

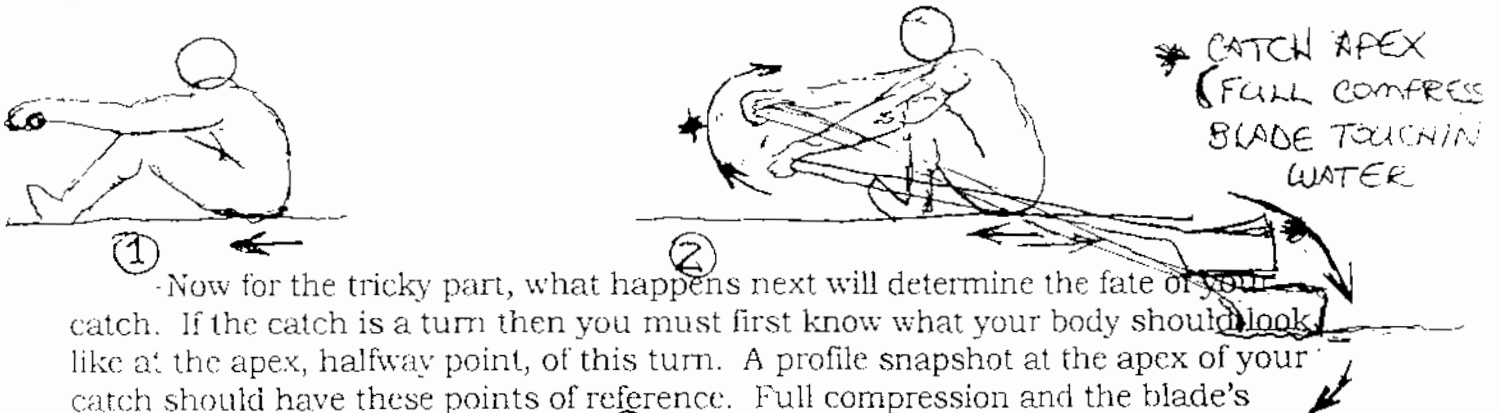
CATCHING

This is probably the most overlooked area of the stroke in rowing. Everyone is told to have a quick catch. Crews often define timing at the catch, but what is a proper catch? My definition of catching goes like this; Catching defines the movements made to take the body and oar from a recovering mode to a driving one. Catching is not just putting the blade in the water. Catching involves your body's momentum making a turn from a sternward direction to a bowward one. Catching involves your body compressing. In the act of catching the blade must go from being feathered over the water to buried and loaded.

All these events must happen in a fluid and ergonomically efficient way. Minimal loss of compression must be achieved. Relaxation, which promotes quick body movements, must be present in order to feel the boat's speed and your body's momentum. The blade must end up in a solid, boat moving, position. Ripping will not do the trick. Sounds like a lot to be concerned with, just remember one very important idea.....

The catch is a turn! Catching is not stopping at the end of your compressing to put the blade in, then driving. Catching begins in the recovery and ends in the drive.

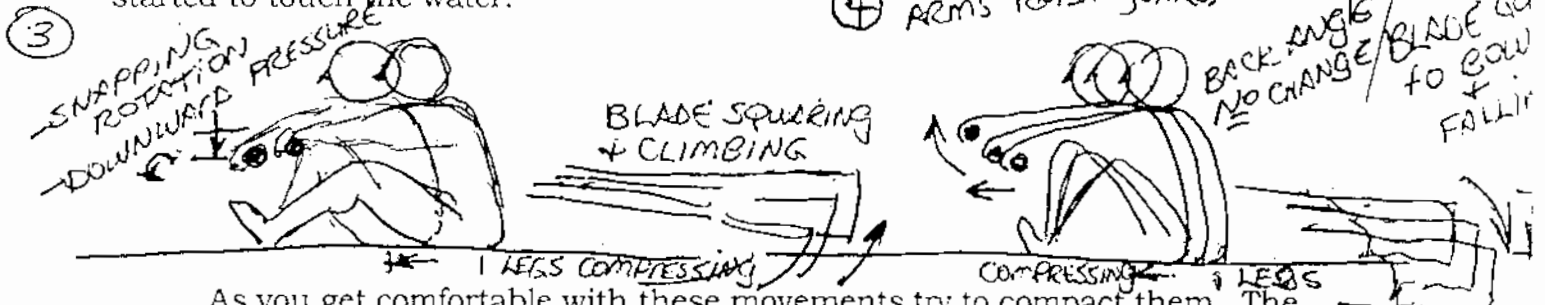
How can you make this turn and get all of the above? I want to go over this step by step. Lets start with your body coming up the slide. You have your arms loosely stretched out, your back is prepared with body angle, you are coming up the slide (compressing your legs), and your hands are kept loose over the handles (oar) with palm pressure down to keep the feathered oar off the water ①



Now for the tricky part, what happens next will determine the fate of your catch. If the catch is a turn then you must first know what your body should look like at the apex, halfway point, of this turn. A profile snapshot at the apex of your catch should have these points of reference. Full compression and the blade's bottom edge just touching the water ② The apex is the moment between movement toward the stern and movement toward the bow. At the true apex, only a vertical movement of the arms should be occurring. Before the apex, compressing should be occurring with a vertical lifting of the arms. After the apex, loading the oar(s) should be achieved by a flexing of the arms joined to a smooth pushing of the legs while the back holds the catch angle in support. The vertical lifting of the handle by the arms is still going on. Armed with this idea lets get back to coming up the slide....

CATCH CONTINUED

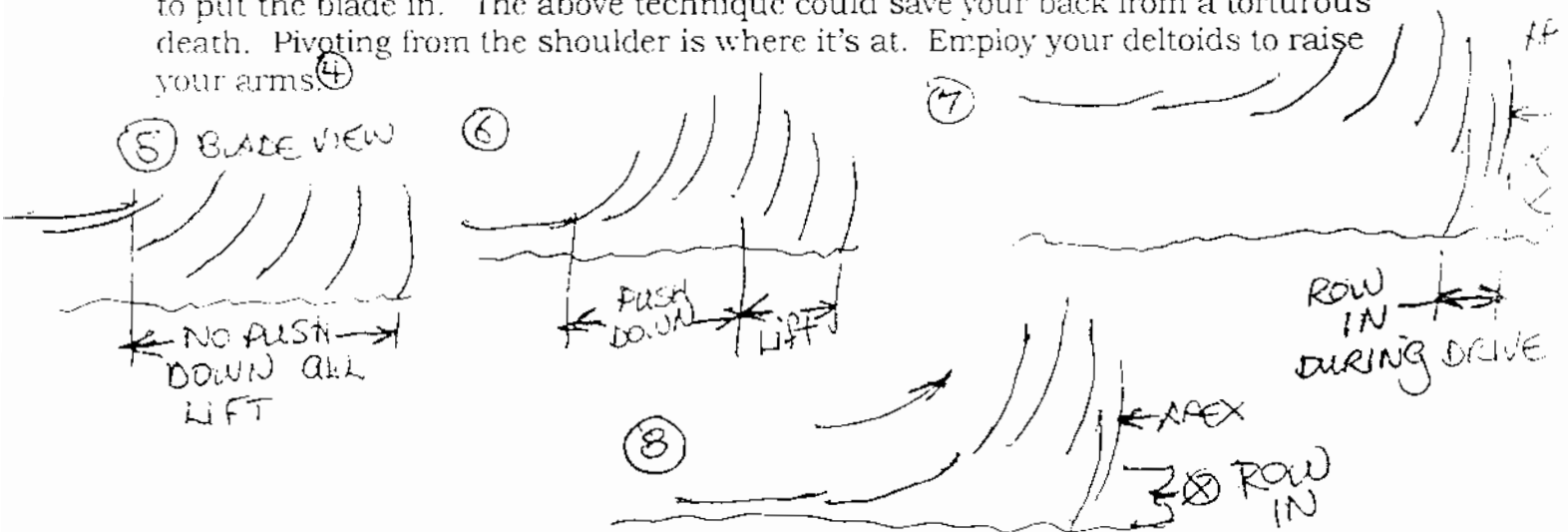
In order to achieve the apex I described, you must begin your square up and arm raise in the recovery. At first, begin the square up early (hands over shins) and push down with the palms as you snap the oar(s) square ^③Off of this low blade square position, start to raise the handle letting gravity help you. A loose handle in the palm position is a must. Avoid holding the handle. Contain it in hands that drape over the handle(s). **During all of these movements you must be moving into the stern with your seat.** As you raise the oar(s) with your arms, you can feel the seat compress your legs. ^④At full compression you must have timed the above movements so that the blade is heading vertically and the bottom edge has started to touch the water.



