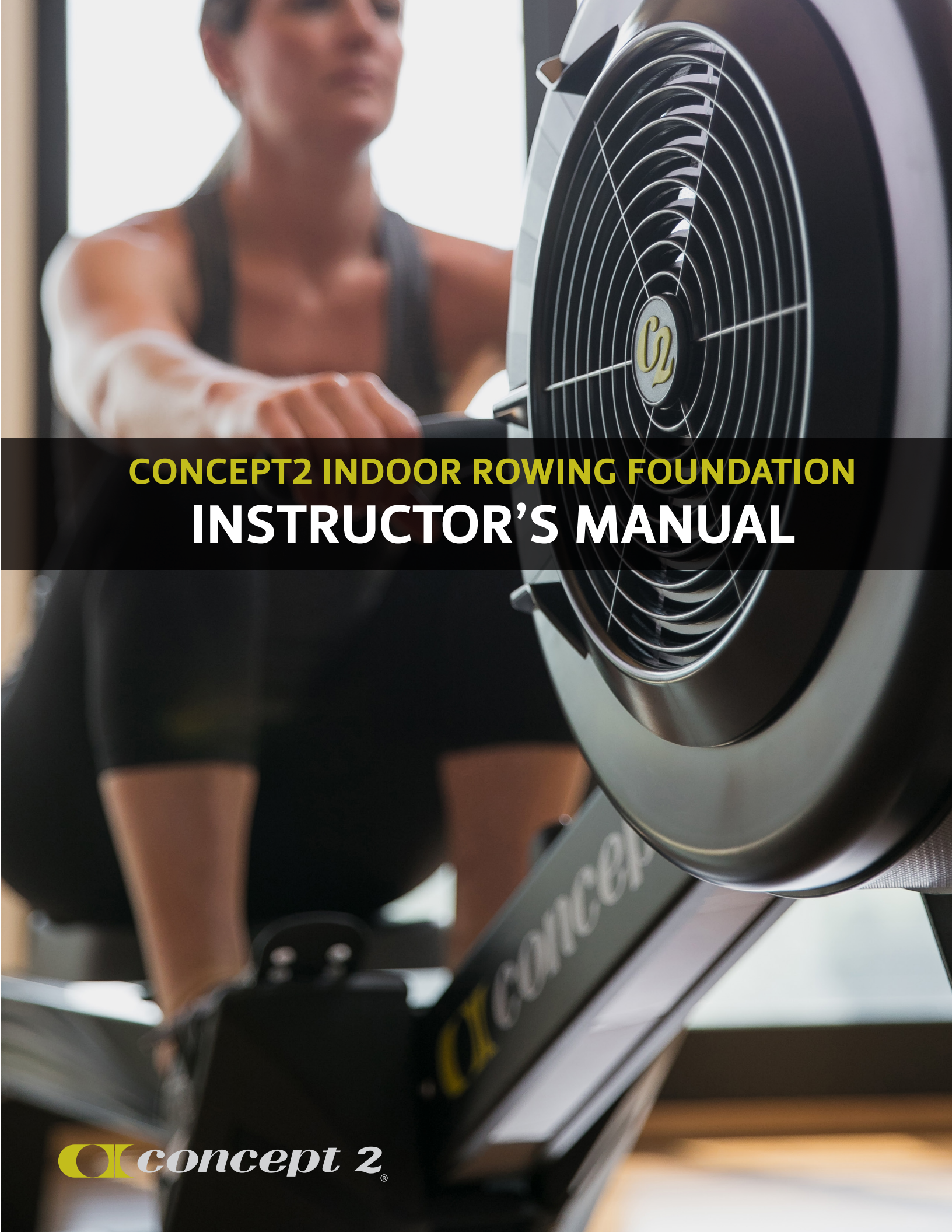


CONCEPT2 INDOOR ROWING FOUNDATION

INSTRUCTOR'S MANUAL

concept 2®

Table of Contents

Welcome to the Concept2 Indoor Rowing Foundation Certification!

A team of rowing enthusiasts, fitness professionals, and professional educators worked together to create this educational program—one that is designed to prepare those on the fitness front lines to teach effective and rewarding indoor rowing.

The goal of the Indoor Rowing Foundation Course is to give you the information and tools to provide clients with an exciting and complete indoor rowing experience. Through this workshop and the Home Study course, you will learn to lead both group and one-on-one workouts.

We look forward to establishing a relationship between trainers, clients and Concept2; and creating a network that brings indoor rowing instruction to the public that is both exciting and highly professional.

For more information contact Concept2 at 800.245.5676.

We hope you enjoy your workshop.

CHAPTER 1 – Concept2 Certification

OBJECTIVES:

- Understand the Concept2 mission and story
- Understand the steps to complete the Indoor Rowing Certification
- Identify opportunities for continuing education through Concept2

Mission Statement

The mission of Concept2 is to provide instruction, materials, and staff support to educate and promote indoor rowing. This mission is directed toward individual rowers, on-the-water rowing coaches, health club fitness directors, personal trainers, and group exercise leaders.

The Concept2 Story

Concept2 got its start in 1976 in the back of a bread truck when brothers Dick and Pete Dreissigacker, fresh from Olympic training, started making composite racing oars—now the oar of choice among the world's rowers. They went on to create the Concept2 Indoor Rower, now used worldwide by Olympic athletes, cardiac rehab patients and every caliber of rower in between.

Since then Concept2 has grown to over 90 employees, and the product line includes the Concept2 Indoor Rower, Dreissigacker Racing Oars, SkiErg and the BikeErg. Concept2 remains dedicated to providing the most innovative rowing products and programs to our customers.

Concept2 Indoor Rowing Certification Process

If you've already heard or experienced how rowing offers incredible full body aerobic and muscle toning benefits then you'll also want to learn how to create rowing workouts specifically to help your clients reach goals. Knowing proper rowing technique and understanding all of the tools available is essential to achieving optimum results.

Completing this class allows you to teach individuals and groups as an approved Indoor Rowing Instructor. This class was developed by Concept2 and approved by ACE (American Council on Exercise).

The Indoor Rowing Instructor Training process includes the following steps:

Step 1: Participate in a one-day Indoor Rowing Foundation Training. In this training you will learn:

- How to complete your instructor training
- The benefits of rowing
- How to use the Concept2 Indoor Rower
- The basic rowing stroke and biomechanics of rowing
- How to teach indoor rowing

Step 2: Complete the written test

Step 3: Prepare a 9-minute video of sample instruction on rowing technique

Step 4: Complete the course evaluation form

Step 5: Submit all written materials and the video to your course instructor. If you have questions or comments about the Instructor Training or course materials contact:

Concept2, Inc.
105 Industrial Park Dr
Morrisville, VT 05661
cadyhp@concept2.com

Continuing Education Opportunities

Concept2 offers a comprehensive set of tools and courses to advance your knowledge of rowing and to develop your skills as an instructor. Visit concept2.com/us/training and concept2.com/training to access additional resources, learn about upcoming workshops and download training programs to use with clients.

Concept2 Motivational Programs

Concept2 maintains a variety of motivational programs that are easy to include as part of indoor rowing at your club. Some of these programs have been active since 1982 and include rowers from all over the world. Others are more recent innovations, often based on customer feedback. Participants range in age from 8 to 80, from Olympic medalists to retirees.

The programs can be used to:

- Increase challenge, incentive and fun for your members.
- Attract and serve members who are unable to attend classes or choose not to.
- Encourage the use of your indoor rowers and make the most of your investment.

Concept2 provides the following suggestions for engaging and motivating indoor rowing enthusiasts:

KEEP A LOGBOOK

Monitoring your progress gives you a tangible record of what you've rowed so you can see improvement over time. You can keep a written log or set up a free Online Logbook at concept2.com/logbook.

PICK A REGULAR WORKOUT TIME EACH DAY/WEEK

Adhering to a schedule makes it easier to stay on track and helps to create a regular routine.

CONSIDER COMPETING IN AN INDOOR ROWING RACE

Hundreds of indoor rowing races are now held around the world each year. Some are small—a handful of people at a local club; others are huge, with over 2000 competitors. The race distance is 2000 meters and anyone can participate. It is a great training goal. To learn more, visit concept2.com.

ROW WITH FRIENDS

There's nothing like exercising with friends or a group for camaraderie and sense of a shared goal. If you don't have access to a support group in your area, try joining an online group with the Affiliation Standings and Team challenges. You can also read about what other rowers are doing in our Update newsletter.

ROW FOR INCENTIVES

Try rowing for the distance-based Million Meter Club or online challenges.

To learn more about the exciting opportunities for engaging and motivating rowing enthusiasts. Visit concept2.com/challenges.

As you and your members take part, you will discover that the fitness activity of indoor rowing has evolved into a sport of its own with worldwide participation.

Additional Programming Support from Concept2

For additional ideas on programming, visit the Concept2 website at:concept2.com/training.

Concept2 offers a variety of tips and workouts to help you and your clients stay motivated, including:

- Concept2 Challenge Calendar: a comprehensive yearly calendar with descriptions of Concept2's challenges, designed to keep you motivated!
- Logbook Page: if you prefer to keep your logbook on paper rather than online, you can download and print a logbook page.
- Winter Workout Plan: three weeks of workouts to get you started on a good winter training program.
- Thirty-Minute Workouts: A selection of workouts that you can do in 30 minutes.

CHAPTER 2 – Benefits of Rowing

OBJECTIVES:

- Understand the reasons for rowing
- Identify benefits to group rowing in a health club setting

Why Row?

As a sport, rowing provides the following benefits:

- Exercises all of the major muscle groups: legs, arms, back, abdomen, and buttocks.
- Muscles stretch and joints move to a greater degree than during other types of workouts, exercising muscles through a winder range of motion.
- Provides aerobic, anaerobic and strength conditioning.
- Is a great calorie burner. Research shows that rowing burns more calories than many other sports.
- Is a time-efficient workout.
- Is an exercise of smooth motion, both rhythmic and low-impact.
- A workout can occur: inside, outside, on water, on land, competitively or just for fun.
- Aids in weight loss, reduces blood pressure and builds lean muscle mass.
- Can be used as a source of cross-training for other sports.

Benefits for Health Clubs

Rowing has many qualities that make it well suited for the club environment. Rowing is a sport that can be experienced as an individual or a team. Some rowers love the solo experience of the single scull, while others love the exquisite teamwork required in an eight-man crew. This carries over nicely to the club environment, where some members choose to exercise alone and others love the camaraderie and motivation offered in a rowing class.

Rowing in a group setting promotes:

- Motivation: Group members keep each other motivated throughout the workout, thereby enhancing the quality and results.
- Commitment: By agreeing to row together at a certain time, group members are less likely to skip the workout.
- Technique: Group members can watch each other's technique and compare it with the technique poster.
- Camaraderie: Your workout becomes a chance to get together with friends or make new friends.
- Workout Variety: Group members can take turns designating the workout, thereby introducing more variety to the group's training.
- Synchrony: In on-water rowing, there are team boats of 2, 4, and 8 people. Rowing is a unique team sport because all the rowers must be in sync, catching the water with their oars at exactly the same moment. This synchrony can add to the quality of your indoor rowing workout.

In addition to being a new and intriguing way of attracting members, it provides a great theme for club décor, special events and membership promotions.

If your goal is to set up a program at a facility, visit concept2.com to learn more about programming and steps to move ahead.

In addition to assisting with your training needs, Concept2 is here to provide resources for programming, instruct your staff, and help make the most of your investment.

For more information, contact Concept2 at 800.245.5676 or info@concept2.com.

CHAPTER 3 – Using the Concept2 Indoor Rower

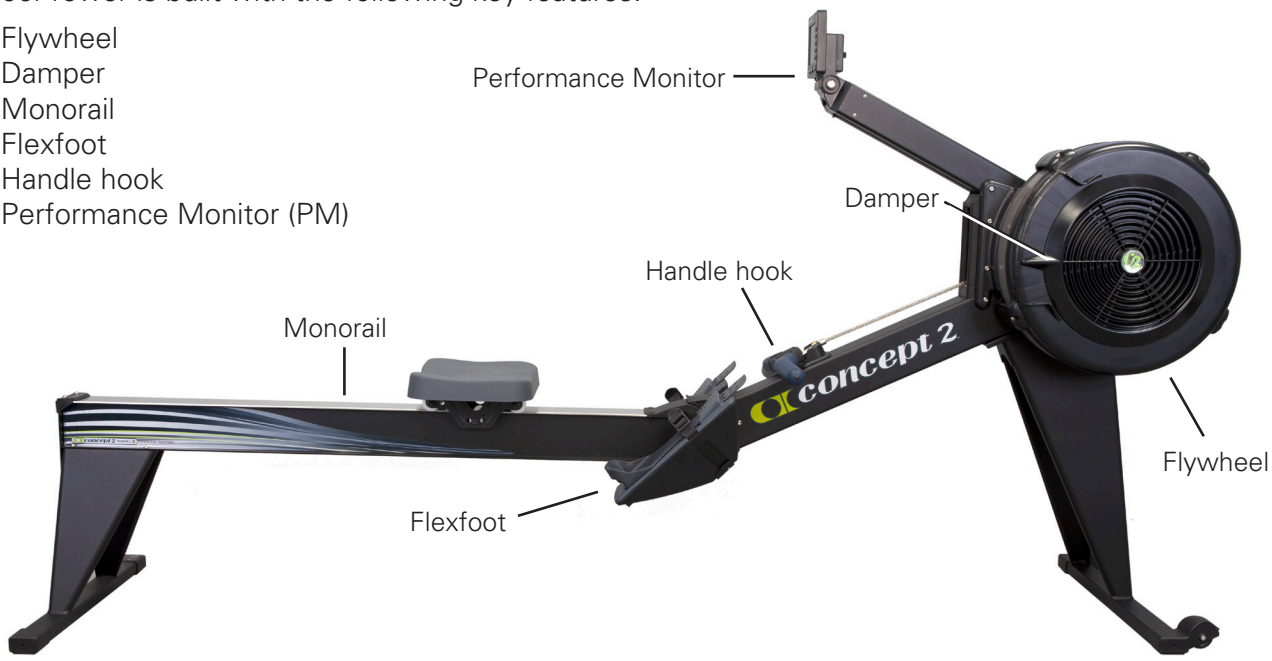
OBJECTIVES:

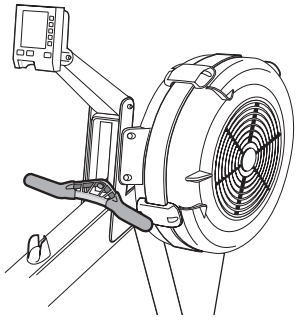
- Identify the main components of the Concept2 Indoor Rower
- Adjust the indoor rower settings
- Understand how to use the Performance Monitor (PM) and Pace Chart
- Identify the indoor rower maintenance schedule
- Recognize basic safety tips

The Concept2 Indoor Rower

The indoor rower is built with the following key features:

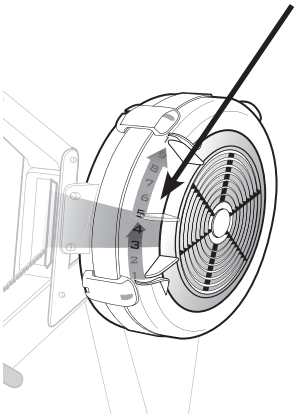
- Flywheel
- Damper
- Monorail
- Flexfoot
- Handle hook
- Performance Monitor (PM)





FLYWHEEL

The harder you pull, the more resistance you will feel. This is because the Concept2 Indoor Rower uses air resistance, which is generated by the spinning flywheel. The faster you get the wheel spinning, the more resistance there will be.



