2.7 DRILLS *by: Mike Purcer*

Drills provide an opportunity to break down the rowing stroke and focus on specific muscle movements or body and blade positions. Drills can be developed by separating the rowing stroke into specific parts, isolating muscular tasks and actions, and allowing the athlete to focus mentally and physically on a particular part of the technique. Drills are used to develop movement. The drills used should be reviewed for sequence, speed, position and momentum.

Drills that do not simulate the movements within the rowing stroke should be reviewed to clarify their intended purpose. Drills that teach incorrect movements or deviate from the stroke cycle should be avoided or used sparingly to prevent the teaching of incorrect movements.

Drills often relate to many different parts of the stroke and are listed below, numbered at the end of each section.

Drills Index

Skill	Section	Page	Skill	Section	Page
Grip	2.7.1	290	Release	2.7.7	301
Posture	2.7.2	290	Recovery	2.7.8	303
Balance	2.7.3	292	Focus	2.7.9	309
Entry	2.7.4	294	Starts	2.7.10	309
Drive	2.7.5	299	Timing	2.7.11	310
Late Drive	2.7.6	300	Bladework		

2.7.1 Grip Drills

The grip on the oar handle is the foundation of the learning process. The grip should be consistently monitored for hand position on the oar handle, finger and wrist tension, and wrist movements. Proper oar handle size is essential. Grip drills, including wrist movement drills, will provide additional comfort and oar control for the athlete.

2.7.1.1 Piano Fingers on Recovery

The athlete moves their fingers independently, as if playing the piano, during the recovery. This drill ensures that the grip on the oar handle is not too tight.

2.7.1.2 Inside Hand Only

The athlete uses only their inside hand and keeps their outside hand on their hip or lower back. Pressure is kept low, and the turning movements (feathering, squaring) are emphasized. Hand placement should be monitored to ensure proper grip.

2.7.1.3 Outside Hand Only

The athlete uses only their outside hand and keeps their inside hand on their hip or lower back. Pressure is low, and the emphasis is on a straight wrist and gripping with the fingers. The blades are kept square, and there is no feathering.

2.7.2 Posture Drills

Body posture is the second step in developing rowing technique. It includes the positions of the legs, torso, arms and head throughout the stroke. The posture of the torso (spine) is critical, as this part of the body is the vertical link between the legs and arms. The spine should remain straight (neutral) throughout the rowing stroke. Excessive forward back curvature at the catch should be avoided; however, there will be some stretch in the shoulders and upper torso. During the late drive, it is critical that the lower spine (lumbar) does not collapse. A bend in the lower spine

reduces power transfer and moves the body weight vertically in the boat.

2.7.2.1 Pause One

The athlete pauses in the finish position, with the torso lying back, the hands at the body, and the blade feathered. The pause can last from a micro-pause (stop and go) to 3 or 4 seconds. The pause allows the coach and athlete to review the athlete's position, including layback, shoulder, arm, and hand positions. The pause is also an opportunity for the athlete/crew to practise boat balance.

2.7.2.2 Pause Two

a) This drill has the athlete pause just after the legs connect and the hands begin to move. The shoulders and arms start moving forward to support the hands, and the oar handle starts to move away from the body. The pause two position is meant to teach that the initial movement of connection with the footstops and the hand, arm and shoulders start simultaneously.

b) Typically, with novices, coaches can isolate the arm movement without torso swing or leg engagement. The athlete moves the hands away from the body until the arms are straight. The torso remains in the finish position, with the legs extended. The drill emphasizes the arm movement from the finish position to straight out. This drill should be used sparingly with advanced crews as it does not reflect a racing movement.

2.7.2.3 Pause Three

The body's position in this pause drill has the legs at the one-quarter slide, the torso almost perpendicular, the arms bent with elbows about 90 degrees, and the hands over the knees. In the cyclical rowing stroke, the legs, torso, and arms move out of the finish together. Following the pause, the athletes should accelerate towards the next catch as in the regular, continuous stroke.

