

Row Your Boat

As more schools add women's rowing to their athletic offerings, strength coaches must learn how to address the power and endurance needs of this unique sport.



The University of Virginia's varsity four placed first at this spring's NCAA Division I championships.

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BY ED NORDENSCHILD

With an increasing number of women's rowing teams being added to collegiate programs across the country, more and more strength and conditioning coaches are faced with training athletes for a sport they know little about. In most ways, training rowers is the same as training athletes in any other sport, but there are some important differences that strength coaches need to keep in mind.

Few sports require the combination of strength and endurance that is needed for rowing. Although both strength and endurance will certainly benefit athletes in most sports, usually we can lean toward developing one more than the other. Rowers, however, need an ample supply of both to be able to go all out for more than six minutes at a time.

In addition, female rowers tend to have less experience with strength train-

ing than other athletes. This is partially because, unlike in other sports, rowing teams may include novice boats with rowers who have never before competed in the sport. Some novice rowers may have never participated in any organized sports, let alone have any strength-training experience.

As a result, we spend more time than usual teaching technique for even the most basic lifts. On the other hand, athletes who have had no exposure to strength training usually show the greatest gains.

Obviously, aerobic conditioning plays a large role in a rower's performance. Here at Virginia, the rowing staff is responsible for the aerobic conditioning of the team through the use of rowing, ergometer (rowing machine) work, running, cycling, stair climbs, and so on. This frees the strength coaches to focus on developing strength, power, and power endurance, which we do through

a periodized program and constant communication with both the rowing and athletic training staffs.

PHYSICAL DEMANDS

Simply put, rowing is a very physically demanding sport. During the main spring season, rowers will typically cover 2,000 meters in six to seven minutes. This requires about 200 or so full pulls on the oars. Races during the fall season can last 13 minutes or more as crews cover 6,000 meters.

Even the strongest and most skilled rower will be of little use if she can't

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MESOCYCLE ONE

Workouts for a sample week in Mesocycle One are listed below. Rowers lift twice a week, either Monday and Wednesday or Tuesday and Thursday.

Monday or Tuesday

Clean pull (use power clean max)

5x50%, 3x75%, 3x95-105%

Core exercise x20

Clean pull 3x110-120% } x2

Core exercise x20

Squat 6x50%, 4x66%, 2x75%, 4x80%, 3x85%

Incline DB rows 6x30-50 lbs. (each hand)

Squat 1-2x90%

Incline DB rows 6x30-50 lbs. } x2

Bench press 8x50%, 6x66%, 2x75%, 5x80%, 3x85%

RDL (use squat max) 8x50%

Bench press 2x90% } x2

RDL 8x50%

Ab circuit: four core exercises done for 15 to 20 repetitions each and repeated twice.

Wednesday or Thursday

Power clean 5x50%, 5x66%, 2x75%, 3x80%, 2x85%

Core exercise x20

Power clean 1x90% } x2

Core exercise x20

Dead lift 6x50%, 6x66%

Incline press 8x50%

Dead lift 2x75%

Incline press 6x66%

Dead lift 4x80%

Incline press 6x75%

Dead lift 3x85%

Incline press 5x80%

Dead lift 2x90%

Incline press 3x85%

Dead lift 2x90%

Incline press 1x90%

Step-ups 6x30% of squat max each leg (minimum 45 lbs.) } x3

Chin-ups x max (minimum six, single-leg help if needed)

Ab circuit: same as Monday/Tuesday

MESOCYCLE TWO

Workouts for a sample week in Mesocycle Two are listed below.

Monday or Tuesday

Clean high pull (use power clean max) 5x50%, 5x66%

Core exercise x20

Clean high pull 4x70-80% } x2

Core exercise x20

Dead lift 5x50%, 5x70-75%

Squat jumps x5

Dead lift 5x70-75% } x2

Squat jumps x5

Overhead step-ups 6x10 kg. plate } x3

Core exercise x20

DB incline press (use incline press max) 5x20%, 6x25-30%

SB ham curl x8

DB incline press 6x25-30% } x2

SB ham curl x8

Lat pull 8x60-100 lbs. } x3

Core exercise x20

Wednesday or Thursday

Power clean 5x50%, 3x66%, 4x75%, 4x75%

Core exercise A x20

Core exercise B x20

Power clean 2x80%

Core exercise A x20 } x2

Core exercise B x20

Back squat 5x50%, 3x70%, 5x75%, 2x80%

Box jumps x5 (step down)