DAMPER

The damper setting is like bicycle gearing. It affects the feel of the rowing but does not directly affect the resistance. With a little experimentation, you will find the damper setting that gives you the best workout and results.

It is important to understand that setting the damper is not the action that determines the intensity of your workout. The work level you are achieving by your effort is the indication of your level of exertion (how hard you are rowing).

The damper setting will change the relationship of the force you exert and the speed of your pull through.

Changing the damper is like changing the kind of boat you are rowing in. The lower numbers on the damper are like a sleek, fast racing shell. The higher numbers are like a slow rowboat loaded with fish. You can imagine that in either of these boats you can row hard and try to go fast or you can row easy and go slowly. You would not get a better workout in the heavy boat with the fish unless you worked harder and longer than you would in the sleek, racing boat. In fact, you might find that you would be more likely to work harder and longer in the fast boat because too high a force did not overtax your muscles.

The stroke rate may vary as the rower tries to keep a constant work level reading on the monitor as the damper setting changes.

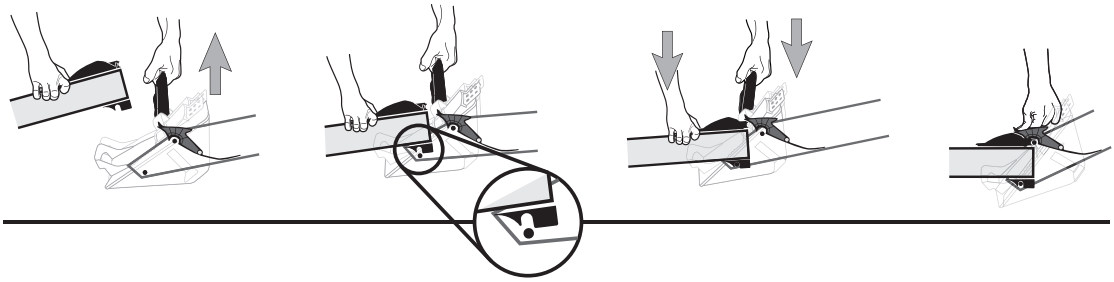
Many new rowers find it more comfortable to row in the higher numbered damper settings. This is because they can move more slowly through the stroke and still generate a decent force. As one becomes more skilled at the rowing motion you will be able to apply your power more quickly and generate high forces even at the lowest numbered damper setting.

Rowing at the higher settings (slower pull through and higher forces) can put too much strain on your muscles and cause you to stop your workout without getting full aerobic benefits.

We recommend a damper setting of 3-5 for the best aerobic workout.

MONORAIL

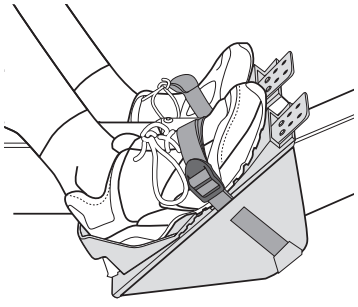
The monorail should be attached and locked prior to use. Attach and detach the monorail only as needed, according to the image below.

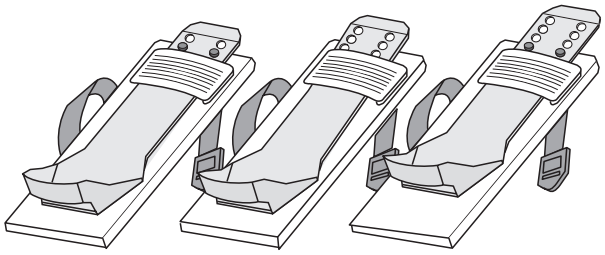


FLEXFOOT

The flexfoot should be set so that the strap crosses the ball of the foot of each shoe. This setting should permit the shins to be perpendicular to the floor.

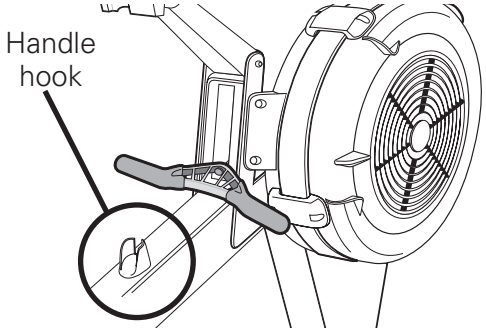
If the shins go beyond the perpendicular, raise the flexfoot toe one or two holes. As the rower moves close to the flywheel, the heels can lift. Shift the flexfoot up and down according to foot length. Lock in to the plastic pegs at the correct setting.





HANDLE HOOK

Place the handle in the handle hook to make it easier to reach when you are seated on the indoor rower.

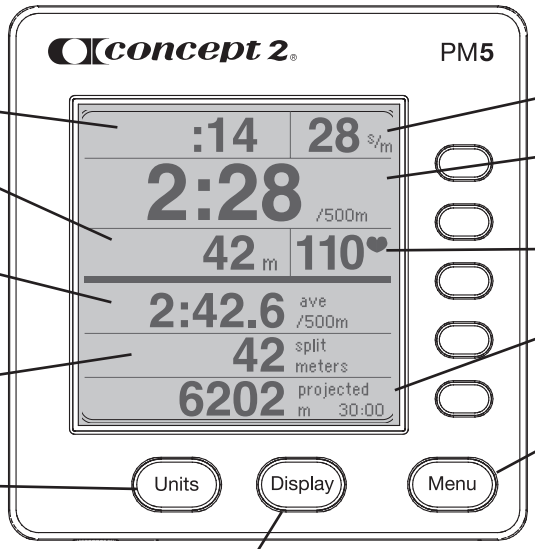


Performance Monitor

The monitor is used to measure the work that a rower does while rowing and provide feedback on performance.

You can view your performance in pace, watts and calories. The PM displays your output in a choice of units and display options. You can choose the units and displays that work best for you.

Sample Display



Total elapsed time.

Total meters.

Average pace (in time) per 500m This is the average for your entire workout.

Split meters. The number of meters in a given distance or time. Splits are five minutes long.

UNITS
Push to change units between Meters (m), Pace, Watts and Calories (Cal).

Strokes per minute (s/m).

Pace (time/500m) A faster pace is indicated by a shorter time to cover the distance.

Heart rate
(Optional. Requires additional chest belt.)

Projected meters in 30 minutes if the current average pace is maintained.

MENU
Push to power up the PM, display the previous menu or save workout results.

DISPLAY
Push to change display between All Data, Force Curve, Paceboat and Large Print.

You can row as hard or as easy as you wish. The indoor rower will not force you to row at any set intensity level. It is up to you. As you put more effort into your rowing, you will go faster, produce more watts, and burn more calories. All of these outputs will be measured and displayed by the Performance Monitor (PM).

Keep your goals in mind. For example, if your goal is to burn a lot of calories, it is more important to row for a long time than to row hard. If you row too hard, you won't last as long. Use the pace chart on page 17 to assist in reading the monitor and pacing a workout.

The indoor rower is a variable resistance machine. The amount of muscle force applied determines the amount of resistive force encountered. More muscle force produces more resistive force, and vice versa.

Your stroke output is displayed on the Performance Monitor. Watch the 1500m display window of the monitor and you will notice the number changes at the end of each drive. This number shows you the output of the stroke you just finished.

The number will seldom be the same from stroke to stroke as it will take time to develop consistent power application.

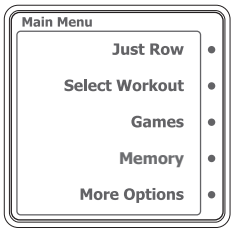
HOW IS WORK MEASURED?

The monitor can display your stroke output in three different units of measure; boat speed as time per 500 meters, watts, and calories per hour. Boat speed is most widely used among rowers. The time per 500 meters is to a rower what time per mile is to a runner. Tell any runner that you do sub 5-minute miles and he will know how fast you run. On the Concept2 Indoor Rower, boat speed is related to the amount of power you are producing to make the flywheel spin. You can view your effort as units of power in

watts. If you row at 100 watts, you are producing the amount of power it takes to keep a 100-watt light bulb lit. The harder you work, the more watts you produce, and the less time it will take to go 500 meters. When you produce power, your body burns calories. The Performance Monitor makes an approximation of the rate you are burning calories based on the amount of power you are producing.

As you do different types of rowing workouts, you will use the stroke output number (pace, Calories or watts) as your guide to tailor the effort to the length of time intended to row. For example, the target work level during a 30-minute steady row will be slower than your target for 2-minute intervals with rest. A seasoned rower will know his or her pace and will monitor their progress based on improvements in the paces he or she can maintain for various workouts.

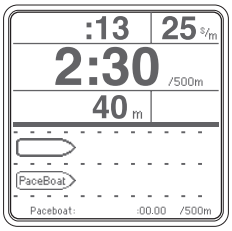
There are multiple display options, including:



Main Menu

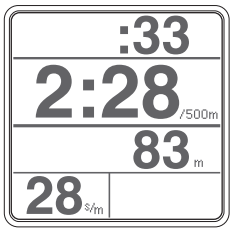
All Data

Force Curve



Pace Boat

Bar Chart



Large Print

Concept2 Indoor Rower Pace Chart

Use this chart to predict your final time or distance for the workouts shown.

Average pace per	Your time will be:					Your distance will be:	
500m	1000m	2000m	5000m	6000m	10,000m	30 min.	60 min.
1:40	3:20	6:40	16:40	20:00	33:20	9000	18,000
1:42	3:24	6:48	17:00	20:24	34:00	8824	17,647
1:44	3:28	6:56	17:20	20:48	34:40	8654	17,308
1:46	3:32	7:04	17:40	21:12	35:20	8491	16,981
1:48	3:36	7:12	18:00	21:36	36:00	8333	16,667
1:50	3:40	7:20	18:20	22:00	36:40	8182	16,364
1:52	3:44	7:28	18:40	22:24	37:20	8036	16,071
1:54	3:48	7:36	19:00	22:48	38:00	7895	15,789
1:56	3:52	7:44	19:20	23:12	38:40	7759	15,517
1:58	3:56	7:52	19:40	23:36	39:20	7627	15,254
2:00	4:00	8:00	20:00	24:00	40:00	7500	15,000
2:02	4:04	8:08	20:20	24:24	40:40	7377	14,754
2:04	4:08	8:16	20:40	24:48	41:20	7258	14,516
2:06	4:12	8:24	21:00	25:12	42:00	7143	14,286
2:08	4:16	8:32	21:20	25:36	42:40	7031	14,063
2:10	4:20	8:40	21:40	26:00	43:20	6923	13,846
2:12	4:24	8:48	22:00	26:24	44:00	6818	13,636
2:14	4:28	8:56	22:20	26:48	44:40	6716	13,433
2:16	4:32	9:04	22:40	27:12	45:20	6618	13,235
2:18	4:36	9:12	23:00	27:36	46:00	6522	13,043
2:20	4:40	9:20	23:20	28:00	46:40	6429	12,857
2:22	4:44	9:28	23:40	28:24	47:20	6338	12,676
2:24	4:48	9:36	24:00	28:48	48:00	6250	12,500
2:26	4:52	9:44	24:20	29:12	48:40	6164	12,329
2:28	4:56	9:52	24:40	29:36	49:20	6081	12,162
2:30	5:00	10:00	25:00	30:00	50:00	6000	12,000
2:32	5:04	10:08	25:20	30:24	50:40	5921	11,842
2:34	5:08	10:16	25:40	30:48	51:20	5844	11,688
2:36	5:12	10:24	26:00	31:12	52:00	5769	11,538
2:38	5:16	10:32	26:20	31:36	52:40	5696	11,392
2:40	5:20	10:40	26:40	32:00	53:20	5625	11,250
2:42	5:24	10:48	27:00	32:24	54:00	5556	11,111
2:44	5:28	10:56	27:20	32:48	54:40	5488	10,976
2:46	5:32	11:04	27:40	33:12	55:20	5422	10,843
2:48	5:36	11:12	28:00	33:36	56:00	5357	10,714
2:50	5:40	11:20	28:20	34:00	56:40	5294	10,588
2:52	5:44	11:28	28:40	34:24	57:20	5233	10,465
2:54	5:48	11:36	29:00	34:48	58:00	5172	10,345
2:56	5:52	11:44	29:20	35:12	58:40	5114	10,227
2:58	5:56	11:52	29:40	35:36	59:20	5056	10,112
3:00	6:00	12:00	30:00	36:00	60:00	5000	10,000

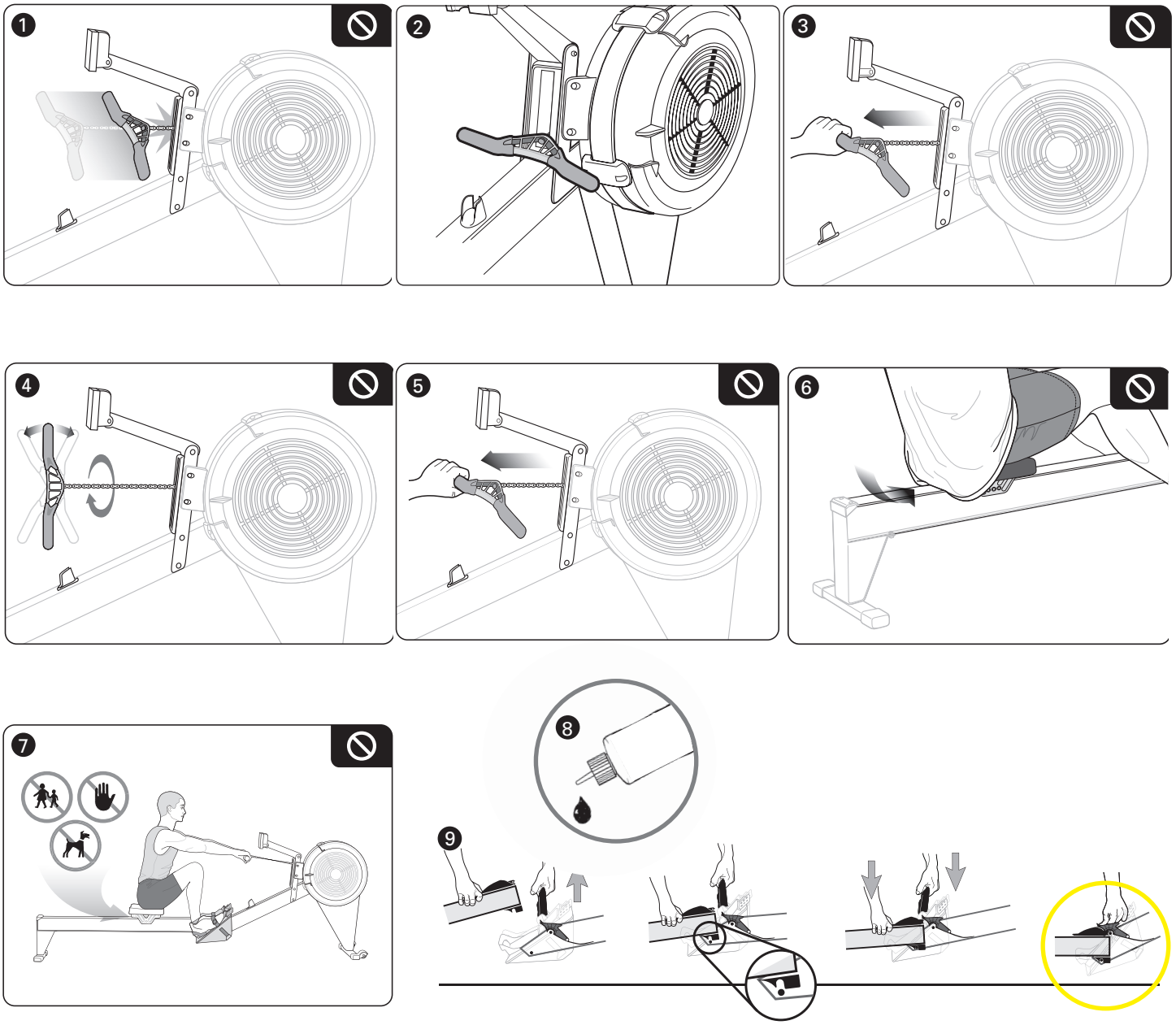
Recommended Maintenance Schedule

The maintenance schedule below should be followed when using groups of indoor rowers regularly for classes. Refer to the User Manual and Concept2 website for more detailed instructions on indoor rower maintenance.