2.7.2.4 Pause Four

In the Pause Four position, the athlete is at half slide, knees at about ninety degrees, with the torso pivoted forward to the catch angle. The arms are relaxed and slightly bent, with the oar handle and hands past the footstops. The blade is above the water, high enough to square and move down to the water on the approach to the catch.

2.7.2.5 Pause Five

At pause five, the athlete is at the three-quarter slide, with the torso at the catch angle and the arms straight. Following pause five, the athlete completes the movement on the slide to achieve the full reach position.

2.7.3 Balance Drills

Balance is a learned skill; balance drills are critical to helping the athlete learn to balance in the boat. Developing body awareness to keep the boat balanced takes time. Starting an athlete out in a single is the easiest way to teach and learn the balance skill. However, balance can be learned in other boats as well. Balance begins with good posture and comfort.

2.7.3.1 Stationary Blade Dips

Sitting at the catch or finish, dropping the blade in and out, with a focus on the balance of the body.

2.7.3.2 Stationary Catch, also called Roll-Ups

This is a stationary drill with the boat not moving. It starts from the finish position, with the blades squared and buried in the water. On command, the athlete(s) release their blades, feather, and proceed through the recovery, then stop after fully burying the blades at the catch. They do not pull on the oar handle during blade placement at the catch. The focus is on the recovery and movement up the slide, with attention to balance while mimicking the recovery. If the blades touch the water during the recovery,

the crew should stop and reset from the start position at the finish.

The stationary catch drill that includes a 2-second pause in the pause four position provides an opportunity to develop balance.

2.7.3.3 Blades Up

Sitting stationary in the boat with blades out of the water challenges the athlete to sit in the middle of the boat to attain balance. At the end of continuous rowing, the crew can stop rowing and let the boat run out with blades up, working to balance the boat for as long as they can. The emphasis is to try to sit balanced. Oars should be stationary. In the beginning, you could have the athletes gunnel the oar handles to keep them stationary.

2.7.3.4 Blades Just Above Water

Athletes are asked to row with their blades just above the water to help balance the boat. The coach should emphasize proper hand levels and move the oar handles horizontally, parallel to the gunnels.

2.7.3.5 Release Feather Hands Away

This is a stationary drill. Start in the finish position with the blades square in the water. The athlete should stabilize the boat in the finish position and get comfortable. When ready, the athlete begins with the release, feathering the blade and moving the hands and shoulders away. The athlete should stop at the position of Pause 3 and try to balance the boat.

2.7.3.6 Cut the Cake

While rowing, the athletes begin the recovery by moving from the finish position to the pause three position, then back to the finish position, without stopping and their blades off the water. Once back at the finish position, they complete a full stroke cycle for a number of strokes, typically three to five, before doing another cut the cake

movement. This drill can be done with different speed focus to highlight dynamic recoveries.

2.7.3.7 Air Strokes

While the crew is rowing, they take a stroke with their blades out of the water. Being able to balance the boat during the drive phase, with the blades out of the water, is challenging.

2.7.3.8 Offset Handle Grip

This drill involves holding the oar handle offset to one side to exaggerate discomfort and make balancing the boat more difficult. In sweep rowing, the outside hand can be placed 10 cm from the end of the oar, and the inside hand can be placed an extra 15 cm down the handle (towards the blade). In sculling, one hand can be in the regular position, and the other 15 cm from the end of the oar.

This is a very awkward rowing position for the athlete. The athlete will compensate for the position by engaging the core, upper body and arm muscles to a greater extent. Both drive and recovery will be dramatically affected in this offset balance drill.

This drill should not exceed 20 strokes. Stop the crew/athlete and immediately resume with the proper grip and posture. The athlete will experience a heightened sense of balance as comfort increases. The athlete should make a conscious effort to feel balance and relaxation.