As you get comfortable with these movements try to compact them. The results should have you beginning your push down square up at around 3/4 slide and raising the handle(s) in the last 2-3 inches of compression. Blade height has a lot to do with compactness and when you must begin your arm raise. A high carry of the blade requires less or no push down of the handle(s), but an early raising of the arms to get to the apex position. ^⑤A very low carry of the blade will require a lot of push down in order to square and have the clearance to raise the arms during the recovery. ^⑥Without the proper clearance the blade will hit the water before full compression. Too much clearance combined with a late upward arm movement will put the apex above the surface of the water and result in the blade being rowed in. ^⑦

What I have learned in coaching rowers who are new to this view to catching is that they are often in the habit of catching as they drive. ^⑧When asked to do the above, the rower will not begin the catching movements early enough in the recovery. Often the blade is not in a position to be put to the water early in the recovery (ex. Flip catchers). ^⑨On a side note, all you flip catchers have to do is start that flip earlier and you will end up in the apex position if and only if you resist the desire to push or open the back until your arms have raised while your legs finish compressing. ^⑩

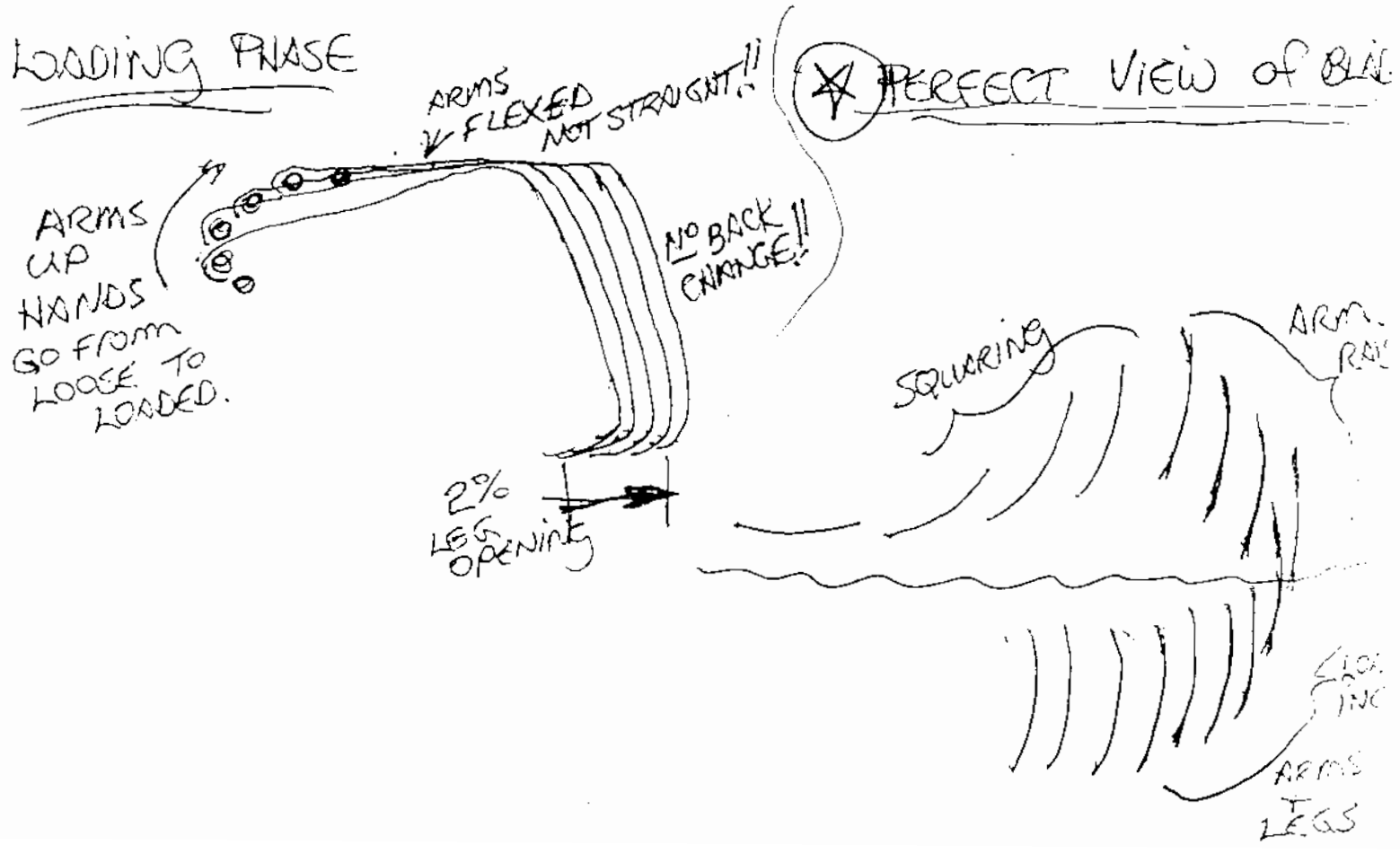
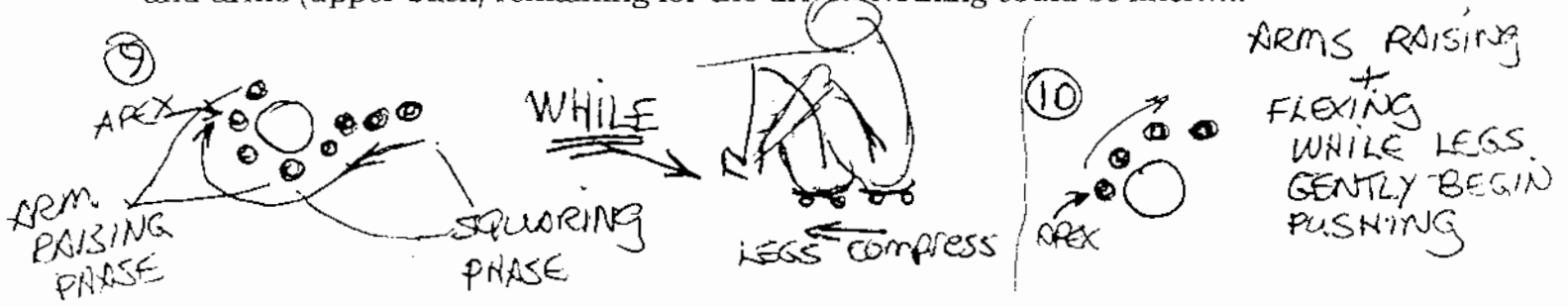
To all you rowers who catch without your arms and prefer using your backs to put the blade in. The above technique could save your back from a torturous death. Pivoting from the shoulder is where it's at. Employ your deltoids to raise your arms. ^⑪



CATCHING CONTINUED

Imagery might help, so imagine your handle(s) are about to hit a cantaloupe size ball. To avoid hitting the ball you must push down and square the blade. Now following the underside of the ball you will reach your catch apex. Everything so far has been with your slide moving toward full compression. The apex being at full compression, you are now ready to load the blade. This will be the part of the catch connected to the drive. Your goal is to anchor and load the blade so that your drive can move the boat past the blade. This part of the catch, if done well, will leave a maximum use of legs, back, and arms.

