



**ROWING  
CANADA  
AVIRON**

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# **ROWING TECHNIQUE**

**MOVEMENT PATTERNS IN SWEEP AND SCULLING TECHNIQUE IN CANADA**

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## INTRODUCTION

TECHNIQUE CAN BE DEFINED AS A SPECIFIC SEQUENCE OF MOVEMENTS OR PARTS OF MOVEMENT IN SOLVING MOVEMENT TASKS IN SPORTS SITUATIONS.

(Dictionary of Sport Science, 1992)

Rowing is a sport characterized by a fairly complex sequence of movements that allow for an athlete to propel a boat from one point to another in the fastest time possible.

This set of proper movement patterns, or “technique” is the most important skill that any coach must teach athletes that are starting out in rowing.

This document outlines the basic components of the rowing stroke. Coaching the correct movement patterns of a rowing stroke is of importance, to not only those athletes taking their first strokes in a boat, but also to the rowers at the highest levels of the sport. Whether the rower is a beginner or competing at the highest level of the sport, it is critical that there is continual emphasis placed on refining and optimizing the rowing technique.

Additional articles will be developed to address more detail and description on bladework, grip on the handle and the biomechanics of the rowing stroke and hull speed. All of these are essential for the coach to gain an understanding of the rowing stroke and helping athletes row faster.

## SCULLING ADDITIONS

Rowing Canada Aviron has recently updated this document to include references and photos of sculling where applicable throughout the RCA Technique document.

Acknowledgements to Terry Paul and Roger Meager for contributing to these additions.

## ACKNOWLEDGEMENTS

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## PART ONE

Good rowing (sweep) and sculling technique consists of three main components:

- 1 THE DRIVE PHASE**  
when the boat is being propelled by the actions of the rowers;
- 2 THE RECOVERY PHASE**  
when the boat is running freely without the propulsive force of the rowers being applied; and,
- 3 THE TWO TRANSITION ELEMENTS OF THE STROKE**

the entry of the blade into the water at the beginning of the drive phase (Blade Entry) and the release of the blade from the water at the end of the drive phase (Blade Release).

### THE DRIVE PHASE (BLADE ENTRY)

During the drive phase, the blade must be buried to the proper depth so that it propels the boat horizontally. Proper blade depth is when the blade is fully covered with the top edge of the blade just below the water surface, and not allowing water to come up the shaft more than about 30 cm (a good way to check this is to put a piece of tape on the shaft at approximately 30 cm from where the shaft joins the blade).



In sculling the body will remain centred in the boat. The thumbs/hands lift up evenly left and right to take the catch.



In sculling the hands at the cross over must be organised well with the right hand knuckles nestled under the left and slightly leading back to the body with the left hand following and close to the right one.



In sculling at the end of the drive phase it is important to ensure the hands are even and level.

### THE STROKE

The stroke is a sequenced movement that links all phases together.

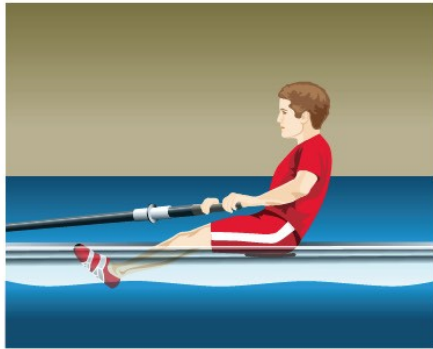
The three components of the stroke are characterized by good blade work throughout the entire stroke cycle:

- » the blade is at the correct depth during the drive;
  - » the blade is at the correct height off the water during the recovery
  - » the blade enters and exits from the water cleanly and smoothly
- While the stroke can be divided into different phases and transitions, the stroke is a continuous, fluid, movement. The boat, rowers and oars are constantly in motion with varying speeds at different parts of the stroke. Each of these movements has an impact on boat speed, the control of which minimizes potential speed losses.

