Maximize the benefits of the Swingulator Dry Tank™
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Standard Rigging

- Swingulator can be rigged for either Port or Starboard stroke—standard delivery is Port Stroke
- Spread (center of boat to center of pin) set at 84cm
- Inboard (outboard side of inboard collar to tip of handle) set at 115cm

Rig Swingulator to match your rowing shell, components that can be adjusted include:

- Pin Location—Spread
- Collar Location—Inboard
- Handle Length—Inboard/Outboard
- Flex Foot Location—Heel Height
- Foot Stretcher Location—Work through the pin
- Seat Height—Carriage Adjustment
- Seat Track Location—Stroke length
- Oar Lock Spacers—Oar-handle height
- Resistance Pulley setting—Endurance for lighter setting/ Power for heavier setting
- Erg Fan Setting—(1-5) for endurance and (6-10) for power

Assembly/Inspection

- Make sure everything is properly assembled and tightened
  (See Assembly and Owner’s Manual for detailed inspection process)
- Install Ergs into machine and tighten into place
- Attach Catch/Finish Gauges to edge of table
- Set Resistance Pulley to Endurance Setting
- Set Erg dampener in Endurance Range (1-5)
- Install oars and orient them to be on the square
  “Square” graphic on oar faces rower when oar is on the square
- Connect cord from Erg to oar (See Assembly and Owner’s Manual for proper cord installation)
• We suggest, that for basic training, use the Endurance pulley with the Erg dampener set for Endurance (1-5)
• Row lightly and check to be sure the resistance cords are running freely
• First few strokes are heavy (similar to boat) as the Erg fan gets up to speed
• Pay attention to rower in front of you to avoid hitting them in back with your oar
• The oars do feather. You can row on the square or include feathering in your rowing
• Row the machine as you would a boat
• The wheel is on the table during the drive and off the table during the recovery
• Catch/Finish Gauges connect to the table and should be set so that oar passes under the gauge at the finish, and above the gauge at the catch

The Swingulator can be used as a training platform for individual, pair, four or eight athletes
• Swingulator splits will be approximately 10 seconds slower per 500 meters as compared to Erg scores
• Use the Swingulator as you would the boat; it is an excellent coaching, training and evaluation platform for all levels of ability and skill
• Swingulator provides hands-on coaching opportunities not found in any other coaching environment
• Optional Seat Connector Bars and Suspension Trainer are available coaching tools that help teach proper technique and power application
Recovery Drills

HANDS ONLY
Focus ➢ Holding layback, support body weight back and up, relax shoulders, elbows out
Goal ➢ Isolate finish, reduced body movement, elbows up and forearms down and around
Teaching Tool ➢ Water Table, Catch/Finish Gauge

HANDS AND BODY
Focus ➢ Hip rotation and flexibility, body is out and up, extended level arms
Goal ➢ Full extension of back with straight arms, level blade, catch with straight arms
Teaching Tool ➢ Water Table, Catch/Finish Gauges

HALF-SLIDE ROWING
Focus ➢ Early full-extension of arms and body, support of body weight out and up
Goal ➢ Early preparation of body and arms for catch
Teaching Tool ➢ Water Table, Catch/Finish Gauges

PAUSE (FINISH, HANDS, BODY OVER, HALF SLIDE, AND CATCH)
Focus ➢ Focus: Flexibility, relaxation, timing, and swing
Goal ➢ Matching oar angles, body positions, stroke length and timing
Teaching Tool ➢ Water Table, Catch/Finish Gauges, Seat Connector Bars

Pause at Hands Away Drill
Drive Drills

LEGS ONLY
Focus > Quick legs at catch, support of body weight, extension of back and arms
Goal > Isolate leg drive at beginning of stroke, quick turnaround, back connection
Teaching Tool > Up close coaching feedback

LEGS AND BACK (STRAIGHT ARMS)
Focus > Pushing the foot stretcher while opening the back without bending arms
Goal > Improve effective use of legs and back, suspension of weight behind oar
Teaching Tool > Suspension trainer

ACCELERATION/DRIVE
Focus > Begin drive at half pressure and finish the stroke at full pressure
Goal > Develop acceleration throughout stroke,
Teaching Tool > Up close coaching feedback, Erg Monitor Power Curve, Seat Connector bars

STARTING SEQUENCE (SET POWER PULLEY TO POWER, ERG TO POWER RANGE (6-10))
Focus > Match slide length (compression), recovery sequencing and catch/finish timing
Goal > Develop specific power, determine slide length progression, timing of crew
Teaching Tool > Power Settings, Water Table, Catch/Finish Gauges