Core exercise x20

Back squat 2x80%

Box jumps x5 } x2

Core exercise x20

Bench press 6x50%, 3x66%, 5x75%, 4x80%

Core exercise x30

RDL (use back squat max) 8x50%

Bench press 4x80%

Core exercise x30

RDL 8x50%

Bench press 1x85%

Core exercise x30

RDL 8x50%

Reverse hyperextensions 14x10 lb. ball } x3

High bench DB rows x50 lbs. (each hand)

Core exercise x20

maintain that strength and technique through an entire race. But since power plus technique equals speed, endurance is only useful when accompanied by strength.

Fortunately, the biomechanical motions of rowing are similar to a power clean or a dead lift. Along with back squats, these exercises and their derivatives target the prime movers for rowing (quadriceps, hamstrings, hips, and upper and lower back) and form the bedrock of our strength-training program.

But there are two other areas that we pay special attention to in our workouts. First, we do a large amount of core training throughout the year. Second, we include at least one pushing exercise, such as a bench press, in every workout to strengthen the antagonist muscles and offset the over-development that can result from rowing's pulling motions. With all the time these athletes spend rowing in the boat and on ergometers, if we don't train the opposite side of their bodies, their chance of injury increases greatly.

We rely on complex sets to produce the greatest benefits in the limited time

we have with the rowers. Each main exercise has a corresponding auxiliary one that is worked into the main exercise sets. For example, we will pair clean pulls with a core exercise. We begin with a set of five clean pulls at 50 percent (of power clean max) and three reps at 75 percent as a warmup. Then

the jump rope followed by 20 reps each of low twists, lizards, back arches, push-ups, and overhead squats.

A STRONG FALL

To make sure we adequately develop strength, power, and power endurance in our rowers, we split the school year

We include at least one pushing exercise, such as a bench press, in every workout to strengthen the antagonist muscles and offset the over-development that can result from rowing's pulling motions.

we start our work sets with three clean pull reps at 95 to 105 percent followed by 20 reps of a core exercise. We then do two sets of three clean pull reps at 110 to 120 percent, each of which is followed by 20 reps of a core exercise.

We use the same complex-set system with all main exercises, which are cycled through a typical periodization of three weeks of increasing work followed by a "down week." In addition, every workout begins with a standard warmup consisting of 300 touches on

into three cycles, each with its own distinct goal. Mesocycle One comprises the fall semester and focuses on strength development.

Quite a bit of time is spent in the early part of Mesocycle One to ensure that all newcomers have a good understanding of the proper form required for each of the major lifts and exercises we use. It makes little sense to rush anyone into a situation where they risk injury due to poor lifting mechanics or lack of strength.

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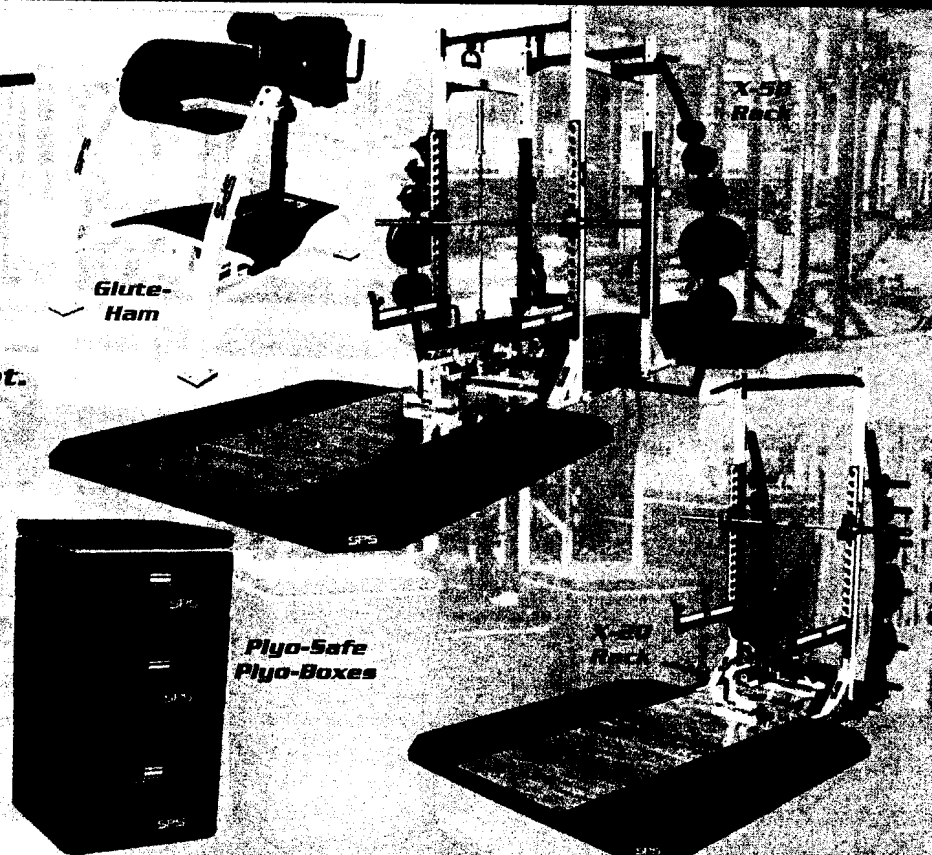
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MESOCYCLE THREE