The Drive Phase, Recovery Phase, the Blade Entry and Blade Release are the essence of rowing and sculling technique.

## THE RECOVERY PHASE (BLADE RELEASE)

On the recovery, the blade must be carried clear of the water so that the blade does not touch the water surface AND the blade balances the boat so that it runs cleanly.



In sculling the hands are organised with the left hand leading the right. Important to feel lateral pressure in the thumbs for balance and blade control.



In sculling the hands need to be organised at the crossover on the recovery phase. The left hand is still leading with the right knuckles nestled under the wrist of the left. The wrists of both hands should be flat with a light grip on the handle.



As the hands separate in the sculling stroke the thumbs need to be on the end on the scull maintaining a slight lateral pressure. The hands lead away from the body with the wrists flat. The torso is centred along the midline of the boat with the whole body symmetrical. Both arms are outside of the knees.



In the first part of the Recovery Phase, the hands move away from the body and lead the trunk forward, while the legs are still down. The hands move smoothly away from the body, and as the hands pass the knees, the seat moves away from backstops and continues smoothly to the forward position.

In the Drive Phase, the opposite occurs: the legs initiate the drive, the trunk leans and the arms draw the handle to the body. Both phases are linked together at both ends with smooth transitions: a smooth entry into the water and a smooth release of the blade at the end of the Drive Phase.

The rowing and sculling stroke is characterized by good posture throughout the stroke cycle. The lower back is kept strong, the athlete sits tall with the shoulders and upper back relaxed.

Another fundamental element of proper rowing and sculling is good blade work. The blade must enter and exit from the water with as little disruption to the speed of the boat as possible.

The ultimate goal of rowing and sculling with proper technique is to ensure the athlete/crew propels the boat as fast as possible. Coupled with the appropriate level of training, this combination will bring success to the athlete.

## THE DRIVE PHASE

The speed a boat travels is determined by the force with which the blades propel it through the water. The force is created by working the strongest and biggest muscles first through a sequence that finishes with the smallest muscles.

### EARLY PART OF THE DRIVE PHASE

The Drive Phase begins with an immediate push with the legs. The feet push firmly against the stretcher in coordination with the blade entering the water. Once covered, the blade moves on a horizontal path. As the legs drive, the back and arms hold firm transferring the power to the blade. The rower at this point

feels suspended between the feet and the handle and feels a subsequent sensation of lightness on the seat.

The shoulders are loose and the arms fully extended and stretched towards the handle as the legs push off the foot stretcher.



### CHARACTERISTICS OF THE EARLY PART OF DRIVE PHASE

- » Drive starts with a strong push on the footstretcher with the legs
- » Body holds firm — good posture through out the drive phase
- » Arms are straight and shoulder girdle stretched
- » Head is moving in a horizontal direction
- » The blade is buried with the top of the blade just below the water surface

## MIDDLE PART OF THE DRIVE PHASE – PART I

After beginning the drive phase with the legs, the trunk begins to pry open through a strong movement of the lower back. The arms are still straight as the trunk hinges open at the hips and the legs continue to push strongly on the foot stretcher. The hands follow a path from the catch position to a point on the body at about the second rib. This keeps the forces on the blade working in the direction in which the boat is headed.

When a blade is held at its correct depth through the stroke, a cavity is formed from which it can be extracted cleanly provided it is kept open with pressure on the front of the blade. In sculling the pressure is maintained by smoothly accelerating the handles to the body by activating a combination of legs, lats and bicep draw. In sweep rowing, that pressure is maintained by emphasizing the draw with the outside arm as it has the most leverage. The inside hand is used to turn the blade onto thefeather. In sculling the blades are turned onto the feather by the fingers, and a slight push of the thumb away from the body. The wrists are kept as quiet as possible.

## CHARACTERISTICS OF THE MIDDLE DRIVE PHASE – PART I

- » Legs are accelerating strongly
- » The body is prying open in a linear, horizontal fashion with body weight suspended on the face of the blade not the boat.
- » Arms are straight and connected to the handle
- » The blade is buried so that the top of the blade is just below the water surface
- » The hands must be level as they approach the crossover in the sculling stroke.



