

HOW TO ROW BETTER AND FASTER

THE INDOOR ROWING GUIDE FOR CROSSFITTERS,
ROWING TEAMS & HOME/GYM USERS



by VICTORIA DRAPER

by VICTORIA DRAPER

HOW TO ROW BETTER AND FASTER

How to Row Better and Faster

The Indoor Rowing Guide

for CrossFitters, Rowing Teams & Home/Gym Users

by Victoria Draper

Copyright 2016

TABLE OF CONTENTS

- i. Introduction
- ii. My Background
- 1. Set-Up
- 2. Proper Rowing Technique
- 3. Common Rowing Mistakes
- 4. Monitor Functions
- 5. Stroke Rate
- 6. Ratio
- 7. Pace Yourself
- 8. Distance Workouts
- 9. Calorie Workouts
- 10. Rowing and WOD Placement
- 11. Complimentary Exercises
- 12. Summary & Thank You
- 13. Glossary
- 14. Pace Chart

INTRODUCTION

Rowing is becoming more common in gyms, training programs and more popular as a recreational sport so I'm on a mission to:

Develop promote & distribute rowing education & resources

CrossFit uses the rowing machine, however most people don't like it.

Gyms usually have two in the corner and they're rarely used.

Rowers on the water tend to avoid the machine whenever possible.

The common reason I've experienced for people disliking the machine is a lack of knowledge of how to properly use it, how to avoid common mistakes and how to use it to your advantage. Choosing the appropriate settings and understanding what all the numbers mean on the monitor is empowering. This book will clarify everything for you and improve your performance whatever your interest or goals.

CrossFitters experience improved performance in every other part of their WOD because of the cardio and strength components of rowing. The most obvious will be faster times.

Gym goers and home users see jumps in their fitness, body shape, and confidence in the sport.

Rowing Teams improve their performance on the water with speed and endurance so they only have to focus on technique when rowing in a boat.

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

MY BACKGROUND

I started rowing in 1994 at UC Davis and rowing has been a part of my life ever since. I'm an athlete, coach, instructor, class and program developer. I certify trainers and consult for events and competitions and advise on equipment maintenance. Rowing at the collegiate, masters and international level has brought perspective to everything I do.

In 2004, I began setting up rowing classes at gyms around the country and certified trainers to teach rowing to their members.

Concept2 recruited me to run their training and certification program for the US and Canada and I also represented them at trade shows in the US, Canada and Germany.

I was featured in Newsweek, Shape Magazine, Sunset Magazine, and other major publications. I also consulted on NBC's Biggest Loser Show, training contestants on the proper use of the rowing machine.

In 2010, I launched another company, RowFX, that focuses on rowing clinics for CrossFit and rowing teams and educating everyone on equipment maintenance.

This idea for this book came to me thinking of how to help the most amount of people possible as fast as possible while rowing keeps growing. Thank you for being here!

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.



SET UP

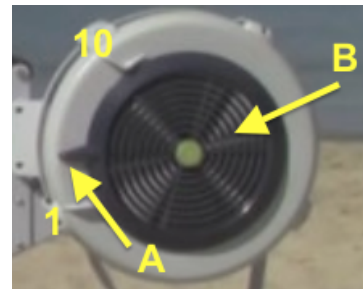
Proper set up is important for the best possible experience.

Set Up in this order:

3. **Wind / Resistance** setting (1-10)
4. **Monitor** Placement
5. **Handle** Placement
6. **Foot** Strap
7. **Body** Positioning

1. Wind / Resistance Setting

- There's a dial on the right side of the Concept2 rower allowing for variable wind resistance.
- It's marked 1-10 for low to high wind resistance against the flywheel.
- Start at 3 while mastering technique.



!!!WARNING!!! A 10 setting does not make you go faster. Even though you feel the resistance immediately, you are just exerting more energy to complete that stroke. The extra wind slows the wheel down more in between strokes so you have to work harder to pick up the speed on the next stroke.

FIX IT..... Know your targets for speed and calories and learn how to hit those targets at a lower setting. Save the higher settings like 10 for strength workouts without time restrictions.

NOTE: There are brands of machines that use magnetic or water resistance and even a piston design. They will have a lever or knob to change the resistance. Focus more on your technique to achieve your goals and less on the machine settings to do all the work. (Example on right.)



DO THIS:

1. Set the dial to High or 10.
2. Row 500 meters
3. Record results below

Resistance	Distance	500 m Pace	Strokes per Min
10	500 meters		

NOW: *Engage your core muscles before every stroke***** Push with the legs in a strong explosive manner as if you're attempting to jump your butt off the seat. You'll get that fast pace you want. Let the flywheel spin and the meters tick. Keep a steady stroke rate. Breathe and relax as you move forward. *****Engage your core muscles before the next stroke***** You'll feel the same "resistance" except this time it's coming from your effort vs. the machine setting.

