

Open Water Swim Clinic

(Meeting Room A; Saturday; 7:00 AM-7:30 AM)

Equipment

- Wetsuits
- Difference between cost levels
- Fit
- Lubricants (body glide, tri slide)
- Neoprene cap
 - Double capping
- Swim Buoy
- Swim skin (for non-wetsuit swimmers)
- Goggles
 - Different tints/fogging/water in goggles

Open water vs. pool swimming

- Dark/cold water
- Calming anxiety/mammalian reflex
- Currents
- Chop/waves
- Sighting
 - Buoys & landmarks
 - Frequency
 - Generally, every 5-10 strokes
 - More frequently in strong current
- Stroke Rate
 - Benefits of higher cadence in open water
 - Most feel comfortable at 50-70 strokes per minute
 - Goal should be towards the higher end, or even more
 - Requires adaptation
 - Using a tempo trainer to increase stroke rate

Tactics

- Drafting
- Pacing
- Race starts
 - Beach start
 - Water start
 - Dive start
 - Seeding yourself in a rolling start

Swim

(Acorn Lake; Saturday; 7:30 AM-8:30 AM)

Skills Practice

- Sighting
- Drafting
- Dolphin diving

Swim Workout

- *3-4 times through ~400 meter loop*
- *Practice sighting. Make the turn and find the next buoy.*
- *Swim w/ people of similar level, practice drafting. Can take turns at the front by round.*
- *Get comfortable/familiar with starts and getting out of the water*

- **Round 1 (beach start)**
 - 100m @ race “takeout”
 - 300m settle in to sustainable race effort
 - ~80% of TT effort for your target race distance
 - Jog back to start + 2 min rest
- **Round 2 (beach start)**
 - 100m @ race “takeout”
 - 200m @ 90% effort
 - 100m settle in at ~80%
 - Jog back to start + 2 min rest
- **Round 3 (water start)**
 - 100m @ race “takeout”
 - 300m @ 90% effort
 - Jog back to start + 2min rest
- **Round 4 (water start)**
 - All easy form focus
 - Practice transition
 - Take wetsuit off to your waist
 - Goggles and cap off, in your hands or waistband
 - Stop and step out of wetsuit

70.3 Race Day Strategy

(Meeting Room A, Saturday, 11:00 AM)

Swim

- Where do I start?
 - Line up slightly faster than estimated swim finish time
 - Line up with the groups you will be competing with for total finish time
- How should I pace the swim?
 - No way to check pace
 - Nerves, adrenaline and water temp will impact RPE
 - Podium contenders and strong swimmers should use competitors as a reference to pace
 - Intermediate and weaker swimmers should start slightly easier for the first 100m and build to a moderate pace
- What goggles should I use?
 - Different color goggle lens will help enhance the colors of buoys
 - Tinted goggles can help if you are swimming into the sun
 - Be sure to check the time you will be in the water. Depending on start time, some athletes may experience different lighting based on the sunrise
- Should I draft in the water?
 - Yes! You can swim directly behind a competitor or for the most advantage right next to the competitor right behind their bow wave (about at the hip)
 - Drafting at the hip also offers the best opportunity to sight
 - Do hinder performance by drafting off a competitor that is too slow
- How should I approach swims that have a current?
 - When swimming with the current, swim at the deepest point of the river where the current will be the strongest. Generally, this will be the center
 - If you are swimming against the current, swim as close to the bank as the course allows
 - Increase pace and turnover when swimming against the current

T1

- Walk the transition before you leave for the swim
- Have visual markers so you know where your bike is racked
- Take your time but hurry every chance you get

Bike

- Should I attempt a flying mount?
 - Not important in non-draft events
 - You could potentially lose time if it's not a practiced skill
- How should I pace the bike?
 - The intensity factor for the bike will typically fall around 80%

- Athletes can range anywhere from 75-85% of their FTP based on their fitness and the duration which they will be on the bike
- You want to keep your VI (variability index) 1.05 or under
 - VI is the ratio to normalized power to average power (don't burn matches!)
- HR should be between 88-92% of your HR Threshold
- Always evaluate how you feel and use this as guidance as well. Remember, you have you run a half marathon once you finish the bike!
- How do I benefit from legal drafting?
 - Draft zone is 12 meters long (about 6 bike lengths)
 - You have 25 seconds to pass and must make continuous forward movement
 - AG athletes may move into the draft zone of a competitor when making a pass and "slingshot" as the pass is made
- How should I approach hills on a course?
 - You can push higher watts to get over a short steep hill to get over the hill faster.
 - You can push close to your threshold but don't stay there for long periods
 - Don't push too hard downhill as the wind resistance is greater and there is less return on the higher output.