## MIDDLE PART OF THE DRIVE PHASE – PART II

The legs continue to push strongly on the stretcher and the lower back continues to pry open. The arms begin to draw so that all three major muscle groups (the legs the back, and arms) are working together to maximize the speed of the handle through the middle of the stroke where the application of power is most effective. The oar and sculls handle accelerates through the stroke as the rower draws on a horizontal plane to a point on the body at about the second rib.



## CHARACTERISTICS OF THE MIDDLE DRIVE PHASE – PART II

- » The legs push strongly, the trunk continues to pry open and the arms begin to draw
- » Legs almost at full extension.
- » The hands draw towards the 2<sup>nd</sup> rib on the chest. The right hand comes in slightly ahead of the left to maintain a level draw.



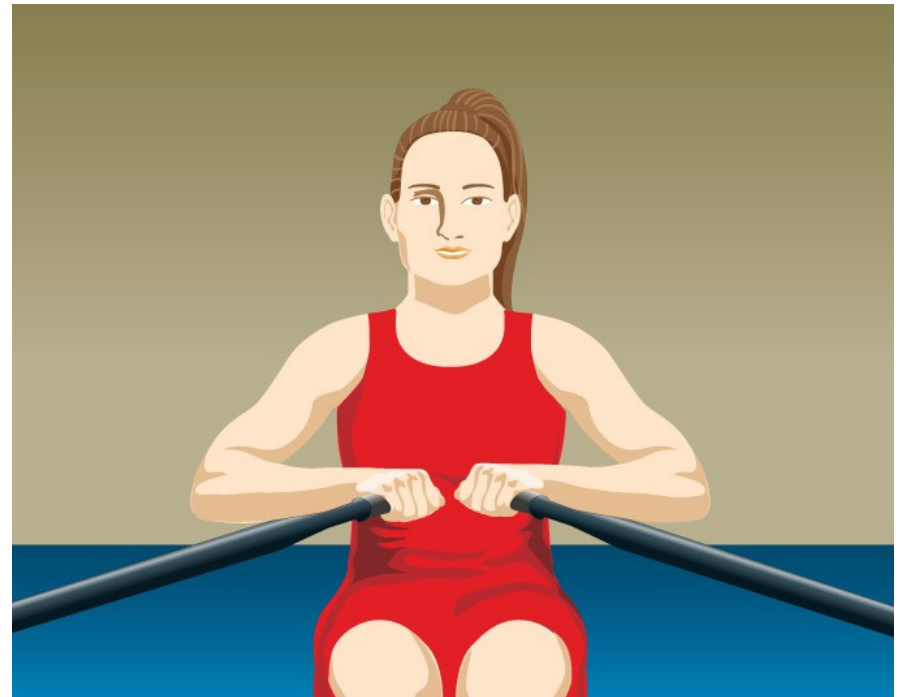
## FINISH OF THE DRIVE PHASE

The legs are fully extended and the feet are still pushing against the stretcher. Lower back is kept firm as the arms pull the handle strongly to finish the stroke. The hands brush the chest as they move down to extract the blade from the water.



## CHARACTERISTICS OF FINISH OF THE DRIVE PHASE

- » The legs are extended with feet pushing on the foot stretcher.
- » The lower back is held firm as the arms draw toward the body.
- » The draw of the hands continues in a strong and level position to the body.
- » Just before the hands reach the body, the handle is pushed down to extract the blade from the water





## THE RECOVERY PHASE

The aim of the recovery is to prepare for the next stroke by setting a position from which a long drive can be rowed with the greatest force. The athletes relax during this phase with smooth controlled movements that avoid disturbing the run of the boat

## THE BLADE RELEASE

- » The blade is released cleanly from the water at the end of the Drive Phase allowing the boat to run freely between strokes.
- » A blade that catches water or drags out and along the surface can slow the boat down on the recovery thus negating some of the work that has been done through the drive phase.
- » A blade carried forward close to the surface also reduces freedom for the movement of the boat which can cause tension and problems with balance.
- » A good blade release leaves a solid puddle in the water that is denoted with clean foam free edges.