DAILY	Wipe monorail with a cloth or non-abrasive scouring pad after use.
WEEKLY	Clean and lubricate the chain with a teaspoon of purified mineral oil, 3-IN-ONE® oil, or 20W motor oil.
MONTHLY	• Inspect chain for stiff links. If thorough lubrication does not help, the chain should be replaced. • Inspect chain-handle connection for wear. If the hole has become elongated, or the U-bolt is worn halfway through, the entire connection should be replaced. • Tighten the shock cord if the handle does not return all the way to the fan enclosure. • Check the socket screws used to install the front leg for tightness. • Loosen or tighten the nuts on the Performance Monitor arm joints as necessary. • Check for dust inside flywheel with a flashlight and vacuum if needed.

Safety Tips

1. Do not let handle fly into chain guide.
2. Place handle against the chain guide or in handle hook before letting go.
3. Pull straight back with both hands.
4. Never twist chain or pull from side to side.
5. Do not row with one hand only. Abuse of the chain can result in injury.
6. Keep clothing free of seat rollers.
7. Keep children and fingers away from seat rollers. Seat rollers can cause injury.
8. Perform proper maintenance as described on page 18.
9. ALWAYS PUT THE FRAME LOCK IN THE LOCKED POSITION BEFORE MOVING THE INDOOR ROWER.



CHAPTER 4 – Rowing Basics and Biomechanics

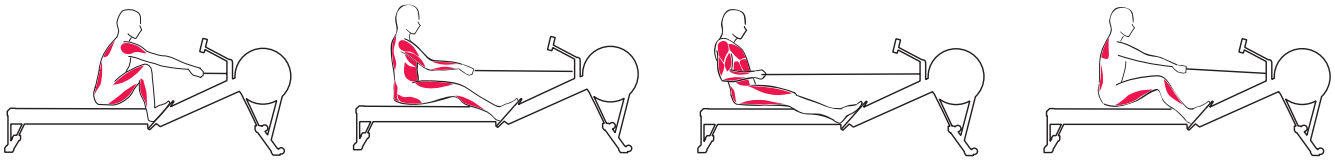
OBJECTIVES:

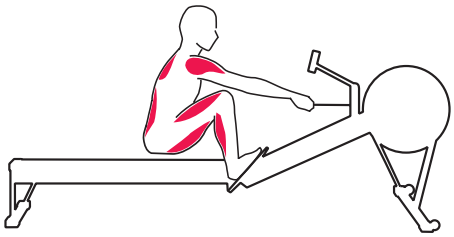
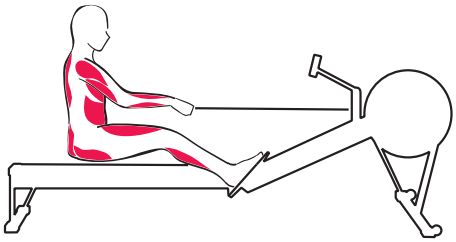
- Learn the basic rowing stroke
- Learn the anatomy and biomechanics of rowing

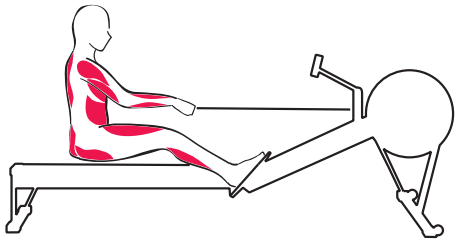
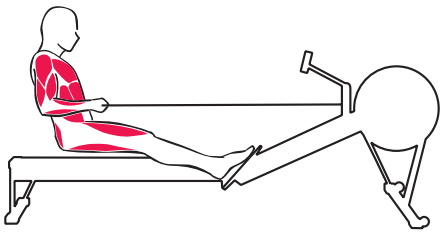
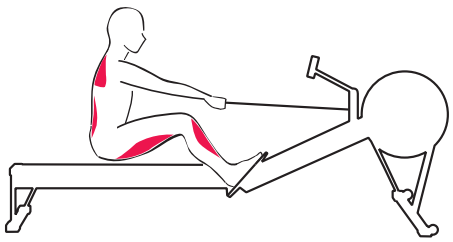
The Basic Rowing Stroke: Movement and Biomechanics

There are four movements to the basic rowing stroke. All four movements should be executed in a smooth, continuous, and fluid manner:

1. Catch
2. Drive
3. Finish
4. Recovery



MOVEMENT	BIOMECHANICS
THE CATCH  The catch begins by grasping the handle evenly with both hands, with the seat slid forward so the knees are tucked into the chest and shins are vertical (or as close to vertical as your flexibility will allow). The arms are stretched out in front and the body is leaning slightly forward from the hips.	The erector spinae muscles of the back are relaxed to allow for trunk flexion, which is provided by the abdominals. The psoas major and minor and the iliacus flex the pelvis and hips. The sartorius muscle rotates the thighs which allows the body to flex between the thighs to obtain maximum reach. The hamstrings and gastrocnemius are contracting while the knees are in flexion. The quadriceps are elongated and stretched, yet the rectus femoris is contributing to hip flexion. The ankles are dorsiflexed by the tibialis anterior. The elbows are extended by the triceps brachii. The grip on the handle is accomplished by the flexor muscles of the fingers and thumb.
THE DRIVE  The drive uses the power of the legs, body swing and arms pulling through to complete the phase. To begin the drive, press firmly against the foot stretchers until the legs are almost fully extended, but not locked. The torso should then swing back to a 100-degree angle with the seat. Let the arms "go for the ride" as you slowly pull them toward the abdomen.	Legs The initial portion of the drive demands maximal power from the legs. The quadriceps extend the knee, and the feet are plantar flexed by the soleus and gastrocnemius muscles. A number of stabilizing muscles aid in supporting the lower back. All the muscles of the shoulder are contracting. These include the supra and infraspinatus, subscapularis, teres major and minor, and the biceps brachii. The scapula is stabilized by the serratus anterior and trapezius muscles. Body Swing As the knees are finishing their extension, the hip is also extending by the contraction of the gluteus and hamstring muscles. Back extension is occurring by contraction of the erector spinae. In the upper body, elbow flexion is occurring via the biceps, brachialis, and the brachioradialis muscles. *continued on next page*

MOVEMENT	BIOMECHANICS
THE DRIVE continued 	Arm Pull Through The knees are maximally extended, and the ankles are plantar flexed. In addition, hip and back extension are being completed. The upper body musculature is contracting with high force to finish the drive. The elbow flexors are dominant. The flexor and extensor carpi ulnaris muscles of the forearm contract to stabilize and adduct the wrist. The shoulder is extended and adducted. The upper arm is internally rotated by the latissimus dorsi and pectoralis major. The teres minor, posterior deltoid, and long head of the biceps are acting on the shoulder joint. The scapula is rotated downward by the pectoralis minor and then drawn backward by the trapezius and rhomboid muscles.
THE FINISH  In the finish, the arms are pulled all the way into the abdomen with the legs fully extended and your torso leaning back to approximately 100 degrees.	The knees and ankles remain constant as the hips complete a full extension. The back extensors are continually contracting, and the upper arms are internally rotated by the contracting latissimus dorsi. The triceps are extending the elbows slightly.
THE RECOVERY  For the recovery, extend the arms, lean forward from the hips, and bend your legs. As you do this, slide forward to start the next catch. The arms must pass over the knees before the knees bend.	The arms are pushed forward and away from the body by the triceps until the elbows reach full extension. The anterior deltoids contract along with the coracobrachialis and biceps, and the upper arms pass over the extended knees. The abdominals flex the torso, and once the hands have cleared the extended knees, the slide begins its forward motion through ankle dorsiflexion and hip and knee flexion.

CHAPTER 5 – How to Teach Indoor Rowing

OBJECTIVES:

- Identify an instructor's responsibilities
- Recognize general rowing problems and how to modify them
- Identify the five bad habits of beginning rowers
- Prevent technique errors through cueing and drills
- Learn proper pre- and post-workout stretches
- Identify basic elements to set up for successful group rowing
- Learn the basic format used and emphasis in programming a workout
- Find additional resources for building workouts

INSTRUCTOR'S RESPONSIBILITIES

- Lead, guide, and coach a safe and effective rowing workout
- Make recommendations for personal enhancement of an individual's rowing technique
- Empower rowers to direct their own workouts
- Provide verbal correction and motivation
- Facilitate motivational programs

GENERAL ROWING PROBLEMS AND MODIFICATIONS

When instructing, note any of the following issues that impact form during a workout. Modify, as needed, using the tips below.

- Stroke should be smooth and continuous, no stopping at any point.
- Shoulders remain down and relaxed, not up around the rower's ears.
- Wrists should be flat. Carry the handle parallel to the floor on drive and recovery.
- Avoid tension in the grip; allow the fingers to wrap softly around the handle.
- Raise the monitor arm to improve a rower's head position and posture.
- Raising and lowering the flexfoot piece on the footstretcher may affect the compression of the legs at the catch. A larger or less flexible person may prefer a lower flexfoot.
- Stroke rate is not an indicator of how hard a person is working. The center window of the performance monitor displays pace and is determined by the intensity of the drive.
- Prompt rowers to keep the number in the center window of the Performance Monitor as constant as possible. Then pull harder and watch what happens to the number.
- If a person is struggling or rushing, prompt them to slow down and row at a slower stroke rate—fewer strokes per minute (SPM).

Five Bad Habits of Beginning Rowers

The following habits have been found to be the most common among beginning rowers:

✘ INCORRECT		✔ CORRECT
EXCESSIVE FORWARD LEAN/REACH		
The seat nearly hits the heels, the shins are past the vertical, the body leans too far forward, and the head and shoulders drop toward the toes. This puts the body in a weak position for the start of the next stroke.		The seat remains at least 7–10 inches from the heels, the shins are nearly vertical, the body leans comfortably forward, and the head and shoulders stay up and relaxed.
ROCKING ON (OPENING BACK TOO EARLY)		
The rower pulls the handle by leaning back rather than by pressing the legs. This wastes the power of the legs and may strain the back.		The legs should start the drive with the body still leaning forward. The back then gradually opens, prying against the extended legs.
SHOOTING THE TAIL (OPENING THE BACK TOO LATE)		
The rower starts the drive by extending the legs without moving the handle. The power of the legs is wasted.		The body needs to come along with the legs, thereby transferring the legs power into the handle. The back then gradually opens, prying against the extended legs. Hips and handle move together.
EARLY KNEE BEND ON THE RECOVERY		
On the recovery, the rower lets the knees come up before the arms are fully extended. As a result, either the knees and hands collide (thud!) or the hands are forced to travel upward in a big arc to avoid the knees (unnecessary work for arms!)		The rower should extend the arms completely and lean the upper body forward from the hips BEFORE bending the knees to slide forward. This gets the hands out nicely ahead of the knees.
EXCESSIVE LAYBACK AND PULLING UP THE CHIN		
The rower leans back too far at the finish and/or pulls the handle all the way up to the chin. This is an inefficient use of the arms and exposes the back to potential strain.		The handle should be pulled to within one inch of the abdomen, halfway between the lap and the chest. The upper body should have a 5–10 degree backward lean.

Cueing for Good Technique

As with any sport, improper technique can result in injury. Recognizing errors is extremely important, but correcting them is even more critical to your role as an instructor.

Repeat these reminders during various points in the class. The goal is to create muscle memory. Repetition of movement and use of imagery help athletes accomplish physical goals.

Use the following verbal cues while instructing during each phase of the stroke.

AT THE CATCH:

- Extend your arms straight toward the flywheel.
- Lean your upper body slightly forward with back straight but not stiff.
- Slide forward on the seat until your shins are vertical. It's okay if heel lifts slightly.

DURING THE DRIVE:

- The arms are long like a rope at the beginning of the drive.
- Wrists should be flat or slightly above the knuckles.
- Begin the drive by pressing down your legs.
- Legs and hips are the pump for the drive.
- Keep your arms straight and hold your back firm to transfer your leg power up to the handle.
- Back and arms keep the drive alive.
- Gradually swing back with your upper body, bending your arms.
- Bending at the elbow too early tires the arms.
- Pry against the legs until you reach a slight backward lean at the finish.
- Drive with both legs, engage both sides of the upper body equally, and finish strong with both arms.

AT THE FINISH:

- Pull handle all the way into your abdomen.
- Straighten your legs.
- Lean your upper body back slightly.
- Finish one stroke before the next is started.

AT THE RECOVERY:

- Extend arms completely.
- Lean your upper body forward at the hips to follow the arms.
- Pivot before the knees come up.
- Hands pass the knees before the knees come up.
- Shoulders before knees.
- Gradually bend your legs to slide forward on the seat.
- Be sure your arms are extended before you bend your knees.
- Draw your body forward until the shins are vertical.
- Upper body should be leaning forward at the hips.
- Arms should be fully extended.
- You are ready to take the next stroke.
- Relax on recovery, aggressive on the drive.