T2

- Speed laces
- Grab hat, glasses bib and go!
 - Bibs only required for the run in the USA. International races require a bib on bike.

Run

- How should I pace the run?
 - Both pace and run will fall around 87-92% of your HR and pace thresholds on an ideal course and day.
 - Example: Pace threshold of 5:15 would be a 5:42 pace at 92%
 - You NEED to use RPE as well on the run when completing in warmer conditions
- How should I approach running up and down hills during the race?
 - Manage effort as you run up hills don't go into the well just to get over
 - Open your stride up running downhill and use gravity to your advantage
 - Additional force and stress on your joints proceed carefully
- How can I keep cool during a warmer race?
 - Always be wetting!
 - Cover your body with ice and water at every aid station.

Final Thoughts

- Visualize how you want to execute the race
- Also visualize how you will respond to adversity
- Always be eating
- Always be passing
- Always be wetting (when it is hot!)

Race Day Nutrition

The big three: carbohydrates, fluids, electrolytes

- Carbohydrates are the main fuel source.
 - There are 4 Calories per gram of carbohydrate.
 - Elevated pre-exercise muscle and liver glycogen concentrations are essential for optimal performance.
 - An 80 kilogram person has ~500 grams (or 2,000 calories) of available carbohydrate stored as blood glucose (small amount) liver glycogen (100 grams) and muscle glycogen (400 grams).
- Fluids
 - Water or sports drink. Coffee/tea are neutral due to diuretic affect..
- Electrolytes
 - Sodium is the most important electrolyte, in front of potassium.
 - Include 460-1150 mg/L of fluid. More if you're a very salty sweater.

Pre-Race Meal

- Should be 3-4 hours prior to race start.
 - The closer to the race, the less food you can consume:

Timing Before Exercise	Carbohydrate
4 hours	Four grams/kg
Or 3 hours	Three grams/kg
Or 2 hours	One gram/kg
Or Five minutes	30 grams

- Focus on low residue, carbohydrate-rich food. Protein should be consumed in small amounts and fat intake should be low to avoid GI distress. A bagel with PB&J and sports drink is excellent. Avoid high fiber/gas producing food like dairy cabbage, bran, etc.
- Experiment in training to see what your body can handle. 600 calories is sufficient for a sprint. For an Ironman, it's not unreasonable to shoot for >1,000 calories before the race.

Nutrition While Training/Racing

- Carbohydrates
 - Aim for 60-120 grams of carbohydrates per hour. Test this in training.
 - Sports drinks are going to be your best source of fuel, followed by gels and gummies. Real food not the best for racing.
 - Look for products that contain a mixture of fructose and glucose. This enhances absorption. Glucose and fructose can be absorbed through separate simultaneous mechanisms through the small intestine, allowing more carbohydrates to enter the

bloodstream. Hammer, Tailwind, GU, Base, Gatorade Endurance, Skratch and EFS all have multiple transportable carbohydrates.

- **Fluids**
 - It is essential to replenish fluid loss during racing. Aim to lose no more than 5% your body weight during a race.
 - The maximum volume of fluid most can absorb is around one liter per hour. Test this in training.
 - Consume 500-1000+ mg of sodium per liter.
 - The optimal range of carbohydrate concentration is 4-8%. As an example, 50 grams of carbs (200 calories) in 626 milliliters (a bit over half a liter) would be 8%.
- **Sodium**
 - People have different concentrations of sodium in their sweat. You can get a sweat test to home in on your concentration. Most are fine aiming for 500-1,500 mg per hour.
 - Sodium enhances fluid absorption in the gut and is an essential electrolyte.
- **Nutrition by race**
 - **Ironman**
 - 60-120 grams of carbohydrates, 22-32 oz fluids, 500-2000 mg of sodium per hour
 - Three to four servings of Tailwind or comparable sports drink.
 - A bottle of Gatorade Endurance + 1-2 gels.
 - A liter of fluid, 3-5 gels, plus sodium supplementation.
 - On the run, you won't be able to consume as much as on the bike. Targeting the lower end (60 grams of carbohydrates) is doable for most. Note: a cup of Gatorade Endurance is ~30 calories.
 - **70.3**
 - 60-120 grams of carbohydrates, 22-32 oz fluids, 500-2000 mg of sodium per hour
 - Three to four servings of Tailwind or comparable sports drink.
 - A bottle of Gatorade Endurance + 1-2 gels.
 - A liter of fluid, 3-5 gels, plus sodium supplementation.
 - On the run, you won't be able to consume as much as on the bike. Targeting the lower end (60 grams of carbohydrates) is doable for most. Note: a cup of Gatorade Endurance is ~30 calories.
 - **Olympic**
 - The effort is high so you will not be able to consume as much in short course racing as you can in long course.
 - Consuming a bottle of sports drink (200-300 calories) on the bike is sufficient.
 - If you can get a couple swigs of sports drink on the run, great.

