When you keep turning around to see if you have a direct hit, your opponent will know what you're trying to do and she/he will compensate. He may decide not to draft you or wake ride you at all, which may also be to your advantage. Remember not to make sudden corrections, rudders or drawstrokes that may slow your progress and allow your opponent to find your draft.

In a head wind coming off your right bow, you may want to position yourself to his left. Feeding him your right side backwash thus also keeping him in the wind and out of your lee. If they're close enough for you to use this strategy, they're near enough to find your draft. That's okay, cause you're gonna smoke 'em anyway!

NEXT CHANGE, ...POWER-UP!!!!!

Wave Theory

(Jude Turczynski)

In wind chop, you have to find waves that are moving faster than 8 miles per hour to really have any fun. The height of these waves will typically be between .75 meters and 1.5 meters (not counting the height of the faster moving swell). The **waves move in groups of about four-six** wave sets. These sets move together at a slow pace of about 4-5 mph but the individual waves in the set move at about 8-15 mph. At the back of a set, a wave raises. As it moves forward in the set, another wave raises behind it and will follow the first. These **waves move forward to the front of the set where they shrink down to nothing, as another wave raises in the back.** So there is no doubt, when you catch a wave, you're gonna eventually loose it.

Racing

Racing is Different (sprints, short races, long distance, etc.)

Kihei Canoe Club

1. Nothing in this document is intended to interfere with racing steering tactics. ***Indeed, nothing in this document deals with steering per se*** - that's an acquired skill that is first learned through instruction by a Club assigned trainer. Steering skill is perfected by practice, practice, and more practice.

2. For more information, with respect to the actual steering of an outrigger canoe, the **suggested** reading is: THE ART AND SKILL OF STEERING - Kanuculture outrigger canoeing technical manual (Batini Books 2003 www.kanuculture.com).

3. During races, canoes are often found in very close quarters; minor collisions are a risk

4. The racing environment is difference - the coaches teach maneuvering techniques that are applicable to that setting.

5. Notwithstanding, the canoe needs to be launched and landed on the beach - and, a canoe may huli during a race - the procedures for these occurrences are virtually the same as for recreational paddling.

Crew Stuff

Time Committment

TIME REQUIREMENTS FOR RACE PROGRAMMES

Vernon Racing Canoe Club

Paddling in a competitive club is a commitment of time, money and effort. The biggest obstacle and most-often the major barrier to participation in a club is the commitment of time.

If you have committed to a race team, you will be expected to show up and participate at all practices (at least three times a week), as well as showing up for races. All paddlers are expected to occasionally show up for a club "work day" to fix boats or clean up the club site. If you must miss practices, try to book a session in the OC-1 or OC-2.

Coaches and club officers, of course, invest much more time preparing paperwork, organizing club activities, representing the club to the canoe associations, and making sure all the equipment is ready for practice.

It is understood that all paddlers are amateur athletes and all of us have jobs, school and family commitments that must be given due consideration. In the final analysis, however,it will be those who have invested the time and effort to become good and dependable paddlers who will be chosen to fill racing crews.

Work and school come first. Paddling will always be here.

Paddling with VRCC can be a rewarding social and personal experience, if you are able to invest the time necessary to make your participation worthwhile.

If, however, you cannot make the commitment in time to this sport, you should not be disappointed when those who do invest the time advance in skill and secure crew placement. There is a lot of room in our club for those that want to participate on a recreational basis.

ATTENDANCE/PARTICIPATION

Waikiki Yacht Club Canoe Team

Policy of the club: Those who participate will have first priority to make crew.

Definition of participation is regular attendance, good attitude, good teamwork, and a demonstrated desire to be part of the WYC program. Participation also includes accepting ancillary duties and always helping to carry the boat. Anyone who does not help carry and stack will be designated "non-participatory" and will not be offered a crew seat.

Do more than just paddle: In a club like ours, the members themselves must take on responsibilities. We do not have a "den mother" or "club owner" who does everything. We need our members to know how to rig, how to canvas, and help fix and repair equipment. We will also need help to make our races, parties, and pot lucks a success. We need someone to haul the boats every week. We need someone to be responsible for Rigging and First Aid. We need someone to be responsible for the tent every week (Novices and Kids put up and Masters take down but someone has to be ultimately responsible).

In this club, helping out counts as "participation."

You help the club, the club will value you.

Be On Time: We cannot and will not wait for late paddlers. If crews have already departed for the evening's work out, late paddlers may take out one-man's and join the group, or do land training (run, push-ups, pull-ups, sit ups). If you are part of a "crew" and will be late (for whatever good reason) please call the Yacht Club at 955-4405 and let a coach know you will not be coming or that you are going to be late.

Race Crews

Waikiki Yacht Club Canoe Team

Coaches will advise you of the race crew selection criteria at the start of the season, and discuss the program goals with the team members. Absence from practice during the week before a race will result in being dropped from a race crew (provided a suitable substitute exists).

Crew Choice:

Waikiki Yacht Club Canoe Team

Coaches will call crews. There is no appeal process except to the head coach (Ray Kaneshiro).

Disaffected/Unhappy Paddlers: If you do not like your crew, your coach, or the club, you should try to work out your problem with someone on the coaching staff. If you cannot resolve the matter to your satisfaction, we encourage you to find another club that may be more appropriate to your needs. Do not stay and "talk stink" to or about other paddlers. As a courtesy to you, we will not refuse to sign any release form to any other club or association, unless you owe money for dues or a fundraiser.

Additional Techniques

Racing Turn

TURNS

Kihei Canoe Club

1. Turns (direction changes) are usually made towards the left - towards the ama side

2. Look over your shoulder to the left (and to the rear) for other vessels, before you execute the turn

3. Instruct the crew to paddle forcefully, to speed up the canoe to facilitate steering

4. Instruct the stroker to kahi, if you need help to tighten the turn.

RACING TURN (LEFT TURN)

Vernon Racing Canoe Club

As you approach the flag/buoy (at approximately 2 canoe lengths) the Steersman will call "TURN COMING UP"

NUMBER 3 SEAT make sure to call change to put Seat 2 on the LEFT (Number 1 on the right) when you get approximately 1 canoe length away from the flag or almost immediately after your hear the steersman say "Turn Coming Up."

As you enter the turn, the Steersman will call "UNI"

NUMBER 1 SEAT poke blade in on the right and kick water to initiate left turn.

NUMBER 2 begin to Draw Left.

NUMBERS 3, 4, 5 keep time but do not power.