Workouts for a sample week in Mesocycle Three are listed below.

Monday or Tuesday

Power clean 5x50%, 3x66%, 3x75%
Chin-ups (choice of grip) x6
Core exercise x20
Power clean 2x80%
Chin-ups x6
Core exercise x20 } x2

Squat 6x50%, 5x66%, 3x75%
Squat jumps (continuous) x6
Core exercise x20
Squat 3x75%
Squat jumps x6
Core exercise x20
Squat 1x80%
Squat jumps x6
Core exercise x20

Bench press 6x50%, 6x66%, 3x80%
RDL (use squat max) 6x50%
Core exercise x20
Bench press 3x80%
RDL 6x50%

Core exercise x20
Bench press 2x85%
RDL 6x50%
Core exercise x20

Wednesday or Thursday

Bent-over row/power clean/clean high pull/front squat
(use power clean max) 5x50%
Core exercise x20
Bent-over row/power clean/
clean high pull/front squat 5x60-66% } x2
Core exercise x20

DB incline press (use incline max) 6x20% (each hand), 4x30-33%
Core exercise x20
DB incline press 4x30-33% } x2
Core exercise x20

SB ham curls x8 } x3
Core exercise x20

After approximately a month of basic strength training, the newcomers are gradually incorporated into the full workout with the veteran rowers. For experienced rowers, the fall workouts are all about building strength with power and Olympic lifts. (See "Mesocycle One" on page 44.)

Even though there is a fall competition schedule with races on selected weekends, we simply train through these competitions. For weekends without races, we use an extended Saturday circuit workout. (See "Saturday Circuit" on page 47.)

At the end of this fall training cycle the rowers are tested for their one repetitive max in the bench press, back squat, and power clean. These new maxs determine the weight loads for the next two training mesocycles.

WINTER POWER

Mesocycle Two takes place during the first six weeks of the spring semester and is run on a schedule similar to Mesocycle One with two lifting sessions per week. The biggest change is that the emphasis shifts to increasing power while maintaining previous strength gains.

We reflect that change by incorporating more Olympic-style lifts as well

as jumps that are directed at increasing lower-body power. But just as importantly, we focus on increasing the speed of the exercises. Even when we do a slower lift, we complex it with a faster exercise. For example, when we do a dead lift in Mesocycle Two, we will immediately follow each set with squat jumps. This way, the explosive tempo needed to produce power is maintained. (See "Mesocycle Two" on page 44.)

During Mesocycle Two we also try to incorporate more sport-specific exercises, such as dead lifts off a box, cleans, high pulls, and one-arm rowing movements. We still use the Saturday circuits, but increase the work-to-rest ratios and include more power-producing exercises.

SPRING ENDURANCE

When Mesocycle Three begins with the start of the competitive spring season, workouts are scheduled for two days a week as travel and competition schedules allow, but are shortened to 30 to 35 minutes. The first workout of the week is geared toward maintaining strength and power levels. The second workout, which is closer to the day of competition, is lighter and faster both in the exercises we use and the way they are performed.