Going from the far side of the ball to the top of the ball is the loading phase of the catch. At the apex, your momentum is turned with the vertical motion that your arms have (remember they are in motion from the earlier lifting in the recovery). As the blade(s) touches and goes into the water the handle(s) must begin going to bow. Therefore, a little squeeze or flex of the arms combined with a gentle pressing of the legs will lock the blade solid in the water. Remember that you are going from the far side of the ball to the top. Now, if done correctly, you have 98% of your legs (2% is lost in this loading process) and 100% of your back and arms (upper back) remaining for the drive. Nothing could be finer.....



DRIVING

Standing on it, cranking, ripping it, throwing your weight to bow, pushing the legs, digging a hole, jumping on it, and several other ways (not to be mentioned in public) to describe the drive can all lead to an image that might not be what you should do or imagine the drive to be. **The goal of the drive is to effectively use your body to move the boat.** If you have made the catch and loading phase correctly, then you are ready to use your "mass" against the handle(s). This does require a certain order of muscle group usage, but the end result should feel like one smooth, shared, evenly pressured event. Let's try and put the drive in some order. First, let's define the muscle groups used...

Legs- No definition needed.

Lower Back- I break the back into two parts. This area of the back contains the muscles that provide the power to do exercises like: back extensions, straight leg dead lifts, and any movements employing the pivoting of the lower spine against the upper legs (femur). When you pivot from the hip you use your lower back.

Upper back- When you bench row with your elbows out, not to your sides, you are using your upper back. Upper back drive makes your humeri pull backward. Imagine the bench pull bar being attached to your elbows. How would you pry your back (keeping your elbows out from your sides) to pull the bar to you?

Arms- I do not treat the arms as a driving element. The true force behind the arms is the upper back. Focusing on the arms can be misleading.

Putting some order to the above groups should be easy. Remember, we flexed our arms and pushed our legs, just a little, to load the blade(s).^① Now we should continue our leg pressing with the support of our back. If we had no back support we would shoot our butt to bow and not move the boat. Back support, holding the catch angle in a relaxed upper back stretched way, is very important. Off the strong pressing of the legs, around 1/2 slide, the correct usage of the lower back will give you a feeling of the lower part of your trunk moving toward the bow ball (forward and a little down). While you do this lower back opening, your arms should be maintaining the slight break/flex they had in loading the blade(s).^②

OFF LEGS @ WHIPPING LOWER THE UPPER B.



The lower back continues to open until you feel vertical in your trunk positioning. At the moment you feel upright in your trunk (sitting up feeling with relaxed forwardly stretched shoulders) you should change focus and try to pry open the upper back off the finish of the legs. The upper back pulling/prying (elbows out) cannot be overpowered by your legs or lower back. You must share the two muscle groups in order to continue applying an even pressure to the handle(s).^③ The above movements should feel like a smooth, even, blending of a leg press, going to a back extension, then to a bench pull. As the back and arms finish sending the boat you are ready to finish.....

FINISHING

In my image of the finish I am no longer on the drive and I am only trying to get out of the water and begin heading for the next stroke. Taking all of the energy (momentum) I have generated on the drive and using it (turning) for an effortless recovery motion toward the stern. **The finish is a turn, not a stop, take the blade out, and pull your body to the stern experience.** Finishing the stroke does not require a feather. ① The feather is an addition to making the finish. Many rowers make feathering part of their efforts to take the blade(s) out of the water. You must be able to take the blade(s) out with loose “non-holding” hands. When the legs finish pushing against your upper back’s “bench pulling” you must begin pushing the handle(s) downward from the palms. The handle(s) will still be heading toward the bow. You are making a turn. The hands must be containing and guiding the handle(s), but not gripping them. Guiding the handle(s) in a loose “bumpered” way is the only way to turn the handles’ direction without affecting the momentum. Use your hands in a way that redirects the handle(s) without controlling them in a braking, twisting, and pushing way. ②

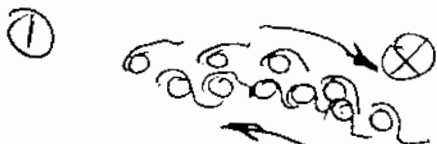
“Bumpered” means that you are containing and manipulating the handle(s) without gripping them. This is a looseness that few rowers are aware of. Gripping the handle(s) to control them feels safe, but it is inhibiting to your relaxation and fluid quick movements. Learn to row with the hands draped loosely over the handle(s), in the palms, while on the square. ③ Get very comfortable at this stroke. Make your turns at both ends and when you feather and square does the fluidness remain? If not, I bet that your turning efforts are lost because you are gripping the handle(s) too much in order to feather and square.

To feather, just snap the handle(s) with a split moment of twisting friction against the handle(s). Sweepers use only the inside hand, while the outside hand continues to loosely guide the handle around the turn. If this snapping moment of friction is timed off of the downward pushing and turning “redirection” of the handle(s), the blade(s) will flip feathered as the bottom edge clears the water’s surface. Momentum conserved, you will not have to push your hands away. Your redirected energies will help you begin your recovery. As your hands begin their trip toward the stern, the handle(s) should be at the base of the fingers/top of the palms. Squaring will put the handle(s) back in the palms with the wrists slightly up, not behind the handle(s). Blade height is controlled by the pressure against your palm, not your fingers. Your wrists should be flat or raised, but never cracked downward. ④

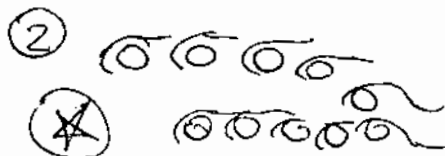
If you are feeling your abdominal muscles pulling you to stern, something is wrong. If your elbows are down during the turning of the handle(s), you cannot make the proper turn and exit from the water, so you will be forced into a stop and go finish. ⑤ Gripping the handle(s) will not allow you to feather and turn the handle(s). ④ Holding or gripping forces you into a stop and go finish. In a stop and go finish you are not able to use all of your drive length because you must turn off the power during the drive in order to stop the handles.

FINISHING CONTINUED

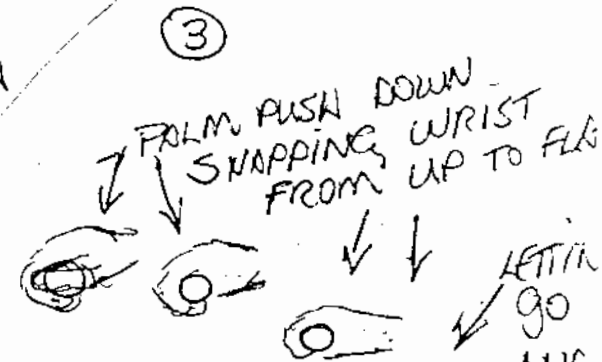
Here are some images to help you out.....



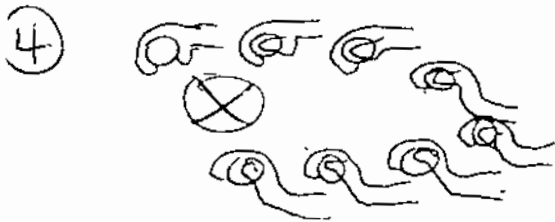
- BROKEN WRISTS
- GRIPPING HAND
- FLAT (STOP/GO)



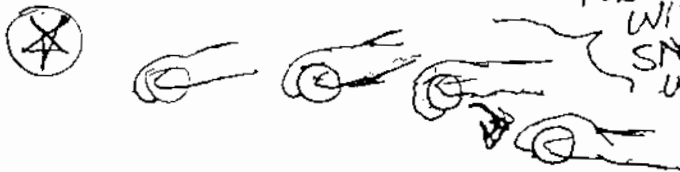
LOOSE SNAP TO FEATHER/ROUND MOTION WITH PUSH AWAY AT A LOWER LEVEL



PALM PUSH DOWN - SNAPPING WRIST FROM UP TO FLAT
 LETTING GO AND PUSHING AWAY WITH BASE OF THUMB
 HANDLE LOOSE IN PALM WRIST FLAT PALM PUSHING DOWN FOR RECOVERY