SHIFTS (POWER AND STROKE RATE)
Focus > Changing recovery and drive speed proportional to power and stroke rate
Goal > Ability to increase/decrease power and stroke rate on demand (start, settle, sprint)
Teaching Tool > Seat Connector Bars, Catch/Finish Gauges
Fundamental Technique Drills

RUSHING SLIDE
Drill ˃ Low stroke rating, pause on recovery
Goal ˃ Control of slide, smooth transition from finish to catch
Teaching Tool ˃ Seat Connector Bars, Power Cord (should not go slack on recovery)

SHOOTING TAIL
Drill ˃ Legs only
Goal ˃ Isolate leg drive and develop leg/back connection
Teaching Tool ˃ Suspension Trainer, Erg Monitor Power Curve

MISSING WATER/WASHING OUT
Drill ˃ Pausing at finish and catch, legs only, hands only
Goal ˃ Precise and consistent entry and exit of blade
Teaching Tool ˃ Water Table, Catch/Finish Gauges

SKYING BLADE
Drill ˃ Pausing at finish and catch
Goal ˃ Maintaining proper handle height during recovery
Teaching Tool ˃ Catch/Finish Gauges

ROWING DEEP
Drill ˃ Pause on drive
Goal ˃ Maintaining proper handle height/blade depth during drive
Teaching Tool ˃ Oar Lock Compression Spring
Fundamental Technique Drills (continued)

CATCH/FINISH ANGLES (STROKE LENGTH)

Drill ❯ Pausing at finish, half slide, catch  
Goal ❯ Determine the optimal catch and finish angles  
Teaching Tool ❯ Water Table and Catch/Finish Gauges, Seat Connector bars

DUMPING FINISH (EXCESSIVE LAYBACK)

Drill ❯ Feet Out  
Goal ❯ Correct body position for smooth efficient finish  
Teaching Tool ❯ Hands-On Coaching

BENDING OUT SIDE ARM (GRABBING WITH ARM, NOT PUSHING WITH LEGS OPENING OF BACK)

Drill ❯ Wide Arms  
Goal ❯ Correct use of outside arm (allowing acceleration of legs and back, then arm)  
Teaching Tool ❯ Hands-On Coaching

SWING/TIMING

Drill ❯ Continuous rowing at low stroke rate and pressure  
Goal ❯ Determine catch and finish angles, then match catch and finishes timing  
Teaching Tool ❯ Oar wheels on water table, Seat Connector bars, Catch/Finish Gauges

BLADE DEPTH (VERTICAL CONTROL AND UPWARD PRESSURE OF HANDLE)

Drill ❯ Continuous rowing at ¾ pressure with level hands  
Goal ❯ Maintaining proper blade depth and a level drive  
Teaching Tool ❯ Oar Lock Compression Spring

Wide arms fundamental technique drill
Effective Use of Erg Power Curves

- The Power-Curve setting on the Erg provides invaluable feedback regarding power application.
- The Swingulator accurately simulates the challenge of applying power in the boat; combining the linear leg drive with the elliptical rotation of the handle.
- The Erg Monitor Power Curve allows coaches to teach a desired power application both individually, or as the focus for the entire crew.
- On the erg monitor push the “Change Display” button until the “power curve” display appears.
- Looking at the power graphs you can learn a lot about the rowers power application, the physiological demands on the athlete, and the resulting effect on boat speed.

Interpreting Swingulator/Erg Power Curves

Effective power application has many variations, but there are a few standard curves:

- Simultaneous legs and body with a body emphasis
- Simultaneous legs and body with a leg emphasis
- Sequential legs to body with body emphasis
- Sequential legs to body with leg emphasis
Interpreting Swingulator/Erg Power Curves (continued)

Inefficient power application has many variations, but there are a few typical issues

• Weak connection of the legs at the catch will look like this.

To address this use Legs only/Drive Drill, or pair athletes with a quick catch turn-around with slower less skilled athletes using Seat Connector bars or individual work with suspension.

• Shooting the tail at the catch will look like this.

To address this see Shooting Tail Drill, or pair athletes with good leg and back connection with less skilled athletes using Seat Connector Bars or individual work with suspension.

• Poor acceleration at the finish will look like this.

