U.S. MASTERS SWIMMING

9 SWIM TIPS FOR BEGINNER TRIATHLETES

THIS GUIDE IS FILLED WITH SWIMMING TECHNIQUE, RACING & TRAINING TIPS TO HELP YOUR SWIM LEG!

Training on your own? Need stronger solutions to resolve trouble areas in your stroke? Craving swim workouts with more diversity? Confused about which swim advice to follow? Ready to recalibrate your swim?

Well, we know swimming! We'll serve as your expert swim resource for all of those topics and more. U.S. Masters Swimming has online swim workouts geared specifically for the triathlete. We'll feed you exclusive, monthly swim content to satisfy your tri knowledge appetite and help you achieve more!

LET'S DIVE IN!

1 TECHNIQUE TIPS

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1. A DIFFERENT APPROACH IN HOW YOU TRAIN IN THE POOL MIGHT BE THE KEY

Many triathletes come from the running world or cycling world, with swimming being the specialty added last. There may be many reasons for this progression, but that doesn't make swimming an unimportant part of a triathlon.

An IRONMAN Masters division champion once told me, "You can't win the race in the swim, but you can lose it there." Here are a couple tips to keep in mind when you're in a pool working toward your triathlon goals.

STOP KICKING LIKE A CYCLIST

Start your kick with a straight leg, with the knee of the kicking leg higher (closer to the surface of the water) than the shoulder-to-hip line. Your knee should be relaxed. Start driving your knee forward (toward the bottom of the pool) by engaging your hip flexor. This is the only point in the kick where it's OK to bend your knee.

Also, I'm often told by triathletes that they don't want to work on kick because they want to save their legs for the rest of the race and that trimming a few minutes off their swim isn't worth the sacrifice that it may have on their bike or run.

My reply to that is two-fold: 1) You need a better kick to train effectively as a pool swimmer; and 2) kicking better is about being more efficient in the water. If you're kicking correctly, it will help your overall swim. The time may not come down drastically, but the level of exertion that you'll be putting into the race will be less, thus saving more energy for the remainder of the race and an overall drop in time.

Kicking like a swimmer will also help strengthen elements of the core and leg muscles that you aren't engaging in your training outside of the pool. Muscle memory is very real. Taking time to learn how to kick.

TRAIN LIKE A SWIMMER

A common question I receive from triathletes is, "Can you give me an 800-yard workout?" My answer: "No, I can't." In swimming, 800 yards is warm-up, not a workout.

In running, you would never do a marathon in your training, and for most people, the first time they do the distance of the race they're competing in is the actual day of the race. The exact opposite is true in swimming.

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By design, we do over-distance training and often train at race pace (through interval set work). Plan out your day and week to spend more time in the pool. This is the only way to truly get better at swimming. This extra time in the pool can help offset some general conditioning/ cardio goals that you might have for the week. Lastly, time in the pool will give your joints a break from all that pavement pounding.

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2. THINK ABOUT YOUR STROKE

BECAUSE LONGER STROKES EQUAL FEWER STROKES...

How many strokes per length should I be taking? If you are skillfully applying sculling motions in your stroke you should be able to keep your hand firmly anchored in one plane as you pull your body past your hand. If you are using the fullest extent of your "wing span" in each stroke (i.e.. stretching your stroke out in front and finishing your stroke completely in the rear) you should be able to move approximately the length of your wing span with each freestyle stroke. (In real life we find that some of the best swimmers move even further than their wing span with each stroke. An explanation of why this is possible is beyond the scope of this article.)

Assume you are 6 ft. tall and have approximately a 5 ft. effective wing span measured wrist to wrist. Swimming or pulling with 100% stroke distance efficiency, you should be able to travel approximately 5 ft. with each freestyle arm stroke (10 ft. for each right-left stroke cycle). In a 25 yd. pool you push off from the wall and begin your first arm stroke at approximately the backstroke flags, leaving 20 yds. (or 60 feet) to swim. If you start counting each hand hit as you stroke down the lane at 100% efficiency you should contact the far wall after 12 strokes (or 6 stroke cycles). If you are 5 ft. tall this would work out to more like 14 strokes per length (6'6" about 11 strokes, 5'6" about 13 strokes).