2.7.3.9 Exaggerated Blade Height on Recovery

The crew carries their oar handles as low as possible during the recovery so that the blades are at maximum height above the water.

2.7.4 Entry Drills

The entry, also called the catch, can be broken down into three parts: 1. the approach, 2. entry, and 3. connection (initial pull). In sculling, the torso reaches forward, whereas in sweep rowing it twists, pivoting toward

the oar handle. The athlete must fully understand the blade's exact path, as well as the timing and speed of the rotation (squaring). It is imperative that the athlete fully understand the exact movements they are seeking to get the most benefit from the drills.

Coaching the entry requires addressing the seat movement, torso compression on the legs, torso position and arm movements.

A demonstration of the ideal catch approach movement by the coach can provide the crew with a visual understanding of the movement. With the crew in the boat, the coach, holding a square blade above the water, will throw it towards the bow. As the blade moves towards the bow, gravity will accelerate it downward until it touches and enters the water. Demonstrate this several times, highlighting that the blade moves towards the bow and downward at the same time. Identify the critical point of contact between the edge of the blade and the water. The entry is the beginning of the stroke and can be referred to as hooking into the water close to full reach.

2.7.4.1 Stationary Catch.

This is also known as a blade placement drill. This drill helps the athlete develop the skills to place the blade at the full-reach position. The focus is on a quick lift of the hands at the catch and on proper recovery movements. Separating the movements of lift and pull, or entry and drive, promotes and enhances blade entry at full reach.

The drill is performed with the boat stationary, initially with two athletes keeping their blades on the water to maintain balance. The other athletes start in the finish position with their blades (square) in the water. On the coxswain's command, the athletes release their blades and move through the recovery, quickly planting them at the catch without pulling on the oar handle.

The movement of placing the blades in the water at full reach without pulling separates the entry from the drive, promotes the development of a muscle pattern that

emphasizes the lift before the pull, and increases the effective stroke length in the water.

2.7.4.2 Three Quarter slide rowing at full power.

This drill is rowing at ¾ slide at full pressure. The three-quarter slide position is a much stronger position for the athlete to apply power, allowing quicker entry movements.

The three-quarter slide position requires the athlete to place the blade in the water at a more perpendicular angle, where the blade must move at a higher rotational velocity. Quickness is required to maintain the blade's quick entry.

It is also important that the pressure be at full pressure to maintain a higher shell speed, ensuring the athlete is challenged to connect quickly with the water.

2.7.4.3 Catch Pic Drill

Catch pic rowing only. Two athletes balance while all others row only the catch phase of the stroke. No upper-body swing. The focus is on quickly applying the legs at the catch to lock onto the water.

This drill is about teaching the legs to contract quickly to increase the boat's speed.

Note that this drill can be hard on the back and should be used sparingly.

2.7.4.4 Exaggerated Quick Catch

This drill involves the athletes making a conscious effort to affect the blade entry as quickly as possible. Total focus on hooking the blade into the water as quickly as possible, using the momentum of the oar and the quick contraction of the shoulder muscles to provide exaggerated quickness to the catch.

2.7.4.5 Hold Body Catch Angle Extended Length

This drill focuses on holding the torso catch angle after the entry for an extended time. The drill exaggerates the body position to ensure the blade entry is locked in with the

legs. The stroke is taken with straight arms, and the torso angle is held.

2.7.4.6 Catch on Command Drill

This drill involves steady-state rowing, allowing the coxswain (or coach) to call the catch at random times during the final part of the recovery phase of the stroke. Athletes must be ready to take the catch on command, moving into a catch position as they approach full reach.

2.7.4.7 Catch Backsplash Drill

On the recovery, the athlete will lift their oar handle slightly early to splash water at the full-reach position. This movement brings the blade down to the water during the recovery, when athletes are reaching out. The emphasis is on the blades touching the water at the full-reach position.