4. Set the dial to 3
5. Row 500 meters at the same pace
6. Record results below

Resistance	Distance	500 m Pace	Strokes per Min
3	500 meters		

IF: you were able to keep the same 500 Meter Pace, great.

IF: you were not able to hit the same 500 Meter Pace, refer to **Chapter 8 Common Mistakes, #2 Shooting the Seat**. Then come back and do this exercise again until you are able to hit the faster pace with a lower setting.

NOTES: _____

2. Monitor Placement & Setup

Proper monitor placement promotes good posture and therefore better technique and better results.

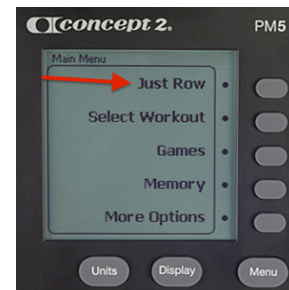
1: Adjust the monitor to eye level

NOTE: Different brands have different designs and may not have an adjustable monitor. Careful of your posture in this case. Keep your eyes looking forward when rowing.



2: Hit “Just Row” to get started.

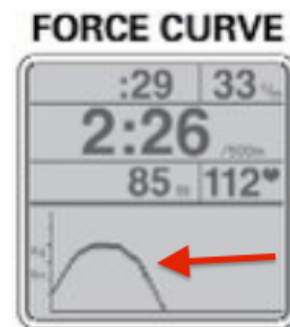
NOTE: The Concept2 PM5 Monitor is shown here. Other brands may display the same data differently.



3: Navigate

- **Units** - Calories, Meters, Watts
- **Display** - Data display
- **Menu** - reset or go back
- **Side Buttons** - general navigation

4. Use the Force Curve to start. It's a powerful self-coaching tool that shows your power output in real time.



NOTE: The chapter “Monitor Functions” covers details of the units and display after we cover proper rowing technique.

3. Handle Placement

Place the handle in the handle hook before you sit down so it's easy to reach when your feet are strapped in.



4. Foot Placement

Position your feet high enough to create a strong horizontal push when rowing and low enough that you feel flexibility when strapped in.

- **Foot Board** - the platform your feet press on when rowing.
- **Flex Foot** - the flexible part with holes that you adjust.
- **Foot Strap** - the nylon strap that secures your feet.



NOTE: Adjust the Flex Foot so that the Foot Strap crosses just above the bend of the foot so that your feet can bend and your heel can lift easily and comfortably.



For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

BODY POSITIONING

Proper body positioning is important throughout the stroke. This is even before you get into technique and strategy.

1. Head Position

- Keep your chin level to the ground
- Eyes straight ahead

NOTE: This maintains good posture and good rowing. Tilting your head up or down causes problems like poor posture, weak rowing and can trigger injuries.



2. Shoulder Position

- Keep shoulders down away from your ears
- Keep shoulders relaxed throughout the stroke.

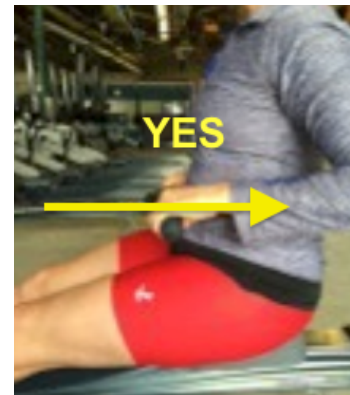


NOTE: When your shoulders shrug, your neck and shoulders are tense and fatigue quickly. You're directing the line of power upward and wasting energy and weakening your stroke.

3. Hand Position

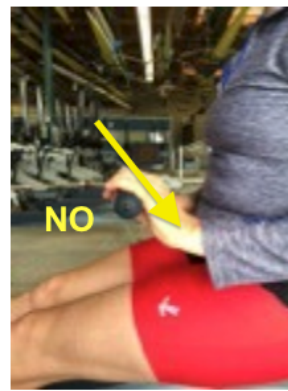
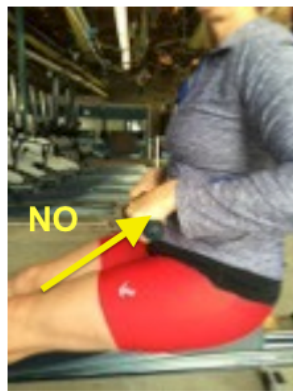
- Keep a relaxed grip
- Keep be space between your palms and the handle
- Keep your knuckles, wrist & elbows in a straight line from the chain

TIP: Imagine your fingers in the shape of a hook when holding the handle.