We are, of course, talking about moderate paced swimming. In the best swimmers we see some reduction in efficiency as speed increases. Anywhere from 10% to 40% increase in the number of strokes per length at a flat out sprint. However these same world level swimmers still take fewer strokes per length while sprinting than the swimmers they beat to the wall.

By now you may have taken stock of your own stroke efficiency and found it lacking. "How do I improve my stroke counts?" you ask. First and foremost, start counting strokes. While you are warming up, while you are swimming easy, while you are sprinting etc. Be aware of how many strokes you are taking now at all speeds. Determine what your "normal" number of strokes per length is in easy or moderate freestyle swimming & pulling and also in threshold intensity swimming & pulling and finally in all out sprints. Get out your training diary (I just know you keep a training diary) and write these down.

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Next, realize that the numbers we calculated above are considered ideals and that it can take years of training to reach ideals. But, starting right now, you can begin trying to decrease strokes in all of your swims. Do drills aimed at absolute minimal strokes per length using long glides between each stroke. Aim to be down around half of your ideal number - certainly less than 10. Do sculling drills and be aware of where your stroke is sculling dominated and where you let go of the water and just paddle. Also do lots of swimming and pulling at 1 or 2 strokes less than your "normal" numbers at various swimming intensities while trying to keep your speed from suffering.

By doing these things regularly you will find that your "normal" numbers will begin to decrease. When this happens, you win.

Emmett Hines, former Director and Head Coach of H2Ouston Swims, coached competitive adult swimming in Houston.

3. FOCUS ON FORCE

APPLYING ARM ACCELERATION FOR MAXIMUM VELOCITY

Science defines swimming speed (S) as the result of propulsive force (F) multiplied by the turnover rate ® minus the amount of drag (D). As a simple math equation, it looks like this:

S = FR – D.

You want the value of S to be as large as possible, so you need to increase force and rate while decreasing drag.

Drag is the biggest factor in our equation, which explains why swimmers who are smooth and streamlined almost always outpace muscular brutes who flail away with fast cadences and flawed form.

PROPERTIES OF PROPULSION

You apply propulsive force with movements of your arms and legs. Your hands and forearms work together as paddle assemblies that push backward through the water to generate thrust.

Breaststroke kick applies force in a similar way, while flutter and dolphin kick create thrust with up and down motions that force water backwards, more like a boat propeller would.

While a propeller can create thrust by cycling at a constant speed, paddles don't work that way. A paddle must continually accelerate to apply propulsive force.

The following example is a simplification of the actual physics, but it works well to help us visualize the process:

- Water is a fluid; when you push it, it moves.
- Once water is moving, anything moving in it at the same speed simply floats along, with no additional force created.
- Therefore, if you want to generate thrust throughout your entire stroke, you must move your paddle faster and faster as the water you're pushing speeds up. Your hand speed must remain greater than the speed of the water it's pushing, which means you must accelerate (i.e., continually increase your hand speed throughout the duration of your pull.)

In other words, an effective swimming arm stroke will not move at a constant rate like the second hand of an analog clock, or like the pedal of a bicycle. There are three distinct speed zones during a complete stroke revolution:

- The recovery and entry, which is a relaxed effort at a constant speed.
- The catch, which is a brief interlude without movement as you establish your position to begin the pull.
- The power phase, which is where your hand and forearm explosively accelerate from the catch position throughout the pull to the beginning of the recovery.

TURNOVER TRADEOFFS

At first glance, our speed equation implies that the fastest possible stroke cadence would always result in the quickest swim. If force and drag remained constant at all turnover rates, this would be true – but the fact is that speeding up your arm stroke can cause a reduction in force and an increase in drag. Pitfalls of overclocking the cadence include:

- Sloppy hand entry that creates turbulence (bubbles) during the catch, resulting in thrust reduction during the pull
- Alterations in body position and alignment from angular momentum created during the recovery, resulting in additional drag from distorted posture
- Pulling-motion form failure because of the muscles' inability to hold proper paddle configuration at the higher speed.