2.7.4.8 Catch Evolution Drill

With the boat balanced by two non-rowing athletes, start with the crew at the catch, lifting their blades in and out of the water with a quick shoulder lift (five catches). Move quickly to the top-quarter slide, emphasizing the quick lift and quick engagement of the legs (five strokes). Ensure that the torso holds the catch angle. Next, move to half slide with the quick arm lift and legs only (five strokes). Then move to three-quarters of the slide, holding the torso angle (five strokes). Finally, finish the stroke with the torso and arms engaged.

2.7.4.9 Sky Recovery Drill

This drill requires athletes to keep their hands as low as possible during recovery and the blade very high off the water. The movement of the hands into the catch will require the crew to raise and lift the oar handle to bring the blade back to the water. This drill emphasized lifting the oar handle into the catch.

2.7.4.10 Choke Up On Skulls

The athlete grips the sculls further down the shaft. This allows the athlete to reach out further with their hands and shoulders as the oar catch angle is increased. The drill gives the athlete the opportunity to feel an extended reach at the catch. This drill can also be done on the square, as holding the sculls on the larger part of the shaft reduces control of feathering.

2.7.4.11 Arm Pointing Pivot Catch

This drill helps rowers learn to pivot their shoulders as they approach the catch. The athlete holds their inside arm straight out from the body and rows with only the outside arm. On the recovery, as the oar crosses the perpendicular, the hand and arm point at the blade of the oar. This alignment causes the shoulders to pivot at the hips as the upper body approaches the catch.

2.7.4.12 Catch Blade Bobbing

The goal of this drill is to strengthen shoulder muscles and to develop quickness aimed at increasing the speed of the blade entry. The drill also allows the shoulder muscles to control the entire vertical range of oar handle movement without moving the upper body, which stays at the catch angle.

The athlete(s) sit in the catch position with their blades fully buried in the water. When learning the drill, part of the crew should keep their blades flat on the water and be responsible for keeping the boat balanced. On command, athletes performing the drill lift the blades out of the water by moving their hands and arms down from the shoulder joint. Arms should be straight. It is important that the upper body remain stationary. The drill is to bob the blades up and down using their shoulder muscles.

The drill can be adjusted to increase the rate at which the oar bobs up and down. The crew might start slow and increase speed bobbing the oars until the timing breaks

down and they stop. The height of the blade above the water can be adjusted to alter the range of motion.

This drill can be completed in three or four sets of 10 to 20 repetitions, two or three times per week. Following the drill, athletes should stretch their shoulder joints with large arm circles in the boat.

2.7.4.13 Early Square Drill

This drill involves squaring the blade early in the recovery to emphasize keeping the hands level as they move toward the catch. The early square can begin as the hands pass the knees on the recovery. The blade should be fully squared as the hands pass the footstops.

2.7.4.14 Square/Feather on Recovery

The crew quickly squares and feathers the blade during recovery as the oar reaches a perpendicular position relative to the boat. This drill ensures the blade is high enough above the water to square on the approach to the catch without dropping the hands.

2.7.5 Drive Drills

The drive portion of the stroke is the application of power following the catch and continuing through to the finish.

2.7.5.1 Exaggerated Acceleration (zero to 100)

This drill emphasizes the boat's acceleration through the drive phase. The crew rows and then exaggerates the drive, from zero pressure at the catch to full pressure at the finish of the drive.

This drill can be performed at varying levels of acceleration. For example, a three-quarter-pressure catch and a full-pressure finish.

2.7.5.2 Drive Blade Depth

The consistent depth of the blade during the drive phase is critical to the efficiency of the stroke. The blade must maintain the depth throughout the drive.

The drill involves rowing at reduced pressure while focusing on maintaining the correct depth

2.7.5.3 Legs Only Through Drive

The athlete focuses on maintaining constant leg drive acceleration through most of the drive phase with a conscious effort to push harder on the legs as the knee joint extends to straighten the legs.