Rowing Drills

These drills help develop technique by focusing on one part of the stroke at a time. Allow one drill to transition into the next until a complete stroke is taken.

ARMS ONLY

Teaches hands away before the knees come up. This exercise is called the "pick drill," and it helps people learn to move "around the corner" at the catch and finish of the stroke.

- Keeping legs in the finish position, row with the arms only. Knees do not move upward.
- Allow the hands to float out until the arms are extended; keep the wrists relaxed.
- Be sure that the handle is pulled to within one inch of the abdomen, halfway between the lap and the chest.
- When the class understands the motion, increase the speed of the pull while keeping the recovery at the same speed.

ARMS AND BACK

This demonstrates proper extension of the arms and body before the legs come up. Practice the coordinated effort of arms and back during the drive and recovery of each stroke

- This exercise starts the same as Arms Only, but the handle moves past the knees as the upper body leans forward over the thighs.
- Change the direction of the handle by first allowing the body to swing back.
- As the handle passes the knees, begin the arm pull as taught in Arms Only.

PARTIAL SLIDE

Teaches proper body position and sequence at each point in the drive and recovery. Row each position below continuously for 10 strokes; then increase the seat travel to the next position until the full slide position is reached.

- 1/4 slide: Like Arms and Back, but continue the extension forward with a slight bend of the knee.
- 1/2 slide: Same movement but just a little more slide. Allow the seat to come halfway up the monorail.
- 3/4 slide: Allow the seat to come 3/4 of the way up to your normal catch position. Remember to get full arm extension and pivot forward at the hips before the seat starts coming up the monorail.
- Full slide: Row full strokes, maintaining control, and emphasize full arm extension and pivot at the hips before the seat starts coming up the monorail on the recovery.

LEGS ONLY

Teaches that the legs, not the arms and shoulders, initiate the drive. Get the class to feel the pressure they can generate without opening their backs or pulling in with their arms. As everyone understands the motion, begin to row continuously.

- Start at the catch position.
- Push the legs until the handle is over the ankles (pause a second and then recover).
- Come to the catch position; then drive again.

LEGS AND BACK

This is an extension of the Legs Only drill. Get the class to feel the pressure they can generate without pulling in with their arms. As the class understands the motion, begin to row continuously.

- Start at the catch position.
- Push the legs and pivot at the hips but leave the arms straight.
- Begin the move to the catch position by first pivoting forward at the hips and then moving the seat up the monorail with your legs. The arms remain straight.

ULTRA-SLOW-MOTION ROWING

Gets all of the body parts working in the right order. Keep everyone in the class rowing together on this. It doesn't feel natural to row slowly, but it allows for focus on each phase of the stroke.

- Row as low as 10 strokes per minute (SPM).
- Row deliberately.
- Focus on proper sequence on the recovery and the drive.

Stretching

These stretches can be done both before and after your workouts. We suggest that you start by trying all of these stretches, and work toward developing a routine using the stretches that work best for you.

BEFORE STRETCHING: It is important that your body be adequately warmed up before you attempt to stretch. We suggest that you row lightly for 3–5 minutes to increase blood flow and prepare the musculo-skeletal system for the stretching sequence to follow.

PRE-WORKOUT STRETCHES can be held for approximately 10 seconds.

POST-WORKOUT STRETCHES can be held for up to 30 seconds.

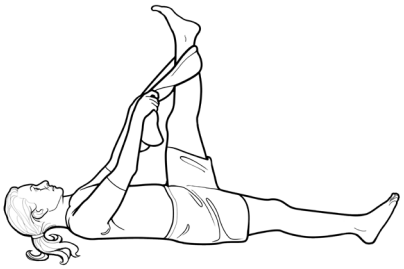
ALL STRETCHES

- Should be done in a static, relaxed and patient fashion. NO bouncing or abrupt movements.
- Should include full deep breaths, expanding the diaphragm on inhalation, for maximum results.
- Should be repeated on both sides if a unilateral stretch.
- Can be repeated for 3–5 repetitions.

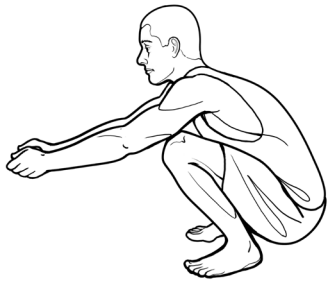
HAMSTRING

Lie on your back and bend one knee up to your chest and hug it. Then extend it straight up (or as straight as you can) and gently pull it toward you. Repeat with the other leg.

Variation A. If you find it difficult to grasp your leg and pull it toward you, try using a towel or rope around your leg. This will make it easier to gently pull your straightened leg toward you.



Variation B. Another variation is to have the lower leg bent with foot flat on the floor.



ACHILLES REGION

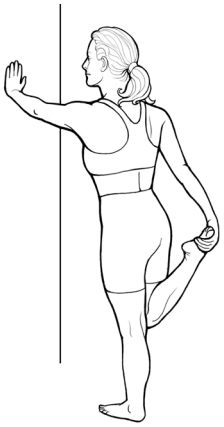
Squat and try to get both heels on the floor.

BICEPS, TRICEPS

Put one arm behind your head as shown, grabbing the elbow with your other hand. Pull gently. Repeat on other side.

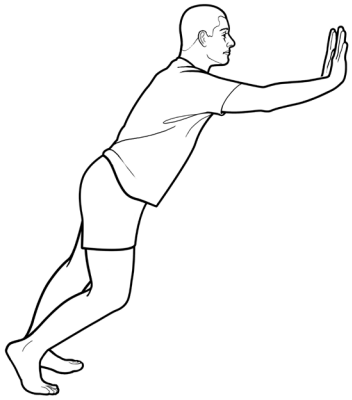
HAMSTRINGS, GASTROCNEMIUS, AACHILLES BACK

Push into a bridge with straight legs and arms. Stretch one leg at a time.



QUADRICEPS, HIP FLEXOR

Stand and stretch your quad by bending your leg back until you can grab your foot. Gently pull your leg up against your butt.

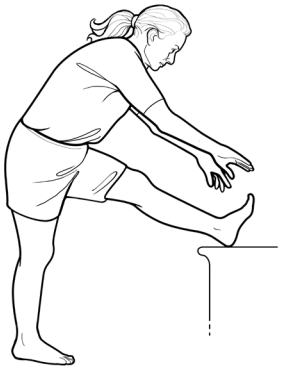


GASTROCNEMIUS, ACHILLES REGION

Calf and Achilles Stretch:

Stand about three feet from a wall and put each foot in turn as far back as you can while still being able to put your heel flat on the floor. Do NOT bounce and do NOT try too hard. The idea is to gently stretch the muscles in your calf.

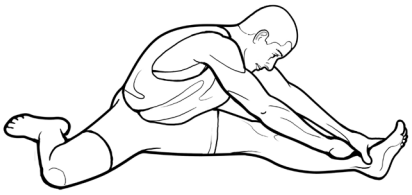
THESE HAMSTRING STRETCHES ARE GOOD FOR YOUR LEGS AND YOUR BACK.



HAMSTRINGS

Standing Hamstring Stretch:

Put your leg up on a chair/bench. Straighten the leg. Keeping your back straight, lean forward until you feel the stretch. To increase the stretch further, use a higher chair/bench.



HAMSTRINGS

Sitting Hamstring Stretch:

Sit on the floor with one leg out to the side and the other leg bent to the inside. Gently reach for your toes on the outstretched leg. Repeat on the other side. Sit on the floor in the "hurdler's position" (one leg out and one leg bent back) and reach out to your toe with both arms, then repeat with the other leg.

Basic Setup for Successful Group Rowing

ROWING ATTIRE

Look for and encourage your rowers to wear the following clothing when working out:

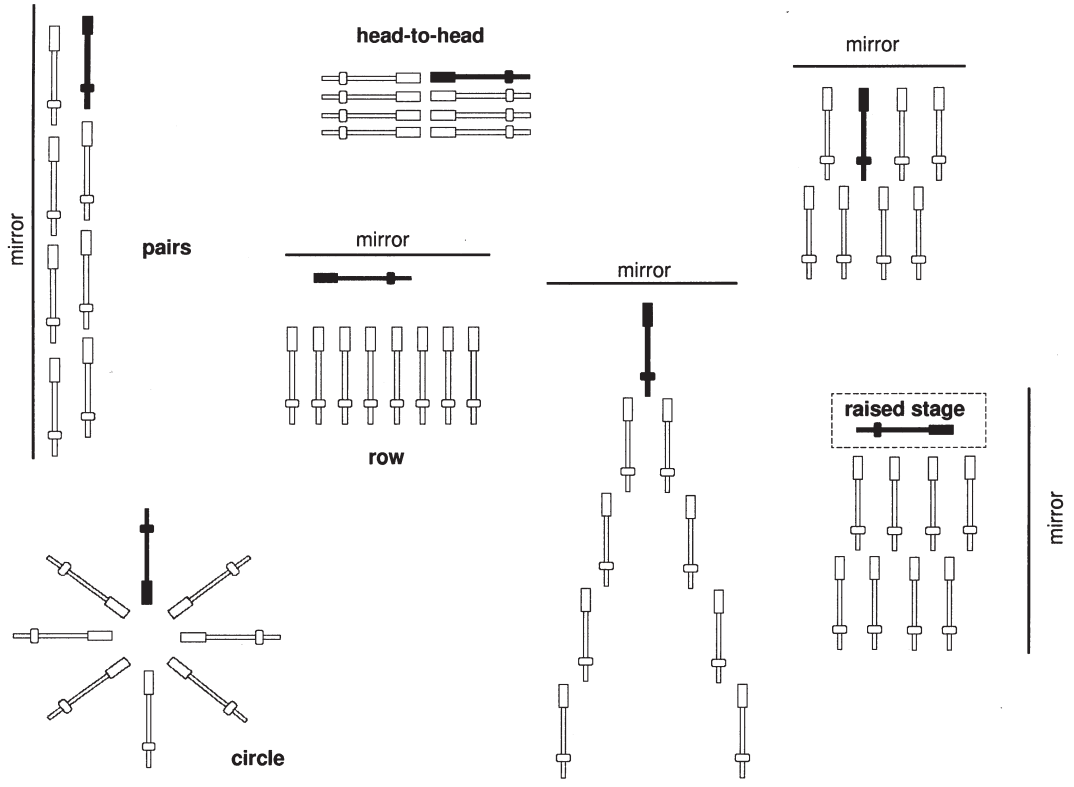
- Comfortably fitting, nonrestrictive clothing that allows the rower to bend freely at the hips, knees, and ankles as well as rotate at the shoulders.
- Clothing that does not hang below the seat. This reduces the risk of clothing getting caught in the rollers.
- Comfortable footwear that allows complete flexion and extension of the ankle joint. Flat-soled shoes are preferable to those with a thick heel.

WHERE TO POSITION YOURSELF

Instructing group rowing workouts is an exciting opportunity to empower each rower to model perfect rowing technique within their own comfort zone. Rowing instructors act as coaches and facilitators as opposed to all-star leaders. This unique responsibility requires the instructor to position himself/herself appropriately when facilitating the workout. The following items should be considered when deciding where to place yourself among your rowing crew:

- Shape of the room
- Number of rows of indoor rowers
- Location of mirrors: 1–5 feet above the floor (height from the floor, 0–12 inches; maximum height for mirror top, 5 feet)
- Experience level of participants
- Arrangement of indoor rowers (see below)

No matter where you choose to position yourself, you should always maintain eye contact with your rowers in addition to allowing at least 3 feet 6 inches between parallel indoor rowers.



KEEPING THE CLASS IN UNISON

This is a rowing class and it is important that everyone row together—everyone catches at the same time and finishes at the same time. The entire workout should be done at the same stroke rate. It is important that the instructor maintain the class at the same stroke rate even during the times of highest effort. Tips for keeping the class together include:

- When rowing in unison, tell rowers to watch the elbows and seat of the indoor rower "in front of you." Tell them that: "What you see is what you should be doing."
- To get a group to row together, pick a point in the stroke where everyone can gather to pick up the rhythm of the stroke. The finish is the easiest spot.

MUSIC SELECTION

Select music that has a driving, motivating, upbeat sound and is within the 120–125 beat per minute range. Music in a rowing class is intended as background sound, so rowers will not be rowing with the beat. Musical style should reflect the preferences of class participants.

Workout Format

Your Rowing Workout Plan should include the following elements:

GOAL OF WORKOUT (including descriptive table)
WARMUP
WORKOUT SETUP
BODY OF WORKOUT
COOLDOWN
NOTES

What follows is an outline to use when developing a workout. The item called BODY OF WORKOUT will take up the most time in each class and is the part that will vary the most from class to class.

The description of the workout is presented as a table. We will use this format each time we describe a workout. The table can be used to outline many types of workouts, including a single piece, a single-piece segmented workout, an interval workout, or an interval pyramid workout.

The duration of the work piece or work interval can be specified in either time or distance rowed. We suggest that the instructor use "time rowed" to define the workout in a class setting. In this way all participants in a class will begin and end the workout at the same time. If distance is used in a class setting, the participants will finish at various times based on their ability.

The intensity guide that appears in the description of each workout refers to the following key:

Indoor Rowing
Workout Intensity Guide Key

Symbol	Term	Description
◆	No pressure paddle	Rowing very easily with low stroke rate and low intensity; a restful pace
•	Conversational pace	Comfortable, able to sustain for long periods
••	Sustainable	Increased breathing, focusing on monitor for feedback, good effort for long piece
•••	Challenging	Best intensity for moderate to long intervals Breathing and heart rate elevated
••••	High intensity	Put the pedal down, short intervals, feeling of fatigue toward the end of the piece. Race pace

Workout Plan Format

GOAL OF WORKOUT:

Description of workout:				
# of intervals	work time	intensity guide	target SPM	rest time

WARMUP: (estimated time for this section . . .)

WORKOUT SETUP: (estimated time for this section . . .)
- Machine setup:
- Monitor setup:

BODY OF WORKOUT: (estimated time for this section . . .)
- Remarks during workout:

COOLDOWN: (estimated time for this section . . .)

NOTES: (estimated time for this section . . .)
- Logging results:
- Post-workout etiquette:
- Optional workouts to do between classes:

Description of workout:				
# of intervals	work time	intensity guide	target SPM	rest time

Intensity Guide Key

◆	No pressure paddle
•	Conversational pace
••	Sustainable
•••	Challenging
••••	High intensity

Workout Plan: The Very First Row

This introductory workout has been designed to cover information new rowers need to learn in their first session on the Concept2 Indoor Rower. This workout can be done by one person or with a small group of new rowers.

The emphasis is on learning proper technique and becoming familiar with the indoor rower. You can introduce your own variations to this workout as long as you cover the suggested topics.

GOAL OF WORKOUT: To introduce a new client or group of clients to rowing and the indoor rower and to teach proper rowing technique.

WARMUP AND WORKOUT SETUP: (estimated time for this section 5 min)

Point out the parts of the indoor rower.