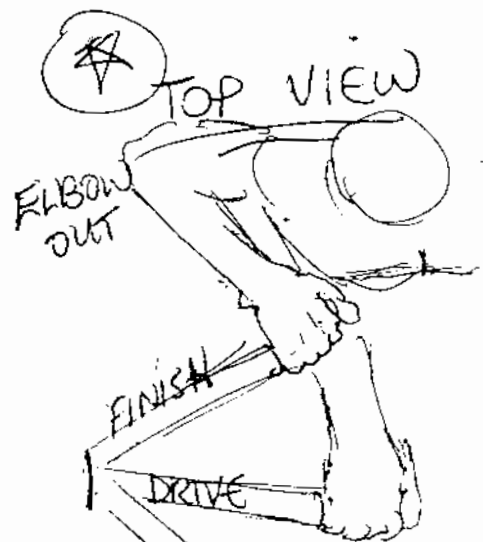
PALM PUSH DOWN WITH SNAPPING WRIST TWIST



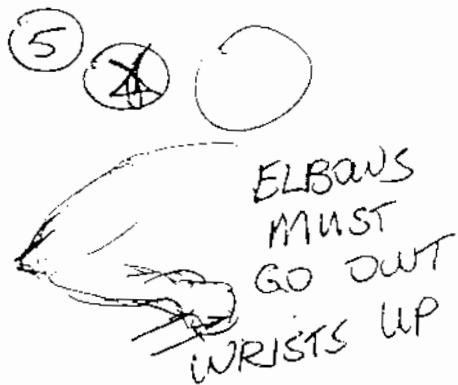
LET GO AND PUSH AWAY RECOVERING WITH A FLAP WRIST



FLAT LOOSE HAND & WRIST



TOP VIEW
 ELBOW OUT
 FINISH
 DRIVE
 CATCH AT CATCH
 HAND PIVOTS ON INDEX FINGER TO PREVENT ARMS LOCKING OUT



ELBOWS MUST GO OUT WRISTS UP



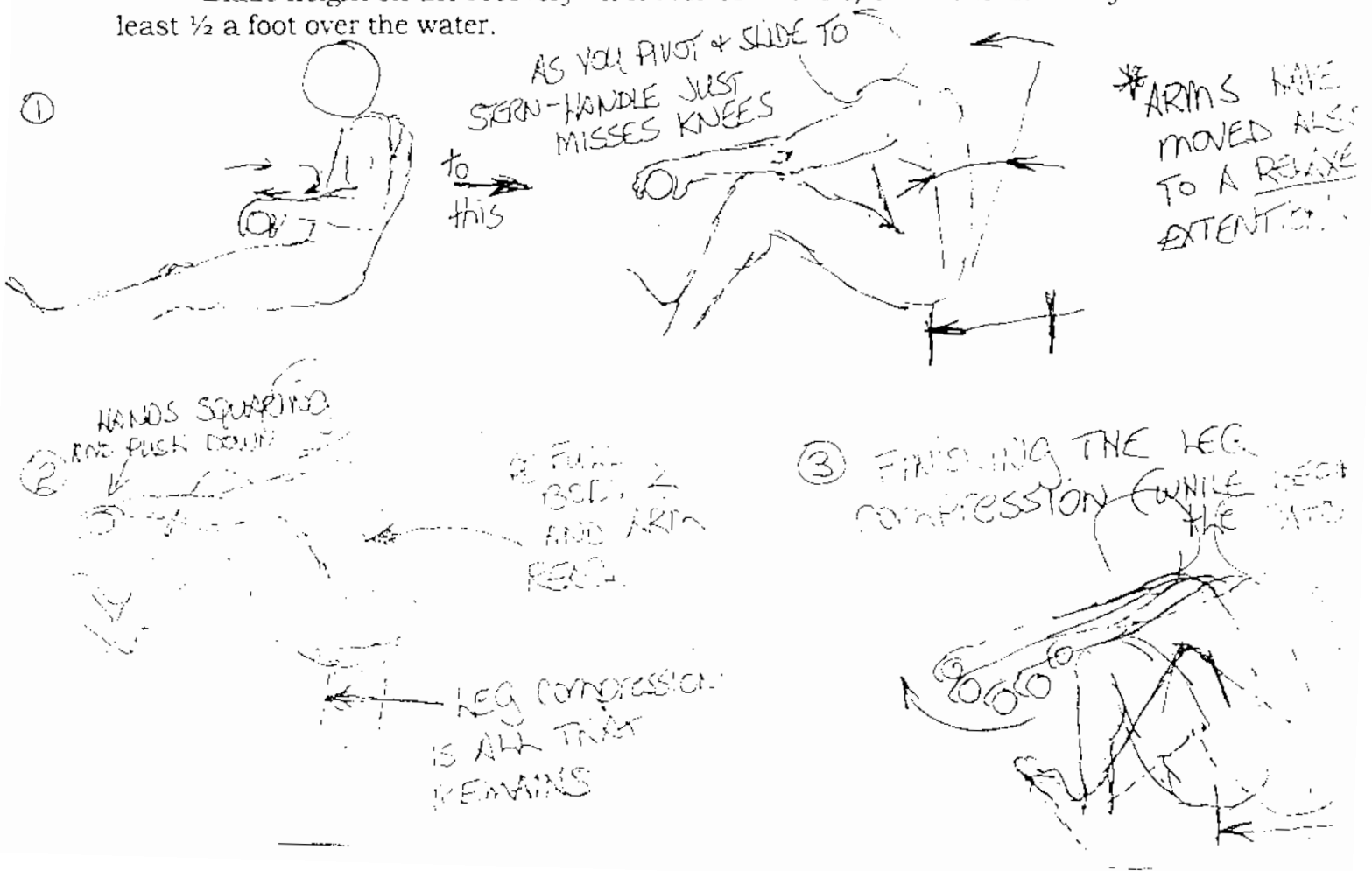
ELBOW & HANDS DROP

RECOVERING

So it is time to try and do it again. We have some momentum coming off the finish. How do we use this to our advantage? **Relax!** Let the finish momentum take your arms toward the stern. Try to flow relaxed and calm following the handle(s). As your arms flow out of the bow, follow them with a pivot of your lower back. When your hands clear the knees begin rolling up your slide (letting your knees rise). Until you have reached $\frac{1}{2}$ slide, you should be finishing your body pivot and arm extension. ① Your arms are at full extension when they are loose and extended. If they are straight and stiff they cannot be relaxed, so only extend them to the looseness that they would have when hanging at your sides. Your lower back pivot should be done with upper back/shoulder relaxation. No stiff backs! Feel your upper thighs against your lower abdominals. If you have pivoted too much you will not be able to get your shins vertical at the apex of the catch, without opening your lower back up. Getting the correct body angle is being aware of the abs/thighs relationship. Too little compression in the abs/thighs means that you need more lower back pivot, too much and you will not get the leg compression needed (rough guess at the angle, 20-30degrees). ②

With the back and arms set, all you need to do is bring the slide under you (compress legs) without giving up your body angle. This is a good area to adjust your cadence by contact with the balls of your feet and the stretchers. Putting on the brakes, in this manner, is gentlest to the boat's rhythm and speed. Control in the second half of the slide is also the easiest for crews. **Do not forget that you will be starting the catch motions over the feet in the recovery.** During this recovering phase your hands are loose and the handle(s) are in the palms ready to push down and role the handle(s) square. ③

Blade height on the recovery varies for conditions, but it should always be at least $\frac{1}{2}$ a foot over the water.



HELPFUL HINTS

***Your efforts should be even throughout the drive. The pressure on the handles should be the same from catch to finish. Use your arms to govern your efforts. Stay in contact (aware of the hull's speed) with the boat. Pushing or prying harder than your arms can hold will be inefficient.

***Use your drive momentum to turn the finish, float up the slide, and use your recovery momentum to turn the catch. As rate and hull speed increase, try to begin the catching motion earlier. Stay ahead of the drive with your catch. Driving harder is the wrong focus, anticipating your catch is where your focus should be.

***Loose hands containing the handles instead of tight, rigid, gripping hands forcing the handles. Are you more aware of something by touching it or grabbing it? Which requires more energy?