Steersman will call "OVER" (Some steersmen will call "DRAW" for this command)

NUMBER 1 & 2 SEATS will Draw Left.

NUMBERS 3, 4, 5 paddle hard!

Steersman will call "STRAIGHT OUT"

NUMBERS 1 & 2 paddle forward (both on the left now)

NUMBER 3 call an immediate change in which all paddlers change sides, except NUMBER 1.

NUMBER 3 then count an 8-count and call change again (short call) then count another 8-count for a second short change over (in order to get the boat moving again).

RACING TURN (LEFT TURN)

Waikiki Yacht Club Canoe Team

As you approach the flag/buoy:

Steersman will call "TURN COMING UP"

NUMBER 2 SEAT make sure to call change to put yourself on the LEFT (Number 1 on the right).

Steersman will call "UNI" (poke hard on the side of the canoe)

NUMBER 1 SEAT poke blade in on the right and kick water to initiate left turn.

NUMBERS 2, 3, 4, 5 paddle hard.

Steersman will call "OVER" (Maintain left poke)

NUMBER 1 & 2 SEATS will kahe left.

NUMBERS 3, 4, 5 keep time, but do not "power"

(Some steersmen will call "KAHE" for this command)

Steersman will call "STRAIGHT OUT"

NUMBERS 1 & 2 paddle forward (both on the left now)

NUMBER 2 call an immediate change in which all paddlers change sides, except NUMBER 1.

NUMBER 2 then count an 8-count and call change again (short call).

Exercises

Vernon Racing Canoe Club

There are many exercises which crews are expected to execute to improve crew efficiency or to accelerate. These are a sample:

"NEXT CHANGE, TWO AND FOUR ONLY" or "NEXT CHANGE, SAME SIDE DRILL"

During the next change, only seats two and four will change over putting everyone paddling on the same side of the boat. This is for timing and technique practice.

1&2 – 3&4 SAME SIDE!

Next change, seats 2 and 3 change only so that 1&2 paddle together and 3&4.

CHANGE ON THREE!

Seat 3 calls changes every three strokes to practice the change over specifically to keep the boat moving during the change and to keep everyone in time during the change.

"NEXT CHANGE, THREE POWER TENS" (or eights)

Starting at the next change, bring the stroke rate up a bit and power up to 100 %. Changes are called at every ten strokes (or 8) for three changes. Used when boat slowing or to focus the crew.

"TWO AND FOUR ON THE AMA" or "WATCH THE AMA"

When the seas are heavy and the boat gets "tippy." The steersman is alerting 2 seat and 4 seat to be aware of the movement of the ama.

"SILENT CHANGES"

An exercise where the crew all changes at a pre-determined stroke count...without Seat 3 calling a change. It promotes intense focus and concentration in the crew.

"BLIND TIMING"

Seats 1-5 paddle with their eyes closed, keeping time only by the rhythm of the boat and the sound of the other paddles hitting the water.

The crew must focus on the rhythm and feel of the boat.

"TWO MINUTE PASSING DRILL"

This is a practice exercise that trains crews to apply the mental and physical intensity necessary to pass another crew. When practicing in multiple boats, the first (lead) crew slows just enough to give the trailing boats a "chance" to pass. You have two minutes to pass. After the last boat passes, the new lead boat slows down just enough to let trailing boats attempt to pass.

The idea is not to simply let the trailing boats pass, but to give them the opportunity to try to pass. The value of the exercise is for the trailing boats to apply full power and maintain it long enough to make up ground and surge ahead.

Hard Start

Vernon Racing Canoe Club

Getting a good start is critical to winning a race. Especially in regatta racing, the start can give you both a physical and psychological edge over other crews.

Mental discipline is the primary foundation for a successful start. When your steersman calls "Paddles Up" (or any other "set" command) you should focus your attention solely on your own boat.

On your start command (whether it be "Hit" or "Imua" or "Huki") drive your first 3-6 strokes firmly and deliberately. Remember that you are applying force to move 1,200 to 1,300 pounds of mass and you are trying to get that mass moving as quickly as possible.

After the first deep strokes, your stroker will pick up the pace. Focus on being in time (synchronized) and pulling hard. Depending on the crew and the success of your start, your Number 3 may not call a change for as many as 16-20 strokes. This allows you to apply smooth even power without the interruption of a change for as long as possible.

After the third "change," the crew should "settle in." What this means is that the boat should have reached a speed sufficient to "glide" or plane through the water. At this point the crew should adjust its pull and stroke to take advantage of the boat's momentum (remember you now have 1,300 pounds of mass going forward).

Common errors in starting are:

being distracted by other boats and other crews;

not starting together so that the timing is off from the very first

stroke; and not properly executing the hard, deep pulls to move the boat.

Stroke Rating

Canadian Community Dragon Boat Association

One of the most immediate features of stroke technique which can be readily adjusted is the RATING and finding the 'right' rating is the greatest difficulty many teams face. There is a delicate balance between boat speed and rating which is effected by the conditioning and strength of a crew and the duration of the work load.

Basically, the faster the boat moves, the higher the possible rating. Conversely, however, a higher rating will not necessarily translate into a faster boat speed unless the crew is fit enough or well prepared to respond to the demand. CONTROL and POWER must take priority over RATING and even if one paddler fails to keep up to the pace set by the rest of the crew, then the boat will not run at its optimum speed. Ideally, a team should strive to maintain the length of stroke yet at as high a rating as possible.

Demands on rating depends very much on the calibre of competition. For example, the top Dragonboat teams in International level competition rate between 85 to 96 strokes a minutes with rating surges that top out between 98 to 120 (Nam Hoi bursts out of the start with a blistering 130). Rating at 75 to 80 will not allow a crew competitive in an International class regardless of how much power they can muster. On the other hand, at a local, competition, the more effective teams rarely go beyond 80, and very often teams that attempt to sustain ratings of 85 plus, fade quickly due to the lack of conditioning required to maintain such a pace.

A large problem is that a crew will not physically be aware that their rating is too high until they are well into a race and they start to fail due to lactic acid poisoning. A critical part of training a crew is to develop the discipline to maintain control over the natural desire to exceed their limitations in the heat of a race; a crew must learn to push the rating as high as they can, but only as far as it contributes to a faster boat.

Changes in rating play an important role in the development of a race strategy and a crew must be well versed in the technical differences and varying degrees of endurance that are associated with different stroke rates. Generally a slower rating will be accompanied by a longer stroke length with a greater emphasis on torso rotation and pull with the lower back muscles.