You want to find that optimal cadence where you can achieve the highest stroke rate while maintaining your best form and force production.

ENHANCING THE EQUATION

When you're tired or in the middle of a long distance set, it's easy to fall into the "clock movement" turnover trap; you go through the stroke motion at a constant rate with very little force applied on the back half of the pull.

That's why it's important to regularly perform specific activities to establish the recovery-catch-acceleration speed zones as deeply-ingrained habits.

About the Author: Terry Heggy has been swimming for more than 50 years. He won his age group in the 10K Open Water Championship in 2006, competed in the National Championship Olympic Distance Triathlon in 2014, and qualified again for USAT Nationals in 2015. The 2019 Jack Buchannan Service Award winner is the head coach of Team Sopris Masters in Glenwood Springs, Colo., a USMS-certified Level 3 Masters coach, and an NASM Certified Personal Trainer.

4. EXHALING - THE HIDDEN SECRET TO SWIMMING FARTHER AND FASTER

WHY BREATHING OUT IS JUST AS IMPORTANT AS BREATHING IN...

THE CO2 REFLEX

Most people think that they feel out-of-breath when they aren't getting enough oxygen. The reality is a bit more complicated. As your body uses oxygen, it creates carbon dioxide (CO2) as a waste product.

As CO2 builds up within you, your body senses it and tells your brain that you need to breathe. Your breathing urges are driven by excessive CO2, not by a lack of oxygen. Getting rid of the CO2 helps relieve the out-of-breath distress.

Swimmers who don't exhale properly will quickly feel winded because of this reflex, even though they probably aren't really suffering oxygen debt. This is why many extremely fit triathletes may feel that they can only swim a few lengths of the pool before needing a long rest break - they're holding their breath.

TIPS

Distance runners and cyclists would never dream of holding their breath during a competition, yet our instincts are to clamp up and stop breathing when our faces are in the water. To become an effective swimmer, we must fight this instinct.

Start blowing out *as soon as you finish inhaling*, and that you'll more effectively get the CO2 out of your lungs before turning for the next breath.

Some people find it helpful to count "1, 2," or to silently think the words *in* and *out* to create the habit of rhythm. Experiment to find what works for you.

It's also important to blow at least some of the air out your nose to maximize the airflow and avoid getting water in your sinuses. This is especially critical when exhaling while you're upside down during a flip turn or on a backstroke start. Getting water up your nose is a memorably unpleasant experience.

Many experienced and elite swimmers are able to achieve full exhalation primarily through their noses. For less experienced swimmers, this takes practice—the important thing is to exhale completely so that you're ready to inhale during the breathing phase of the stroke.

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ALTERNATE BREATHING

Many coaches urge swimmers to breathe on every third arm instead of constantly breathing on the same side. This has two primary benefits:

- It makes your stroke more symmetrical and helps you recognize stroke anomalies.
- It makes it easier to switch breathing sides in a race, so you can see your competitors or avoid chaos in open water.

For an alternate-side breathing pattern, you'll have to slightly change your inhale/exhale timing ratio to an "out-out-in" count—but you should still keep air moving at all times.

Once you have mastered breathing ever two strokes, then you can then move to trying out alternate or bilateral breathing

BLOW AWAY PANIC AND KEEP YOUR SPEED

There are times when you'll feel especially out of breath, such as during the madness of a triathlon start, or coming off the wall from a flip turn. In those cases, rather than slowing down to rest, try blowing out a little harder to curtail the CO2 reflex. You'll often find that you have more energy than you thought after you get rid of the "bad air."

BREATHING WITH ECONOMY

It seems logical to assume that it's better to take as many strokes as possible between breaths to avoid any drag created by the breathing motion. Well, this might work for some sprinters, but after about 30 seconds of effort, your body switches to metabolic processes that require oxygen. If you want to maintain power past that point, you must breathe and develop a good inhale/exhale rhythm.