***Let go of the handles off of your feathering motion.

***As your legs compress in the recovery let the knees spread apart. Against the biceps is a good location for them at the catch. Do not use the legs to balance the boat on the recovery.

***Look for "set" at the catch, on the drive, and at the finish by making symmetrical movements with symmetrical efforts. Do not try to "set" the boat on the recovery with lots of leaning, leg shifting, or arm adjustments. Weather and water conditions will always effect the boat. Your straining efforts in the recovery will not let you recover, so "forget about it" on the recovery. Focus on the turns and drive of your stroke and the boat will "set up" if done correctly- in good conditions. I never expect my racing shell to "set up" in rough water and wind, I look for stability in the catch and drive.

***Catching is a downward to upward motion done in the recovery. If you try to catch when you reach full compression, you will always row the blade in and miss water. Start the round motion of catching with at least $\frac{1}{4}$ of your slide left to compress.

***Elbows out to complete your upper back's prying against your supporting legs. Finishing (turning) begins when the shoulders are back and the elbows are heading out off your sides.

***Use your eyes to see what you do. Get use to looking at your blade making the catch and finish. With the correct images of the stroke in your head, you should try to make your blade(s) look the same. Self-coaching is a great way to make changes.

***Be aware of the oar(s) and how they rest in the locks. A "non-holding" feather and square can be felt in the locks. The locks are designed to hold the oar(s) in only two ways, feathered or squared, so any time you see a blade in a $\frac{1}{2}$ feathered position the rower is holding it there.

***Driving should feel like you are pushing then whipping your trunk and arms through. Eventually the order of the levers will feel like one motion. You should never feel that one body part was taxed more than any of the others. After a race, my whole body aches - not just my legs.

SSS Stay optimistic in your technical pursuits. Rome was not built in a day! Learning to walk took some time. Remember, when you did learn to walk you had not spent years ingraining an incorrect way of doing it. **Old habits are hard to break, but not impossible.** Enjoy making changes for the better!

TRAINING

WINTER

At the end of the fall head races it is time to look toward making the next year a stronger and faster one. The two ways you can do this from November 1st to March 31st are base aerobic work with a technical focus and weight training with an enduring strength building focus.

In the boat or on the erg you can work on your technique. Row the erg like the boat. Make a round catch and a finish. Do not row the erg for the best score or split. The technique for a good erg split is inefficient in the boat. Share your arms and back with your legs in the drive. Train your heart and transport system at 65% of maximum.

Determine your max heart rate by an actual stress test. Then train at a heart rate that is 65% of your max heart rate value. Do not train at a cadence (stroke rating) or split (on the erg), use your heart rate to determine your effort level. On a day when you are very tired, you will be working above the 65% level if you try to hold the splits you had on a day when you were fresh. Another way to roughly find your 65% effort level is to row on the erg for an hour to 1½ hours at an even split for the whole time. The effort level that will enable you to do this is close to the value you should do all of your winter training at. When you average several attempts at determining your "steady state"/65% effort level you will be very close and have determined the value in a "field study" way.

This level of rowing should consume all of your non-weight lifting time. Any other type of aerobic training will cut into and counter effect the energy you are putting toward growing with weight training. You can never do enough of this type of training and your body will recover very quickly from this work with proper carbs, water, fat, and rest. "Steady state" training is the foundation of your aerobic training.

*****Make sure you hydrate effectively during these sessions. Being too concentrated or low on electrolytes can cause under-performance, inhibit training, and often causes cramping, pulls, and tears.

*****All training must begin with stretching that employs all of the muscles used for the exercise(s) you are about to do. Stretching is something that I do before a row or after about five minutes of easy paddle in the boat, sometimes both. I like to do about five gentle minutes on the erg then stretch then do my ergo workout or weights. Warmed up and loose is the only way to avoid injury. Warming up can cure many of the nagging (non-poor technique related) aches one can get during a row. Stopping to stretch out a tight spot during a row or erg or stretching between sets of weights can turn a painful injury prone workout into an enjoyable productive one.

Weight training should be done in a way that provides results for one goal. That goal should be making each stroke in a race stronger. If one repetition of an exercise done with maximum weight represents pure power (anaerobic exercise), and an infinite number of repetitions of an exercise done with no weight represents pure endurance (aerobic exercise), then rowing a race for example, 120strokes/1 Kilometer, requires usage of the muscles in a hybrid way. Racing requires not one stroke, yet not thousands. Anaerobic and aerobic muscle fiber development is needed. How can this be achieved? Not easily.....

WINTER CONTINUED

Your body is designed to adapt to the stresses that it must continually endure. If you continually increase the stresses to your body, in adapting, you will grow. Braking the rowing motion into the basic body elements and stressing these elements in a way that is similar to racing, as long as the stress is increased over time, will make you stronger each stroke of the race.

Taking your body's natural ability to adapt and applying that to an increasing stress similar to the frequency of your racing will force your body to grow.

*****Note, this growth will only occur under conditions of proper nutrition and rest. Your body must have ample protein and energy for tissue recovery and growth. You must not be putting your body through any other forms of exercise outside of "steady state" aerobic level work. Even if you do your aerobic work between 65% and AT (aerobic threshold ~85%) you will be working against your growing efforts.

Based on the above view, these are some exercises with set/repetition frequencies. Always do them in this order with proper technique/form. Form and control of the weight must be maintained in order to avoid injury. Consult your trainer or me for proper form and technique.

***All exercises should be done twice (2 sets).**

***You should do both sets then move to the next exercise.**

***Resting should be about equal to the time needed to complete a set.**

***All exercises are to be done at 85% of a max rep/exertion resistance setting.**

Max is equal to the resistance/load only one rep/exertion can be completed at.

***All sets are to be at no less than 50 reps/set. The younger and fitter you are the more reps/set. For example, a fit age 20 to 30 should be doing sets of 80 to 100 reps/set. If you are 30 to under 50, try doing sets of 50 to 80 reps. If over 50, try no more than 50 reps/set.**

***Recovery is the key to set:rep volume. The older you are the more recovery time you will need. Lowering the rep volume is the trick.**

*******All your weight training must be developed gradually*******

The first month should be devoted to familiarization with the exercises, machines, and your correct technique/form. Build up the resistance slowly in the first four weeks. Sometimes I have started athletes off with no weight.

For example, making a squat movement 50 times, with just your body's weight, can be enough for some of you seniors or first timers.

Because of the high reps/set @ 85% of max, no one could ever do a set in an explosive manner from start to finish without pausing or pacing. So, do as many as you can without pacing (resting between exertions/reps), until you start to fail. Then put the bar on the rack and rest 15 to 25 seconds until you have your breath back. Get right back to the exercise and continue chipping away at the set, bit by bit. When you first start you may be at no

weight doing all 50 in one shot, but after two months you should be at a resistance (85%) where you can only get the 50 reps by doing 15, 15, 10, 10.

WINTER CONTINUED

Gradually add weight and modify the way you break up the set for the safest results. For you crankers, who are into the 80 to 100 reps/set, keep the load so that you never go above 15 or below 10 reps.

Now the exercises:

- 🏋️ Squats
- 🏋️ Back extensions
- 🏋️ Leg presses
- 🏋️ Straight leg deadlifts
- 🏋️ Seated or bench Rows
- 🏋️ Abs
- 🏋️ Dumbbell rows

Any exercises that compliment or counter can be added, but these must be done to cover the basic groups used in rowing.

All weight training should be done on a Monday, Wednesday, Friday or Tuesday, Thursday, Saturday schedule = 3 days / week

So, winter training is done in order to: grow in strength (in a sport specific way), improve on technique in the boat or on the erg, and improve or maintain your aerobic base.

SPRING

What if we have a big race scheduled for the end of July. The race is a 2 or 1 Kilometer event and all our efforts and hopes are riding on the outcome of this race. How do we get from the winter phase to the 2/1K racing mode?