Consistency and maximum use of power through the COMPRESSION phase is the critical aspect of a lower rating which allows a paddler to function at a level of intensity just below his or her anaerobic threshold.

At a higher rating of 95 plus the characteristics of the stroke technique changes dramatically with a reduced length of stroke and less movement of the lower torso.

A powerful propulsion comes more from the CATCH and FINISH since the COMPRESSION power phase is reduced in length. The CATCH location should change very little and only the FINISH position is moved forward, requiring the paddler to lock the angle of his torso forward and to derive power from the rotation of his upper shoulders and arms.

Being able to shift easily from the long to middle to short stroke technique is vital and improper training will lead to a paddler becoming overly taxed and frustrated at attempting to apply a long stroke technique to a high rating or trying to apply a high rating to a boat which is just not moving very fast.

Water Changes

Lori Stewart and Jackie Webber False Creek Racing Canoe Club

There is a lot going on when a water change is occurring and everything happens so fast that there is no time to think about what is going on. The secret to doing successful water changes is:

1. To develop an "AUTO PILOT" – This is done by practicing changes slowly from start to finish in stages.

2. Practice your changes using mental visualization.

Mastering changes is hard work, BUT changes don't have to be hard or painful. Changes can be challenging and fun rather than intimidating and scary.

IN THE WATER

Once you have left the comfort of the escort boat, you need to do a few things:

1. Line up in order with the appropriate amount of space between you and the next paddler.

2. Raise a hand in the air so your steersman can line up with you. As the canoe gets close, have your left hand up so you can make contact with the canoe and protect your head from the iakos.

3. When in line, let the canoe come to you – STAY IN A STRAIGHT LINE DO NOT SWIM TOWARDS THE CANOE.

4. Call out your seat as the canoe approaches you.

5. As the canoe approaches you, you should be focused on the canoe and know exactly where you will grab the canoe.

IN THE CANOE

A change is coming up and the whole boat needs to be ready for it …

1. The caller makes the appropriate changes to get paddlers on their correct side coming into the change (the people getting out are on ama side.) This way the people getting into the canoe won't have their blades in their face before they grab the canoe, which combined with dodging iakos can be distracting and ruin your approach. Also, the paddlers staying in, can paddle hard without having to avoid heads and other body parts. This approach works the best with 1 and 2 person changes. If you are doing a 3 person change, you can choose to have one of the paddlers staying in, paddling ama side once the bodies have gone past them. (This is a fine tune point which should be worked out as a group.)

2. If you are the caller and you are getting out, it is your responsibility to pass the "calling duty" off to a fellow paddler who is staying in the boat, **well before the change occurs**.

3. Once the signal for a change has been given from the coach boat, a designated paddler (the caller or steersperson usually) should clearly announce the upcoming change *(ie. Seat 2 and 4*). It is then sometimes a good idea for everyone to echo the instigated "*change call*", to ensure that everyone is aware of the upcoming change and who will be exiting the boat.

4. **If the canoe is skirted**: at a reasonable time before the change, the steersperson will call for paddlers to "UNZIP". *Unzipping* always occurs from BACK to FRONT. The logic here is that the bow seats take on more water than stern seats; thus, the fronts should unzip last. Once the paddler has unzipped they call out "4 seat unzipped" nice and loud. And up the boat it goes, one at a time, with the next paddler unzipping.

THE CHANGE

APPROACHING THE CANOE:

1. Left hand in the air should make light contact with the side of the canoe. This is for *proprioseption*, meaning that your body knows where the canoe is by touch and vision.

2. Your body should be no more than arms length away from the canoe and no less than one foot. (this will allow you to establish proper "ATTACK DISTANCE", which is a must.)

3. Try to keep your legs as close to the surface of the water as much as possible in your approach, it would be useful to use more of a breast stroke approach. Prior to grabbing the canoe, your feet are on the surface of the water pointing away from the oncoming boat. This prevents paddlers from grabbing the canoe with their legs directly under them, which will cause a drag on the boat.

THE GRAB:

1. Look for your spot to grab (which is usually marked with tape on the side of the canoe at the front of each seat). At this point, the paddlers full concentration should be on **WHERE** and **WHEN** to grab the canoe. The rest should be AUTO PILOT!!:

2. Extend your arms and reach towards the "grab spot" with both arms. Legs are behind you close to the surface.

3. As soon as you touch the canoe you kick with your legs (scissors or dolphin kick). The most common error is grabbing late. If you grab late, the canoe stats to pass you, your legs sink deeper into the water and you end up clinging to the canoe with your legs flailing behind you. If this occurs, you'll have to use a great deal more energy and muscle to get in. If you time it right, you won't have to be killer strong! (*Technique and Timing is key*) "SO GRAB EARLY AND GRAB WITH EXTENSION!"

4. Your kick coincides with your arm pull. It is one explosive, committed, and" whole body" effort that takes you to a "front support position" (both your hands and hip line on the gunwale – with your weight on your hands.)

5. From the "Front Support Position", lean forward slightly to get your legs out of the water and simultaneously reach for the far gunwale with your **right hand**. If you keep your left arm straight and strong, your bum should be

almost be inside the near gunwale. Twist your torso to the left so your bum finds the seat, then swing your legs in and pick up your paddles and GO! ***note** The important part of the change is getting to the front support position and then reaching for the gunwale with the right hand. It is important to find the far gunwale because your body then knows where it need to go: between your hands! If you can get to this position you can step into the boat, fall in, "bum in", crawl in, etc. They key is you are not slowing the boat down by dragging your legs in the water.

GET OUT!

The change is close, you're unzipped, you're paddling on the correct side and you're ready to get out …

1. **Timing** : When your replacement paddler is about a "2 to 3 seat distance away", you should be stowing your paddle. When they are a "1 to 2 seat distance away" you should be getting out. ***note:** Try not to get out too late because you will interfere with your replacement paddler… Also, if you stop paddling and stow your paddle too soon, and time passes before you get out of the canoe, the rest of the paddlers will be pulling dead weight!