WARNING: Upward & downward angles reduce speed and power and cause fatigue in the forearms. Improper angles can also trigger 2 Common Mistakes: Early Body Swing and/or excessive layback.

Incorrect Hand Positions



DO THIS:

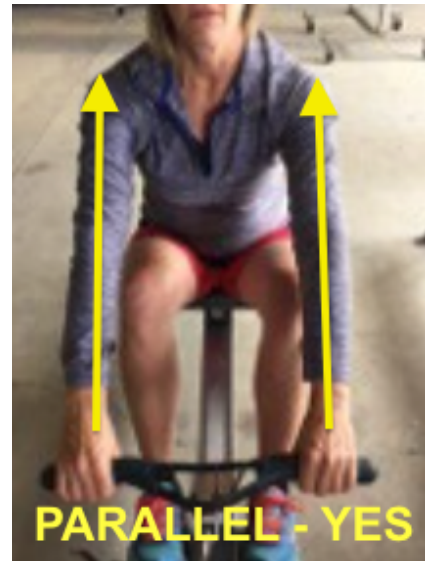
ROW WITH 2 FINGERS; your index and middle finger barely hooked on the handle and the pressure on those 2 fingers will straighten out the wrists.

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

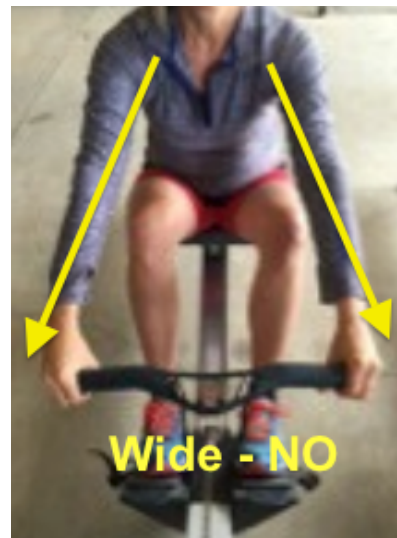
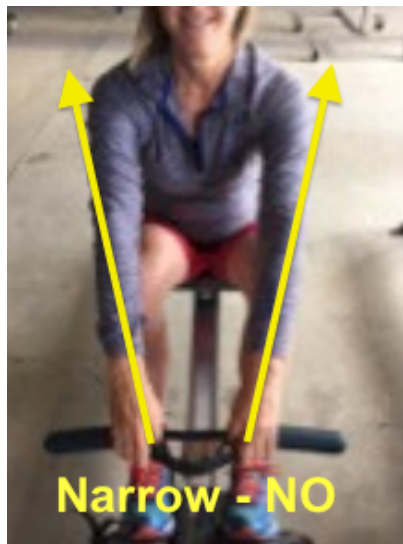
4. Arm Positioning

- Hold the handle so your hands are shoulder-width apart.
- Change your position minimally if necessary on long pieces when your fingers are sweating and you need a new grip.
- Get back to good position ASAP.

NOTE: Maintaining straight angles ensure a straight line of power for increased power and speed. You're maximizing your efficiency so you go faster with less effort.



Incorrect Arm Angles



WARNING: Placing your hands too close or too far apart uses the wrong muscles, weakens your stroke and slows you down. Do your best to keep your arms parallel to each other.

5. Elbows Position

- Keep elbows relaxed and neutral
- It's ok if they come away slightly from your body
- Think again of creating a straight line of power as much as possible.

NOTE: See the forearm following in line with the chain and the elbow following in line with the forearm to create a neutral amount of space from the body.



Incorrect Elbow Position



WARNING: Forced elbow positions weaken your stroke.

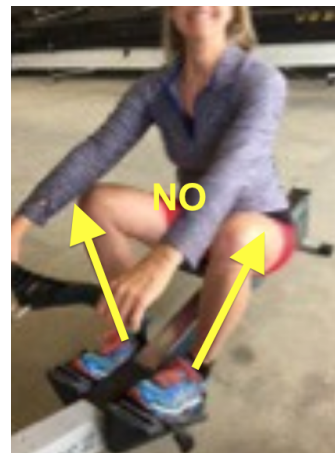
- Pushing your elbows out and away from your body is a weak position and tires out your shoulder muscles. It also affects your wrist position.
- Pinning your elbows in too close from your body is again a weak position and tires out your back muscles. This can also affect your wrist position.

6. Knees / Legs Position

- Keep your knees in line with your ankles and hips.
- Keep your knee caps pointed straight up so that your shins are parallel to each other throughout the stroke.
- Apply even pressure to both feet throughout the stroke.
- Apply pressure through heels and toes throughout the stroke.



Incorrect Knees/Legs Position



WARNING: Dropping your knees away or toward each other loses power and speed because you lose the line of power.