- Seat: Have everyone adjust themselves so that body weight is equally distributed on the seat. Advise them to avoid sitting too far forward or too far back on the seat.
- Monitor: Demonstrate how to adjust the Performance Monitor so that it is directly in front of you as you lean forward at the catch. Have everyone turn on their monitor; briefly discuss its operation. Show how to change the display and discuss the display options.
- Damper setting: Explain the range of damper settings and then have participants set the damper on 3.
- Handle: Place handle in handle hook, explaining why the handle hook should be used.
- Flexfoot: Adjust the flexfoot heel so the strap crosses the ball of your foot. This setting should permit the shins to be perpendicular to the floor. If the shins exceed the perpendicular, lower the flexfoot toepiece 1 or 2 holes.

BODY OF WORKOUT: (estimated time for this section 10 min)

- Introduce the rowing stroke by using segments of the stroke, then the entire stroke: finish, recovery, catch, and drive. Emphasize that the handle passes the knees before the knees bend upward during recovery, and other important points of style as discussed in this chapter.
- Introduce synchrony of rowing: slow motion rowing, with the class following the instructor through each phase of the stroke. Explain how each individual can be rowing at his or her own intensity yet in synchrony with the group.
- Discuss stroke rate (strokes per minute SPM) and show the participants where to find SPM on the monitor display. Change the stroke rate from 20 to 24 SPM while rowing at same intensity. Point out that the SPM and pace are not directly related.
- Show participants how the monitor displays their intensity in their choice of watts, pace, calories, and average pace. Demonstrate changing the intensity while maintaining the same strokes per minute.

STRETCHING: (estimated time for this section 3 min) Note that this could be done earlier in session.

- Review stretching on and off the rower.

POST WORKOUT ETIQUETTE

- Monitor: Wipe off the front of the monitor.
- Handle: Place the handle in the handle hook.
- Seat: Wipe any sweat from the seat and monorail. Slide the seat forward.
- Damper setting: Put damper setting to 3.

QUESTIONS:

- Take questions from the group.

IF PARTICIPANTS WANT TO ROW BEFORE THE NEXT CLASS:

- Build up to 15 minutes of continuous rowing at 20–22 strokes per minute.

CHAPTER 6 – Fundamental Six Workouts

The following six workouts have been designed to give a new rower practical experience with the following aspects of indoor rowing:

- The concept of pace
- Stroke rate
- Damper setting
- Steady-state rowing
- Interval rowing
- Rowing to a set distance

We recommend that new rowers do these six workouts in order because the concepts build upon each other. These workouts focus on learning, therefore the intensity should be kept to a comfortable level. Upon completion, you will be thoroughly familiar with rowing and the Concept2 Indoor Rower.

A log book may be distributed to participants beginning this series so they can keep track of their progress through these workouts and as they continue to row in a class setting or on their own.

These workouts can be presented in a one-on-one setting or in a class setting. We have assumed that the instructor has a working knowledge of indoor rowing and can "fill in any blank" in our write-ups. We have included instructor's comments with each of these workouts as a guide for the instructor so that the "student" comes away from each workout with the intended knowledge.

The goal of this course is to give new rowers the tools and experience to realize the potential benefits of indoor rowing.

Fundamental Workout 1—Work Level

GOAL OF WORKOUT: To experience changing effort while keeping stroke rate constant. To gain understanding of how to gauge effort.

Description of workout: Interval workout				
interval #	work time	intensity guide	target SPM	rest time
1	2:00	•	20-24	1:00
2	2:00	••	20-24	1:00
3	2:00	•••	20-24	1:00
4	2:00	•	20-24	1:00
5	2:00	••	20-24	1:00
6	2:00	•••	20-24	1:00

Refer to the Workout Intensity Guide key on page 33.

WARMUP: (estimated time 5 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3.
- Monitor setup: Set work time for 2:00. Set rest time for 1:00. Set the Performance Monitor to display units of Pace and Average Pace.

BODY OF WORK: (estimated time 18 min)

- Remarks during workout: During the rest interval, your average pace for that interval will be displayed. Use that average pace to determine your target pace for the next work interval.

COOLDOWN: (estimated time 5 min) Include light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.

  PM5—Use MEMORY to view your meters and average pace of each interval.

SUGGESTED INSTRUCTOR COMMENTS

- The indoor rower is a variable resistance machine. The amount of muscle force applied determines the amount of resistive force encountered. More muscle force produces more resistive force, and vice versa.

- Your work level is displayed in the center window of the Performance Monitor. Watch the central display window of the monitor and you will notice the number changes at the end of each drive. This number shows you the work level of the stroke you just finished. The number will seldom be the same from stroke to stroke as it will take time to develop consistent power application.

  The monitor can display your work level in three different units of measure; boat speed as time per 500 meters, watts, and calories per hour. Boat speed is most widely used among rowers. The time per 500 meters is to a rower what time per mile is to a runner. Tell any runner that you do sub 5 minute miles and he will know how fast you run. On the Concept2 Indoor Rower, boat speed is related to the amount of power you are producing to make the flywheel spin. You can view your effort as units of power in watts. If you row at 100 watts, you are producing the amount of power it takes to keep a 100 watt light bulb lit. The harder you work, the more Watts you produce, and the less time it will take to go 500 meters. When you produce power, your body burns calories. The Performance Monitor makes an approximation of the rate you are burning calories based on the amount of power you are producing. (The calorie calculation does not take into account individual parameters such as body weight and metabolism differences).

- This is rowing class and it is important that everyone row in unison—everyone catches at the same time and finishes at the same time. (Note to instructor: The entire workout should be done at the same stroke rate. It is important that the instructor maintain the class at the same stroke rate even during the times of highest effort. Make sure the class understands that stroke rate and intensity are not directly linked. Each person can row at their chosen intensity, and at the same stroke rate as everyone else.)

  If, at any time, the work is too hard, just ease off on your effort. The goal of this workout is to experiment with various levels of exertion. If the work is too easy, you can try increasing the effort and target a boatspeed that is another 10 seconds faster. Remember, you will have plenty of time to experiment with how fast you can go. You should not try to go too hard on your first rowing workouts.

- You should now have a feel for levels of exertion and how the work level number in the central display on the Performance Monitor relates to your effort level. As you do different types of rowing workouts, you will use the work level number as your guide to tailor the effort to the length of time intended to row. For example, the target work level during a 30-minute steady row will be slower than your target for 2 minute intervals with rest. A seasoned rower will know his or her pace and will monitor their progress based on improvements in the paces he or she can maintain for various workouts.

Fundamental Workout 2–Stroke Rate

GOAL OF WORKOUT: To gain control of the stroke by rowing at different stroke rates while measuring a steady intensity level.

Description of workout: Single-piece segmented workout			
work time	segment	intensity guide	target SPM
30:00	30:00 - 25:00	••	20
	25:00 - 20:00	••	22
	20:00 - 15:00	••	24
	15:00 - 10:00	••	26
	10:00 - 5:00	••	24
	5:00 - 0:00	••	22

Refer to the Workout Intensity Guide key on page 33.

WARMUP: (estimated time 5 min.) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min.)

- Machine setup: Set damper at 3.
- Monitor setup: Set work time for 30:00.
  Set the Performance Monitor to display units of Pace and Average Pace.

BODY OF WORK: (estimated time 30 min.)

- Remarks during workout: Remember to start out at a pace that you can maintain for a 30:00 steady-state workout. Use the center window to monitor your target pace, especially when you are changing your stroke rate.

COOLDOWN: (estimated time 5 min.) Include light paddling and stretching.

NOTES: (estimated time 1 min.)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.
  PM5—Use MEMORY to view your meters and average pace of each interval.

SUGGESTED INSTRUCTOR COMMENTS

- The instructor should be the person to set the stroke rate. Have the class follow the instructor's movements. The rowers should observe the stroke rate on their Performance Monitor.

- By increasing or decreasing the speed of the hands on the recovery or by shortening or lengthening the stroke (amount of seat travel and reach), the individual can change the strokes per minute independent of the level of exertion (see chart below).

Action	Strokes per minute
Quicker hands on recovery	Increase
Slower hands on recovery	Decrease
Longer Stroke	Decrease
Shorter Stroke	Increase

- The rowers may feel that they have to pull with more force at the lower stroke rates to achieve the target pace. "Long and strong." "Understroking your opponent."

  You might introduce the concept of "ratio" by asking the class to follow your movement. The pull through should be faster than your recovery. It might be close to a ratio of one part on the drive to two parts on the recovery.

- Ask the class if there was a stroke rate that seemed the most comfortable for them. That is a good starting place when the length of the piece increases. They will probably feel more comfortable at higher stroke rates as they become more skilled at the rowing motion.

  Emphasize that stroke rate does not determine work done. The best guide to the intensity of the work level is displayed in the middle window of the Performance Monitor.

Fundamental Workout 3–Damper Setting

GOAL OF WORKOUT: To understand the effect of the damper on the feel of the stroke

Description of workout: Interval workout (change the damper between intervals, alternating between 3 and 7)				
# of intervals	work time	intensity guide	target SPM	rest time
5	4:00	•••	28	2:00

Refer to the Workout Intensity Guide key on page 33.

WARMUP: (estimated time 5 min.) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min.)

- Machine setup: Set damper at 3 for pieces 1, 3, and 5; during rest period, set at 7 for pieces 2 and 4.
- Monitor setup: Set work time for 4:00. Set rest time for 1:00
  Set the Performance Monitor to display units of Pace and Average Pace.

BODY OF WORK: (estimated time 30 min.)

- Remarks during workout: To experience the effect of the damper, it is best to maintain a consistent stroke rate and work level for each of the intervals.
  Use the center window to monitor your target pace.

COOLDOWN: (estimated time 5 min.) Include light paddling and stretching.

NOTES: (estimated time 1 min.)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.
  PM5—Use MEMORY to view your meters and average pace of each interval.

SUGGESTED INSTRUCTOR COMMENTS

- It is important to understand that setting the damper is not the action that determines the intensity of your workout. The work level you are achieving by your effort is the indication of your level of exertion (how hard you are rowing).

- The damper setting will change the relationship of the force you exert and the speed of your pull through.

  Changing the damper is like changing the kind of boat you are rowing in. The lower numbers on the damper are like a sleek, fast racing shell. The higher numbers are like a slow rowboat loaded with fish. You can imagine that in either of these boats you can row hard and try to go fast or you can row easy and go slowly. You would not get a better workout in the heavy boat with the fish unless you worked harder and longer than you would in the sleek, racing boat. In fact, you might find that you would be more likely to work harder and longer in the fast boat because your muscles were not overtaxed by too high a force.

  The stroke rate may vary as the rower tries to keep a constant work level reading on the monitor as the damper setting changes. Row in sync!

  The higher number of damper setting, the stroke rate will typically be lower…the "long and strong" type of stroke.

- Many new rowers find it more comfortable to row in the higher numbered damper settings. This is because they can move more slowly through the stroke and still generate a decent force. As one becomes more skilled at the rowing motion you will be able to apply your power more quickly and generate high forces even at the lowest numbered damper setting.

  Rowing at the higher settings (slower pull through and higher forces) can put too much strain on your muscles and cause you to stop your workout without getting full aerobic benefits.

Fundamental Workout 4–Steady-State

GOAL OF WORKOUT: Find your target pace for a steady-state row.

Description of workout: Single-piece steady-state rowing		
work time	intensity guide	target SPM
20:00	•••	26-28

Refer to the Workout Intensity Guide key on page 33.

WARMUP: (estimated time 5 min.) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min.)

- Machine setup: Set damper at 3.
- Monitor setup: Set work time for 20:00.
  Set the Performance Monitor to display units of Pace and Average Pace.

BODY OF WORK: (estimated time 30 min.)

- Remarks during workout: Use the center window to monitor your target pace. Start at a pace that you can maintain for 20 minutes. When you reach the last 5 minutes, try increasing your intensity (less time/500m) while keeping your stroke rate constant.

COOLDOWN: (estimated time 5 min.) Include light paddling and stretching.

NOTES: (estimated time 1 min.)

- Logging results: Record meters and average pace for the 20-minute piece. Note that the average pace shown for the piece is your steady-state 20:00 pace.

SUGGESTED INSTRUCTOR COMMENTS

- Have the class look in the lower left corner of the Performance Monitor to note the display of average pace. Make sure everyone is in average pace mode. Press the DISPLAY button until average pace shows in the lower left window. This displays your average pace for the length of time you have been rowing since the last reset or start-up. If you start rowing at a slow pace and then increase your effort, you will see an immediate change in your current pace (viewed in the center window) and a gradual change in your average pace (viewed in the lower left window).

  Ask if anyone feels they started rowing too hard and encourage them to ease off if needed. Or increase intensity if they feel they started off too slow.

- At the end of the 20 minutes, the Performance Monitor will stop timing and freeze the results. The pace that appears in the average pace window is the rower's 20 minute pace. This would be a good pace for the rower to target the next time they do a steady-state workout.

Fundamental Workout 5–Interval Training with Varying Intensities

GOAL OF WORKOUT: Through a workout of short intervals, learn how to row at higher intensity and maintain effective form.

Description of workout: Interval workout				
# of intervals	work time	intensity guide	target SPM	rest time
10	1:00	••••	30	1:00

Refer to the Workout Intensity Guide key on page 33.

WARMUP: (estimated time 5 min.) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min.)

- Machine setup: Set damper at 3.
- Monitor setup: Set work time for 1:00. Set rest time for 1:00. Set the Performance Monitor to display units of Pace and Average Pace.

BODY OF WORK: (estimated time 30 min.)

- Remarks during workout: Use the center window to monitor your target pace. Start at a comfortable intensity for the first few intervals and build your effort with each successive piece. Do not row at a higher stroke rate than 30 SPM. Increase your pace by pulling harder, especially using your leg drive to full advantage.

COOLDOWN: (estimated time 5 min.) Include light paddling and stretching.

NOTES: (estimated time 1 min.)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.
  PM5—Use MEMORY to view your meters and average pace of each interval.

SUGGESTED INSTRUCTOR COMMENTS

- Relax during the minute of easy rowing. Stay consistent, focus on form; when tired, push with both legs and accelerate the arms to body.
- Ask rowers to guess at which pace they would be able to row a full 2000 meters. (The 2000 meters will take between 7 and 12 minutes.)

Fundamental Workout 6—Preset Distance

GOAL OF WORKOUT: This workout is set up as a prescribed distance rather than a prescribed work time. A timed workout is more useful in a group rowing situation because every one will finish the work at the same time, regardless of ability. With a distance workout, the more fit and stronger individuals will complete the work in less time.

Description of workout: Pyramid interval workout				
interval #	work distance	intensity guide	target SPM	rest time
1	2000 m	••	24-26	2:00 to 5:00
2	2000 m	•••	26-28	

Refer to the Workout Intensity Guide key on page 33.

