

## ROWING TECHNIQUE ~ POWER TRIANGLES

### General

To obtain maximum power in the boat or on the Ergometer it is essential to make efficient use of the skeletal and muscular systems on both the recovery and drive portions of the stroke. An even pressure should be maintained throughout the drive by a gradual acceleration of the body-mass to compensate for the lightening of the load as the drive progresses. All movements and transitions between them must be smooth, with no "lunges" or sudden movements that will consume energy in both the making and reversing of them.

### Power Triangles

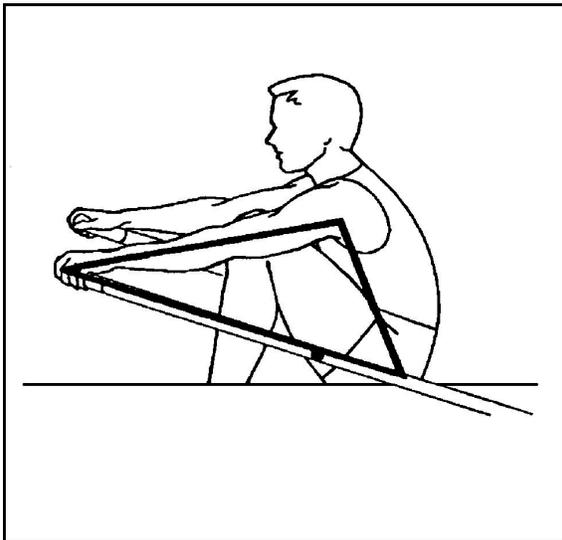


Figure 1. The Catch

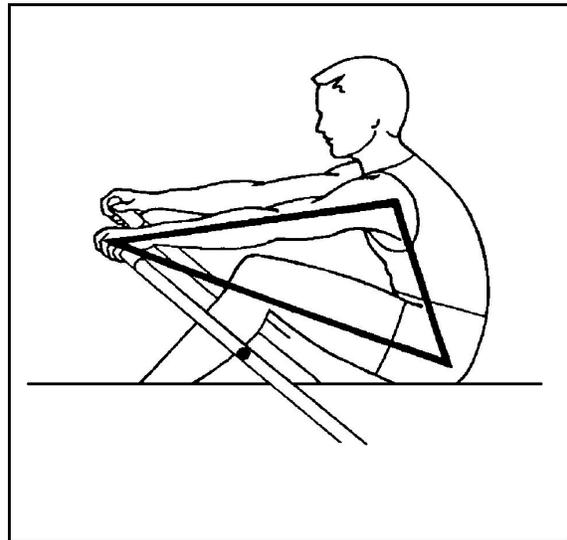


Figure 2. The Leg Drive

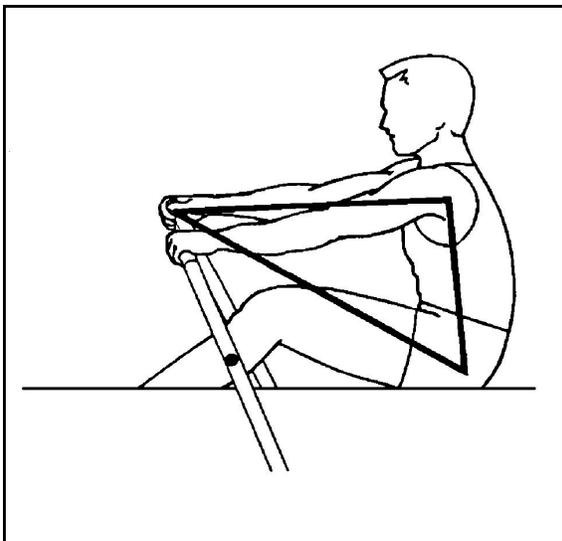


Figure 3. The Body Swing

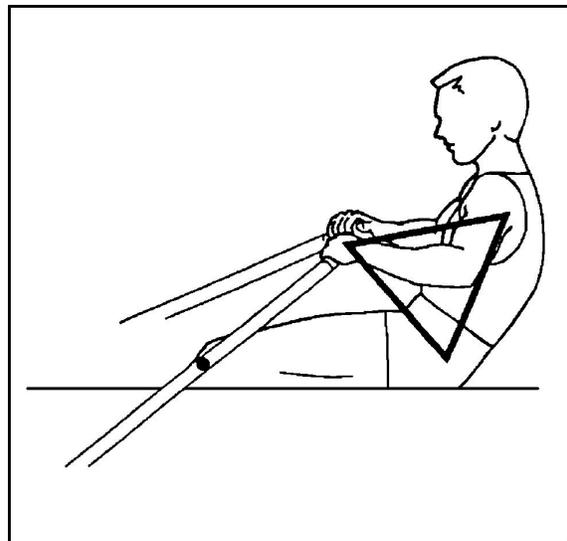


Figure 4. The Finish

The figures illustrate a series of "power-triangles" that represent the most powerful body positions that can be adopted through the drive. The three "points" of the triangle are the shoulders, hips and hands.

**Figure 1. The Catch:** shows the "compression" of the body at the catch. The shins are upright (but not beyond upright), the chest is pressed against the thighs (when viewed from the side there is no daylight showing between the chest and thighs), the head is up and looking tall, the

arms are straight with no bend in the elbows, and the wrists are flat and the fingers wrapped loosely around the handle. The back has a natural curve, which begins at the lower back, not at the shoulders. A "power-triangle" is established. It is important to develop a visual image of this triangle to be able to maintain it throughout the drive.

**Figure 2. The Leg Drive:** shows the drive at half slide. The knees are being driven down, but the body angle and arm positions have not changed, maintaining the power-triangle established at the catch.

**Figure 3. The Body Swing:** shows the body angle at three-quarter slide. The back is taking over the drive as the power of the leg drive is starting to diminish, with a smooth transition between the two. The body is just approaching upright with the arms still straight. The angles of the power-triangle have changed little from the one established at the catch, even though the legs are down and the back is coming up.

**Figure 4. The Finish:** shows the body angle at full slide, approaching the finish position. The legs have been driven fully down, but the knees are still slightly flexed. The back is straight and supported by the abdominal and stomach muscles (the feet should not be pulling up against the retaining straps on the stretcher) and the head is still up. The arms are now taking over and the elbows will be pulled back past the body to bring the hands all the way into the chest. Squeezing the shoulder blades together at the finish can help overcome slouching and develop a long finish. The condensed triangle illustrates that less power is available, therefore this body and arm position must not be adopted any earlier in the drive.

### **Recovery**

The recovery follows the sequence in reverse. The arms can complete their straightening as the forward body swing is completed, but it is essential to establish the body angle for the catch early in the recovery. The hands should be over the shins before the knees start to come up. The approach to the catch should be smooth and at a controlled speed. The body-mass must not accelerate into the catch, as energy will be consumed in reversing its direction.