About the Author: Terry Heggy has been swimming for more than 50 years. He won his age group in the 10K Open Water Championship in 2006, competed in the National Championship Olympic Distance Triathlon in 2014, and qualified again for USAT Nationals in 2015. The 2019 Jack Buchannan Service Award winner is the head coach of Team Sopris Masters in Glenwood Springs, Colo., a USMS-certified Level 3 Masters coach, and an NASM Certified Personal Trainer.

5. HOW TO REMAIN CALM IN TRIATHLON SWIMMING CHAOS

Triathlon swimming can catch even the most experienced athlete by surprise. Getting kicked, having your cap or goggles ripped off of your head, surf conditions you haven't experienced before or haven't experienced in some time, or accidentally inhaling a face full of water can trigger any triathlete into survival mode.

When anxiety takes over, your breathing feels labored or you start wheezing, your heart rate jumps, your arms begin to feel very heavy, and it's difficult to kick. The labored breathing and heaviness in your arms and legs aren't because you haven't built the stamina or didn't practice high heart-rate training, but rather you're experiencing the fight or flight phenomenon, during which oxygenated blood is redirected away from your limbs to your vital organs.

Knowing what to do when you're triggered into survival mode can keep you from going over the fight-or-flight edge and into a panic situation. Let's take a look at some things to practice and prepare for when you're in unexpected conditions and provide some steps you can follow to get your head back into the swim.

PRACTICE IN OPEN WATER

Swim in adverse open water conditions when possible. Swim with a group and get close—bump into each other, practice swimming side by side, drafting, and passing each other. It's always best to breathe on the side away from chop. But if there is some chop, practice breathing toward the chop—get your head in position and the timing right to breathe easy, especially if it's on your weaker side. Have a buddy grab your leash and unzip your wetsuit as you swim by. Practice rezipping your suit in the water when you're a bit winded and swimmers are passing you on both sides. Remove your cap and goggles, stuff them in your suit, and swim a few hundred yards without them. Have someone grab your ankle and hold on while you continue to swim for several strokes. Practice shore starts and finishes with a group—the larger the better.

The more creative you are, using any combination of the above, the better prepared you'll be for the unexpected. You'll also become a better and faster swimmer when water conditions are normal so it's a win-win.

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TURN CHAOS INTO OPPORTUNITY AND FUN

The day of your triathlon recall your favorite simulations with your swim group and how much fun they were. Make it the same on the day of your race. Rather than looking at the start of a triathlon with anxiety and trepidation, look at it as another practice or simulation, only with a much larger group. Visualize a great start, passing the first buoy and swimming cleanly though tough conditions with lots of swimmers in the water and nothing bothering you from the swim start to swim finish.

Here's a helpful list to have on race day, or even on a tough day swimming in adverse conditions. It's not limited to these steps—modify it and make it personal to you, with whatever helps you avoid survival triggers.

BEFORE THE RACE

- Stay warm in the morning—wear sweats and a hat
- Drink warm or room-temperature liquids to keep your core warm—no ice-cold drinks
- Put your wetsuit on not more than 30 minutes before your wave start
- Get in a short swim 15 minutes before your wave start and do a bottom check where you plan to enter the water to check for obstacles or sandbars, etc. Locate navigation targets you'll use for sighting and swimming straight.

DURING THE RACE

- When the horn goes off, do what you've done in practices: Get in briskly but in control. A face-plant at the swim start is a really bad way to start your race.
- Stay low and get past the surf quickly by moving under the waves, slow your stroke down, and get your breathing under control.
- When you pass the first buoy and find your own lane, swim your swim, the one you've been practicing all season—don't suddenly change it up and start sprinting.

IF SOMETHING HAPPENS

If you get anxious, kicked, have difficulty breathing, inhale some water, or start hyperventilating, here are a few tricks to help you regain control:

- Roll on to your back to recover
- Slow your breathing, relax, and get all the air you need
- If backstroke or breaststroke isn't an option because of high chop, try to put your head low in the water and keep moving, letting the chop pass over you and sneaking your breath in during the troughs—the low points of the waves. Once you have things under control, your arms will become light again and your legs connected and kicking.
- Don't be afraid to signal for help if you need it. Sometimes it's better to get out and try another day.