CROSSFIT ATHLETES: Even though in weight lifting, you practice rotating your knees outward, it doesn't apply here. With weight lifting your feet are pointed outward so your knees must follow. In rowing, your feet are parallel and therefore your knees must be in alignment for safety and best results.

PROPER ROWING TECHNIQUE

Proper rowing technique keeps you safe from injury and helps you go faster with greater ease. The fundamentals are universal for every level from Juniors to Seniors, from recreational to competitive and on every continent in the world.

Good rowing looks smooth, however there are specific and unique body positions that make up the stroke with transitions that make it look good.

Slow down at first even if it feels mechanical so you learn the muscle memory. You'll learn it better this way. Take 1 step back and you'll fly 5 steps forward so fast.

1 CALCULATED STROKE = DRIVE + RECOVERY

DRIVE is the work portion of the stroke.

1. Legs Push
2. Body swings
3. Arms pull

RECOVERY is the time for positioning in between each stroke.

1. Arms release
2. Body pivots forward
3. Legs compress

CROSSFIT ATHLETES: Compare the recovery to setting up for lifting. Think of when you spend time positioning your feet and hands, and then you position your lower back, chest and chin before you lift. You want to give the same time and attention to the body positioning details during the recovery phase before each stroke.

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

*****STARTING POSITION (The Catch)*****



1. **CHIN** level
2. **SHOULDERS** down
3. **CHEST** pressed forward
4. **ABS** are engaged
5. **BACK** is strong and tall
6. **PELVIS** is tilted forward
7. **SHINS** are vertical

******Here's the details of proper execution of each position******

DRIVE SEQUENCE - 1. Legs Push



- Keep your **ARMS STRAIGHT**
- Keep your **SHOULDERS FORWARD** in front of your hips
- Keep your **ABS ENGAGED**
- **PUSH THE LEGS** down **QUICK** and **STRONG**
- Move the handle at the same speed as the seat

DRIVE SEQUENCE - 2. Body Swings



- Keep the arms mostly straight
- SWING YOUR BODY FROM YOUR HIPS

DRIVE SEQUENCE - 3. Arms Pull



- PULL YOUR ARMS INTO YOUR BODY

NOTE: Immediately begin your recovery. **DO NOT hold the finish position.** It wastes time & energy.

TIP: Accelerate the handle speed throughout the stroke for better results and faster times.

TIP: Keep your core engaged throughout the stroke to transfer your effort to the machine and get better results.

RECOVERY SEQUENCE - 1. Arms Release



- LEGS REMAIN EXTENDED
- SHOULDERS REMAIN BEHIND your hips
- RELEASE YOUR HANDS away from your body

RECOVERY SEQUENCE - 2. Body Pivots Forward



- ABS engage
- PELVIS TILTS forward
- SHOULDERS MOVE in front of your hips
- CHEST presses forward
- LOWER BACK is tall and flexed
- Keep your legs mostly extended

RECOVERY SEQUENCE - 3. Legs Compress



- Maintain the body position already set
- Focus on keeping your shoulders forward
- Move your seat and handle forward
- Maintain an even speed throughout this phase

NOTE: This RECOVERY SEQUENCE is VERY IMPORTANT even though you're not exerting any force. You're repositioning your body for the next stroke.

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

COMMON ROWING MISTAKES

These are the seven (7) most common mistakes and how to correct them. These are based on the fundamentals and universal principals previously covered.

Correcting your mistakes ensures safety and maximizes efficiency. You'll row better and go faster with less effort. You'll feel better and more confident.

The 7 most common mistakes are:

1. Early Knee Bend
2. Early Body Swing
3. Early Arm Bend
4. High Shoulders
5. High Pull & Excessive Layback
6. Shooting the Seat
7. Hunchback Rowing

DO THIS:

1. Record a 1 minute video of yourself rowing.
2. Use this guide and identify your areas for improvement.
3. Start with the biggest need for improvement.
4. Row at a low stroke rate of 10 allowing time for intentional body positioning and correct as you go.
5. Have a friend watch you and correct as you go to make sure your body position matches the correct examples here
6. Repeat for all needed areas of improvement.

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

#1 Common Mistake - Early Knee Bend (Recovery)

*****Incorrect*****

- Knees bend before the arms extend after the finish
- You lift the handle up to avoid your knees.
- Your body weight is poorly distributed and strains your back



*****Correct*****

1. Extend your arms before anything else on the recovery
2. Pivot your hips forward and angle your body forward
3. Bend your knees last in the recovery sequence.



DO THIS: Row 500 meters with a **PAUSE** on the recovery sequence. **PAUSE** with **ARMS EXTENDED**, then **ARMS & BODY FORWARD** and holding for 2 seconds at each point before moving forward and taking the next stroke. This develops your muscle memory and create a new good habit. Record yourself before and after to see the improvement.