2.7.5.4 Segmented Drive

Split the drive (legs, body, arms) into individual movements. Start with legs only, all the way down, maintaining the torso at the catch angle and keeping the arms straight as the blade is released from the water, for five strokes. Next, legs first, all the way down, then the torso swings from the catch angle to the finish position while the arms remain straight as the blade is released, five strokes. Finally, legs extend first, the body swings second, then the arms pull the oar handle into the finish position, five strokes. The movements are separated to emphasize the sequencing of muscle and joint actions throughout the drive.

2.7.5.5 Outside Arm Only

Focusing on the power application with the outside arm reaching a strong position with the outside shoulder and arm into the finish of the stroke.

2.7.5.6 Pause One

The crew pauses for an assigned time in the finish position. This drill emphasises a strong finish position. Coach and athlete to check the finish position on the pause stroke.

2.7.6 Late Drive (Finish Drills)

There are many drills that assist in the efficiency of the finish. These drills focus on the last third of the drive part of the stroke.

2.7.6.1 Rowing on the Square

Rowing on the square requires the athlete to keep the blade squared without feathering throughout the stroke cycle.

2.7.6.2 Square Release

The square release drill involves extracting the blade without feathering and holding it square until it starts moving during recovery. As soon as the hands move away from the body during recovery, the athlete should feather the blade at the normal position.

2.7.6.3 Arms and Body Only

The athlete rows with arms and body only to emphasize the movements of the finish.

2.7.6.4 Last Half of Drive

The athletes row using a quarter slide, including torso swing and arms, as they do the last half of the drive phase.

2.7.6.5 Big Send

The athlete rows with an exaggerated power through the finish of the stroke. This is done every stroke, ensuring that the blade remains covered until the last moment.

2.7.6.6 Exaggerated Layback

The athlete rows with an exaggerated layback to emphasize the torso movement at the finish.

2.7.6.7 Reduced Pressure Finish

The athlete rows, reducing the force on the oar handle just before release. The reduced force on the oar handle is matched by a reduced force on the footstops, allowing the boat to continue accelerating. The blade extraction is clean, and the blade is released without dragging water.

2.7.7 Release Drills

There are many drills that improve the efficiency of the release, extracting the blade from the water. These drills limit the negative effects of blade movements as the blade releases from the water.

2.7.7.1 Square Release

The square release drill involves extracting the blade on the square and holding the square until the blade begins to move during the recovery. Once the blade begins to move during the recovery, the athlete should feather at the normal position.

2.7.7.2 Pause One on the Square

Pause one rowing on the square emphasizes the tap down movement and the position of the hands immediately after the release.

2.7.7.3 Outside Arm Rowing

The athlete rows with the outside arm only to emphasize the use of the outside arm during the release. Athletes should focus on triceps activation and forearm movement from a stationary elbow joint.

2.7.7.4 Back End Suspension

The athletes sit stationary at the backstops with their arms extended. This position would be the start of the finish. On command, athletes pull on the oar handles, lifting themselves off the slide. The purpose of this drill is to teach body suspension in the finish part of the stroke.

This drill can be further developed when the athletes start at quarter, half or three-quarter slide on the drive phase.

2.7.7.5 Reverse Release

The athlete sits stationary with blades feathered and arms away from the body (elbows at 90 degrees). The drill

is to start from this stationary position and, in reverse motion, place the blade square in the water.

2.7.7.6 Release Backing

The athlete sits at the backstops in the finish position with the blades square and buried. The athlete pushes on the handles, backing the blades lightly in the water. When the arms are extended, the athlete then pulls on the handles, keeping the wrists flat and the blades buried until just before the hands reach the body, at which point the blade is released and feathered.

2.7.7.7 Finish Position Blade Bobbing

The athlete sits stationary in the finish position with the blades square in the water. The blades are then bobbed in and out of the water with flat wrists, using a tap down from the elbows.

The feather movement is added to end the bobbing after a number of strokes.