To address see Acceleration/Drive Drill or pair athletes with dynamic acceleration with less skilled athletes using Seat Connector Bars.
The Swingulator can be used for all aspects of training and conditioning

- Aerobic
- Anaerobic
- Power
- Speed

Some examples of training workouts:

**UT2-STRENGTH/ENDURANCE TRAINING/AEROBIC CAPACITY**

**Duration** (minutes) ➔ 60-90
**Stroke Rate** ➔ 18-20
**Heart Rate** ➔ 144-152
**Examples** ➔ 3x 20 minutes, 2x 40 minutes, continuous 60 – 90 minutes

**UT1-ENDURANCE TRAINING**

**Duration** (minutes) ➔ 30-60
**Stroke Rate** ➔ 20-24
**Heart Rate** ➔ 156-168
**Examples** ➔ 6x 10 minutes (stroke rate ladder 20-22-24-22-20)

**AT-THRESHOLD TRAINING**

**Duration** (minutes) ➔ 20-30
**Stroke Rate** ➔ 24-28
**Heart Rate** ➔ 168-180
**Examples** ➔ 3x15 minutes (stroke rate 24-28)

**TR-TRANSPORTATION**

**Duration** (minutes) ➔ 2-5
**Stroke Rate** ➔ 28-32
**Heart Rate** ➔ 180+
**Examples** ➔ 5x1500 meters (500 at 28, 500 at 30, 500 at 32)

**AN (ANEROBIC) MAX PHYSIOLOGICAL RESPONSE**

**Duration** (minutes) ➔ 1-2
**Stroke Rate** ➔ Max
**Heart Rate** ➔ Max
**Examples** ➔ 3 series of 7x 1 minute; 2 series 4 x 500 meters, 2 series 10 x 30 seconds
Using the dampener settings on the Erg and the adjustable pulley settings on the Swingulator provides a range of resistance to allow for targeted training goals and appropriate stroke rate.

<table>
<thead>
<tr>
<th>TRAINING GOAL</th>
<th>PULLEY SETTING</th>
<th>ERG VENT</th>
<th>STROKE RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>Power</td>
<td>5 – 10</td>
<td>12 – 26</td>
</tr>
<tr>
<td>Endurance</td>
<td>Endurance</td>
<td>3 – 5</td>
<td>16 – 24</td>
</tr>
<tr>
<td>Speed</td>
<td>Endurance</td>
<td>2 – 4</td>
<td>32 – 38</td>
</tr>
<tr>
<td>WOMEN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>Power</td>
<td>1 – 5</td>
<td>12 – 26</td>
</tr>
<tr>
<td>Endurance</td>
<td>Endurance</td>
<td>1 – 3</td>
<td>16 – 24</td>
</tr>
<tr>
<td>Speed</td>
<td>Endurance</td>
<td>1 – 3</td>
<td>30 – 36</td>
</tr>
</tbody>
</table>

Adjusting the erg dampener setting and the Swingulator pulley location will replicate the drive resistance of both a Men’s and Women’s rowing shells.

<table>
<thead>
<tr>
<th>BOAT</th>
<th>PULLEY SETTING</th>
<th>ERG VENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-</td>
<td>Endurance</td>
<td>5-6</td>
</tr>
<tr>
<td>4+</td>
<td>Endurance</td>
<td>4-5</td>
</tr>
<tr>
<td>8+</td>
<td>Endurance</td>
<td>3-4</td>
</tr>
<tr>
<td>WOMEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-</td>
<td>Endurance</td>
<td>3-4</td>
</tr>
<tr>
<td>4+</td>
<td>Endurance</td>
<td>2-3</td>
</tr>
<tr>
<td>8+</td>
<td>Endurance</td>
<td>1-2</td>
</tr>
</tbody>
</table>
Swingulator can help isolate, monitor and compare individual and team rower’s performance

- Using monitoring features, coaches can optimize both side and seat locations
- Allows for a truly quantifiable crew selection process

Individual Performance Assessment

- Determine optimal catch/finish angles—stroke length
- Determine optimal rigging (Spread, height, foot stretcher location, etc)
- March and maintain optimal power application—Effective power curve output on erg
- Typical assessment/testing protocols
  - a. 10 stroke Max power
  - b. 1 minute Anaerobic threshold
  - c. 2K-6K VO2 Max
  - d. 60 minutes Aerobic capacity

Coxswain Role

- Have coxswains play an active role in training and coaching crews when using the Swingulator
- Coxswains should run practice with the coach just like it was on the water
- Allow coxswain to observe rowers from different angles and see the results of their calls
- Coaches can help coxswains in selecting effective calls, and determine applicable drills
- This Swingulator is also an excellent opportunity for coaches to listen to their coxswains and provide feedback regarding the effective use of their voice, and the development of leadership skills
Evaluating Team Performance/Selection

- Determine optimal rigging for selected crew
- Adjust rigging to match catch/finish angles and stroke lengths
- Power Graph—determine effective power application and match power graphs for all rowers
- Erg Score—an accurate physiological assessment of team and individual that matches power application of a boat
- Blade Work—handle heights, clean entry and exit, recovery sequence, blade depth, feathering
- Swing-match athletes and determine boating’s according to how they row together