#2 Common Mistake - Early Body Swing

***** Incorrect*****

- The body swings back before the legs push to extend
- Your back and arms carry the load
- Leaves you vulnerable to injury



***** Correct*****

- Legs push first while your body is still angled forward
- Your body swings open after your legs are extended



DO THIS: Row 500 meters using the “LEGS ONLY” DRILL. You might discover that this error in your rowing comes from a need improve flexibility or a need for more back strength. If so, take appropriate actions.

1-Compress



2-Extend



3-Compress



#3 Common Mistake - Early Arm Pull

*****Incorrect****

- Arms bend to pull the chain before the legs extend
- Shoulders shrug upward towards the ears



*****Correct*****

- Legs push first to start the stroke
- Follow through with your body swing
- Arms pull in last to finish the stroke



TIP: You can use the “LEGS ONLY” drill for this issue also.

1-Compress



2-Extend



3-Compress



#4 Common Mistake - High Shoulders

***** Incorrect*****

- Shoulders are close to the ears
- The handle travels at an upward angle in the stroke



***** Correct*****

- Shoulders are down, away from the ears
- Keep the line of power straight and the chain level



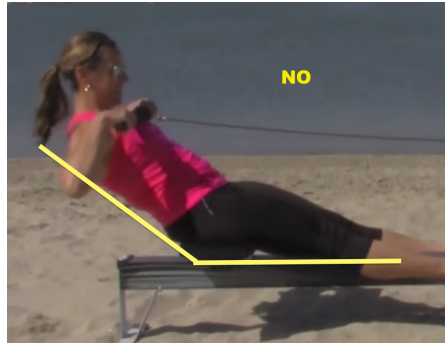
TIP: Imagine a straight line of power from the beginning to the end of the stroke. Picture yourself running your hands across a level table top. Imagine pushing your lats downward towards your lower back all the way through the stroke.

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

#5 Common Mistake - High Pull & Excessive Layback

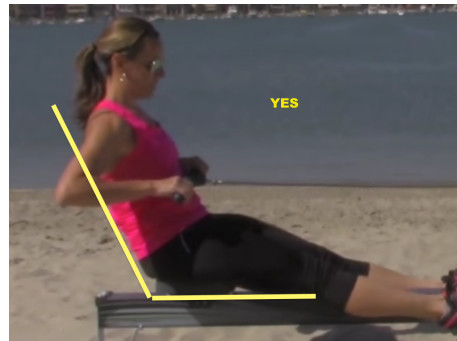
*****Incorrect*****

- Body swings back past the recommended angle
- Handle pulls up high up towards your chest or chin



*****Correct*****

- Lean back about 10 degrees past vertical
- Pull the handle in parallel to the ground



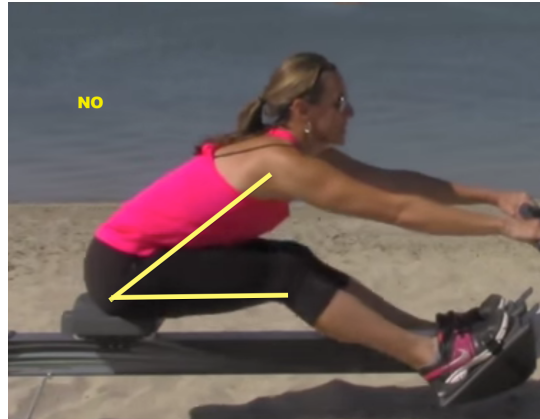
DO THIS: Row 500 meters with your feet unstrapped. Your body will naturally stop at the appropriate angle at which you're still in control of your body weight and center of gravity.



#6 Common Mistake - Shooting The Seat

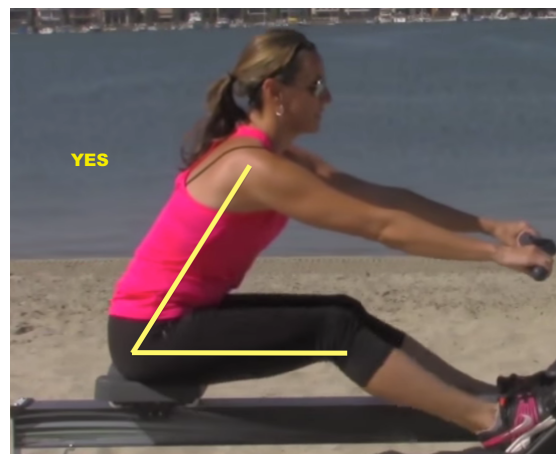
*****Incorrect*** (Energy wasted)**

- Legs extend without moving the handle
- Head and chest drop down
- Torso becomes nearly horizontal and disengaged
- Effort is wasted and potential power is lost