In **March** you should modify your training a little. Continue your “steady state” work and weights, but drop a weight session on the Wed/Thursday and replace with an A.T. workout. A.T., aerobic threshold, training is done at an effort which your body begins using both the aerobic and anaerobic fuel systems. Unfortunately, anaerobic fuel has a byproduct, lactic acid, which your body can only remove at a certain rate. When lactic acid builds up in the muscle you experience aching and failure (ex. weight lifting). Training at A.T. will help you have the “wind” in the body of a race. The third 500 meters of a 2K is the place where a lack of A. T. work will show.

A.T. workouts are 15 to 20 minutes in duration @ 85% of max heart rate. You do 3 to 4 pieces with about 8 minutes rest between each in a workout. Stroke rates range from 26 to 30 s/min depending on the size of boat, fitness of athlete(s), and technical level. A fit, technically smooth eight can do this level of training, 85% HRMax, at 30 s/min easily. An unfit, rough looking eight might have trouble holding 26 s/min for 15 to 20min at that effort level.

SPRING CONTINUED

In **April and May** the focus of weight training changes. The resistance/ load should drop to 65% while the reps/set goes up. In these months only one weight training session will be done/week with only one set at each exercise. The number of reps per set should double. So, if you were doing 2 x 50 reps, now you will be doing 1 x 100 reps. In stead of getting through the set bit by bit (15, 15, 10, 10, etc.) try to get id done in one steady pacing. The logic behind this change is that we need to try and maintain the muscle mass that we spent all winter developing. If you stopped weights all together, you would quickly lose the muscle.

Another change to the schedule would be the completion of **two** interval workouts in a week. This is a step closer toward racing. Make sure you have a long one and a short one in each week i.e., Mon-weights, Tues-steady state, Wed-A.T., Thurs-steady state, Fri-I min on/1min off, and Sat-4 x 1500 meters. One day a week, usually Sunday, should be taken off or actively rested (hiking, biking, roller-blading, etc.).

SUMMER

In **June and July** you need to continue to work of May, but do more race simulation. At the end of July, there can be no doubts as to what you are capable of in the race. This confidence will be easily achieved by making several mock races during these two months. The crescendo will be a tapered (rested) build-up for your big race at the end of July.

Here is how it might look:

The 1st half of June is like May, except you add small starts and sprints to all your interval workouts.

½ way through the month, on a Saturday, you do a mock race warm-up and b last a piece equaling the July regatta distance. Do not rest up for this one.

Continue through the rest of the month, just like the 1st half, but on the last week of June do this mini-taper:

Mon-steady state, Tues-3/4 of the full race distance, Wed-easy steady state, Thurs-1/2 the race, Fri-just a race warm-up, and Sat- the race....

You should repeat the first ½ of June in July (with the mock race). The difference in the second part of July will be how you approach the upcoming big race.

At lease, no less than, one week from your heat you must do a mock race. This piece will conclude your training. You should be at your lowest, energy-wise, when you do this piece.

Friday/Saturday's weights should be cut in half, only one set instead of two. This is to make sure you are not too burned up by the A.T. training.

Sat. /Sunday's training should be interval work. In March, this means several types of workouts designed to simulate racing strokes over various distances/time intervals and at various cadences.

ALL WORKOUTS ABOVE 'STEADY STATE' REQUIRE A WARM UP WHICH BRINGS YOU TO THE LEVEL AT WHICH YOU WILL BE WORKING!!!!!!

WARMING UP

I recommend 5-10 min. at an easy paddle: Then 4 min @ 22, 3 min @ 24, 2 min @ 26, and 1 min @ 28: Stop and stretch/hydrate: do 3 x 20 strokes @ 26, 28, and 30 paddling between each 20: if the workout is at a higher level continue with 3-4 x 10 strokes @ 32, 34, 36/ whatever you need to feel ready. On workouts that have starts, do some 1st stroke starts, 2nd, 3rd, 1st five, 1st five-ten high and 1st five-ten high-ten @ base.

Here are some interval workouts:

1 min. on/1 min. off @ various rates (28 to 38) –do 2 to 4 sets making a total of 18 to 30 pieces –rest 8 to 10 min between sets (depending on set length).

4 x 1500 meters (5-6 min) @ racing base rate -32 to 36 s/min depending on boat – rest 10 min between pieces.

3x {3x (2 min. on/1min. off)} @ racing base rate – 32 to 36s/min depending on boat – rest 10 min between each set of three.

4 to 6 x 2K @ various rates -28, 30, 32, 34, 30s/min depending on boat raise or lower the rating scale by 2 s/min (e.g., 1x start @ 26s/min).

6x {6x (20s on/10s off)} @ increasing rates –go up in rating two strokes for each 20s piece –e.g. 1st set 24, 26, 28, 30, 32, 34. start at 26/2nd set, 28/3rd, 24/4th, 26/5th, 28/6th.

6x 1000 meters (3-4 min) @ racing pace – 32 to 36 depending on boat –rest 6-8 min between pieces.

The above work outs can be modified for your needs. The basic structure is there. You will use these workouts all summer so learn them well. Try to mix them p and never do the same one twice in a week.

At this point you must maintain your speed, but get fully rested. The remaining week/+ will be so easy that your body will rally rest up, but you will do a little race work, to stay in touch, every other day until your racing begins. One week before, you will end your training with a race piece. Then you will have the next day, Friday, off. On the Saturday before your heat you will take an easy row to get the kinks out. Sunday you will do another easy paddle and use this day to travel if you are not already there. Tuesday crank out a 500m or 2x 250m after a good warm-up. Wednesday's just a race warm-up. Thursday light the candle as needed....

The above scenario can be modified to your needs and racing goals, but remember that building trough a month, raising the work load over 3-4 weeks, and then backing off in the 4th or 5th week can yield good training results and racing results. If timed correctly, cycling your training can prevent burnout and improve results. Be warned, too much tapering for all your races will not give you the highest peak. Only a couple of races in a summer season should be treated this way. For most races you should try to train through, like the mid June and July pieces that you see in the above schedule. Use some races as a training tool. You learn the most by racing; just make sure your training doesn't suffer.

FALL/HEAD RACES

Going from summer to fall is easy. I like to focus on technique, weight maintenance, and both aerobic base and A.T. conditioning. Here is a good schedule to follow for the head season:

Mon- steady stage
Tues- weights (like April/May)
Wed- steady state
Thurs- A.T.
Fri- steady state
Sat- mock head or real one
Sun- rest

Remember to cycle your efforts over each month, taper for the big races, and lean to be technically economical. Head race winners are the most aerobic and economic racers. Use all the miles to get an effective efficient stroke.

John Riley Weight Training Program

Weight training should be done in a way that provides results for one goal. That goal should be making each stroke in a race stronger. If one repetition of an exercise done with maximum weight represents pure power (anaerobic exercise), and an infinite number of repetitions of an exercise done with no weight represents pure endurance (aerobic exercise), then rowing a race for example 120 strokes/1 Kmeter, requires usage of the muscles in a hybrid way. Racing requires not one stroke, yet not thousands. Anaerobic and aerobic muscle fiber development is needed. How can this be achieved? Not easily.....

Your body is designed to adapt to the stresses that it must continually endure. If you continually increase the stresses to your body, in adapting, you will grow. Braking the rowing motion into the basic body elements and stressing these elements in a way that is similar to racing, as long as the stress is increased over time, will make you stronger each stroke of the race.

Taking your body's natural ability to adapt and applying that to an increasing stress similar to the frequency of your racing will force your body to grow.

Note: This will only occur under conditions of proper nutrition and rest. Your body must have ample protein and energy for tissue recovery and growth. You must not be putting your body through any other forms of exercise outside of "steady state" aerobic level work. Even if you do your aerobic work between 65% and AT (aerobic threshold – 85%) you will be working against your growing efforts.

Based on the above view, these are some exercise with set/repetition frequencies. Always do them in this order with proper technique/form. Form and control of the weight must be maintained in order to avoid injury. Consult your trainer or me for proper form and technique.