- Note the phenomenon wherein rinsing your mouth with a glucose solution enhances performance.
- **Sprint**
 - The effort is high so you will not be able to consume as much in short course racing as you can in long course.
 - Taking a few swigs of sports drink on the bike is all you need.
- **Other factors**
 - Caffeine as an ergogenic aid
 - Use strategically
 - What about protein and fat? Or real food?
 - Should nutrition targets in training be different?

Recovery Seminar

(Meeting Room A; Sunday; 11:30AM)

Active Recovery – Zone 1/2

- Easy 30-60 min runs or rides
- Gets the muscles moving
- Works out any lactic acid sticking
- Easy means “easier than you think”

Passive Recovery

- Stretching – after workouts, not before!
- Yoga
- Foam rolling/tennis ball/Theragun
 - Spine, hips, quads, calves
- Normatec/Compression clothing
- Ice baths – reduces swelling and muscle damage by constricting blood vessels
- Elevate legs
- “Forced Relaxation”
- Massage – work fluids towards heart
- Sleep! Ample sleep allows the mind and body to recover and “remember” the work that has been done
- E-Stim (Firefly)

Nutrition

- Eating the right foods after a workout can help the body recover quicker
- 30 min after:
 - Quick carb/protein shake
 - Electrolytes/lots of fluids
- 3-4 hours after:
 - Full balanced meal – protein, carbs, veggies
- Impact of Alcohol

Trackers

- Whoop/Body Battery (HRV)
- Sleep (Sleep 8)

RUN CLINIC

FORM

POSTURE

- Focus on being relaxed
- Neutral head
- Relaxed neck and shoulders (shoulders should be down and back)
- Lean from the ankles
- Hips forward
- Your arms should be bent at a 90-degree angle and should be moving forward and backward. Do not cross your centerline.
- Relax your hands and pretend you are holding butterflies that you don't want to crush in each hand.

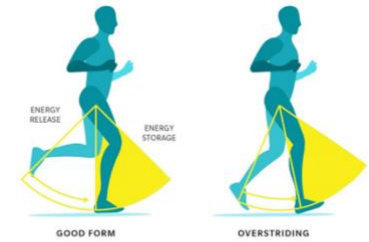


FIGURE 4.3: Pendulum shift
With good form, you encounter minimal stress-per-stride and optimal economy. When you make contact too far in front of the body, or overstride, it requires that you lift the body up and down more, overloading the muscles on the front side of the legs and increasing the stress-per-stride. A symmetric pendulum builds a successful stride.

HIP DRIVE

- Activate your glutes
- Focus on the push back—hip flexor flexibility is beneficial
- Avoid hip drop

FOOT STRIKE

- Foot needs to land beneath center of gravity
- Avoid overstriding, which is inefficient, traumatic on the body, and leads to injury
 - Jarring
 - Quad dominant = knee issues
 - Breaks momentum
 - Deactivates glutes (you pull instead of push)
- Cadence (Is 180 spm ideal?)

WARM UP

- Activates muscles, dilates blood vessels, primes nervous system, lowers likelihood of injury
- Perform glute **activation exercises**, like bridges and fire hydrants
- **Drills** are important for form maintenance and activating certain muscle groups integral to running well. Do drills and strides after easy runs and before hard workouts and racing. The most important drills include: Skips, B-Skips, Butt Kicks, High Knees, Quick Step, Karaoke
- **Dynamic stretching** stimulates and stretches the muscles and unlocks joints. Leg swings, knee to chest, lunges, quad stretch, etc.
- **Strides**

OTHER ITEMS

Breathing: Breathe deeply from the stomach—i.e. “belly breathing”

Run slow to run fast: Easy running forges a strong cardiorespiratory system, builds durability, and makes you faster. Every run should not feel exhausting/painful.

Build mileage slowly: 10% rule

Running shoes: Run in proper, run-specific shoes

Address flexibility issues and muscle imbalances. Mobility is essential, especially spine and hip mobility (they counterbalance one another).

Strength A stronger runner is more resilient and less injury prone. Especially prioritize core/hip strength.