## CHARACTERISTICS OF THE BLADE

### RELEASE

- » The outside hand keeps pressure on the blade to the end of the drive
- » The fingers and wrists control the handle to ensure a clean release from the water just before it reaches the body

The inside hand for sweep rowing turns the blade onto the feather and the motion forward begins with the blade on the feather and the outside hand leading away from the body. In sculling the fingers and some wrist movement roll the blade onto the feather. The left hand then leads away slightly ahead of the right from the body.



## THE BEGINNING OF THE RECOVERY PHASE

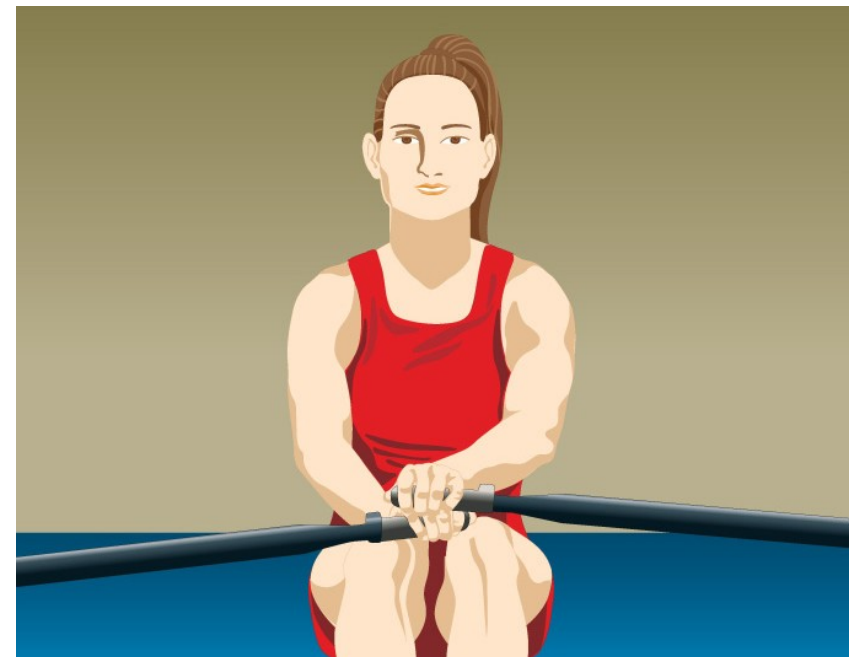
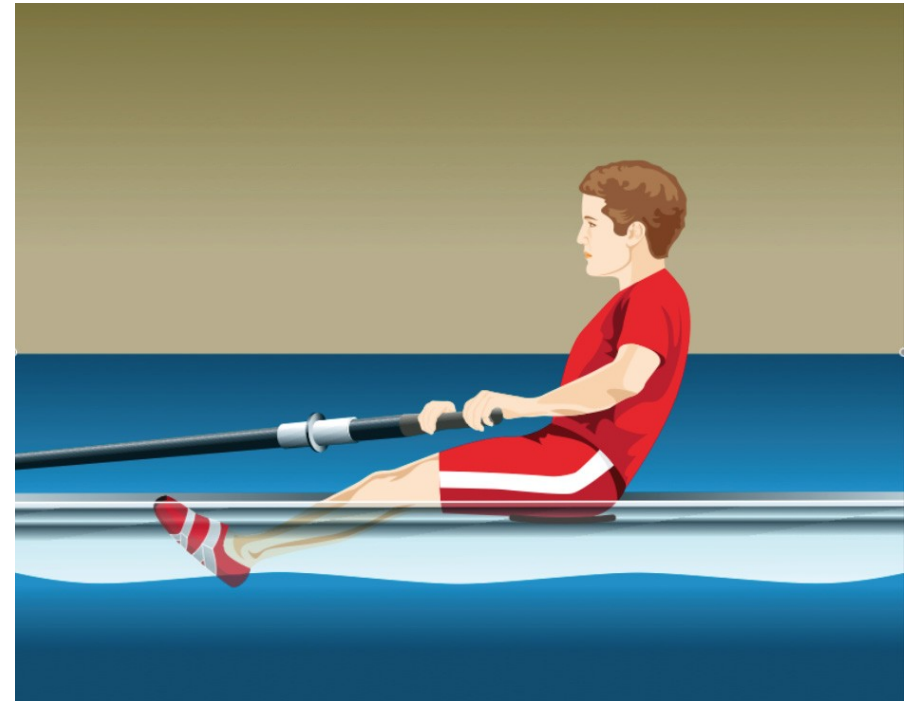
The aim of the recovery is to return the athlete to a position for the next drive phase with minimal disturbance to the run of the boat.