While you're swimming, tell yourself, "I'm OK, it's a beautiful day." Enjoy every stroke you take and feel how lucky you are to be able to do something so few can do and do well. Before you know it, your feet will hit the sand and you'll be sporting an ear to ear grin. Be sure to congratulate yourself on a job well done!

About the Author: Stuart McDougal: A USMS Level 3 coach and Total Immersion Master coach. He is the head swim coach of SoCal Tri Masters and LA Tri Club in Los Angeles and co-founder of Mind Body and Swim Inc. in San Francisco.

6. TRIATHLON SWIM LEG STARTS AND FINISHES

WHETHER YOU'RE STARTING ON LAND OR IN THE WATER, THERE'S A LOT TO CONSIDER AND PRACTICE

Practicing these types of starts and finishes is critical for your swim leg success.Here's what you need to know.

LAND START

When starting on land, knowing where you want to line up based on your skills and abilities can make the difference between having a great start and a difficult or unpleasant one.

Faster swimmers and triathletes will line up in the front of the pack with the straightest line to the first buoy, and they'll be more aggressive and confident, moving quickly to the deeper water where they can start swimming. Slower or inexperienced open water swimmers or triathletes should pick a spot in the lineup that's more conservative to avoid being bumped, squeezed, and swum over. Start behind the faster swimmers or at the ends of the pack. You can even get behind the entire pack and let everyone start in front of you.

Depending on the venue, land starts can be quite different. If the bottom drops off quickly, you'll find yourself swimming in short time. If the bottom gradually gets deeper and the bottom is safe to step on, running or walking fast through the shallow water gets you into the deeper water quickly. However, knowing how to progress through water as it gets deeper requires practice.

Practice running into shallow water picking your feet up over the surface of the water. Start off with a slow pace, working on getting your feet up and over the shallow water. Practice running at different speeds to see what works for you. As the water gets deeper, it will get more difficult to get your feet over the surface of the water. When this happens, you can lift your knees and feet higher in front of you or throw your feet out to the side if your knees are flexible. Both can be more difficult and tiring, so don't try it at a race without practicing it during your training sessions.

Once the water is up to your waist, you can begin dolphin diving. Only dolphin dive if you know the bottom is safe enough for you to do so and you've practiced it in your training sessions. Hold your arms out in front of you like you're doing a regular dive but keep your head up and looking forward as you execute the dive. Don't put your head down or lead with your head, or you could dive into the bottom or an obstacle on the bottom and be severely injured. Your head should stay toward the surface of the water as your arms punch through, creating a pocket for the rest of your body to follow. Once you reach the deeper water, begin swimming.

IN-WATER START

Some events have an in-water start. The water may be shallow enough for you to stand, or you may have to tread water or hold onto a rope, dock, or other object. Again, your position in the lineup is important for a good start. Don't be in the front of the pack if you're a slower or newer swimmer—move to the outside or back of the pack. Practice starting while treading water, which requires creating momentum from a dead stop (a skill that is also useful on the swim course if you find you've had to stop to feed, adjust your goggles, etc.). If you're starting from the water and it's shallow enough to stand and the bottom is safe, start with a strong dolphin dive to get you going. Practice this during your training sessions.

THE FINISH

The finishes typically require you to exit the water and make your way on your feet to the transition area. This means that your legs will need to be ready to work, so if you're not a big kicker, engage your kick leading up to the finish to warm up your legs. Practice swimming as far into the shoreline as you can before standing up. Then, stand up, get your balance, and start running in the shallower water. Like the start, bring your knees up high and then pick your feet up and over the surface as the water gets shallower. Once you hit dry land, watch where and how you step to ensure a smooth transition.

Remember, the confidence you build in practice will help keep your nerves under control and allow you to have a fun and successful race.

David Miner is the owner of Swim Without Limits, Inc., and a USMS Level 3 coach.

7. HOW TO REMEDY CHALLENGES OF THE SWIM-TO-BIKE TRANSITION

Among the unique and exciting challenges of triathlon are the transitions from one discipline to the next. When you're trying to shave time from your total race time, transitions can account for a lot of extraneous seconds or even minutes. More importantly, what happens in the transition interval itself can reveal deficits in energy as you attempt to adjust to the completely different demands of the next leg of the race.

