

## Triathlon Solutions

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### *Seven Elements of Athletic Movement (7 EAM) as it relates to cycling Triathlon & Time Trialing*

**Body Position** – The head should remain in the neutral position; as much as possible so the rider can form a low and tight target for the wind. Having the head down is most aero (but you ride blind) and having the head completely arched up for full view places the atlas vertebrae under enormous stress and will cause the rider to constantly shift around to relieve the pain. To achieve an “as much as possible” neutral position for the head, **the rider’s eyes** should peer out on the road approximately 10-15 meters and no further. The rider needs to maintain an even air flow that moves around the frame and rider’s body. A key thing to consider is that the **rider’s bones need to be supported by other bones**. Below is a good example of a rider with his head in a good neutral position, bones resting on bones, and still faces the wind as a low and tight target:



Moving around and constantly adjusting the ones position while riding, creates broken air space and slows the rider down. When riders focus solely on aero dynamics they will end up having bones (that make them look aero) supported by muscles. Below shows a rider that uses his back muscles to support his upper body position:



This tends to be quite painful after an hour no matter how fit or flexible the rider is. For starters, much unnecessary stress is placed on the muscles of the lower back. This sets the rider up for a slow run. Additionally, the constant adjustments place unnecessary & unnatural stress on the sympathetic muscles which will pre-maturely bring on fatigue. Most all of us do some sort of back stretch two or three times during a 90km or 180 km ride. However, this type of back pain, from poor positioning, demands frequent (2 or 3 times an hour) stretching. **This is certainly not aerodynamic.** Riders that experience this in races can be seen looking like the below picture:



Other less-dramatic factors that cause the rider to break up the air flow can be from reaching for rear or frame-mounted water bottles. This can be quickly solved by having a drink system mounted on the handle bars so the rider can stay in the aero position while drinking. However, most position changes (during the ride) come from lack of comfort. This can be a result from improper fitting (not being professionally fitted) or having a traditional two-triangle frame where the rider has to fit to the bike rather than a bike fit to the rider. A good test to verify the rider has proper positioning is by observing the range of lateral movement of the front wheel as the rider completes aggressive spin cycles. The front wheel's location (while spinning) should be locked in position with **no lateral movement**. Of course, lateral movement is unavoidable, even for the strongest rider, if the rider happens to be engaged in winds comparable to the trade winds of Kona, Hawaii.

**Arm Action** – The job of the arms are to **keep the ride quiet**. Lateral (loud) movement is wasted energy and makes a bigger target for the on-coming wind. This is accomplished by being properly fitted as described above. Additionally, when the arms in the aero position, they should be in a fixed position and not bounce around. **The hands** maintain a relaxed but firm grip. A death grip on the bars causes muscle contractions with hands, forearms, biceps, and triceps. Muscle contractions restrict blood flow and over time cause the hands to “go to sleep” or set the stage for the onset of muscle cramps. When facing long climbs, move the arms out of the rests and grip the horizontal cross bar with the hands moved towards the center. This creates a more aero position and helps keep the upper body quiet, tight, and aggressive.

**Leg Action** – The job of the legs is the transfer the rider’s will to the road. The key is the **keep the knees in board** towards the top tube of the bike. At all costs, the rider needs to keep the knees from bowing outward. This discrepancy causes aero drag, looks goofy, and sets the rider up for possible knee injury. The saddle should be adjusted in such a way that the seat portion is parallel to the road and permits the rider to rest the region in the most balanced manner. This creates a balanced load for the leg muscles, engages them to work in harmony, and delays fatigue. If the nose of the saddle is dipped low, the quadriceps will be forced to take on a majority of the load and ultimately be overworked. If the nose of the saddle is too high, the back muscles pick the load and fatigue quite quickly. Spin cycles should be maintained at 90 cycles (cadence) per one minute. The **pedal strokes** should be smooth circles that balance the rider’s power throughout the cycle. Since most riders have difficulty doing a smooth upstroke, a helpful object permanence to achieve this is to consider scraping mud off the heel of a muddy shoe.

**Breathing** – Breathing is the best way to monitor your intensity. Breathing needs to come from the rider’s diaphragm. Every once in a while, complete a full exhale. This will remind the rider to take full breaths. Standing up comes at a cost. By standing up, the rider can gain up to 20 meters of instant power. However, this will normally take the rider from aerobic state (life with O<sub>2</sub>) to an anaerobic state (life without O<sub>2</sub>). When done correctly, breathing can give the rider much confidence when the breathing of other riders can be heard.

**Coordination** – Coordination allows the rider to settle in and **achieve a détente between the mind, working muscles and lungs**. This coordination is enhanced by the rider picking one of the 7EAM and focusing on that until the thought naturally goes away. Then pick another.

**Smoothness** – Smoothness ensures that working **muscles operate at the rider’s capacity to produce an optimum flow of nourishing red blood cells to the requesting capillaries**. Harsh movements break up the air flowing past the rider’s body and bike frame. Furthermore, harsh movements create muscle contractions that restrict optimum blood flow. **A drill to help with smooth pedal strokes is the Isolated Leg Spinning Drill.**

**Relaxation** – Muscles only produce **maximum output when they are in a relaxed state**. This is achieved with a confident mind and body connection. The rider needs to keep rotating through the different 7EAM (Body Position, Arm Action, Leg Action, Breathing, Coordination, Smoothness, and Relaxation) so the thoughts on continually on things the rider can control. Thoughts on things the rider can’t control waste precious mental energy and actually lower overall supply so there is normally nothing to fight with at the finish. **Thoughts that are on things the rider can control become recycled energy** that rider can continue to reuse over and over during the ride. This can be thought of as having an extra gear (of energy) to look forward when you need it the most.