- All exercises should be done twice (2 sets).
- You should do both sets then move to the next exercise.
- Resting should be about equal to the time needed to complete a set.
- All exercises are to be done at 85% of a max rep/exertion resistance setting. Max is equal to the resistance/load only one rep/exertion can be completed at.
- All sets are to be at less than 50 reps/set. The younger and fitter you are the more reps/set. For example, a fit age 20 to 30 should be doing sets of 80 to 100 reps/set. If you are 30 to fewer than 50, try doing sets of 50 to 80 reps. If over 50, try no more than 50 reps/set.
- Recovery is the key to set:rep volume. The older you are the more recovery time you will need. Lowering the rep volume is the trick.

All Your weight training must be developed gradually

The first month should be devoted to familiarization with the exercises, machines, and your correct technique/form. Build up the resistance slowly in the

first four weeks. Sometimes I have started athletes off with no weight. For example, making a squat movement 50 times, with just your body's weight, can be enough for some of you seniors or first timers.

Because of the high reps/set @ 85% of max, no one could ever do a set in an explosive manner from start to finish without pausing or pacing. So, do as many as you can without pacing (resting between exertions/reps), until you start to fail. Then put the bar on the rack and rest 15 to 25 seconds until you have your breath back. Get right back to the exercise and continue chipping away at the set, bit by bit. When you first start you may be at no weight doing all 50 in one shot, but after two months you should be at a resistance (-85%) where you can only get the 50 reps by doing 15,15,10,10.

Gradually add weight and modify the way you break up the set for the safest results. For you crankers, who are into the 80 to 100 reps/set, keep the load so that you never go above 15 or below 10 reps.

Now the exercisers:

- Squats
- Back extensions
- Leg presses
- Straight leg deadlifts
- Seated or bench rows
- Abs
- Dumbbell rows

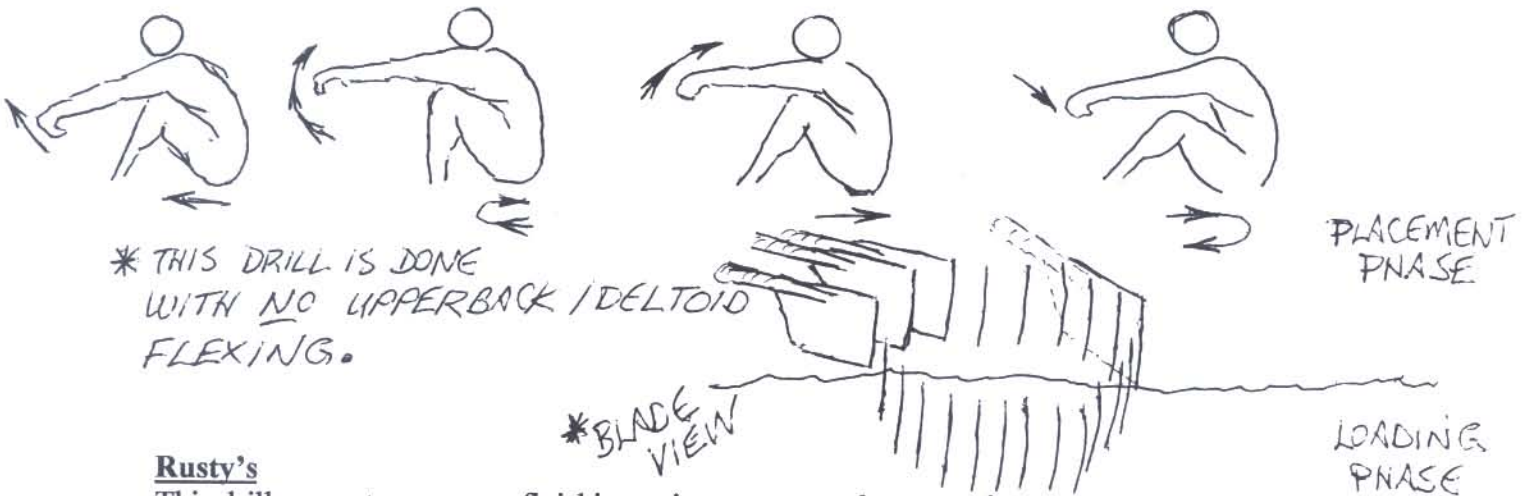
Any exercises that compliment or counter can be added, but these must be done to cover the basic groups used in rowing.

All weight training should be done on a Monday, Wednesday, Friday or Tuesday, Thursday, Saturday schedule = 3days / week.

Catch Drills

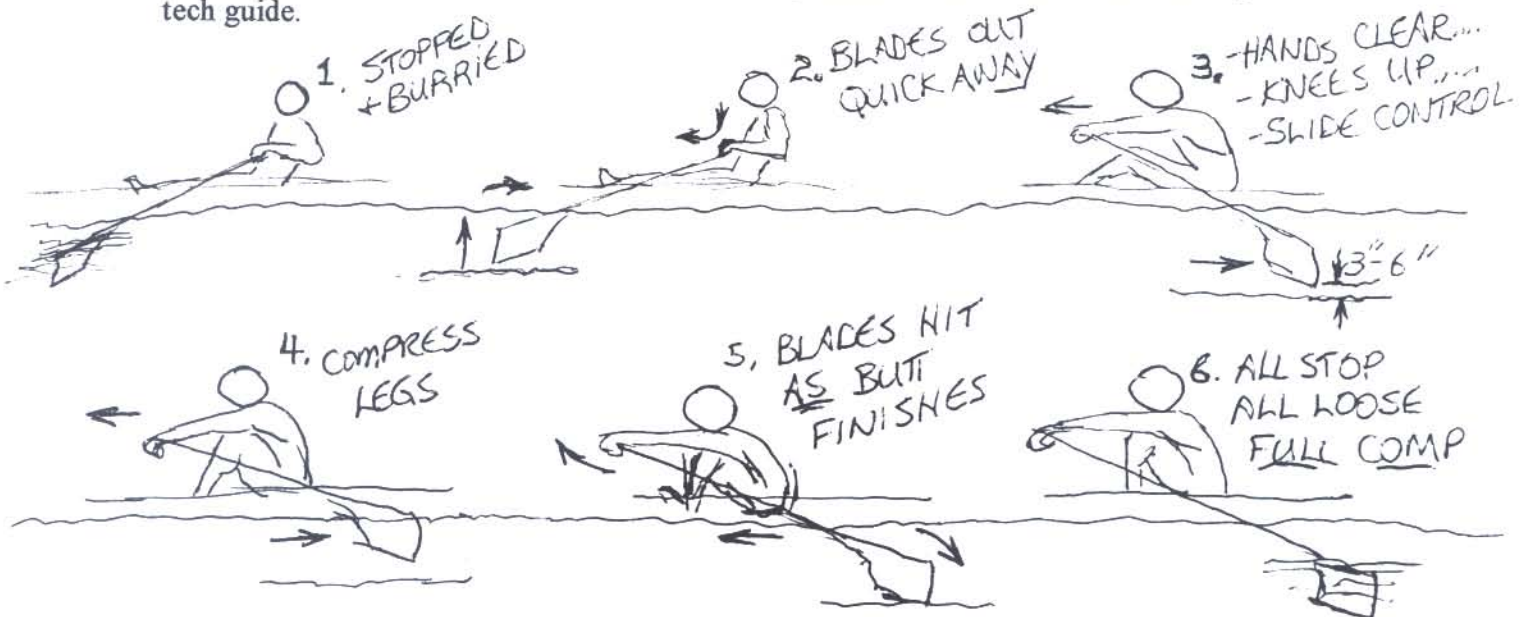
Blade Placement

This drill will help you coordinate the sternward, leg compressing, movement of your seat with the fingertip lifting, wrist rising, raising of your arms. Placement occurs as you finish squaring, so this drill can be done on the square. Off of the arm raise, your hands should be loosely guiding/following the handles as the blades hit the water. Let the blades cover as your seat begins going to bow. Then take the blades out and move back to the stern. **Note;** Your back should not be involved during any of this drill. Use your legs, arms, and hands. Your hand movement should scribe a circular motion.