CHALLENGE: POSITION CHANGE FROM HORIZONTAL TO VERTICAL

Much of the discomfort can come simply from the postural changes from exerting yourself in a horizontal position in the swim to jumping on your bike. A lot is going on here, starting with the vestibular adjustment in your inner ear. Finding your equilibrium relies on the agreement between your visual feedback, your awareness of the position and movement of your body (proprioception), and your brain. Add to this the continually changing position that comes with swimming in chop and doing so within a crowded pack of frenzied triathletes to a narrow chute on the beach.

It's no wonder that you may feel unsteady, wobbly, or even momentary vertigo when you stand up. In your training sessions in the pool, you can incorporate elements that challenge your sense of equilibrium to better cope with this transition.

WHAT TO PRACTICE

From a race pace, stop short of the wall in the deep end to vigorously tread water for at least 30 seconds, and then resume swimming. Do this as much as necessary until you can do this with ease. And then do it some more.

Add no-wall turns to a set of long repeats that are at least 200 yards or meters and rotate yourself under the flags instead of at the wall. Try executing these rotations as quickly as possible without much loss of momentum in your swimming pace. Again, repeat this as much as necessary.

Between repeats or in between sets, pull yourself out of the water onto the pool deck as soon as you touch the wall and stand upright to get a sense of your position before getting back in the water.

The idea is to repeatedly subject yourself to a stressor to improve your natural response to it when the time comes—such is the rationale for endurance training in the first place!

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CHALLENGE: SWIMMING IS A TOTALLY DIFFERENT KIND OF EXERCISE

Whoever masterminded the sequence of a triathlon to make it as difficult as possible had to have done so with the idea that it would be most physically challenging to begin with the swim. Starting with the fact that you're only able to breathe when your face isn't in the water, swimming is a full-body cardiovascular endeavor that utilizes many muscle groups in your arms, legs, abdominals, and back to work in harmony with one another. Incidentally, you'll need some reserve energy for the transition and latter two legs of the race when you're finished.

If you're feeling depleted as you round the last buoy, start preparing yourself for the transition while you're still in the water. Since you're about to shift more of your effort to your legs, get blood pumping down there by kicking harder in the last 50 to 100 meters or so. You're literally stepping on the gas and forcing your body to send the fuel where it's needed most.

WHAT TO PRACTICE:

You can easily incorporate this into your workouts by varying the intensity of your kicking.

As you approach the end of a repeat, kick hard for the last 15 to 20 yards/meters into the wall. When you get there, stand up and jog in place in the water.

During a kick set, periodically rotate your kickboard 90 degrees from flat on the surface to submerged at least halfway like a bulldozer or tombstone. You'll sense an instant requirement to increase the tempo of your kick in order to maintain the same pace.

CHALLENGE: LOGISTICS FOR REALISTIC TRAINING

Setting up swim-to-bike "brick" exercises that focus specifically on the movements in the transition itself can be a logistics challenge because of the necessity to quickly move from a pool to a bike, and varying water and weather conditions may thwart the triathlete trying to replicate as closely as possible the conditions during an actual triathlon.

WHAT TO PRACTICE:

When you can't do an actual swim-to-bike brick workout, practice in the pool by treading water and walking or running in the water between your regular sets. This will also help with the final approach to the transition, when it's necessary to stand up and run through 1 or 2

feet of water. Sensing the resistance of water and understanding how to overcome it with the amount of force appropriate will make every transition that much simpler and help you deal with any surprises going into T1 on race day.

Each time you practice these exercises to improve efficiency of your swim-to-bike transition, you're making physiological gains that'll make you a more complete triathlete.

Erica Slaughter has competed in several triathlons and has more than 10 years of experience coaching triathlon, including two years as head swim coach for the triathlon team at the University of Michigan. Erica has a master's degree in exercise physiology from Eastern Michigan University.

8. THE RIGHT ROUTINE DEPENDS ON MANY FACTORS

The number of competitions in your triathlon season as well as your need to train for three disciplines can make developing a training strategy seem complex but coming up with the right plan isn't as difficult as you might think.