*****Correct*****

- Core is **ENGAGED**
- Seat and handle move together
- Shoulders and hips move together



#7 Common Mistake - Hunchback Rowing

*****Incorrect*****

- Eyes and Head are focused downward
- Shoulders are near the ears
- Upper back is rounded
- Lower back is rounded
- Pelvis is straight up and down or tilted backward



*****Correct*****

- Head tall and level to the ground
- Shoulders down away from your ears
- Press your chest forward
- Flex your lower back and
- Tilt your pelvis forward

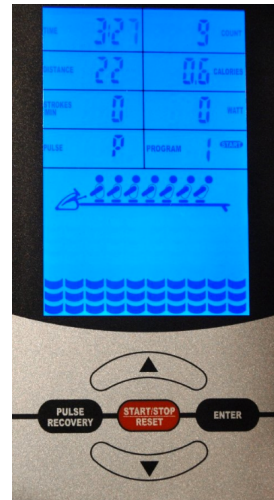


MONITOR FUNCTIONS

The monitor is a powerful tool with a lot of information to help you manage your workouts and track progress over time.

Different brands of rowing machines may have slightly different displays, however the functions are mostly universal.

Below are a few examples of monitors and the types of information they display.



Time - All machines allow you to just begin rowing and it counts your time. Most machines allow you to set a timed workout.

Stroke Rate - aka “Strokes Per Minute”, aka “S/M”, aka “SPM” all refer to the number of strokes per minute you row. This is not an indicator of how fast you’re rowing or how much power you are producing.

Meters - is the unit of measure for distance. Some brands show miles per hour MPH, however meters is the standard.

HR/Pulse - Heart Rate / Pulse shows your heart rate or pulse rate throughout your workout. These machines usually come with a heart rate monitor synced to the machine.

Level / Load / Drag Factor - The amount of resistance or drag you choose to work with. It's similar to choosing a level of incline on an elliptical or choosing a gear on a bike.

Units - The main units for measuring your work output are 500m pace, Watts and Calories.

■ Watts - is shown as a whole number. A watt is a unit of energy. $\text{Watts} = 2.80 / \text{pace}^3$. Ex/ 2:05/500m split = 125 seconds/500 meters or a 0.25 pace. Watts are then calculated as $(2.80 / 0.25^3)$ or $(2.80 / 0.015625)$, which equals 179.2.

■ 500 meter pace - is shows the amount of time it would take you to row 500 meter. Ex/ If you take 1 stroke and the monitor reads 2:00/500m, that means it would take you 2 minutes to row 500 meters if you maintained that intensity or 4:00 minutes to row 1,000meters.

■ Calories - are shown as a whole number of total calories burned as well as a calorie/hour value.

NOTE: Average units and Actual units are different. The actual meters pace, or watts or calories is the number shown for that one stroke. The average is the average of all the work in that workout.

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

STROKE RATE

Stroke rate is the number of strokes that you take in a minute. It can be expressed a few different ways:

- Stroke Rate
- Strokes Per Minute
- S/M
- SPM
- SR



#1 goal is to row at the lowest stroke rate possible to get your target times. Then you're efficient and you save energy and go faster with less effort. The key is **keeping your core engaged**.

Your #2 goal is to be consistent and hit your target rates. **The number may fluctuate** at first. Pay attention what rates work best for you according to your physique, fitness and strength.

NOTE: The **STROKE RATE IS NOT HOW FAST YOU ROW**. You can row at a high stroke rate like 33 strokes per minute shown above and NOT pull hard or NOT be efficient or NOT be strong and NOT get the results you want. Your 500m PACE is how fast you row and determines your finish time.

COMMON QUESTION: What should my stroke rate be???

ANSWER: It depends on the following factors:

1. Length of the workout - Row higher SR for Short Pieces (ex/ 30 SR for 500m). Row Lower SR for Longer Pieces (ex/ 22 SR for 4,000m).
2. Fitness Level - Row a lower SR overall when less fit so you have more time to breathe in between each stroke. You can bump up the rating when you're more fit.
3. Experience - Beginners are best to use a lower stroke rate so there's more time to think about the rowing sequence.
4. Testing - do testing to see what gives you the best results.

DO THIS:

1. Row 500 meters
2. Maintain a 30 Stroke Rate
3. Record results below

Stroke Rate	Distance	500 m Pace/Time
30	500 meters	

NOW: ***Focus on the leg push at the beginning while relaxing and recovering in between each stroke*** Let the flywheel spin and the meters tick. You might feel like you're not doing enough... trust the process and focus on engaging your core.

4. Row 500 meters
5. Maintain a 24 Stroke Rate
6. Aim for the same 500 meter pace at the lower stroke rate
7. Record results below

Stroke Rate	Distance	500 m Pace/Time
24	500 meters	

IF: you were able to keep the same 500 Meter Pace, great.