2.7.7.8 Release Pressure

The athletes begin rowing with regular strokes. Next, they do a ten (10) emphasizing the acceleration of the oar handle to the body. This is followed by a ten (10) with no pressure after the hands are about 20 cm from the body and just drift into the release. The blades should pop out when the pressure is released. Finally, the athletes do ten (10) strokes to find the medium between full-pressure finishes and no-pressure finishes.

Knowing when to let go of the pressure is the key to a clean release that keeps the boat moving. (personal conversation, Mark Henry, May 2024)

2.7.8 Recovery Drills

There are many drills that help improve the efficiency of the recovery from the finish position to the full reach position. At practice rates, the recovery is traditionally broken down into moving the hands and arms away from

the body before the torso pivots forward, followed by a slow, controlled slide forward on the seat. This document promotes rowing technique during practice that matches racing, including the coordinated, simultaneous movements of the legs, torso and arms. The recovery draws the footstops towards the seat and the body's centre of mass. At race rate, these movements accelerate the footstops towards the seat and increase boat speed. During practice, as in racing, the movement should accelerate the footstops towards the seat, and the athlete should increase speed towards the full reach position. At practice rates, the recovery starts slowly and continues to accelerate towards the next catch.

The best drills closely relate to the biomechanical movements of the body at a racing rate. Drills must be monitored for body posture (position), balance, and speed (acceleration). Recovery drills should be used in conjunction with catch drills to ensure equivalent improvement in the continuous stroke. Coaches should ensure that athletes are fully aware of the movements and the objective of the drill to maximize its effectiveness.

2.7.8.1 Pause One

Pause drills are an excellent way to develop body movements during the recovery. In Pause One, the body is in the finish position. The torso is lying back in the finish position, with the blades feathered and the hands at the body. The athlete/crew should display good posture (neutral spine), keep the shoulders back, and be able to balance the boat. This is a good position for the coach to check the position of the body and arms and make adjustments as required.

2.7.8.2 Pause Two

This drill has the athlete pause just after the legs connect and the hands begin to move. The shoulders and arms start moving forward to support the hands, and the oar handle starts to move away from the body. The pause

two position is meant to teach that the initial movement of connection with the footstops and the hand, arm and shoulders start simultaneously.

2.7.8.3 Pause Three

In this pause drill, the body's position has the legs at the one-quarter slide, the torso almost perpendicular, and the arms bent, with elbows at about ninety degrees and the hands over the knees. In the cyclical rowing stroke, the legs, torso, and arms move out of the finish together. Following the pause, the athletes should accelerate towards the catch, as in the regular, continuous stroke.

2.7.8.4 Pause Four

In the Pause Four position, the athlete is at half slide, knees at about ninety degrees, with the torso pivoted forward to the catch angle. The arms are relaxed and slightly bent, with the oar handle and hands past the footstops. The blade is above the water, high enough to square and move down to the water on the approach to the catch.

2.7.8.5 Pause Five

Pause five, the athlete is at three-quarter slide, with the torso at the catch angle and the arms straight. Following pause five, the athlete completes movement on the slide to achieve the full reach position.

2.7.8.6 Beat Pause (micro-pause)

This drill is a pause rowing drill that includes a very short one-beat pause in the finish position of the stroke. This drill is typically done continuously for 30 to 60 seconds.

2.7.8.7 Stationary Recovery Progression

This drill starts with the athletes sitting at the finish position with blades square and buried in the water. The coxswain or bow will call 3-2-1-tap, and the crew will tap down and hold their blades in the air (squared or feathered,

pause one) with the boat balanced for as long as possible. Once the boat tips, the crew returns to buried blades, sets the boat up and repeats. The outcome is the simultaneous movement of the release, the crew's posture, and the boat's balance.

The next step is on the call from the stationary blades, square and buried at the finish; the crew will tap down and move to the pause two position. Again, the drill emphasizes simulated movement, posture, and balance. Once the crew becomes proficient in timing and balance, they can move on to the next part. The drill progresses from the tap down to pauses three, four, and five.