Rusty's

This drill promotes a proper finishing exit, a proper and symmetric recovery, proper blade squaring, and proper blade placement. Team boats will improve their timing. Starting at the finish position with blades buried, take the blades out; execute your recovery and the placement part of the catch. You should end up at full compression with blades buried. You should not pressure the blades and your boat should not move forward. To repeat; feather your oars, back up to the finish, and rebury blades. **Note;** if you start to flip while catching, do not grab with your arms, Push your legs and you will row out of it. If you rush up and spring into the catch, this drill will let you know it. Slide control will help you through this drill. Control your momentum. Make sure the blades are cutting the water as you reach full compression. Not after..... refer to my tech guide.



Drills for the Drive

The best way to drill the drive is to break up the three components; legs, lower back, and upper back (arms). Isolation and repetition of each part combined with repetition of the smooth linking of one lever to the next will generate a fluid, strong, and horizontal drive.

This may seem easy, but I rarely meet someone who does these perfectly.

Legs Real simple, just row on the square with only the legs. Take the blades out before you are forced to lean back. Feel your legs stretch everything north of your hips. Flexing just the biceps to help quicken the blade's load-up. Do not open the upper or lower back to find resistance. Use your legs.....

* RELAX EVERYTHING ABOVE HIPS (ISOLATE)

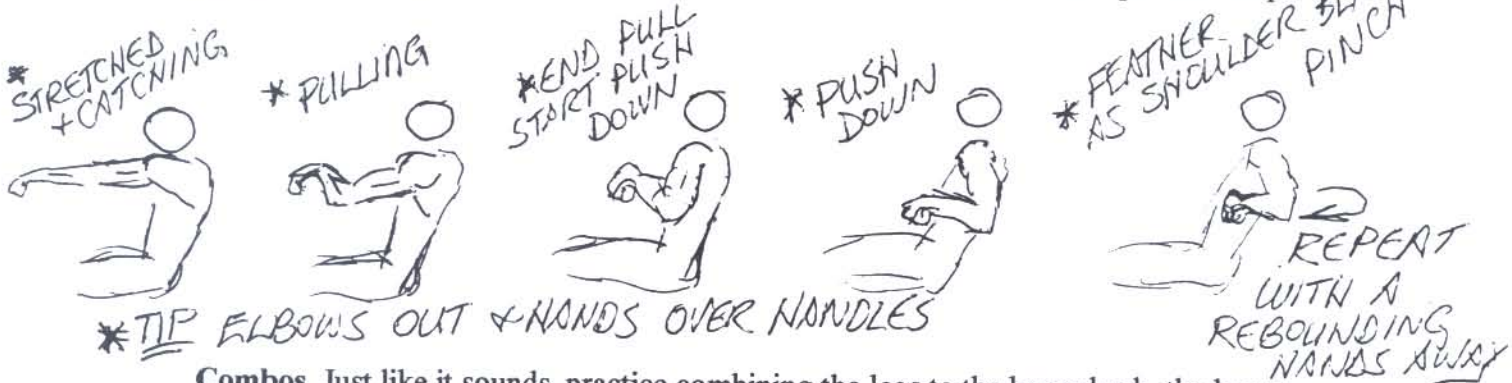


Back Just like legs except use your trunk swing from the hips. Catch and finish without any other levers in use. * LEAN BACK FROM HIP



* TRY TO KEEP YOUR UPPERBACK OUT OF IT.....

Upper Back/Arms You've got the idea. Focus on the stretch of your lats and the full range of shoulder use. Keep your elbows out and shoulders low. Hand position helps.



Combos Just like it sounds, practice combining the legs to the lower back, the lower back to the upper back, and all three.....

Drills for the Finish

The goals of a good finish are the proper push down from the palms, followed by a quick loose-handed feather, with an uncoiling of your pinched shoulder blades sending away hands that lead your trunk into the stern in a prepared/stretched position. Blades climb out square then feather off the water..... and stay off. Hands in and out are at very different levels. Drilling the finish is best achieved by going in and out of the square while rowing. For isolation and repetition of the finish, row only the upper back part of the stroke. Push down - then feather. When the bottom edge of blade clears the water, then you can feather. Hint....if your feathered finish does not feel as clean as when on the square, then your feather is messing things up.



- THE HANG.....



- THE DRAW.....

- HANDS OVER HANDLES



- END OF PULL
ELBOWS OUT.....

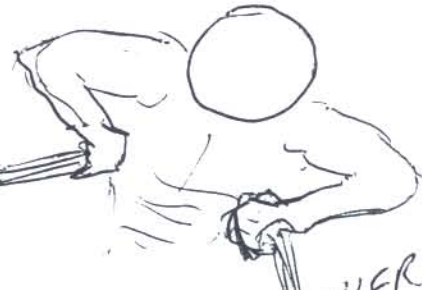
- SLIGHT SEPERATION OF HANDS.



THE PUSH DOWN



- END OF PUSH DOWN
- ABS RELAX AS CHIN HOLDS POSITION IN STERN
- SHOULDER BLADES BEGIN TO PINCH
- EXHALE



- FEATHER WITH A LITTLE WRIST BRAKE
- ELBOWS DROP A LITTLE
- LEFT HAND REBOUNDS AWAY.



PULLING



PULLING



PUSH DOWN



FEATHER

REPEAT

Drills for the Recovery

The return to the stern is a time for relaxation, preparation, and rhythm control. Improve your recovery by doing anything that helps the three areas above. Here are some things I like to do.

Piano Playing or Open Hands With the hands in the proper place, your hanging fingers should be free to be wiggled on the recovery. Open hands allows a moment of pre-square-up recovery made with just the top of the handle against the top of palm / base of fingers. Relax and trust yourself and the mechanics.

FINGERS
LOOSE



FINGERS
NANGING



FINGERS
WIGGLING

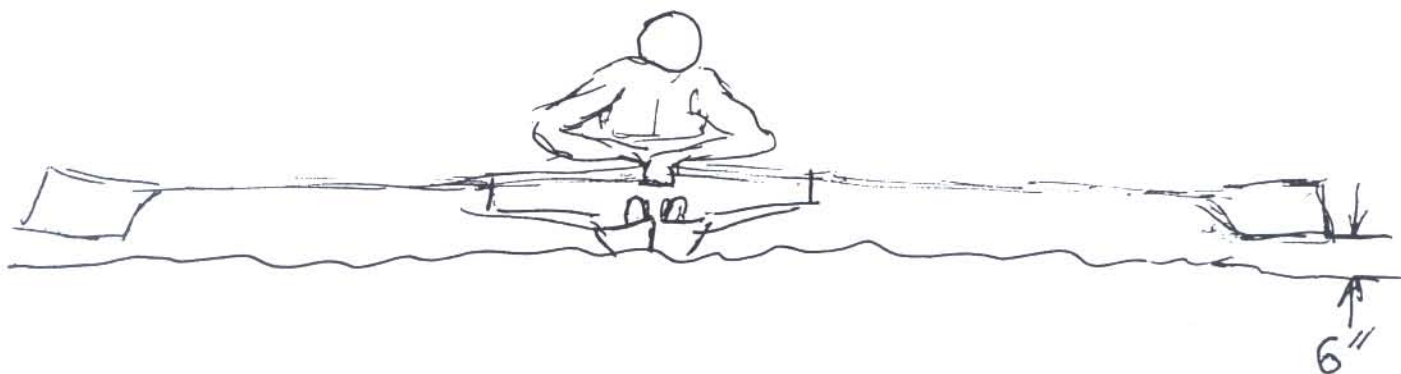


Quick Prep Getting out of bow requires quick fluid hands away that bring a loose stretch to your lats and shoulders.....while your knees begin rising. Try to be quick and loose while recovering to half slide (as fast as on the drive), then use foot pressure, as your legs compress, to smoothly slow yourself into the catching phase.

NO PICTURE — IT IS ALL IN THE
RHYTHM



Parallel Oars Row with oar shafts parallel to the water. Often blades are carried too low. If you can not do this, due to hands hitting your legs, you are rigged too low.



Hope these helped..... Good Luck!

Riles