IF: you were not able to hit the same 500 Meter Pace, you either need to work on engaging the core (CONNECTION) or improve the explosive power with your legs.

NOTES:

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

RATIO

Ratio is the time spent on the drive relative to the time spent on the recovery. You want to be quick on the Drive and relaxed on the recovery. Spend LESS time on the drive and MORE time on the recovery. This can be shown mathematically:

DRIVE Time < **RECOVERY** Time

A good ratio target is 1/2 time. Drive = 1 < Recovery = 2

OR.... 1:2

This 1 count for the drive and 2 counts for the recovery.

The drive is powerful and quick including the handle speed to finish. Relax on the recovery and decelerate the handle speed from the finish position to the catch and position your body.

DO THIS:

Count your ratio to achieve the ideal rhythm:

- **One** – Drive your legs, swing your body, pull your arms
- **Two** – Release your hands and pivot your body
- **Three** – Bend your knees, slide forward slowly to the catch



CROSSFIT: Think of weight lifting and the prep time between each rep. It allows you to be intentional with your body positioning and breathing for optimal performance. Same principles apply here.

PACE YOURSELF

Pacing is strategic. Know your goal and know yourself. Use the machine functions and understand the feedback to gauge your performance throughout the workout.

Gain control over your results. Know why you got them so you can improve next time.

DO THIS:

1. Row 500 meters
2. Record results below

Distance	Damper / Drag	Final Time	Stroke Rate	Notes
500 meters	4 / 120			

NOTE: Record the average stroke rate, not the last stroke rate. In the notes, record a few keywords to remind yourself of the workout like “fly and die” if you went out hard and tired quickly.

NOW: Focus on going 1 second faster. Watch your stroke rate and record results. Test and find your best settings and pacing.

1. Row 500 meters
2. Record results below

Distance	Damper / Drag	Final Time	Stroke Rate	Notes
500 meters	3 / ??			

DISTANCE WORKOUTS

Distance workouts are stated in meters and different distances require different strategies. You can row at higher stroke rates and keep a faster pace for shorter distances. Keep lower stroke rates and more conservative pacing for longer distances.

Some common distances are:

- 500 meters
- 1000 meters
- 2000 meters
- 5000 meters

Below is an example of how the results might differ regarding the times and stroke rates. This is just for example. You must do your own testing to see what happens for you.

Distance	Perceived Effort and HR	500 m split time	Final Time	Stroke Rate
500 meters	10	2:00	2:00	30
1000 meters	9	2:05	4:10	28
2000 meters	8	2:10	8:40	26
5000 meters	7	2:15	22:30	24

DO THIS: Start now and do 1 workout per day and record your results.

Distance	Perceived Effort	500 m split time	Final Time	Stroke Rate
500 meters	10			
1000 meters	9			
2000 meters	8			
5000 meters	7			

NOW: Finish this book and then review the material already covered. Then do these workouts again and aim to beat your times with better splits and lower stroke rates.

Distance	Perceived Effort	500 m split time	Final Time	Stroke Rate
500 meters	10			
1000 meters	9			
2000 meters	8			
5000 meters	7			

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

CALORIE WORKOUTS

Calorie workouts also need strategies for different workouts. Know the pace you need to get the times your want and achieve your goals. 1st, get your baseline, then beat it.

■ 10 Calorie Row
■ 25 Calorie Row

■ 50 Calories Row
■ 100 Calorie Row

DO THIS:

Calories	Final Time	Stroke Rate	Calories/ Hour	Notes
10 calorie row				
25 calorie row				
50 calorie row				
100 calorie row				

NOW: Do these workouts again and aim to beat your times.

Calories	Final Time	Stroke Rate	Calories/ Hour	Notes
10 calorie row				
25 calorie row				
50 calorie row				
100 calorie row				

CROSSFIT WOD - ROWING PLACEMENT

If you belong to CrossFit, you know the workouts of the day (WODs) vary so frequently that it's usually a surprise when and how rowing will show up.

Working with CrossFit for years, I've developed a few tips to help ease the pain of rowing in the WOD. However, **technique still remains true**, even with tweaks in your strategy.

1. **If you have heavy leg work** before or after the rowing portion, like squats or box jumps, you can lower the damper setting a notch or two and increase your stroke rate so you're going lighter and faster.
2. **If you have heavy arm work like pull ups**, you want to heavily depend on your legs, lower to medium stroke rate with controlled mass power and keep the finish of your stroke light and quick in the arms and rely on the momentum of the handle speed to do your arm work.
3. **If you have several rounds (AMRAP)** so you're on the rower several times, focus on a steady pace throughout for even distribution of power output. Focusing on technique will save you and keep you moving steady through your workouts.
4. **If you have 1 fast or short piece**, pick a mid damper setting like 4-5, a mid stroke rate like 26, and row high pressure with a power 10 stroke sprint finish.