The final step is to complete the recovery from tap down with dynamic movement, ending with the blades planted in the water, stationary in the catch position. The movements must be dynamic, accelerating the footstops towards the seat while working on timing and balance.

2.7.8.8 Offset Handle Grip

This drill involves holding the oar handle offset to one side to exaggerate discomfort and make balancing the boat more difficult. In sweep rowing, the outside hand can be placed 10 cm from the end of the oar, and the inside hand can be placed an extra 15 cm down the handle (towards the blade). In sculling, one hand can be in the regular position, and the other 15 cm from the end of the oar.

This is a very awkward rowing position for the athlete. The athlete will compensate for the position by engaging the core, upper body and arm muscles to a greater extent. Both drive and recovery will be significantly affected in this offset balance drill.

This drill should not exceed 20 strokes. Stop the crew/athlete and start up immediately with the proper grip and posture. The athlete will experience a heightened sense of balance as comfort increases. The athlete should make a conscious effort to feel the balance and relaxation.

2.7.8.9 Cut the Cake

In this drill, the athlete moves from the finish position to the pause three position (with dynamic recovery movements) and back to the finish position without stopping. This drill is typically included every third or fifth stroke during continuous full-stroke rowing. The drill emphasizes the move out of the finish position, which should be monitored for posture, simultaneous movement of the legs, torso and arms, and balance.

2.7.8.10 Hand Position Drills

The grip and hand positions are critical to good rowing technique. Grip drills were reviewed earlier in this chapter; however, the grip and hand positions should not be ignored during recovery drills. Flat-wrist drills that emphasise relaxing the forearms and carrying the sculling oar handles under the fingers are helpful, but coaches should remember that at racing intensity, the wrists are bent during the recovery until moving into the catch.

2.7.8.11 Sculling Left Hand Away

Typically, in sculling, coaches prefer that the left hand lead away from the finish position, with the right hand at a similar level and closely behind. To support this movement, use this drill.

The drill starts with the athlete pausing in the pause one position. From the pause one position, only the left arm moves away from the body until it is straight, while the torso and right arm remain in the finish position. Once the left arm is straight, the recovery begins with the right arm and torso moving to catch up with the left arm.

2.7.8.12 Eyes Closed

Rowing at a low rate with eyes closed helps the athlete sense the shell's flow between strokes. The athlete's goal is to feel weightless as they accelerate on the slide. As the crew moves together, the athletes should pull themselves

on the slide while maintaining a neutral position as the shell moves under them.

2.7.8.13 Accelerated Recovery 0 to 100

This drill requires the rower(s) to emphasize acceleration during the recovery. The rowers start very slowly out of the finish and exaggerate the acceleration, zero speed at the finish and then accelerating 100 percent (as fast as possible) into the next catch. This drill should be done only for five to ten strokes before returning to controlled rowing.

2.7.8.14 Accelerated Recovery Half Slide

Rowing at steady state (rate 18~20), the crew then goes to half slide, and the rate increases (24~26) for ten strokes. For the next ten strokes, the crew drops the pressure but increases the rate. After the second ten at half slide, the crew lengthens to full strokes in three and rows at full pressure and race rate.

1) Steady state (18~20spm)
2) Ten strokes at half slide (24~26spm)
3) Ten strokes drop the pressure and increase the rate (30~32spm)
4) Full strokes and build in three to full pressure and race rate for a hard ten.
5) Back to steady state

2.7.8.15 Air Strokes Accelerated Recovery

At steady state (rate 18~20), the crew performs an 'air stroke,' with the blade feathered above the water during the drive phase, moving slowly. This is followed by an accelerated recovery focused on accelerating the boat. The air stroke is performed every fifth stroke, three times.

2.7.8.16 Two-Speed Recovery

While rowing, move very slowly from the finish position to the pause three position. Micro pause in the pause three

position, followed by exaggerated acceleration into the next catch.