WARMUP: (estimated time 5 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3.
- Monitor setup: Set work distance for 2000 meters. Set the Performance Monitor to display units of Pace and Average Pace.

BODY OF WORK: (estimated time 30 min)

- Remarks during workout: Use the center window to monitor your target pace. The first 2000-meter piece is a trial run to get a feel for the distance, so take it easy. The second is your "time trial." This is just like a race on the water.

COOLDOWN: (estimated time 5 min) Include light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.

  PM5—Use MEMORY to view your meters and average pace of each interval.

SUGGESTED INSTRUCTOR COMMENTS

- Concentration will be on establishing a pace that can be maintained for the duration of the row.
  Everyone will finish at different times. 2000 meters will take anywhere from 6 minutes (for an Olympic hopeful) to 12 minutes.

- At 1000 meters into the piece, have the rowers make note of the average pace. At various times, remind the rowers to look at the average pace to see if it is going down (faster) or up (slower). If a rower sees their average pace go up, chances are they started out too fast and are having to slow down to recover.
  Ask if anyone feels they started rowing too hard, and encourage them to ease off if needed. Or increase intensity if they feel they started off too slow.

- For the PM:
  Explain to the group that data for the workout just completed will be stored in memory. Taking a stroke while the monitor is off will start the monitor AND begin another workout.

CHAPTER 7 – Workout Plans

The Fundamental Workouts are designed to teach a new rower the basics. The workouts that follow can be done by rowers of any ability. Remember, intensity is up to the rower, not the design of the workout. Altering the number and length of workpieces, the length of the rest interval, and the target intensity will produce a variety of workout designs.

Use the following workout plans and feel free to come up with your own. It is a good idea to repeat favorite workouts regularly as a way of monitoring improvement. You will notice that we have added optional workouts to do between classes. These are specified as distance workpieces for variety. A rower who enjoys the group rowing experience may wish to row on days when no class is scheduled.

Workout Plan 1

GOAL OF WORKOUT: Endurance—building aerobic capacity.

Description of workout: Single-piece continuous row		
work time	intensity guide	target SPM
30:00	••	26

WARMUP: (estimated time 7 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or other for long duration.
- Monitor setup: Set work time for 30:00. Set rest time for 5:00.

BODY OF WORKOUT: (estimated time 30 min)

- Remarks during workout: Target a pace you can sustain for 30 minutes. As the piece progresses, try to apply more effort, bringing the pace down.

COOLDOWN: (estimated time 5 min) Light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: Note total meters rowed and average pace.
- Post-workout etiquette:
- Optional workout to do between classes:

Description of workout: Interval workout, long distance				
# of Intervals	work distance	intensity guide	target SPM	rest time
3	2500 meters	••	28	5:00

Refer to the Workout Intensity Guide key on page 33.

Workout Plan 2

GOAL OF WORKOUT: Short, but intense workout. Work on increasing your peak output.

Description of workout: Pyramid interval workout				
interval #	work time	intensity guide	target SPM	rest time
1	2:00	•••	26	2:00
2	3:00	•••	26	3:00
3	4:00	•••	26	3:00
4	3:00	••••	30	2:00
5	2:00	••••	30	1:00
6	1:00	••••	30	-

WARMUP: (estimated time 7 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or other setting of choice
- Monitor setup:

  The PM3, PM4 and PM5 will allow you to set up this workout using variable intervals.

BODY OF WORKOUT: (estimated time 30 min)

- Remarks during workout: Row the first 3 intervals at somewhat under maximum effort. Row the last 3 intervals at your highest intensity.

COOLDOWN: (estimated time 5 min) Light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: Record meters rowed and average pace for each interval.
- Post-workout etiquette:
- Optional workout to do between classes:

Description of workout: Pyramid interval workout				
Interval #	work distance	intensity guide	target SPM	rest time
1	1500 meters	•••	28	3:00
2	1000 meters	•••	28	3:00
3	500 meters	••••	28	3:00

Refer to the Workout Intensity Guide key on page 33.

Workout Plan 3

GOAL OF WORKOUT: Endurance—building aerobic capacity.

Description of workout: Single-piece segmented workout			
work time	segment	intensity guide	target SPM
40:00	40:00-30:00	•	24
	30:00-20:00	••	26
	20:00-10:00	••	28
	10:00- 0:00	•••	30

WARMUP: (estimated time 5 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or your personal choice.
- Monitor setup: Set work time for 40:00.

BODY OF WORKOUT: (estimated time 40 min)

- Remarks during workout: Start piece at conservational pace and drop 3–5 seconds of pace each 10:00. As pace decreases you may want to increase stroke rate 1–2 SPM.

COOLDOWN: (estimated time 4 min) Light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: Note total meters rowed and average pace.
- Post-workout etiquette:
- Optional workout to do between classes:

Description of workout:				
# of intervals	work distance	intensity guide	target SPM	rest time
6	500 meters	••••	30-32	3:00

Refer to the Workout Intensity Guide key on page 33.

Workout Plan 4

GOAL OF WORKOUT: Anaerobic threshold—building power and aerobic conditioning.

Description of workout: Interval workout, moderate length - challenging effort				
# of intervals	work time	intensity guide	target SPM	rest time
4	7:00	•••	28-30	4:00

WARMUP: (estimated time 5 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or your personal choice.
- Monitor setup: Set work time for 7:00, set rest time for 4:00.

BODY OF WORKOUT: (estimated time 44 min)

- Remarks during workout: Try to keep consistent pace from interval to interval. Total meters should be close to 30:00 single piece effort.

COOLDOWN: (estimated time 5 min) Light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.
  PM5—Use MEMORY to view your meters and average pace of each interval.
- Post-workout etiquette:
- Optional workout to do between classes:

Description of workout: Single piece segmented workout by distance			
work distance	segment	intensity guide	target SPM
7500	7500-6000	•••	28
	6000-5500	••	24
	5500-4000	•••	28
	4000-3500	••	24
	3500-2000	•••	28
	2000-1500	••	24
	1500-0	•••	28

Refer to the Workout Intensity Guide key on page 33.

Workout Plan 5

GOAL OF WORKOUT: Anaerobic conditioning—building power and lactate tolerance.

Description of workout: Interval workout, high intensity, long rest				
# of intervals	work time	intensity guide	target SPM	rest time
3	2:00	••••	26-28	3:00

# of intervals	work time	intensity guide	target SPM	rest time
3	2:00	••••	28-30	3:00

WARMUP: (estimated time 5 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or your personal choice.
- Monitor setup: Set work time for 2:00 and rest time for 3:00.

BODY OF WORKOUT: (estimated time 32 min)

- Remarks during workout: Between parts 1 and 2, paddle through a complete cycle of work and rest for a total of 7 minutes of rest. Row the pieces with high intensity but consistently. Try to avoid "flying and dying" as the workout progresses.

COOLDOWN: (estimated time 4 min) Light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.

  PM5—Use MEMORY to view your meters and average pace of each interval.
- Post-workout etiquette:
- Optional workout to do between classes:

Description of workout: Single piece every 1000 meters		
work distance	intensity guide	target SPM
10,000	••	26-28

Note: at every 1000 meters row at •••• for 10 strokes at SPM 30-32.

Refer to the Workout Intensity Guide key on page 33.

Workout Plan 6

GOAL OF WORKOUT: A medium-duration workout rowed at various intensities to allow some rowing at higher intensity within the long piece.

Description of workout: Single-piece segmented workout			
work time	segment	intensity guide	target SPM
30:00	30:00 - 28:00	•	26
	28:00 - 20:00	•••	26
	20:00 - 18:00	•	26
	18:00 - 10:00	•••	28
	10:00 - 8:00	•	28
	8:00 - 0:00	•••	28

WARMUP: (estimated time 5 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or other setting of choice.
- Monitor setup: Set monitor for a work time of 30:00.

BODY OF WORKOUT: (estimated time 30 min)

- Remarks during workout: The 8 minute segments of ••• level work should start out easier and become more intense as the workout progresses. If the rower starts out too intense on the first 8 minute segment, the intensity will be difficult to maintain toward the end of the 30 minutes.

COOLDOWN: (estimated time 5 min) Light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: Record meters rowed and average pace for the 30:00.
- Post-workout etiquette:
- Optional workouts to do between classes:

Description of workout: Single piece segmented workout			
work distance	segment	intensity guide	target SPM
7500 meters	7500 - 7000	•	26
	7000 - 5000	•••	26
	5000 - 4500	•	26
	4500 - 2500	•••	28
	2500 - 2000	•	28
	2000 - 0	•••	28

Refer to the Workout Intensity Guide key on page 33.

Workout Plan 7

GOAL OF WORKOUT: Short but intense workout, interval rowing.

Description of workout: Interval workout				
# of intervals	work time	intensity guide	target SPM	rest time
4	4:00	•••	28	1:00

WARMUP: (estimated time 5 min) Include rowing drills and stretching

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or other setting of choice.
- Monitor setup: Set work time for 4:00. Set rest time for 1:00.

BODY OF WORKOUT: (estimated time 20 min)

- Remarks during workout: At each interval, increase your intensity. Try to increase your pace without increasing your strokes per minute (SPM).

COOLDOWN: (estimated time 5 min) Include light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.

  PM5—Use MEMORY to view your meters and average pace of each interval.
- Post-workout etiquette:
- Optional workout to do between classes:

Description of workout: Interval workout				
# of intervals	work distance	intensity guide	target SPM	rest time
5	750 meters	•••	28	2:00

Refer to the Workout Intensity Guide key on page 33.

Workout Plan 8

GOAL OF WORKOUT: Endurance—aerobic power.

Description of workout: Interval workout with short rest period				
# of intervals	work time	intensity guide	target SPM	rest time
15	1:40	•••	26	0:20

WARMUP: (estimated time 5 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or your personal choice.
- Monitor setup: Set work time for 1:40 and rest time for 0:20.

BODY OF WORKOUT: (estimated time 30 min)

- Remarks during workout: Monitor will display interval number during rest time. Moderate effort realizing that the rest does not provide total recovery.

COOLDOWN: (estimated time 4 min) Include light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.

  PM5—Use MEMORY to view your meters and average pace of each interval.
- Post-workout etiquette:
- Optional workout to do between classes:

Description of workout: Single piece, long interval workout				
# of intervals	work distance	intensity guide	target SPM	rest time
2	6000 meters	•••	28	6:00

Refer to the Workout Intensity Guide key on page 33.

Workout Plan 9

GOAL OF WORKOUT: This workout focuses on high intensity rowing for short duration. It is good for developing muscular strength. Rowers will get a feel for rowing at a faster pace than they are used to.

Description of workout: Interval workout				
# of intervals	Work time	Intensity guide	Target SPM	Rest time
20	0:20	••••	32	0:40

WARMUP: (estimated time 5 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or other setting of choice. Using a higher damper setting will turn this into more of a strength training workout. But be careful not to overload with excessively heavy damper settings.
- Monitor setup: Set work time for 0:20. Set rest time for 0:40.

BODY OF WORKOUT: (estimated time 30 min)

- Remarks during workout: It is important that the rower be well warmed up before beginning this high-intensity rowing. The first few work intervals should be controlled effort. The rower should increase the effort with each interval.

COOLDOWN: (estimated time 5 min) Include light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.

  PM5—Use MEMORY to view your meters and average pace of each interval.
- Post-workout etiquette
- Optional workout to do between classes:

Description of workout: Long interval workout				
# of intervals	work distance	intensity guide	target SPM	rest time
4	1000 meters	•••	28	1:00

Refer to the Workout Intensity Guide key on page 33.

Workout Plan 10

GOAL OF WORKOUT: Aerobic-cardiovascular development, weight control.

Description of workout: Interval workout, long intervals				
# of intervals	work time	intensity guide	target SPM	rest time
1	16:00	•	22	3:00
1	16:00	••	26	

WARMUP: (estimated time 5 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or other for long-duration rowing.
- Monitor setup: Set work time on monitor for 16:00, rest time for 3:00.

BODY OF WORKOUT: (estimated time 35 min)

- Remarks during workout: Conversational pace on interval 1 and sustainable pace in interval 2. Work on good recovery technique and full range of motion.

COOLDOWN: (estimated time 4 min) Light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.

  PM5—Use MEMORY to view your meters and average pace of each interval.
- Post-workout etiquette:
- Optional workout to do between classes:

Description of workout: Go for a personal best on the 2000 meter row with three intervals				
# of intervals	work distance	intensity guide	target SPM	rest time
1	2000 meters	••	26	3:00
1	2000 meters	••••	28-32	6:00
1	2000 meters	•	22	

Refer to the Workout Intensity Guide key on page 33.

Workout Plan 11

GOAL OF WORKOUT: Moderate duration but intense workout, steady-state rowing.

Description of workout: Single-piece steady-state rowing		
work time	intensity guide	target SPM
20:00	•••	28

WARMUP: (estimated time 5 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or other for long-distance rowing.
- Monitor setup: Set work time for 20:00.

BODY OF WORKOUT: (estimated time 20 min)

- Remarks during workout: Select a pace and stroke sustainable for the 20 min. As the piece progresses, try to apply more effort, bring the pace down.

COOLDOWN: (estimated time 5 min) Include light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: Note total meters rowed and average pace.

- Post-workout etiquette:
- Optional workout to do between classes:

Description of workout: Single distance steady state rowing		
work distance	intensity guide	target SPM
5000 meters	••	28

Refer to the Workout Intensity Guide key on page 33.

Workout Plan 12

GOAL OF WORKOUT: This workout focuses on high-intensity rowing for short duration. It is good for developing muscular strength. Rowers will get a feel for rowing at a faster pace than they are used to.

Description of workout: Interval workout				
# intervals	work time	intensity guide	target SPM	rest time
15	1:00	••••	30	1:00

WARMUP: (estimated time 5 min) Include rowing drills and stretching.

WORKOUT SETUP: (estimated time 1 min)

- Machine setup: Set damper at 3 or other setting of choice.
- Monitor setup: Set work time for 1:00. Set rest time for 1:00.

BODY OF WORKOUT: (estimated time 30 min)

- Remarks during workout: It is important that the rower be well warmed up before beginning this high-intensity rowing. The first few work intervals should be controlled effort. The rower should increase the effort with each interval.

COOLDOWN: (estimated time 5 min) Light paddling and stretching.

NOTES: (estimated time 1 min)

- Logging results: PM3 & PM4—Use MEMORY & LOGCARD to view your meters and average pace of each interval.

  PM5—Use MEMORY to view your meters and average pace of each interval.
- Post workout etiquette:
- Optional workout to do between classes:

Description of workout: Interval workout, short distance				
# of intervals	work distance	intensity guide	target SPM	rest time
15	250 meters	••••	28	1:00

Refer to the Workout Intensity Guide key on page 33.

Rowing Training Programs

More and more people are finding that indoor rowing can become the major component of a fitness program. The fitness professional can plan workouts in advance to assure that goals are met and variety is maintained.

Clients who commit to a series of progressive workouts will get more benefit from rowing.

