High school and collegiate rowers have to achieve a balance in both their water and dry-land conditioning programs. Their time in the weight room should be devoted to the strengthening of all the muscle groups to achieve a balanced musculature for injury prevention. We incorporate three kinds of training: one for strength, one for power, and the third for muscle endurance.

That is the formula for enhancing sports performance and building a winning school crew.

The continuous pulling movements by the rowers require the back and bicep muscles to provide enough pushing movements in the weight room to strengthen the antagonist muscles (chest, triceps.)

What good would strong back and bicep muscles (agonist muscles used for the rower's pulling motion) be if they were offset by imbalanced, weak opposing muscle groups (the antagonist pectoral and tricep muscles)? You'd have an injury waiting to happen during a practice or at a critical time during a race.

So, besides focusing on seated rows, pull-ups or lat pulldowns during dry-land workouts, the rowers must include important pushing movements such as bench presses, incline presses, or parallel bar dips.

Another area which merits attention is core conditioning. Strong lower backs and abdominal muscles, hip flexors and, of course, strong legs to supply power for the upper body pulling muscles, are fundamental.

Squats, deadlifts, leg presses, hyperextensions, ab curls or crunches are all recommended to complement those pulldowns, seated rows, dips or bench presses. A time-efficient workout will utilize mostly multi-joint or compound exercises such as squats, lunges, leg presses, deadlifts, barbell or dumbbell rows, pulldowns or pull-ups, seated rows, upright rows or shoulder presses, and bench presses, incline presses, or parallel bar dips.

Below is a conditioning program that incorporates strength training for the upper and lower body muscles. It should be done twice weekly on non-consecutive days, say, every third day or so to ensure adequate recovery between practices and rowing events.
Workout one could be a strength/power day using heavy weight for multiple sets of 5-8 reps per exercise.

Workout two would be a muscle endurance day comprising multiple sets of 12 to 20 reps per exercise with light to moderate resistance in a circuit training format. The tempo of each rep in each workout should also be varied for effectiveness.

The strength/power workout could be two seconds to push or pull (contraction) and three to four seconds to return to the start position (eccentric phase of the lift) with a 60 to 90-second rest between sets.

Perform one set for strength, using a slower tempo (two seconds contraction, four eccentric seconds) and two sets for power with a faster tempo (one second contraction, two eccentric seconds).

Make sure to have the athlete drink water after every few exercises. Since the muscle-endurance day stresses speed, you should aim for one second to push or pull, two seconds to return to start for each rep, and 15 to 30 seconds between exercises.

After completing four consecutive exercises, the athlete should drink water, as hydration is always emphasized before, during, and after workouts.

**Workout One:** Squats (3x6), Leg Presses (3x8), Pulldowns (3x6); Bar Dips (3x8), Upright Rows (3x6), Deadlifts (3x8), Crunches (3x8).

**Workout Two:** Bench Presses (1x12), Leg Presses (1x20), Seated Rows (1x15), Squats (1x12), Incline Presses (1x15), Front Lungees (1x12), Barbell Rows (1x20), Side Lunges (1x12), Shoulder Presses (1x12), Hyperextensions (1x20), Seated Twists with 25 lb. Plate (1x12).

Try the twice weekly weight-room workouts both in-season and in the off-season for a while and see if there is improvement in strength, power, and endurance in the water.

And, to make sure the conditioning program is totally balanced and to promote recovery and provide energy between, before, during and after workouts, practices and races, the coach should be sure to include balanced menu from the basic food groups containing ample protein, complex carbohydrates, essential fatty acids, plentiful water intake for proper hydration, plus getting enough quality sleep.

In other words, be properly fueled to ensure a well-rested engine for peak performance in the water!

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