2. Stowing Your Paddle: If your canoe has paddle clips, simply ensure your blade is down and touching the bottom of the canoe and clip the shaft of the paddle into place (vertically). If there are no clips, you need to stow your paddle on the far right hand side of the canoe, blade is down in the canoe and the paddle handle rests on the right hand side of your seat. This allows for as little disruption to the paddler trying to enter the boat. **"TAKE THE TIME TO STOW YOUR PADDLE PROPERLY!"**

A NOTE ABOUT SPRAYSKIRTS

1. Misconceptions: Some people seem to be a little more reluctant about doing changes with skirted boats for the following reasons: *"the spot I have to get into is smaller" "I can't see the seat" "The skirt is slippery"* To clear up this issue…the sprayskirt is your *friend*. If it is fully unzipped, there is lots of room. If the front of the seat is marked by tape on the side of the canoe, below the skirt, you shouldn't have any problems. The hoops will also alert you that your seat is coming up. Actually, you'll find that the skirts give better traction than any unwaxed gunwale, so go for it, use it to your advantage!

2. Zipping Once the change is complete in a skirted boat, the call to zip up can occur (generally initiated from the caller or steersperson). Zipping occurs from the FRONT to the BACK. The call would then come from the front most paddler ie"1 seat zipping" …"1 seat zipped". Then down the boat, with the next paddler calling out that they are zipping and then have successfully zipped. Only one paddler zips at a time.

3. Bailing If a change has occurred and it's not too rough, sometimes 4 or 5 seat (bailing seats) can leave their skirt unzipped to bail after the boat gets up and running again. If 4 or 5 seat decides to bail they should indicate this to their teammates by calling "4/5 seat bailing"

MENTAL VISUALIZATION

Mental Visualization is a process that is encouraged to help you with your changes. You need to be able to "see" yourself doing changes correctly, competently and with precision. To do this, find a time when you are relaxed!!! (maybe a quiet time at home, just before falling asleep, just as you wake up, sitting in your parked car or maybe at work?!?!) Picture your water change with the "picture" that you are physically in the water and the canoe is approaching …(Visualize your exact position as the boat approaches) …What are you doing? Is your left hand up? … Make contact with the canoe …look for your grab spot …focus on it …legs are close to the surface … reaching for it … GRAB /KICK … front support … reach for the far gunwale … get my legs/bum in … there's the paddle … look up … Which side do I start on? … OK …**GO!** Now, picture the same successful change from an outside perspective, as if you are watching a video tape. Go through the same change. See you change in slow motion with all the stages – and then see it at full speed, being precise and powerful with no wasted strokes. Try to stay focused (you should not be distracted in the middle of any mental training.) Always visualize the perfect change with no errors. Never see yourself fall, stumble or cling – it's not an option! If you visualize often and practice often you will have great changes! **GOOD LUCK!!**

Escort Boat Safety!

Skipper Rich Lagrand – MDROCC

More and more often I hear how it is becoming harder to get escort boats to support races. For most recreational skippers, supporting 9-man Kanu races is the most hazardous and stressful activity they will ever participate in with their boats. Particularly so in the early part of the race when there are so many boats, kanu's, and people in the water in such close proximity. This is aggravated when clubs are forced to ask otherwise unknown skippers to help, often with minimal knowledge of the skippers knowledge, character, or skill.

As good seaman and skippers, our most important job is to ensure your safety at all times. Helping the teams win is our SECOND most important job. Your job as a paddler/coach (as it relates to the escort), is to do everything you can to reduce the skippers stress level and workload. This can most easily be accomplished by following a few common sense safety rules, keeping a high level of situational awareness as a backup for the skipper, and exercising some basic consideration.

To most skippers, paddling is just that - paddling - you stick the paddle in the water in front of you, pull it back, pull it out, and repeat. Most do not fully appreciate the subtle nuances of technique and strategy that paddlers must totally focus on to be competitive. In like fashion, paddlers do not always appreciate the massive amounts of information that the skipper is processing: Trim, wind, swell, current, Kanu traffic, boat traffic, people in the water, ad nauseam. The skippers' brains have to work like radar, tracking 50+ targets at all times. He has to navigate safely around all the other boats, Kanu's, and people in the water, keeping track of what is going on in his own boat, and supporting your team while not interfering with others. Every moment they are making decisions that directly affect everyone's safety and the outcome of the race. This can make for a very stressful situation for your skipper.

So how do you attract and keep good skippers? Make it more fun for them then it is work! The following are a few suggestions and general safety rules that you should be aware of while being escorted. The more you follow these rules, the less the skipper has to worry about you, freeing his brain to focus on the other aspects of his job, making it easier for him to have fun while doing it.

First and Foremost - Your Safety!

1. When boarding the boat, try to position yourselves so that the boat is kept level from side to side. When too much weight is on one side of the boat, it can be very difficult to handle, increasing the skippers workload tremendously. This becomes increasingly important when operating at high speed or close to a kanu or other boats. Excess weight on one side of the boat cause it to heel, and can also affect handling rather dramatically. This makes it difficult for the skipper to run in close to the kanu as desired.

2. Avoid moving around the boat unnecessarily. This is again related to weight distribution, but is also for your own safety. Stray swells combined with boat maneuvers can cause sudden jolts that may throw you off balance, potentially injuring yourself or others.

3. Do NOT trust the non-skid for secure footing. The only reason it is called 'non-skid' is that 'slicker then whale crap on a Teflon doorknob' takes too long to say.

4. Do not jump off the boat while it is still moving. Wait until the skipper has given the okay before jumping in the water. While not apparent to you, he may be making minor position adjustments to place you more in the kanu's line.

5. Do not approach the boat while the engine is running during a change. No shark has less mercy then a spinning propeller, and again, the skipper may be making small adjustments to the boats' position. Approach the swim step/boarding ladder from the side farthest away from the propeller. Even when not moving, propellers can be quite sharp and cause a severe wound.

6. When docking, do not step off the boat until given the okay by the skipper. As during changes, he may be making minor adjustments to the boats' position at the last second. Getting caught between a 3,000+ pound boat and the dock IS hazardous to your health.

7. Do not use the Bimini poles for support when standing or when getting on or off the boat. These are not designed to carry the weight of a person who has lost their balance, may break, causing you to fall and the skipper to get upset about the damage to the boat.

8. Do not sit on the bow of cuddy cabin boats when underway. If you slip off the fore deck, you can easily be run over. The only time you should sit in/on the bow of a runabout is when it has been designed for you to do so (i.e. there are actual seats up there) or when the boat is at rest.

USCG Accident Statistics - Year 2000

Cause	Accidents	Fatalities	% Fatality
Improper Loading	98	51	52%
Standing, sitting on gunwale, transom, bow, or seatback	33	14	42%
Alcohol Use	346	100	29%
Passenger Behavior	306	29	10%
Rules of the Road Infraction	48	4 8	3%
Operator Inexperience	905	60	7%
Excessive Speed	630	33	5%
Restricted Vision	116	6	5%
Operator Inattention	959	49	5%
Careless/Reckless Operation	907	34	4%

Of all reportable accidents 45% involved open motorboats such as those that are used as escort boats. Lacerations were the most reported type of injury for open motorboats. Notice that while most accidents are the Skippers fault, the top four 'most likely to result in fatality' accident causes are all within YOUR control!