NOTE: Whatever the context of rowing in the WOD, **technique is still a constant**. Excessive layback or holding the finish position wastes energy. Excessive reach forward could lead to back injury. Pulling up to the chin to get more length is a mistaken strategy. All these strategies I've seen require more effort from smaller muscles for minimal benefit. **Focus on technique, engage your core and explode with the legs.**

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

COMPLIMENTARY EXERCISES

Rowing is a total body workout so it's not necessary to do extra work to get lean from head to toe. However, if you want to improve certain areas of your rowing, you might consider the following exercises to compliment your training.

LEGS - Squats, Wall Sits, Lunges

Any exercise to strengthen your legs is great to support your rowing development, because rowing is a leg dominant sport.

Core - Crunches, Supermans, Planks, etc.

Your back and abdominal muscles and your entire core are super important to the rowing stroke because they translate your leg work to the machine.

Arms - Arm Pulls, Bicep Curls

The last part of the rowing motion is the finish with the arms and a good follow through helps get more out of the stroke.

Sumo DeadLift High Pull

This exercise incorporates the same sequence as the rowing stroke. It utilizes the legs, then body, and then arms with acceleration towards the top of the movement. The way your core is engaged and your legs are ready to push off for the weightlifting exercise is how you want to feel when you're getting ready to take a stroke.



SUMMARY

Rowing is a sport and general fitness activity with many benefits. The rowing machine continues to grow in popularity and I want to reach everyone that uses a machine with quality educational material.

Please help spread the word of this book by sharing the link with others who may benefit.

For your **FREE 30 Day Training Plan**, go to www.rowfx.com.

THANK YOU

Thanks to all who contributed directly and indirectly to this project. For your encouragement and feedback and referrals.

Gramma
Family
Friends
Janet & Brian
Marj & Sandi
UC Davis Rowing / Alumni
Lake Merritt Rowing Club
Long Beach Rowing Association
Athletes of Newport Aquatic Center
Athletes of Long Beach State Crew
Athletes of Los Angeles Rowing Club
Athletes of Sea Base Rowing
Mentors, Coaches & Athletes
CrossFit Customers
CrossFit Athletes
Clients & Students
Tennis Gang
Deegan

GLOSSARY

Catch: "The Catch" or "The Catch Position". The beginning position when you're ready to take the next stroke.

Damper Setting: The adjustable vent of the flywheel ranging from 1-10 for variable air flow to the flywheel for resistance.

Finish: "The Finish" or "The Finish Position". The point at which the rower completes the stroke.

Flexfoot: The flexible support system that cups the heel and lifts when the rower moves forward to the catch position.

Flywheel: The mechanism enclosed at the front of the rower that spins at a rate with variable resistance to help measure the work of the rower.

Forward Body Angle: The angle the upper body reaches in order to create "length" in the stroke. This is created by pivoting the upper body from the hips forward over the thighs.

Hypercompression or Overcompression: Excessive leg compression at the beginning of the stroke.

Interval: A segment, or portion of a workout, measured in either time or distance. This is usually followed by a shorter rest period and then repeated. Ex: 1 of 3 500 meter pieces with 2 minutes rest in between.

Layback: The degree to which the body swings back at the finish position

Leg Drive: The motion of legs pushing off the foot boards.

Load: The amount of resisting force the rower feels during the drive. This is created by the airflow into the flywheel and can be adjusted using different damper settings (1-10).

Pace: "500m Split" or "Split Time." The time expected to cover the distance of 500 meters with the current level of effort or work output.

Piece: A term referring to a portion or segment of a structured and formatted workout. This may be stated in meters or time. Ex/ 500 meter piece, 2 minute piece.

Rating: aka "Stroke Rate" or "SPM". The number of strokes per minute you row.

Ratio: The ratio is the relative time spent on the drive and the recovery.

Recovery: This is the part of the stroke "cycle" that comes after completing the stroke itself or "the drive." It is the time in between strokes where the rowing motion is reversed and the rower prepares the body position for the next stroke.

Split: "500 Meter Split" or "Pace". The amount of time it would take to row 500 meters if a particular level of power were maintained for that distance.

SPM: "Strokes Per Minute" or "Stroke Rate" is how many strokes per minute you row.

Stroke Rate: "SPM" or "Strokes Per Minute".

Swing: The action of the upper body pivoting from a forward body angle to a rear body angle.

Watt: Unit of measurement of energy output. You can choose this measurement instead of calories or 500m split.

Work Units: The unit a rower chooses to measure the work output. You can choose 500m split, Watts or Calories.

PACE CHART

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