Stand back and watch them row—trust your eyes, how they row on the Swingulator is how they will row on the water—if they row together on the Swingulator, they will row well on the water.
# TEAM TRAINER 2- XT PRODUCT INFORMATION SHEET

## Two-Seat Team Trainer W/Water Table

<table>
<thead>
<tr>
<th>FOOTPRINT</th>
<th>WIDTH-FT</th>
<th>LENGTH-FT</th>
<th>WIDTH-M</th>
<th>LENGTH-M</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Unit (2 seats)</td>
<td>10</td>
<td>12.4</td>
<td>3.3</td>
<td>4.1</td>
</tr>
<tr>
<td>2 Units (4 seats)</td>
<td>10</td>
<td>21.4</td>
<td>3.3</td>
<td>7.0</td>
</tr>
<tr>
<td>4 Units (8 seats)</td>
<td>10</td>
<td>39.4</td>
<td>3.3</td>
<td>12.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEIGHT- 1 UNIT (2 SEATS)</th>
<th>LBS</th>
<th>KG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell with seats and foot stretchers</td>
<td>350</td>
<td>159</td>
</tr>
<tr>
<td>Oars with end caps (2)</td>
<td>16.2</td>
<td>7.4</td>
</tr>
<tr>
<td>Water Tables (2)</td>
<td>30</td>
<td>14</td>
</tr>
<tr>
<td>C2 Ergs w/o seat or I-beam (2)</td>
<td>78</td>
<td>35</td>
</tr>
<tr>
<td>Total Machine Weight</td>
<td>474.2</td>
<td>216</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SHELL/RIGGER</th>
<th>IN</th>
<th>CM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deck width--at base</td>
<td>18</td>
<td>45.6</td>
</tr>
<tr>
<td>Deck width--inside edge of gunwale</td>
<td>20.8</td>
<td>52.7</td>
</tr>
<tr>
<td>Deck depth</td>
<td>5.5</td>
<td>14</td>
</tr>
<tr>
<td>Spread (center of boat to center of pin)</td>
<td>32.7-34.3</td>
<td>83-87 (set at 84)</td>
</tr>
<tr>
<td>Inboard (outboard side of collar to tip of handle)</td>
<td>45.3 +/-1.2</td>
<td>115 +/-3 (Set at 115)</td>
</tr>
<tr>
<td>Outboard Travel (center of pin to center of wheel)</td>
<td>23.4 +/- 1.2</td>
<td>59.5 +/-3 (Set at 59.5)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OAR/TABLE</th>
<th>LBS</th>
<th>KG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept 2 Carbon-Fiber Oar--Medium Stiffness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oar Weight (fully assembled)</td>
<td>8.1</td>
<td>3.7</td>
</tr>
<tr>
<td>Oar Shaft Angle (oar lock at medium setting)</td>
<td>Degrees</td>
<td>Degrees</td>
</tr>
<tr>
<td>—On Drive</td>
<td>8-9°</td>
<td>8-9°</td>
</tr>
<tr>
<td>—On Recovery</td>
<td>5-6°</td>
<td>5-6°</td>
</tr>
<tr>
<td>Oar Length--tip of handle to center of wheel (with handle in shortest length setting)</td>
<td>IN</td>
<td>CM</td>
</tr>
<tr>
<td>Oar Handle Length Adjustment</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Collar location—from tip of handle</td>
<td>115cm—outside edge of inside collar; 122cm-outside edge of outside collar</td>
<td></td>
</tr>
<tr>
<td>Oar Lock vertical adjustment range</td>
<td>1.25</td>
<td>3.2</td>
</tr>
<tr>
<td>Handle height range</td>
<td>6</td>
<td>15.2</td>
</tr>
<tr>
<td>Table height to top surface</td>
<td>27.2</td>
<td>69</td>
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<table>
<thead>
<tr>
<th>SEAT ASSEMBLY</th>
<th>IN</th>
<th>CM</th>
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</thead>
<tbody>
<tr>
<td>Fiberglass Racing Seat with Aluminum tracks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheel spread—on center</td>
<td>11.8</td>
<td>30</td>
</tr>
<tr>
<td>Height range in carriage (3 settings—machine set at middle height)</td>
<td>0.5</td>
<td>1.3</td>
</tr>
<tr>
<td>Travel</td>
<td>35.4</td>
<td>90</td>
</tr>
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<table>
<thead>
<tr>
<th>FOOTSTRETCHER</th>
<th>IN</th>
<th>CM</th>
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</thead>
<tbody>
<tr>
<td>Steel Foot board with C2 Flexfoot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track adjustability range</td>
<td>9.8</td>
<td>24.8</td>
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