Basic Consideration - Make the Skippers Life Easy

1. Keep the items that you bring aboard with you down to those that you will need during the race. These boats have little room for extra gear, and it is invariably under foot.

2. Be mindful of where you step on the boat, particularly when getting on or off. I have seen several skippers get very upset when people scuff or dirty the upholstery by walking on it. Docks are usually quite dirty, and that dirt is inevitably tracked wherever you step. If possible (and safe!), rinse your sandals/feet right before boarding.

3. Get organized before coming to the boat, and get to the boat on time! On time is when or before the kanu launches.

4. For longer events (such as the Catalina Classic), keep coolers down to a minimum. For many boats, it may be better to bring two or three small coolers rather then one big one. Smaller coolers are easier to tuck away so they are not in the way yet still easily accessed.

5. Avoid using foul language - Many skippers won't care, but you never know who will and who won't. If you avoid it altogether, you're guaranteed to not offend anyone. I have heard of several skippers that have not returned for this reason alone.

6. Keep your gear together. Loose items drifting around on deck are a safety hazard and cause confusion when you have to go looking for them when needed.

7. Take your trash with you when you leave the boat, and offer to take any other trash that you see on the boat.

8. Steersman - If at all possible, get with your escort skipper before the race to discuss your strategy and preferences. This may include signals for when paddlers should drop into the water, where you want the escort positioned while racing (port, starboard, distance from kanu, etc.).

9. Coaches - Give the skipper clear instructions, but do not press him to push the limits of the rules or his equipment.

10. On the Catalina Classic - Bring as little gear as possible. Pack your 'during race' gear separately from your 'overnight' gear. This will allow the skipper to position the gear that you need during the race so that it is handy, while putting the overnight gear 'deeper in the pile' so that everybody can get to their 'during race' gear. If you have friends/relatives/other teammates riding the shuttle over, have them take as much of your overnight gear with them as possible. Having the gear taken over via the shuttle will also reduce the weight of the escort boat, improving its' performance and making it easier to handle. If the skipper does not have a crew with him, offer to leave a paddler aboard to help him moor the boat. The paddler will need Shore Boat fare (currently $4.50), and somebody to take care of his gear on shore. Also, invite your skipper along with your team to dinner and whatever other activities you have planned. The more they feel a part of the team, the more likely they will return next year (this assumes of course that you DO want them back next year). If your skipper is alone and on a small boat with minimal or no overnighting capability, offer to share your quarters. The money they receive from KOA is not enough to cover expenses and lodging.

11. Recognize your escort skipper as an essential element to your participation and victory. A good escort skipper can make all the difference in the world, especially when the racing is close. A little recognition and appreciation goes a very long way!

To keep them coming back, use the following principles to guide you.

1. Go out of your way to make them feel like a part of the team.because they are! Without them there is no race, and they can directly affect your results. One skipper I know was given the extra plaque that was originally intended for a paddler who did not make the race. A wonderful and much appreciated gesture (he positively raved about it to me). I have no doubt that it is a significant part of why he is willing to come back and help again this year.

2. Do everything within your power to reduce the impact of your activity on their equipment.

3. Do everything within your power to reduce the skippers stress level during the race. This is most easily accomplished by following the safety rules previously laid out. Finally, but most importantly, make sure you let your club staff and the KOA officials know about any skipper that disregards your safety or the safety of others! You DO NOT want these people back. No race in the world is worth anybody's life or limb.

Training Workouts

Hypertrophy/Base Preparation

Canadian Community Dragon Boat Association

(during water Preparation ie. Phase or off season November to February)

10-15 repetitions to failure.

Sets to be consecutive. Complete each cycle 3-5 times before advancing to next cycle. No rest between each sets.

Develop strict technique with weights of 50-60% maximum.

Cycle I:

- Dumbbell Biceps Curl
- Overhead Triceps Press
- Bent Over Lateral Dumbbell Raise
- Front Dumbbell Raise

Cycle II:

- Upright Row
- Dips (Elbows Out) or Bench Dumbbell Flys
- Reverse Barbell Curl
- Wrist Curls

Cycle III:

- Bent Over Dumbbell Row or Barbell Row
- Bent Arm Pull Over or Dumbbell/Barbell Press
- Seated ObliqueTwist or Side Bend
- Lower Back Extension

Cycle IV

- Military Press Behind/Front of the Neck
- Pronated Pull Ups
- Lunge or Squats
- Abdominal Crunch
- Biceps
- Triceps
- Posterior Deltoid/Trapezius
- Anterior and Lateral Deltoid
- Upper and Lower Trapezius
- Inner Pectorals and Deltoids
- Brachiallus and Biceps
- Flexors
- Latissimus Dorsi, Teres Major
- Pectorals
- Obliques
- Erectors
- Deltoids
- Latissimus Dorsi
- Quadriceps and Gluteus Maximus
- Upper and Lower Abdominals

Strength (during water Speed and Strength Block ie.March)

- 6-8 repetitions to failure each set with 3 complete cycles.
- Very strict technique required to avoid injury. 2 to 3 minute rest between sets.
- 70-85% maximum weight in secondary group.

Maximum Strength (Optional) (mid to end of March)

- 3-4 repetitions per set for primary muscles ie. Bench Press (Pects), Lat Pulls (Lats) Squats (Quads).
- 90-95% maximum weight in primary group. Secondary group to remain in strength phase (6-8 reps.).

NOTE:

Maximum strength exercises should only be done if a crew or individual wants to seriously target short sprints. For distances over 500m the potential rise of injury from a maximum strength regime far outweighs the potential gains.