Since power endurance is a main goal during this cycle, we'll use lighter weights and more reps, especially in the second workout. Using lower weight also decreases the chance for injury in already fatigued rowers. In addition, we adjust our complex sets by using two auxiliary exercises for each main lift. (See "Mesocycle Three," above.)

Once the season ends, the rowers have a few weeks off and then are given a workout to take home for the summer. These summer workouts are lighter and more varied, with an emphasis on areas that we do not work directly during the rest of the year, such as biceps, triceps, and lateral movement.

SCHEDULING & COMMUNICATION

Although the purpose and format of each mesocycle is determined in advance, the actual workouts are written on a weekly basis, and are sometimes even altered daily if the rowers are getting tired or sore. The main exercises are typically changed every three or four weeks, but the intensity and set/rep scheme is adjusted each week to maintain the periodization scheme as well as prevent staleness and keep the athletes interested in the workout.

Writing the workouts weekly gives me

the opportunity to adjust them as needed based on the condition of the rowers and feedback I receive from them and their coaches. Fortunately, one of the hallmarks of the Virginia program is close communication among the athletic training, rowing, and strength staffs.

Since the conditioning workouts are designed and implemented by the rowing staff, we confer often to prevent overuse injuries. These injuries result from overuse of the rowing musculature, poor rowing or lifting mechanics, or an acute strain or sprain.

Rowing is somewhat different from other sports in that its practices and competitions are held about five miles from campus. Although I can't go to practices on a regular basis, I do stop by on occasion to observe. I also attend as many home events as possible and even ride in the launch boat for an up-close view.

For the most part, I must rely on the rowing staff, which usually has a presence at every strength workout, to let me know how the rowers are doing. If the rowing coach feels that the rowers are unusually fatigued due to previous rowing or conditioning workouts, he communicates that to me, which allows me to make the necessary adjustments to the strength workout.

I also talk daily with our athletic trainer. Any injured rowers are responsible for seeing the athletic trainer before the workout so that he can advise me of needed changes to their workout.

When combined with a solid periodized plan, this constant communication allows us to provide the athletes the opportunity to improve daily. After all, the effectiveness of our strength-training program is shown not in the weight-room, but on the water. ■

SATURDAY CIRCUIT

Since the fall rowing season at the University of Virginia has limited competitive dates, we fill the other weekends with a special Saturday strength and endurance circuit workout done right after a rowing or ergometer workout. A sample is listed below. Rowers do two repetitions of 35 seconds on and 25 seconds off at each station. The goal of each circuit is to complete as many reps as possible. Varsity rowers use the higher weight listed while novice rowers use the lower weight.

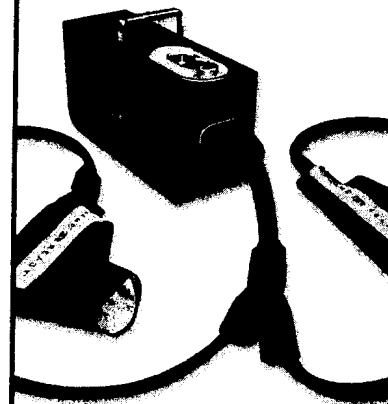
EXERCISE

WEIGHT

Power clean	30 kg/20 kg.
Alternating step-ups	25 kg/20 kg.
Straight leg crunches	Body weight
Lat pull	4 plates
Jump rope	Body weight
Back squat	30 kg/20 kg.
Incline sit-ups	Body weight
Back extensions	Body weight
Hamstring curl	6 plates
Low ab crunch	10-lb. ball
DB push press	Choice of 15- or 25-lb. DB
Dead lift	50 kg./40 kg.
Grab and reach	4-lb. ball
Bench press	65 lbs./55 lbs.
Speed step-ups	14-inch box
Inverted row	Body weight
Bar crunch	55 lbs./45 lbs.
Incline press	55 lbs./45 lbs.
Romanian dead lift	65 lbs./55 lbs.
Swiss ball crunch	10 lbs.
Incline DB rows	30 lbs./20 lbs.
Sumo squat	40 lbs./30 lbs.
Treadmill	9 m.p.h.