The recovery begins with the hands moving away and the trunk following. When the arms are straight and the hands are clear of the knees the seat begins to move sternward.

The seat does not move until the athletes are on their feet and without the need to pull themselves forward with their toes.

### CHARACTERISTICS OF THE BEGINNING OF THE RECOVERY PHASE

- » The hands lead with the blades off the water surface
- » The trunk follows by hinging at the hips (pivoting the pelvis).
- » The lower back is in a natural position but not slumped – good posture
- » The hands keep moving away until the arms are straight.
- » The seat begins to move forward when the athletes are on their feet and the hands have passed the knees.



## THE MIDDLE PART OF THE RECOVERY PHASE

As the seat moves sternward, the athletes keep pressure firmly on their feet, their knees are rising and the body is extending to full reach. These movements are completed before arriving at the catch position. The oar or sculls is used to balance the boat as the rowers relax and feel the boat moving beneath them (not pulling on the shoes). The rowers prepare for the next stroke.



## CHARACTERISTICS OF THE MIDDLE PART OF THE RECOVERY PHASE

- » The arms are at full length.
- » The body is stretching forward for full length.
- » The boat is balanced with blades or sculls off the water.
- » The movement of the seat is continuous and controlled.
- » The boat is gliding uninhibited beneath the rower.



## THE END OF THE RECOVERY PHASE – APPROACHING THE CATCH

As the rower prepares for the next stroke, the inside hand squares the blade as both hands rise to bring the blade down close to the water surface. This helps to increase the amount of length gained upon entering the water.

The shoulders are relaxed and the arms are at full extension as the body reaches between the knees for a long stroke. The movement sternward adjusts in accordance with the speed of the boat. In the catch position the rower has good posture, good length by reaching between the knees and vertical shins that place the rower in a strong position from which to apply power. In sculling the hands are moving outside of the boat with the knees upright and symmetrical in the boat.



## CHARACTERISTICS OF APPROACHING THE CATCH

- » The body is fully prepared with a straight back.
- » The head remains level with the neck and shoulders relaxed.
- » The athlete gathers for a quick change of direction.
- » The blade or sculls is/are square and close to the water surface.

## THE ENTRY

The lock-on is the moment the blade finds full resistance in the water. The precision with which the blade holds the water creates the propulsive force on the boat and is the most critical part of the stroke. While the speed of the boat is determined by the force during the drive, without the blade generating a firm force in the water, the ideal stroke cannot be accomplished.

The blade's "lock on" is created by driving the blade into the water with the legs in coordination with the hands that guide it on its path. Accurate timing of the entry is improved by proper sequencing of the movements during the recovery phase.



## CHARACTERISTICS OF THE ENTRY

- » The hands rise quickly but smoothly to control the path of the blade.
- » A strong push with the feet provide impetus for the blade to move quickly enough to find resistance in the water.
- » The back is held firm.

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