Cycle I (Primary Group)

- Dumbbell/Barbell Bench Press
- Bent Over Dumbbell Row /Barbell Row / Lat Pulls
- Lunge or Squats
- Military Press Front of the Neck

Cycle II (Secondary Group)

- Upright Row
- Dumbbell Flys
- Dumbbell Curl
- Overhead Triceps Press

Cycle III (Secondary Group)

- Bent Over Lateral Dumbbell Raise
- Front Dumbbell Raise
- Abdominal Crunch
- Lower Back Extension
- Pectorals, Deltoids and Triceps
- Latissimus Dorsi and Teres Majors
- Quadriceps and Gluteus Maximus
- Deltoids and Pectorals
- Trapezius
- Inner Pectorals and Deltoids
- Biceps
- Triceps
- Posterior Deltoids, Trapezius
- Anterior Deltoids
- Abdominals
- Erectors

Power (during Race Preparation Phase ie. April to mid-May)

- 8-15 repetitions or to failure as required with explosive speed during contraction only. Avoid use of momentum to assist in repetition.
- Strict technique required to avoid injury.
- Smaller weights of 50% maximum

Cycle I

- Subinated Pull-ups (to Failure)
- Power Cleans
- Power Squats or Lunges
- Seated Oblique Twist (to failure)

Cycle II

- Pronated Pull Ups (to failure)
- Push Ups (to failure)
- Abdominal Crunch (to failure)

Cycle III

- Bent Over Row
- Dips - elbows out (to failure)

- Dumbbell Curls
- Over head Tricep Press
- Lats., Teres Major and Biceps
- Pectorals, Brachiallus and Deltoids
- Quadriceps and Gluteus Maximus
- Obliques
- Latissimus Dorsi and Teres Major
- Pectorals and Triceps
- Upper and Lower Abdominals
- Latissimus Dorsi and Teres Major
- Deltoids
- Biceps
- Triceps

The Paddling Programme

Canadian Community Dragon Boat Association

The number of factors to be considered in developing a Dragon Boat Training Programme is immense. Obviously the more time a team spends practicing, the greater the difference in performance. The amount of training an athlete must undergo within a season depends greatly on the goals and objectives set out early on in the year. For example, to obtain high performance challenging world record achievements, an athlete today must expect to commit 1000-1500 hours of training time a year (that's 3-4 hours a day!); at a national level one could expect 600-800 hours (1 1/2 - 2 hours per day); while at a local level one should realize that a minimum of 300-400 hours of training is required if you want to be successful competitively, which translates to 1 1/2 - 2 hours 3 to 4 times a week, year round.

The formula for high performance, however, demands *quality time* and the winning team is not always the one which practices the most. Training time must be carefully managed in a 'Training Programme' to facilitate development of the different aspects of an athletes' physical potential, such as Strength, Endurance, Technique and Speed which all have quite different training requirements. The ideal programme will maximize an athletes output from a minimum amount of training that focuses these specific aspects, and allows an adequate time for his/her body to adapt and recover from the stress brought on by exertion. The independent variables of training programme, therefore, are VOLUME, INTENSITY and DENSITY.

Training VOLUME (the amount of work time) is certainly adjustable, though it is effected by the INTENSITY of work (how hard you work) and the DENSITY of practices (the number of practice sessions related to rest periods within a given time). To put it simply, for a low INTENSITY work-out such as a long trip in an outrigger, the VOLUME of work can increase, which is good for aerobic Endurance training, though you need a long time to recover so that the DENSITY of a work-out schedule must be kept low.

On the other hand, a high INTENSITY workout such as sprint interval training is good for Speed and Strength development, though the VOLUME of work must be low since our bodies cannot handle extreme exertion for long or without greater rest periods between each piece of work. DENSITY, however, can be increased by adding more practices of shorter duration throughout the week.

The key to an effective training programme is to find the right balance of VOLUME, INTENSITY and DENSITY which best suits the goals and time commitments of a team. A training season should begin with a large VOLUME of work at low INTENSITY and gradually increase the INTENSITY of practice sessions closer to the target competition date, decreasing the VOLUME. It is important to understand that by varying the degree of VOLUME and INTENSITY an athlete changes different aspects of his/her metabolism and physical structure to ultimately result in higher performance.

Our paddling season has been further broken down into separate phases to allow for progressive development and transition from one level of performance to the next. The type and intensity of work we do changes as our bodies adapt to progressively increasing demands. Macro-cycles refer to the largest organizational block grouping work of similar nature. Micro-cycles refer to the weekly pattern of activities which support the objectives of the macro-cycle.

The basic concept is that a weekly micro-cycle varies intensity from one day to the next allowing us to balance hard work with recovery time. Macro-cycles prescribe increasing levels of intensity week to week in order to achieve specific performance goals within a 4-8 week period. Our bodies tend to respond best when stressed and then are allowed to heal. The healing process is what makes us perform better in the next cycle.

The three main Macro-cycles are:

- General Fitness Preparation
- Strength and Endurance Development
- Speed Development and Race Preparation

GENERAL FITNESS PREPARATION (4-8 WEEKS)

The objective of this Macro-cycle is to create a performance base. Development is to be more general allowing for a broad range of distances and variety in exercises during this phase. Work should never-the-less be more specific than in the off-season and focus of paddling related activity to build up local muscle endurance ie. the muscle groups which will be used for racing.

a) General Aerobic Conditioning

Work in the boat will focus on low intensity, larger volume exercises such as steady state intensive paddling sessions mixed with longer extensive sessions if training seeks to develop marathon abilities. Work should be comfortable but strong earlier in the cycle but should progress to uncomfortable and fast paddling. The cycle will end with a level of intensity which borders in painful ie. Maximal Aerobic work.

There are two objectives for this Cycle. To improve our the general cardio-vascular potential such as cardiac stroke volume, VO2 max. etc. and to increase capillary density in our paddling muscles. This will provide the staying power for races even as short as 500m.

Alternative sessions to the boat would be running, swimming, kayaking or rowing (boat or ergometer) as long as it's working to the same level of intensity and duration. Effort should be made to raise anaerobic threshold levels and to achieve maximum aerobic functioning.

b) Base Strength Development

Muscle mass should increase (hypertrophy) and base strength should be developed in the gym for all muscle groups (see section 2.2 for dryland strength development - Hypertrophy Phase). Even a simple routine of push-ups, sit-ups, pull-ups and dips at home can go a long way in developing a base strength that can contribute to better paddling performance.

A small amount of resistance training in the boat is good at this stage as long as the resistance level is also low eg. dragging a tire or having 1/2 of the boat paddling for 50-60 strokes.

STRENGTH AND ENDURANCE DEVELOPMENT (2 CYCLES @ 4 WEEKS EACH)

This Cycle seeks to make improvements to paddling strength and specific race endurance. Neuromuscular recruitment is important, so effort both in the boat and during dryland training should be intense striving to 'feel' for maximum resistance during a paddle stroke. Speed work should begin in the later stages of the cycle.