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chedule is such that I erg or bike four per week and strength train two times week with one day of rest. Move work-around based on your schedule and take a day of rest as needed. My training were based on a goal of 1:31 splits for e. For each workout I add the number inds noted to the 1:31 split, depend- the goal of the workout. I train the like to race, which is to go steady and nger throughout the piece. Last year d 1:32 for the first 500m, 1:31 for ddle 1000m, and then 1:30 for the 0m. I want to get to halfway con- ; some energy and then attack in the . Mentally, I break the race up into arts. The first two minutes, I know et through. The second two minutes eed to focus and maintain pace. nce I'm within the last two minutes, hat even if I feel like crap, I can fight ng on. I ended up rowing a 6:05.6 in il, which I was happy with.

out your own individual style and focus. Be realistic with your goals and days that are meant to be hard. ull yourself on steady state days or l run yourself into the ground. Think our racing plan and how you want to ir splits for the race. Visit tbfit.com re tips for the C.R.A.S.H.-B.s and aining information. Good luck and ie holidays! ☐

WEEK	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
1	SS 3x18' 3x2x1' 18/20/22 Pace: +23/+21/+18 <i>HR to 75%</i>	Weights	Long Interval 2x2500M 1000/750/500/250 Change rate. 24/26/28/30 #1+12/+10/+8/+6 #2+10/+8/+6/+4 Rest: 5' <i>HR to 75%</i>	Off	Weights	Race Prep 3x2'on 2' off Pace: +2"	SS-60-70' Bike/Erg HR 65-70% easy
2	SS <i>Two</i> 3x18' 3x2x1' 18/20/22 Pace: +23/+21/+18 <i>HR to 75%</i>	Weights	Long Interval <i>two</i> 3x2500M 1000/750/500/250 Rate: 24/26/28/30 #1+12/+10/+8/+6 #2+10/+8/+6/+4 #3+12/+10/+8/+6 Rest: 5' <i>HR to 75%</i>	Off	Weights	Race Prep 2 series <i>HR to 75%</i> 3x2'on 2' off. Pace: +2"	SS-60-70' Bike/Erg HR 65-70% easy <i>SS</i>
3	SS 3x18' 3x2x1' 18/20/22 Pace: +23/+21/+18	Weights	Long Interval 3x2500M 1000/750/500/250 Rate: 24/26/28/30 #1+12/+10/+8/+6 #2+10/+8/+6/+4 #3+12/+10/+8/+6 Rest: 5'	Off	Weights	Race Prep 2 series 3x2' on 2' off. Pace: +2"	SS-60-70' Bike/Erg HR 65-70% easy
4	SS <i>205K</i> 2x24' 3x2x1' 18/20/22 Pace: +23/+21/+18 <i>5K</i>	Weights	Long Interval <i>two</i> 2x2000M 750/500/250 Rate: 28/30/32 #1+8/+6/+4 #2+6/+4/+2 Rest: 7'	Off	Weights	Race Prep 4x2' 1' 30" rest Pace: +1 to +2" <i>HR to 75%</i>	SS-60-70' Bike/Erg HR 65-70% Easy
5	SS 2x24' 3x2x1' 18/20/22 Pace: +23/+21/+18	Weights	Long Interval 3x2000M 750/500/250 Rate: 28/30/32 #1+8/+6/+4 #2+6/+4/+2 #3+8/+6/+4 Rest: 7'	Off	Weights	Race Prep 4x2' 1' Rest Pace: +1 to +2" <i>HR to 75%</i>	SS-60-70' Bike/Erg HR 65-70% Easy
6	SS 2x24' 3x2x1' 18/20/22 Pace: +23/+21/+18	Weights	Short Interval 3x1000M Pace: +2' to +3' Rest: 5-7'	Off	Weights	Race Prep 3x2' 30" Rest +1 to 0"	Off or Recovery 40' Bike or erg
7	SS 1x24' 1x18' 3x2x1' 18/20/22 Pace: +23/+21/+18	Weights	Short Interval 6x500M Pace: 2k Last 2 faster than 2k pace. Rest: 3-5'	Off	SS 10-12K Pace: +23"	3x2' 15" rest +1 to 0"	Off
8	SS 1x24' 1x18' 3x2x1' 18/20/22 Pace: +23/+21/+18	Weights	Short Interval 6x500M Pace: 2k Last 2 faster than 2k pace. Rest: 3-5'	Off	SS 10-12K Pace: +23"	3x2' 15" rest +1 to 0"	Off

The plan