2.7.8.17 Recovery Only (moving the boat)

With the boat stationary, the athlete/crew will start from the finish position and execute the recovery, accelerating the footstops towards the seat while keeping the blades off the water. The athlete/crew will then slowly return to the catch position with the boat balanced and the, blades feathered off the water. Once at the finish position, the athlete/crew will again execute the recovery, accelerating the footstops to the seat and again move back to the finish position with feathered blades and a balanced boat. This should be repeated 10 times to see how far the crew can move the boat using only the recovery.

2.7.8.18 Body Start First Drill

These body-awareness drills help the athlete when there is a movement delay (torso, legs, hands) from the finish position. The legs, torso and hands move together out of the finish position but at different speeds.

Torso First. Row at a low rate with a short pause at the finish position. From the finish position, the hands remain at the body and the legs stay straight. The torso starts the recovery by pivoting forward a small amount (ten degrees) while the hands remain at the body and the legs stay straight. Once the torso begins the recovery (noticeably), the hands and legs join in. This drill emphasizes torso movement out of the finish at the beginning of the recovery.

Legs First. Row at a low rate with a short pause at the finish position. From the finish position, the hands remain at the body and the torso at the finish angle. The legs start the recovery by moving the slide and lifting the knees a few inches, while the hands stay at the body and the torso at the layback angle. Once the legs start and the knees rise on the recovery, the hands and torso join the recovery. This drill emphasizes leg movement out of the finish at the beginning of the recovery.

Hands First. This drill can also be completed with the hands starting first, but this is typically not necessary, as the hands generally start first due to early development coaching.

These drills are typically completed for only a short time (10 strokes) and give the athlete a new sense of movement control.

2.7.9 Focus Drills

This section provides a variety of drills that address several aspects of physiological skills and the ability to focus on rowing technique.

2.7.9.1 Eyes Closed

This simple drill requires the athlete to close their eyes and focus on the sensation of the movement.

2.7.9.2 Stroke Pyramid Drill

The pyramid of strokes drill. This drill involves a sequence of strokes, progressing from full stroke, 3/4, 1/2, 1/4, swing, pick, swing, 1/4, 1/2, 3/4, to full stroke. It is most easily done by having the coxie or coach call the next stroke early. This is a body awareness drill and does not mimic the stroke movements.

2.7.9.3 Three-Part Breathing

Breathing skills enhance air intake and provide an opportunity to improve relaxation skills in the boat. The NCCP Level 3 Theory Manual (1983) outlined the three-part breathing drill. This technique promotes relaxed focus.

2.7.10 Start Drills

The start of the race typically includes several shorter strokes that keep the oar through the middle of the stroke arc, where it is more effective.

2.7.10.1 Start Progression Drills

Progression drills typically start with one stroke. The first stroke can be completed at ½ power and ½ speed. Once the crew is together, the progression may move to ½ power at ¾ speed or ¾ power at ¾ speed. The progression will increase in power and speed, then progress to two strokes, three, and so on.

2.7.10.2 Quarter Stroke Starts

Starts with three to five one-quarter-length strokes. This short stroke requires the crew to move very fast to develop speed.

2.7.10.3 Running Starts

This drill involves rowing at a low rate with half pressure, then doing a start; half, three-quarters, and full, at pressure and full speed. You can build up to a regular start.

2.7.10.4 Over Rate Starts

Starts at excessively high rates.

2.7.10.5 Starts on Square

Starts with the blades kept square allows the athletes to develop a quick clean release. This drill also promotes low hands on the recovery and a quick catch.

2.7.11 Timing Drills

Crew timing is critical for maximum performance, and coaches must constantly work to achieve and maintain proper timing of the blades and body movements. Changing rowing technique or rigging can correct major timing errors, but the crew should continually perfect good timing.

2.7.11.1 Water Slap Drill

While rowing at practice rates. During recovery, the crew, with a quick movement, raises their hands and slaps the blades together on the water as their hands cross over the footstops.