The Paddling Programme includes two Strength and Endurance Macro-cycles allowing for a period of transition. The second Cycle starts from a lower level of intensity builds to a higher level much faster that the first Cycle. The purpose for this is achieve a better balance between aerobic and anaerobic conditioning exercises which are taken to greater extremes in the second Cycle.

a) Aerobic/Anaerobic Endurance Training

The range of work should begin with Anaerobic Threshold training and advance to Lactic Tolerance training later in the Cycle. The emphasis is on intense interval sessions at least once a week alternating with intensive steady state paddling on other days in the week. Close attention should be paid to heartrates during activity to ensure that work is targeting the appropriate intensity. This is air-sucking, heart-pounding, rubber-leg kind of work, so don't expect improvement if your going for an easy jog.

b) Maximal Strength Development

The initial Cycle should accompany the dryland Strength Phase (see section 2.2) and the latter Cycle should correspond to the Maximum Strength Phase of the Dryland Weight Training Programme. The level of resistance in the boat should also be increased during resistance training sessions. Care should be taken to avoid back to back strength training sessions ensuring that proper recovery time is allocated.

RACE PREPARATION (4 WEEKS)

This is the Cycle where speed becomes the main feature, converting the strength gains which were made in the earlier Cycles to power. Maximal intensities will be stressed with a duration of work which is closer to the actual race. Race rehearsals will be conducted where all of the trained aspects will be put together for a specific target performance. Smoothing out the transitions from utilization of one energy system to the next is the goal in discovering the optimum racing pace.

a) Race Specific Aerobic/Anaerobic Conditioning

Maintenance of aerobic conditioning is important in this Cycle both in the boat and on land. Longer distance steady state paddling sessions will provide recovery activity for extreme lactic tolerance training. Specific endurance for the sprint race distances is the goal to the extent that there may be some decrease in long distance endurance.

Interval training on land should continue to stress improvement to VO2 max. and anaerobic thresholds.

b) Development of Power

Strength work should focus on converting absolute strength to power. Fast contractions and less load should replace maximum loads early in the Cycle (see section 2.2 - Power Phase). Acceleration drills and maximum speed exercises will be carried out in the boat the stress maximum application of power throughout the race distance. Endurance of strength is important and is best to be improved in the boat, paddling.

Gym Workout

Canadian Community Dragon Boat Association

TRAIN IN STAGES

Most of us find a workout that works for a month and stick with it for the next 17 years. But a muscle that's asked to do the same thing over and over again will eventually use fewer fibers to do the job, according to a study in the Journal of Applied Physiology.

So let's say you bench-press every time you train, and you always use 135 pounds, and you always do three sets of 10 repetitions. At first, your muscles will respond the way you want them to--by getting bigger and stronger. But eventually they'll get used to the routine and start using less and less muscle mass to do the same thing (a phenomenon any guy with a job can relate to). That's why serious athletes constantly change their workouts over the course of a year. To become faster and stronger, they change the exercises they do, the amount of weight they lift, how many sets and repetitions they perform, and how much rest they take between sets. They change everything they can to make sure that their muscles never grow so accustomed to exercise that they stop responding to it.

If you look at weight loss as an athletic event--you are, after all, trying to change the way your body looks and performs--it follows that you should frequently change the way you exercise, focusing on one goal for a while (building muscle, say), then another (burning fat), until your body does what you want it to. This program works great for dragon boaters...in the fall, you should focus on building muscle, and toning from January to March (right before you get on the water).

Try this two-stage routine.

October to December: Build Muscle Divide your workouts in three:

Day one: shoulders and arms (shoulder presses, upright rows with dumbbells, biceps curls, dips)

Day two: lower body (squats, lunges, deadlifts, twisting crunches)

Day three: chest and back (flat bench presses, incline presses, pullups or pulldowns, cable rows)

Do three or four sets of five or six repetitions of each exercise. On each repetition of each set, take a full 3 to 4 seconds to lower the weight, followed by a short pause. Then take 2 seconds to lift it.
Add 20 to 30 minutes of cardiovascular exercise two or three times a week--before or after the weight workouts, or on separate days.

January to March: Fry Fat Here's a sample circuit program, featuring three groups of three exercises that you should be able to do in your home or in a gym.

Do each group three times before moving on to the next group. For each exercise, choose a weight you can use for a set that lasts 30 to 45 seconds. Rest for 15 seconds after each exercise before moving on to the next one. In each group, you should be able to use the same weights on the first and third exercises. (The midsection exercises between them don't require weights, although you can use them if you want.)	Circuit Program
	Group 1
	Dumbbell squat
	Twisting crunch
	Dumbbell bench press
	Group 2
	Dumbbell lunge
	Back extension
	Dumbbell bent-over row
	Group 3
	Dumbbell stepup

	Reverse Crunch
	Dumbbell curl-and-press

Do these circuits three times a week, and on three other days, do interval runs: After a 5-minute jogging warmup, sprint for 30 seconds, then go easy for a minute, and continue for 15 to 20 minutes. Then cool down with easy jogging for 5 minutes.

Finally: Adjust your diet to your body Keeping weight off once you've lost it should be easy, but most guys fail. Research shows that about one-third of the weight lost in a program is regained within a year. But before you worry about that, savor the moment. Take a photo of your new waistline. Treat yourself to something you've always wanted.

When you're done celebrating, get back to your program. Remember that the less weight you have, the less food you need. If you started all this at 200 pounds, you could eat 3,080 calories a day back then, including 102 grams of fat, and not gain weight, even without any exercise beyond a half-hour daily walk. Now all the numbers have changed. The chart below shows what you would need to do to maintain a lower body weight.

ADJUST YOUR DIET TO YOUR NEW BODY			
	Calories	Fat	How
At 170 pounds, you'd need...	2,618	87 g	Eliminate 462 calories and 15 g fat (an order of french fries and a soda), or add 35 minutes of running at a 10-minute-mile pace
At 180 pounds, you'd need...	2,772	92 g	Eliminate 308 calories and 10 g fat (two handfuls of Wheat Thins crackers or a Fifth Avenue candy bar), or add 40 minutes of weight lifting each day
At 190 pounds, you'd need...	2,926	97 g	Eliminate 154 calories and 5 g fat (an ice-cream cone or a granola bar), or walk for an extra 30 minutes a day at a moderate pace

The Taper

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Critical to top performance is tapering down activity to limit damage to muscles and let our bodies recovery for a race event. It does not mean that work stops all together, particularly for sprint races. Generally the density of practices is reduced, but is replaced by extremely high intensity work for short duration to maintain speed. Alactic activity is stressed, limiting extreme work to 15-20 seconds in order to prevent accumulation of toxins. Low volume is also a must to avoid over-stressing central energy stores.

