

A vital element of triathlon training is to learn to be as efficient as possible in every element of the race (transitions included).

**Efficiency** can be defined as producing the greatest amount of work for the least amount of energy. I have listed some of the most important elements that make for the greatest efficiency.

Swim: (see Terry Laughlin's Triathlon Swimming Made Easy)

*Rotation:* the torso should rotate as if it is on a spit, which serves to ease your arm recovery, breathing, and reduces drag in the water.

*Head position:* keep your head down and in a line with the rest of your body. If you lift your head to breathe, your legs will sink, and your drag factor increases. Use rotation to breathe, not head lift.

*Arm recovery* (as the arm comes out of the water): your arm should be relaxed, with a high, bent elbow. Again, torso rotation will facilitate this.

*Kick:* imagine you are swimming in a long cylinder; you should keep your kick within this cylinder and initiate the motion from your hips, not your knees. Don't kick like a mad donkey; a relaxed, condensed kick will do.

Bike: (see Joe Friel's, The Cyclist's Training Bible)

*Pedal stroke:* listen to the sound your pedal stroke makes –you should hear a consistent whiirrrrr. If your stroke has pauses, or a change in the tone, then it is not efficient or even. Focus on pushing your feet over the top of the stroke and “scraping mud off your shoes” at the bottom. This will feel more like an elliptical motion than a circle, but will even out your stroke.

*Leg alignment:* make sure that your legs stay aligned throughout the stroke; don't let your knees flare out at the top, or move in at the bottom of each cycle. They should always be in a straight line

*Cadence:* cadences greater than 80rpm have been found to be the most efficient. This may increase your heart rate, BUT it will reduce the fatigue your legs feel, as pushing a big and heavy gear really demands a lot of energy and you will suffer for it on the run.

*Arms:* they should be relaxed, with the elbows slightly bent and shoulders loose. Hands should also be as relaxed as possible.

Run: (see Hal Higdon's, Run Fast )

*Foot strike:* land mid-foot, just behind the ball of your foot. If you land on your heels you increase ground reaction forces (that are already 8 x body weight when you run) and you break your forward motion.

*Stride Length:* every beginner makes the same mistake of trying to increase stride length—well, Don't do it!

If you increase stride length, you will be forced to land on your heels and thereby hit the breaks, and jar your knees. You should land just forward of your center of gravity (COG).

*Stride rate:* a faster turnover, a faster runner makes. 3 times every run, count your right foot strikes for 20 seconds and aim for 30, which has been found to be the most efficient.

*Body Carriage:* focus on having a slight forward lean that begins from your feet, not your hips. This allows you to “fall” forward (saving energy) and helps with the correct foot plant.

*Arm carriage:* they should be relaxed, with no more than a 90 degree angle. Arm swing should be predominantly forward and backward, with no more cross torso motion than to the midline of your body. Keep your shoulders down.