Two reasons why:

1. Rowing is a new skill for many people. A person jumping into an occasional rowing workout may not be able to acquire the necessary skills to get the best workout from the indoor rower. A set series of fundamental workouts can teach those skills.
2. The Performance Monitor enables us to have an accurate way of monitoring the result of a client's effort. Becoming familiar with these output numbers over a series of workouts will give the client a reference to monitor his or her progress over time and to establish mini goals for each workout.

In designing a program, we must first consider how many days per week will be rowing days. Three sample 8-week calendars are offered here, along with a blank calendar. The first calendar schedules 3 days of rowing per week, the next schedules 4 days, the last, 5. The calendar can be weighted toward lower-intensity steady-state or high-intensity interval workouts, depending on the fitness level and goals of the participants. Long, steady-state workouts focus on aerobic conditioning and weight loss and are good for rowing in synchrony as a group. Interval workouts incorporating plenty of rest develop anaerobic power and strength. These are useful in preparation for 2000-meter racing. Regardless of the goal, maintaining some variety is a good idea. Using different types of workouts will stimulate different functions within the body and result in well-rounded training.

We are often asked how to differentiate between workouts for the less fit population and the very fit rower.

The key here is the intensity at which the workout is done. In fact, the same workout can be done by both populations in the same class. Example: A 10 times 2-minute interval workout at 28 strokes per minute might be an intense workout for a collegiate oarsman rowing at a pace of 1:35/500m. Alongside the oarsman, a 60-year-old might comfortably row in sync at 28 strokes per minute but at a pace of 2:45/500m. The intensity or difficulty of the work is a function of how hard the rower pulls on each stroke and is displayed in the center window of the monitor as their pace or watts. Remember, stroke rate (SPM) is not the measure of intensity. We suggest that most work is done at a stroke rate of 24 to 28. Leading a workout at a stroke rate greater than 32 is not advised. The workouts are taken from The Very First Row, page 35, the Fundamental Six Workouts, pages 37-47, and the Workout Plans, pages 48-60.

The Fundamental Workouts are coded as follows:

F0 (The Very First Rowing Workout)
F1 (Fundamental Workout 1–Work Level)
F2 (Fundamental Workout 2–Stroke Rate)
F3 (Fundamental Workout 3–Damper Setting)
F4 (Fundamental Workout 4–Steady State)
F5 (Fundamental Workout 5–Interval Training)
F6 (Fundamental Workout 6–Preset Distance)

The Workout Plans are coded as follows:

W1–Workout Plan 1
W2–Workout Plan 2
W3–Workout Plan 3 etc…

NOTE: **These programs assume that the participants are new to rowing. Each program begins with a series of fundamental workouts. Advanced programs for experienced rowers would not necessarily begin with these fundamental workouts.**

Three Time/Week Training Program

WEEK 1	Su	M	T	W	Th	F	Sa
	rest	FO	rest	F1	rest	F2	rest

WEEK 2	Su	M	T	W	Th	F	Sa
	rest	rest	F3	rest	F4	rest	F5

WEEK 3	Su	M	T	W	Th	F	Sa
	rest	F6	rest	W6	rest	W7	rest

WEEK 4	Su	M	T	W	Th	F	Sa
	rest	rest	W1	rest	W10	rest	W12

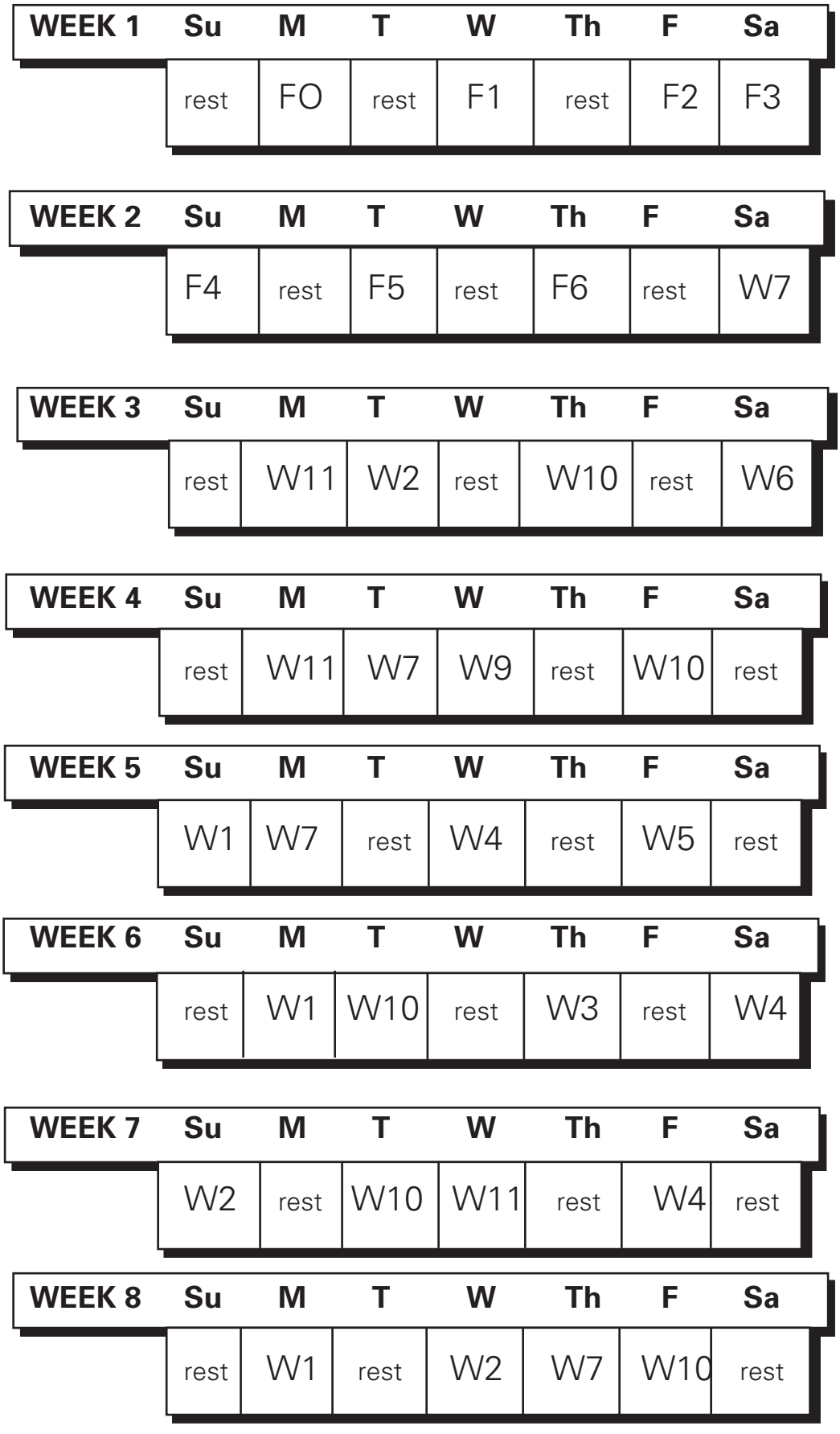
WEEK 5	Su	M	T	W	Th	F	Sa
	rest	W2	rest	W3	rest	W5	rest

WEEK 6	Su	M	T	W	Th	F	Sa
	rest	rest	W1	rest	W7	rest	W9

WEEK 7	Su	M	T	W	Th	F	Sa
	rest	W10	rest	W1	rest	W2	rest

WEEK 8	Su	M	T	W	Th	F	Sa
	rest	rest	W11	rest	W6	rest	W1

Four Time/Week Training Program



WEEK 1	Su	M	T	W	Th	F	Sa
	rest	FO	rest	F1	rest	F2	F3

WEEK 2	Su	M	T	W	Th	F	Sa
	F4	rest	F5	rest	F6	rest	W7

WEEK 3	Su	M	T	W	Th	F	Sa
	rest	W11	W2	rest	W10	rest	W6

WEEK 4	Su	M	T	W	Th	F	Sa
	rest	W11	W7	W9	rest	W10	rest

WEEK 5	Su	M	T	W	Th	F	Sa
	W1	W7	rest	W4	rest	W5	rest

WEEK 6	Su	M	T	W	Th	F	Sa
	rest	W1	W10	rest	W3	rest	W4

WEEK 7	Su	M	T	W	Th	F	Sa
	W2	rest	W10	W11	rest	W4	rest

WEEK 8	Su	M	T	W	Th	F	Sa
	rest	W1	rest	W2	W7	W10	rest

Five Time/Week Training Program

WEEK 1	Su	M	T	W	Th	F	Sa
	rest	FO	F1	F2	rest	F3	F4

WEEK 2	Su	M	T	W	Th	F	Sa
	F5	rest	F6	rest	W2	W10	W5

WEEK 3	Su	M	T	W	Th	F	Sa
	rest	W7	W3	rest	W12	W6	W11

WEEK 4	Su	M	T	W	Th	F	Sa
	rest	W4	W1	W5	rest	W9	W8

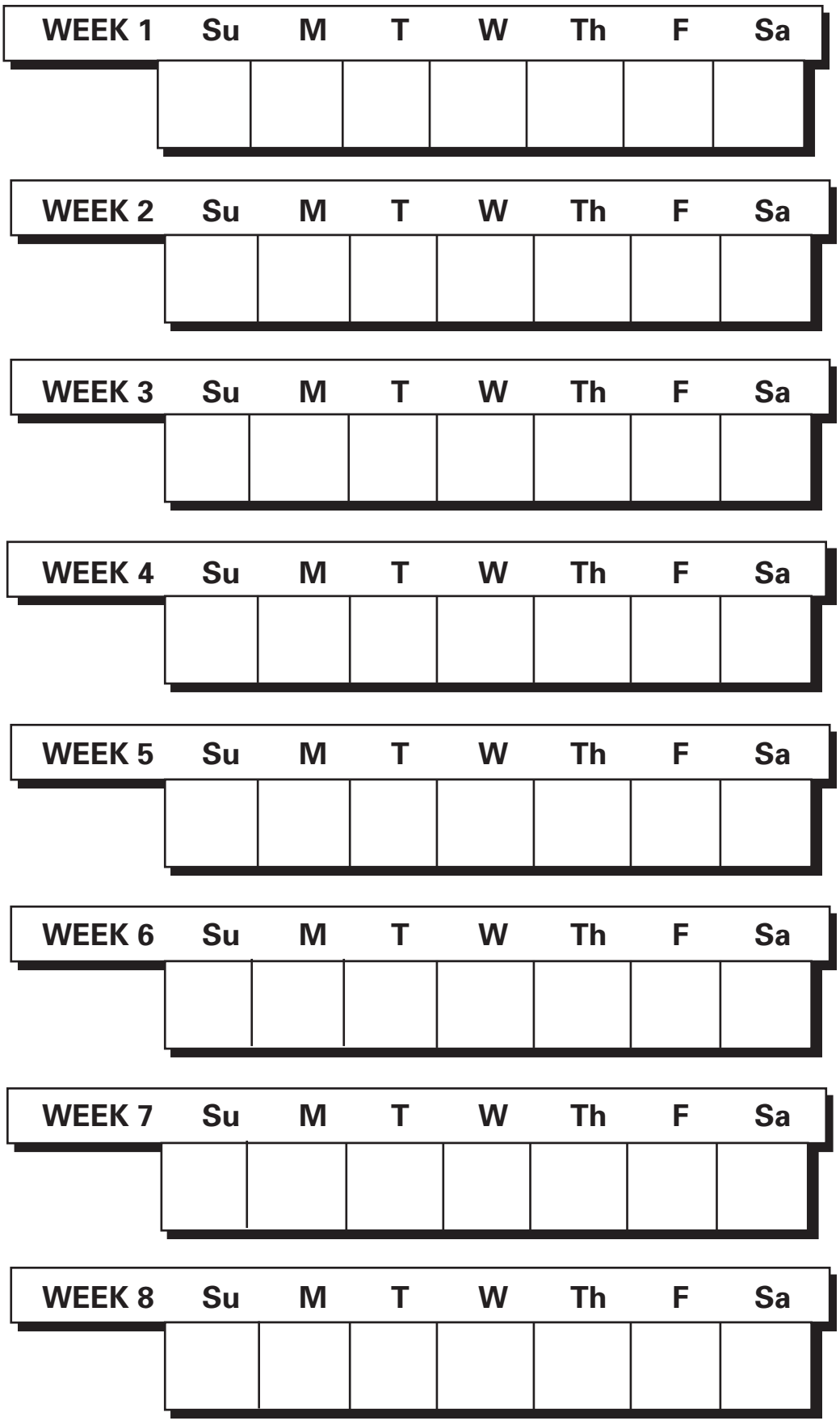
WEEK 5	Su	M	T	W	Th	F	Sa
	W10	W7	rest	W2	W3	W12	rest

WEEK 6	Su	M	T	W	Th	F	Sa
	W3	rest	W5	rest	W7	W9	W11

WEEK 7	Su	M	T	W	Th	F	Sa
	rest	W10	W11	W2	W5	W6	rest

WEEK 8	Su	M	T	W	Th	F	Sa
	W12	W1	rest	rest	W2	W9	W8

Training Program Calendar



Appendix

- FREQUENTLY ASKED QUESTIONS
- ROWING GLOSSARY
- STUDIES ABOUT THE BENEFITS OF ROWING
- BIBLIOGRAPHY
- TRAINING COMPLETION FORM
- TRAINING EVALUATION FORM

Frequently Asked Questions

Below are some frequently asked questions and answers to help your rowers.

Q. What should the damper setting be?

A. Start off at a setting between 3-5 and learn to change pace and stroke rate at that setting. As you become proficient at rowing, experiment by moving the damper setting in both directions. Be careful not to imply that you need to row at higher damper settings once you are more experienced.

Q. How long should I row in the beginning?

A. First, be sure that your physician has approved your rowing. Next, start off with a damper setting of 3 and row for 2–3 minutes; then stop and stretch those body parts that are involved in the rowing motion: hands, arms, shoulders, lower back, hamstrings, and quadriceps, and gastrocnemius. Keep rowing in segments of 3–5 minutes with rest in between until you achieve 16–20 minutes of light rowing. In the first week, row every other day.

Q. What stroke rate should I row?

A. Whatever rate is most comfortable for you; however, many new rowers row between 20 and 28 strokes per minute (SPM).

Q. Does rowing a higher stroke rate mean I am working harder?

A. The best indication of work is the center display on the Performance Monitor. The SPM indicates how frequently the rower is moving up and down the monorail but does not indicate how much energy a rower is exerting.

Q. How frequently and how long should I row?

A. Rowing every other day with some other form of light exercise in between is probably a good idea, however, some people row every day. Thirty minutes of continuous activity appears to be a recommended duration in order for the activity to have a training effect.

Q. Does weight lifting help rowing?

A. Weight lifting for overall conditioning is a good idea, particularly among senior athletes. Weight lifting, specifically for rowing, may not provide as much benefit as rowing at different stroke rates, intensities, and damper settings. The specificity of the rowing motion and the information provided by the Performance Monitor can assist in managing a strength-type workout.