The duration of the Taper Cycle if difficult to determine. Where the density of training high ie. 10 to 12 sessions per week then typically the taper is longer, perhaps 2 - 3 weeks. For a lower density training of 3-4 sessions per week, the taper probably needs only 1 week.

Combined with proper nutritional preparation, the end result is a performance peak.

Psychology

PSYCHOLOGY

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ATHLETIC ATTITUDE

Attitude is vital to training activity and sustaining a high level of performance in a race. Not only must you put in 100% in the course of a race, it is crucial that as part of your training discipline that you develop an attitude which forces you to work to your maximum throughout a training session.

The level of intensity in a work-out is controlled largely by your desire to work, particularly when fatigue sets in, when you must consciously order your Central Nervous System to maintain the workload or increase it. This one factor effects everything since paddle speed does not equal paddle power; it depends on how much effort is spent during the stroke. Only you know how much you are trying - what you put into your training is what you will get out of it or rather what the TEAM will get out of it.

Those traits which most profoundly effect performance are:

- Desire
- Assertiveness

- Tension Control
- Sensitivity
- Personal Accountability
- Confidence
- Self Discipline

Desire

The desire to perform well or improve one's abilities will develop through constructive training objectives and must be regularly reinforced through positive feedback. Each paddler should be urged to strive to be his or her best which means setting goals which are marginally beyond reach, yet achievable with effort and determination.

Very often an athletes desire 'TO BE THE BEST' or 'TO WIN' can cause overreaching or induce undesirably high stress levels. There is not much you can do if a boat beside you is pulling ahead in a race; you cannot 'WILL' yourself to beat them.

The desire to overcome your WEAKNESS is the key to focusing mental energy on the work; you must recognize your own deficiencies and be determined to eliminate them. Our bodies do not willing let themselves be pushed to the absolute limit and many athletes may not even know where their limits are. Limits must be discovered and can only be revealed or changed with an extremely focused effort. Be disciplined and above all, don't cheat yourself!

Assertiveness

How hard an athlete is willing to work in training and in a race all depends on how capable they may be at asserting their abilities. This can be particularly problematic in a dragon boat team where a paddlers' lack of assertion can easily go unnoticed. Drills to focus on the individual will help to reduce the anonymity of paddling in a group.

Development of aggression is a vital for a paddler to achieve an adequate level of arousal needed for maximal performance.

Tension Control

The ability to generate and maintain the appropriate level of stress, not too high or too low, is crucial for peak performance. During a race or practice many distractions can throw you off your plan such as a false start, delay or collision with another boat, which can raise the level of stress to the point it interferes with performance. Getting too pumped up can result in loss of control and cause you to burn out to quickly in a race.

On the other hand, an athlete may be too relaxed and may not become sufficiently aroused before a race which can also lead to reduced performance.

Emotional detachment, regular and rhythmic breathing and an intense focus on the mental image of the race re-created in your mind will create the most suitable environment for an ultimate performance. This is not an easy state to achieve - it must be learned with hard training.

Sensitivity

It is important that each paddler is keenly aware of changes in the race, involving rating and intensity levels. Staying alert is not easy in longer races or training sessions when ones' attention can wander, loosing focus on a pre-established programme.

Mental 'Imaging' plays an important role in both training and in race events, where a clearly developed mental picture will improve your 'Focus' on the work to be done (it can be so intense that you can 'see' your own stroke or 'feel' the water moving by without even being in the boat). It is important for each paddler to be able to measure their own performance accurately against this image and be capable of making technique or intensity adjustments on demand.

Personal Accountability

It is the responsibility of every paddler to recognize his or her obligations to the team and themselves. Clearly without continually monitoring the heart rate of every paddler in the boat, it is difficult to determine the amount of effort one is putting into training exercises or a race; particularly since there are 19 other paddlers to drive the boat forward. This is a personal issue where the desire to perform well and commitment to the TEAM must over power the natural tendency to want to 'give up' or ease off in the intensity of work. This is what separates a dedicated athlete from an undependable one.

Team bonding is a key where each paddler is dedicated to a common goal, even though personality traits may vary considerable.

Confidence

Every paddler must be physically and mentally prepared to commit to the race plan or make calculated adjustments as required to perform in accordance with their own personal maximum. With sufficient preparation

and by setting goals which are attainable, paddlers should develop a strong sense of confidence in the abilities of the team and themselves.

Self Discipline

The ability to adhere to the principles of a race or a training session requires extreme Self- Discipline.

The effect of 'Athletic Willpower' has already been discussed as an important component to 'Endurance' Training where an athlete must stay focused on the required levels of intensity.

Race Day

What happens on Race Days

Vernon Racing Canoe Club

Regatta races are almost always held on Sundays. Some distance races are held on Saturdays.

Remember, the earlier you get to the race location (beach) the more likely you are to find parking. In some locations like Lotus or Jericho, parking late may be virtually impossible. In others, you can find parking, but will end up walking a long way to our club tent.

The primary concern in the minds of most paddlers on race day is their own race and their own crew. (This is as it should be...) However, there are many important club activities that take place that need your help.

SETTING UP THE TENT AND CANOES

We usually set up our tent very early on race day. We also have to take the canoe off the trailer, carry it to the beach, and rig it for racing. That's a lot of work and the more hands we have, the easier the job.

CARRY CANOES IN AND OUT BETWEEN RACES

We may not race in every event.

In those cases, the canoe will have to come out of the water between races. Everyone should help with that chore, since it demonstrates our solidarity as a club and our respect for our canoe.

At some races, the crews coming in or going out may need help getting into the canoe.

Everyone should be at the water then to help the crews switch.

In rare cases, the next crew racing may want to use a different canoe. In that case, one canoe needs to come out of the water and another go in.

GREET CREWS COMING BACK

Win or lose, each of our crews deserves our support. Having your fellow club members on hand to send you off and especially to greet you when you come back is important.

TAKE DOWN AND CLEAN UP

Paddlers who just show up for their race then leave are missing out on a lot of the fun of being part of a club. They are also making it harder on those who have to stick around and clean up our area, take down the tents, unrig the boat, and load it on the trailer.

BRING FOOD

Bringing food (donuts, chips, sushi rolls, bread, cookies, etc. is often an ad hoc affair. Suffice to say that you should bring your own drinks (plenty for a whole day at the beach) and you can bring something for the table "as the spirit moves you."