You need to increase your aerobic capacity for races that require varying levels of endurance, but that's not your only objective. Perhaps more importantly, you need to physically and mentally prepare for the challenges of each discipline and the unknowns of triathlon that make each race distinct and exciting. You want to stand on the beach waiting to get the race underway, undaunted and ready for whatever the water has in store for you, and you want to exit the water with enough energy to do as well as you're capable of doing in the cycling and running legs of the race.

With these goals in mind, develop a framework for the season that ensures you get the most out of your training. You'll need to have quantifiable benchmarks against which to measure your progress and evaluate your race readiness.

In a perfect world, you'd have unlimited time available to spend training. But you've got demands on your time and three disciplines for which to train. To make things simple when it comes to developing your swimming training plan, try constructing a strategy based on a periodization scheme that fits your goals for the season. There are two main types from which to choose: linear and nonlinear.

LINEAR PERIODIZATION

A linear periodization scheme requires you to progressively increase your yardage and perhaps the duration of your training sessions. The rationale for this is simple: Increasing your training load increases the stress on your muscles, which expands your aerobic capacity. Furthermore, planning a training season based on this periodization scheme is as simple as increasing your training volume on a daily or weekly basis.

Let's say that you have 12 weeks until your big race. Each week, increase your yardage incrementally, perhaps by 25 percent from the week before, until you reach a workload that should provide the aerobic base you need for your event.

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For example, if you start with 2,000 yards in Week 1, you'll increase it to 2,500 in Week 2, 3,125 yards in Week 3, and so on. You do not and should not just get in the water and crank out exactly that distance straight. Your time will be well spent by including drills, kicking, pulling, and anything else you need to work on to become a stronger swimmer.

NONLINEAR PERIODIZATION

In a nonlinear periodization scheme, you'll vary the training variables of volume (the yardage you swim) and intensity in your workouts on a daily or weekly basis. This way, you could peak for several individual races in one season as opposed to just one main race at the end of the season.

The theory behind nonlinear periodization is that training gains in strength and endurance can be achieved through more than endurance training alone, that physiological gains can be supplemented by high intensity interval training.

What this means for your swim training is that you'll vary your yardage on a daily or weekly basis and add some shorter distance sets at race pace (or more intense than race pace) with intervals to limit your amount of rest between repeats.

To develop your endurance, it's important to put stress on your muscles so that they'll respond and adapt to this stress. This is where training gains will be made; without this stress, your reduction in volume will set you back from where you'd be if you were following a linear periodization scheme but with interruptions.

An example of a weekly workout utilizing nonlinear periodization might look like this:

DAY 1
1000 moderate pace swim
8 x 50s @ :45 (or whatever interval affords you no more than 10 seconds rest)

DAY 2
1000 moderate pace swim
6 x 100s @ 1:30

DAY 5
2000 moderate pace swim
4 x 50s @ :45

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As you can see, nonlinear periodization shouldn't be confused with completely random organization of training. You still want measurable benchmarks to chart your training progress.

Erica Slaughter has competed in several triathlons and has more than 10 years of experience coaching triathlon, including two years as head swim coach for the triathlon team at the University of Michigan. Erica has a master's degree in exercise physiology from Eastern Michigan University.

9. HOW YOU SHOULD SPEND YOUR *OFFSEASON*

The triathlon offseason affords you the opportunity to evaluate your aptitude as a swimmer. You will have much more to gain from your swimming workouts in-season by continually assessing the effectiveness of your abilities. In order to get the most out of technique drills and pace training, you must be reasonably conditioned specifically for swimming, what competitive swimmers often refer to being "in shape." It's not enough to be generally aerobically conditioned—you could be able to run five-minute miles and still be floundering in the pool. Getting in swim shape necessarily involves some rudimentary skill review, especially if you've never had much swimming instruction.

FOUNDATIONAL ABILITIES

The two most important aspects of competent swimming are core stability and breath control. Without them, swimming is like trying to learn calculus without having working knowledge of algebra and trigonometry. This can be dangerous in triathlon because if you're not a completely competent swimmer, you'll be less capable of dealing with the unanticipated conditions in a frenzied open water swim.