Q. What is the difference between aerobic and anaerobic workouts?

A. An aerobic workout is usually done at a pace that allows you to carry on a conversation. This pace can be rowed for a long time. An anaerobic workout involves high-intensity efforts of short duration and the production of lactic acid, a by-product of energy production without the presence of sufficient oxygen. Lactic acid usually results in a burning discomfort in the legs and arms. A good training program will include both types.

Q. What is the best strategy for racing 2000 meters?

A. Find a pace that you can sustain over the entire 2000 meters. Then, as you approach the last 1000 meters, try to reduce the pace by .5-1.5 seconds each 250 meters. Do not allow the momentary excitement to take you out of your pace, particularly at the start of the race.

Q. How do I stop my forearms from tightening up?

A. Rowing with arms bent early in the drive and squeezing the handle too tightly may cause the forearms to tighten up. The hands should to be soft and relaxed. The arms should be long from the knuckles through the wrists to the shoulders until the hands approach the knees on the drive. Allow the elbows to swing past the body at the finish.

Q. How can I stop the seat from hitting the back of my heels?

A. Be sure to move your hands beyond your knees before the knees bend and allow your shoulders to angle forward over the thighs before the seat begins to move. The seat should follow the hands and shoulders toward the wheel. The seat should not get closer than 7–10 inches from your heels at the catch. Shins should not move beyond perpendicular to the floor.

Rowing Glossary

Biofeedback	The information displayed on the monitor relative to your efforts in terms of work output, heart rate, and strokes per minute.
Catch	The position of the body when the hands and seat are closest to the flywheel. (In on-water rowing, the oar enters the water at this position and you begin to pull.) The starting point for the drive.
Cooldown	A period of moderate to easy rowing after a workout that allows the body to recover.
Damper Setting	The numbers on the right side of the flywheel, which represent the amount of air flowing to the flywheel. The higher the number, the more air. A higher setting makes the Indoor Rower feel like a heavy, slow rowboat; a lower number makes the indoor rower feel like a sleek, fast racing shell.
Drive	The work portion of the stroke when you are pushing with your legs and pulling with your back and arms.
Ergometer	A device that measures work. The indoor rower is an ergometer.
Finish	The position of the body when the seat is at the back end of the monorail and the handle is close to the body, having just completed the drive. (In on-water rowing, you take your oar out of the water at this position.)
Flexfoot	The part of the indoor rower that supports your feet.
Forward Body Angle	Pivoting the upper body from the hips forward over the thighs.
Heart Rate	The rate at which your heart is beating measured in beats per minute; an indication of your cardiac response to exercise. If the Indoor Rower is equipped with a heart receiver and the user is wearing a transmitting belt, heart rate will be displayed in the lower right corner of the Performance Monitor.
Hypercompression	(Or overcompression) Excessive leg compression (hyperflexion of the knee) before the catch; this occurs if the rower allows the seat to come too close to the heels (within 7 inches). Don't compress beyond vertical shins.
Interval	A work segment, measured in either time or distance, usually followed by a rest period. Interval workouts put a series of work segments together, separated by a specified period of rest.
Layback	The position of the upper body at the finish of the stroke. The upper body should have a 5-10 degree backward lean.
Leg Drive	The action of the legs at the beginning and during the drive.
Load	The amount of resisting force the rower feels during the drive.
Meters	The units used to measure how "far" you have rowed. This "distance" is calculated and displayed by the monitor and is the result of how much power you produce. The monitor equates your power with the amount of power required to move a boat through water.
Monorail	The rail upon which the seat slides.
Pace	A measure of the effort put into each stroke. The Performance Monitor displays pace terms of how long it takes to row 500 meters. The smaller your pace number, the less time it is taking you to row 500 meters, and thus, the faster you are going.
Paddling	Rowing very easily with low stroke rate and low intensity; a restful pace.

Piece	The term used to describe a work segment on the indoor rower. A 500-meter piece means a work segment of 500 meters. Pieces may be defined in either time or distance.
Race Pace	The effort you could maintain for an entire race distance. **NOTE:** Your race pace for 500 meters will be quite different from your race pace for 2000 meters.
Ratio	The ratio between the time spent on the drive part of the stroke and the time spent on the recovery. Ideally, you should spend more time on the recovery than on the drive.
Recovery	The non-drive part of the stroke, when you are moving the handle and then the body from the finish back to the catch position.
Rest	A period of paddling before or after a work piece.
Segmented Rowing	Dividing a piece into distance or time segments while rowing the entire piece (i.e., a 5000-meter piece might be divided up into five 1000-meter segments at different stroke rates).
Sequence	The order of involvement of the body parts during the drive and the recovery (legs, back, and arms on the drive; arms, back, and legs on the recovery).
Split	The work output measured at set distance or time segments during a work piece.
SPM	Strokes per minute. The number of drives per minute.
Swing	The action of the upper body as it pivots at the hips during the drive, swinging from a forward body angle through perpendicular to the layback position.
Warmup	A period of initially easy but increasingly intense rowing, used to increase the temperature of the body and stimulate cardiovascular activity.
Work	The term used to describe the portion of a workout when the rowing is intense.
Work Output	Your effort during the stroke, displayed on the Performance Monitor, in your choice of units: time/500m, watts, or calories.

A Comparison of the Physiological Responses to Rowing and Cycling Exercise Using RPE as an Indicator of Exercise Intensity

Poster Presentation American College of Sports medicine Conference 1984

W. E. GILLIGAN, J. BEZONI and M. J. WEBSTER

Department of Physical Education, Western Illinois University, Macomb, Illinois 61455

The purpose of this study was to compare the physiological and perceptual responses of self-selected, comparable workloads on a rowing ergometer (RE) (Concept2, Morrisville, VT) and cycle ergometer (CE). Eighteen subjects (10 men, 8 women) completed 2–6 practice sessions on a RE and CE at a self-selected workload. Subsequent to the practice sessions, baseline physiological and perceptual data were collected during 20 min of RE and CE exercise. Subjects then performed several exercise sessions until habituation to the RE and CE was achieved. Habituation was defined as the ability of subjects to (a) replicate a workload at 60–70% of maximum heart rate (HR), (b) consistently perceive the same self-selected workload on the RPE scale, and (c) learn proper rowing technique. Following habituation, subjects completed a second 20-minute testing session on the RE and CE at a workload corresponding with the RPE preferred during the habituation sessions. During this second exercise test, RPE for RE and CE exercise were not significantly different (RE 11.8 ± 0.5, CE 12.9 ± 0.4), indicating that the subjects perceived the workloads to be of similar intensity. Although HR was not significantly different between exercise modalities (RE 153 ± 1, CE 154 ± 1 beats•min-1), oxygen cost and caloric expenditure were significantly greater ($P < 0.05$) during RE exercise as compared to CE exercise (VO2: RE 2.1 ± 0.11, CE 1.9 ± 0.12 1•min-1; caloric expenditure: RE 10.5 ± 0.6, CE 9.5 ± 0.6 kcal•min-1). These data suggest that while individuals perceive and choose similar work intensities during RE and CE exercise, oxygen uptake and caloric expenditure are greater during RE exercise.

A Comparison of Energy Cost and Mechanical Efficiency at Identical Power Outputs Between a Mechanical Variable-Resistance Rowing Ergometer and a Mechanical Fixed-Resistance Bicycle Ergometer

Med Sci Sports & Exer., 1988, 20:5, 479–488

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Energy cost and mechanical efficiency were assessed for 45 untrained men and 29 untrained women, ages 20–59, during comparative power outputs while working on a wind-resistance rowing ergometer and mechanically-braked bicycle ergometer. VO2 and HR were measured during each minute of a 2-min. step increase protocol at 50, 60, 90, 110, 140, 180, 210, and 250 W for men and 50, 60, 90, and 100 W for women. With the exception of data recorded for the higher power outputs (>210 W), energy costs were significantly higher for both men and women ($P < .01$) for rowing ergometry than for identical power outputs during cycle ergometry. Mechanical efficiencies for all comparable power outputs were significantly higher ($P < .01$) for cycle ergometry. Increased energy costs and lowered mechanical efficiency during simulated rowing may be due, at least in part, to unfamiliarity with the rowing exercise, resulting in improper technique. However, even accounting for this effect, it appears that the rowing exercise if performed with a sliding seat which emphasizes use of the large leg muscles for power production, places as significant a demand on the aerobic energy system as the more traditional aerobic exercises and thus has a definite place in the spectrum of prescribed exercises in contemporary physical fitness and cardiac rehabilitation programs.

Rowing and Cycle Ergometer Exercise in the Elderly

S. MARK, F.C. HAGERMEN, FACSM, J.E. FALKEL, T.F. MURRAY, and K.E. RAGG

Department of Zoological and Biomedical Sciences,

Ohio University, Athens, OH 45701

This study compared physiological responses of 28 elderly subjects (>30 years) to 12 weeks of cycle and rowing ergometer training. Following medical screening, VO2 max, VE max, and HR max were measured during progressive exercise tests on both a cycle and rowing ergometer. Subjects were then assigned to either a cycle (CG) or rowing (RG) training group. Each group trained 3 x 30 min/wk and was further subdivided into high intensity (>80% HR max) and moderate intensity (>75% HR max) groups. The progressive exercise tests were repeated following training. VO2 max for CG increased 20% on rowing test and 15% on cycle test. VO2 max for RG increased 17% on rowing test and 12% on cycle test; all were significant increases (P<.05 or better) except RG performance on cycle test. VE max showed a similar pattern of improvement. HRmax increased significantly for both groups on rowing test (P<.01). Average power output for CG increased 40% on rowing test and 22% on cycle test while RG increased power 33% on rowing test and 14% on cycle test (all significant at P<.01). With exception of average power, no significant difference was attributed to modality or intensity of training. Based on these results, rowing ergometry can be considered a suitable alternative exercise for the elderly, and this age group appears to benefit from the range of training intensities recommended by ACSM and AHA.

Journal of Sports Sciences, 1993, 11, 227–232

Estimation of Maximum Oxygen Uptake from Submaximal Exercise on a Concept2 Rowing Ergometer

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The purpose of this study was to develop a submaximal test, on the Concept2 rowing ergometer, to estimate the maximum oxygen uptake (VO2 max) of male rowers and non-rowers. Eleven rowers and 14 non-rowers completed a submaximal and a maximal rowing test. The submaximal test consisted of exercising for six minutes at five different incremental speeds with at least six minutes recovery between each speed. Speed, heart rate, and oxygen uptake were monitored during the last minute of each increment. In the maximal test, the subjects were asked to row for six minutes at a speed calculated to elicit 105% of their predicted maximum heart rate(HRmax). The HRmax was predicted from 220 beats min -1 minus age. Actual HRmax was recorded, and the highest value of oxygen uptake measured was regarded as the subject's VO2 max.

An analysis of covariance revealed that the data collected for rowers and non-rowers had to be considered separately. The greatest differences were seen for the submaximal speed minusVO2 relationship, which showed that the rowers were more efficient on the ergometer than the non-rowers. Measured HRmax was found to average nine beats min-1 below the predicted HRmax. The measured VO2 max values for the whole group averaged 4.16 ± 0.64 1 min-1(x ± SD). A nomogram was developed to predict VO2 max. At an exercise intensity of 80–90% HRmax, the average estimated VO2 max, using predicted HRmax calculated from 220 beats min-1 minus age, was 4.34 ± 0.7 1 min-1. Using measured values of HRmax, the average estimated VO2 max was found to be 4.06 ± 0.6 1 min-1, which reduced the mean error of the estimate from 4.3 to 2.4%.

This study shows that rowing VO2 max can be estimated from a submaximal exercise test, with a mean error of the estimate of less than 5%, provided that the exercise intensity of the test is approximately 80–90% HRmax.

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Training Completion Form

Use this form to register your completion of an Indoor Rowing workshop.

Date _____

Location _____

Select one:

- ☐ **Indoor Rowing Basics Short Course**
- ☐ **Indoor Rowing Basics**
- ☐ **Full Day**

Select one:

- ☐ I am a group fitness instructor
- ☐ I am a personal trainer
- ☐ I am both of the above
- ☐ None of above

Name _____

Mailing Address _____

City/State/Zip/Country _____

Day Phone _____ Evening Phone _____

Fax _____ Email _____

Are you ACE Certified? ☐ Yes ☐ No Certification # _____

Are you AFAA Certified? ☐ Yes ☐ No Certification # _____

Other Fitness Certifications (ACSM, USRA Level I Coach, etc.) _____

_____

Name of Club where you intend to instruct _____

Club Address _____

City/State/Zip/Country _____

Owner's Name _____ Phone Number _____

Program Director's Name _____ Phone Number _____

Does your club own rowers? ☐ Yes ☐ No Quantity _____ What type? _____

Is your health club planning to introduce Group Indoor Rowing. ☐ Yes ☐ No

---

Please Note: Participants who complete the Indoor Rowing Basics Short Course, the Indoor Rowing Basics, or the Full day workshop are required to complete the Home Study in order to receive certification from the Concept2 Indoor Rowing Foundation.

Tear out here

Training Evaluation Form

Location of Workshop_____Date of Workshop_____

Name of Presenter_____Type of Workshop: Full Day____Basic____Short Course____

To keep the quality and content of each presentation at the highest level, we would appreciate it if you would rate the following items describing the presentation on a scale of 1 to 5 (with 5 being the highest score).

1. Knowledge of subject	1	2	3	4	5
2. Organization	1	2	3	4	5
3. Presentation and communication skills	1	2	3	4	5
4. Overall customer service	1	2	3	4	5
5. Appropriateness of material for target audience	1	2	3	4	5
6. Mission statement and purpose	1	2	3	4	5
7. Setup of the indoor rower	1	2	3	4	5
8. Slow motion rowing/drills	1	2	3	4	5
9. Stretching	1	2	3	4	5
10. Rower etiquette/clothing	1	2	3	4	5
11. Kinesiology/physiology	1	2	3	4	5
12. 40-minute class practicum	1	2	3	4	5
13. Workout formating	1	2	3	4	5
14. Using one liners, discussing cueing mistakes, perfecting individual technique	1	2	3	4	5
15. Class development (progressive programming vs. drop in)	1	2	3	4	5
16. Home Study component/motivational programming	1	2	3	4	5

Tear out here

17. What did you like best about the workshop? _____

_____

18. What did you like least about the workshop? _____

_____

19. Would you recommend any changes? _____

_____

20. What prompted you to take the indoor rowing workshop? (Check all that apply)

_____My health club is planning to introduce group indoor rowing.

_____I am interested in offering indoor rowing to my clients.

_____I am interested in receiving continuing education credits or units from ACE/AFAA.

_____I am interested in learning more about rowing.

_____Other, please explain _____

_____

21. Do you know any other trainers who would be interested in receiving information from us?

Name_____Address _____

Name_____Address _____

Name_____Address _____

Thank you!

Notes:


concept 2®