

the **CrossFit** JOURNAL ARTICLES

Rowing Technique

Passing the Human Polygraph

Angela Hart

What makes rowing popular with elite athletes and CrossFitters is exactly what many in the general fitness population dislike about it: your weaknesses cannot be hidden on the rowing machine. It is a human polygraph of physical and mental performance. Stroke for stroke, you are provided with feedback that both reveals any weak spots and very visibly demonstrates the relationship between performance and proper technique. If you want faster times, better scores, and superior performance, work to improve your rowing technique so you can harness your full potential.

Rowing engages all the major muscles of the body and works multiple joints through a large range of motion in a natural, powerful sequence in a no-impact manner. However, proper rowing technique is not an innate skill; mastering it requires instruction. The rowing stroke is very similar to a deadlift. In the drive (work) phase, the legs initiate the power, and arms remain straight. Then the hip flexors and torso muscles maintain the power through the leg and hip drive. Finally, the arms finish the stroke with an accelerating pull toward the torso that completes the smooth handoff of power from lower body to torso to upper body.

The handle and seat must move together during the drive. A common error is to pull with the back early, which is evidenced as the handle moving first. Just as the bar and hips must move together during a deadlift, so the handle and seat should move together during the work phase of the rowing stroke. On the recovery (rest) phase of each stroke, the handle leads the body forward. The arms extend first and then forward flexion occurs at the hips. You should feel your body weight shift from

the back to the front of the seat as forward body angle is achieved, before the knees begin to rise and the legs compress for the next stroke.

Be sure to watch the position of the knees at the catch (the “front” of the stroke, just as you are about to apply drive power). Many new rowers will attempt to open the legs, i.e., flare the knees outward, to try to achieve deeper compression at the beginning of each stroke, but this action will bring the knees out of alignment with the ankles and can cause injury with application of force or repetition. As you reach forward for the catch, your shins should be essentially vertical and aligned with your feet.

Mass (i.e., body weight) is an advantage on the rowing machine, and one key to optimal performance is learning to use your body mass to your advantage by suspending your body weight between the handle and the feet. This is achieved with a powerful, explosive leg drive right off the catch when the shins are vertical, the body is angled forward at roughly thirty degrees, and the arms are straight. Quickly snap open the knee, using just a powerful push with the legs to initiate the drive. When the legs have propelled the seat halfway back, the knee angle continues to open powerfully as the hip opens, using the strength of the core to maintain the suspension of body mass. As the shoulders begin to cross over the hip joint on the way to a thirty-degree layback, the arms continue the suspension by pulling toward the torso with accelerating force. Scoop the handle fluidly down and away from the body at the end of the pull to create a smooth transition from the work to the rest phase of the stroke, eliminating any pause in the handle movement.

1 of 2

Passing the Human Polygraph (continued...)



Many people are confused about the purpose and significance of the damper setting on the flywheel. This is not a resistance setting. You create greater resistance when you apply greater force, and the rowing machine adapts to every stroke. A high-intensity, powerful stroke will be met with much higher resistance than a low-intensity, weak stroke. The damper simply adjusts how quickly the force is applied to the machine. As you put in more effort, you will go faster, generate more power (watts), and use more energy (calories). Most people prefer a damper setting of 3 to 5 for all types of workouts. A higher damper setting results in a slower stroke rating (fewer strokes per minute) and is often preferred by endurance athletes who are accustomed to a slower leg turnover and increased time spent in a state of muscular contraction. A lower damper setting results in a faster stroke rating, which is often appealing to sprinters and competitive cyclists who are accustomed to a faster leg turn over and quick, explosive muscular work. (Not surprisingly, many CrossFitters—particularly the bigger, heavier ones—seem to prefer somewhat higher settings, going for both hard and fast.) Experiment for yourself to determine the setting that gives you the best performances and allows you to work at the highest intensity. Too high and you'll have to back off the speed of your stroke; too low and you won't be able to generate maximum power.

In summary, the rowing stroke is a continuous, fluid movement in which the handle is perpetually in motion. Although we can break it down into its constituent parts for training and analysis, as in the following steps, it should not actually look or feel like a series of separate movements.

1. Begin rowing from the catch position, with shins vertical, torso angled forward from the hip to create subtle forward spinal flexion, arms fully extended with fingers curved around the handle, abdominal muscles engaged and the navel pulling back away from the thighs, and shoulders relaxed down (not hunched up), with slight scapular retraction.
2. Initiate the drive with the legs, giving a quick, powerful push (kick) off the catch while maintaining the forward body angle for the first half of the drive (roughly ten to fourteen inches of the slide, but

variable depending on the length of the legs). Continue pushing with the legs while opening the body angle with the strength and explosiveness of the legs and core body strength, resulting in suspension. Let your mass work to your advantage, allowing the weight of the body to combine with muscular strength and endurance to produce maximum power output.

3. As your legs reach extension, finish the stroke with a powerful arm pull, accelerating the handle as you pull it away from the flywheel and back to your upper abdomen. At the end of the drive, your legs will be straight with a bit of plantar flexion at the ankle (i.e., slightly up on the balls of your feet) to prevent hyperextension of the knee joints; your body will be angled back about thirty degrees from vertical with activated trunk muscles; and your arms will be bent with the elbows behind the torso and the handle almost touching your abs).
4. Return to the catch by extending the arms and allowing the handle to pull the body into forward flexion. Flex forward at the hips, aligning the chest over the thighs, and then slide the seat up toward the feet with slow control. Overall, the recovery phase should take about twice as long as the drive phase.

Think explosive power as you row, as if you are placing your feet on the back of a competitor and pushing away with every stroke.

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