Core stability in swimming is essential for maintaining alignment of your body and mitigating form drag while simultaneously propelling your body through the water. With the density of water being 800 times greater than that of air, every tiny errant movement or dropped elbow/hip/leg/foot is amplified with direct consequences on speed and the effort required to move through the water.

To evaluate the effectiveness of your core stability in the water, the simplest thing you can do is work on floating stationary in a supine position, looking upward in streamline position. Keep your body as aligned as possible, with legs fully extended and your toes at the surface. Control all impulses to "catch" yourself and bring your legs back to the surface using your abdominal, oblique, back, and thigh muscles. Don't cheat by kicking them back up or sculling with your hands to re-establish position.

Breath control is important in tandem with core stability because the percentage of air in your lungs directly affects your buoyancy and therefore your position in the water. Of course, with every inhalation and exhalation, that percentage changes constantly. Get in the deep end and put it to the test sometime. Exhale as much as you can, and you'll begin to sink.

3 TRAINING TIPS

Think of your lungs as balloons—try to keep them between 40 to 60 percent filled with air at all times. What you're doing is programming your tidal volume to also work on behalf of your buoyancy while swimming, in addition to the purpose of respiration which is to nourish the cells with oxygen and remove the waste products (CO_2). While swimming, you need to train yourself to ration the air in your lungs. Then you need to learn how to do that at the appropriate times in your stroke cycle. This is because your center of mass changes with each arm movement forward or backward.

While in the water testing your core stability with supine floating, change the position of your arms from overhead to by your sides. This moves your center of mass lower, and farther from your center of buoyancy (your lungs). In this movement alone, you'll understand the connection of core stability and breath control and their necessity for swimming efficiently. Practicing positional changes in the water and floating in different positions are valuable for becoming a competent swimmer. With repeated workouts, core stability and breath control can become instinctive.

GETTING THE MOST OUT OF DRILLS

With most triathlon swim distances ranging from 500 meters to 2.4 miles, your technique focus should be on long distance freestyle drills. Long distance freestyle technique is generally distinct from sprint freestyle technique with differences in:

- Length of the stroke (more distance per stroke)
- Frequency of stroke cycles (fewer cycles per minute)
- Degree of hip rotation (more rotation in concert with longer strokes)
- Contribution of kicking (kicking mostly to aid rotation)

Use of long distance freestyle technique is not only a biomechanical advantage in longer swims (especially long open water swims), it's also a much more economical use of your energy resources than a sprint freestyle stroke technique with high stroke turnover and vigorous kicking. Not surprisingly, core stability and breath control are even more important for having the most efficient long distance freestyle technique.

3 TRAINING TIPS

What is swimming efficiently? Maintaining body alignment, reducing form drag, maximizing distance per stroke, and rationing breathing through stroke cycles and changes in center of mass. Once you have this down, you'll gain more from any workout you do.

VALUABLE OFFSEASON SETS FOR TRIATHLETES

- Side kick with board: Holding a kickboard with one hand extended in front, kick on your side, changing position of your other arm from laying on top of your side to having your hand on your hip.
- Side kick without board: Holding your arm out front, extend into a side kick for 10 seconds, and then rotate 180 degrees onto your other side and repeat 10-second side kick on opposite side.
- Head-up freestyle: Look forward and keep your head straight, and work on keeping your hips and feet at the surface. Don't forget to ration your breathing even with your head out of the water.
- Invisible kickboard: Hold your arms out front in streamline and kick as you normally would with a board.
- Stop and tread: In any set, add random pauses to tread water for at least 30 seconds, and then resume swimming without pushing off the wall or bottom.
- Pulling with bilateral breathing: Breathe every three or five strokes, and work on maximizing rotation until you feel like you could roll over—correct this using core muscles. For an added challenge, move the pull buoy to between your ankles.

Erica Slaughter has competed in several triathlons and has more than 10 years of experience coaching triathlon, including two years as head swim coach for the triathlon team at the University of Michigan. Erica has a master's degree in exercise physiology from Eastern Michigan University.

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