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Exhaling: The Hidden Secret to Swimming Farther and Faster

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Why You Need to Get a Snorkel Right Now

Get Your Feel for the Water and Stop Slipping

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Falling in Love With Swimming–Again

Michigan Masters swimmer Sallie Bartkowiak took a lengthy trip back to the pool

I readied my goggles and adjusted my cap. My mind was like a freight train. Would I still have "it?" Would my muscles remember?

After a 30-year break from any type of swimming, I needed to jump-start my gym routine because my running days were over. The pool was the obvious answer—I was a swimmer!

I would mark that first swim four years ago "the exploratory voyage." Keeping my expectations low, my nerves instantly calmed down as the water enveloped my body. I swam a couple freestyle laps and stopped, a bit tired.

I wasn't surprised. As a seasoned athlete on the bike and track and in the weight room, I knew my endurance would translate differently in the pool. The muscle memory from decades past found its way back into my bloodstream and those endorphins kicked in as I continued with flip turns, backstroke, butterfly. A flood of racing and swim-team memories came back to me during the 300 yards I was able to swim in my first return to the pool. The quietness I found so exhilarating coming off walls was still there. It still felt magical.

That mere 300 yards, which once felt like a mountain to overcome, has turned into 4,000 yards a day, five times a week over the last four years with Michigan Masters. I have become obsessed with swimming. Again.

It's been a long trip. My father introduced me to water at the age of 4. The love affair started with lessons, and turned into middle school, high school, and club swimming. He was a teacher, basketball coach, and role model to me, and his passing in 1982 when I was just 16 was devastating. I didn't want to step foot in a pool again.

The pool was a great place to disperse my grief. But that grief soon turned inward, and the coping mechanism I developed was an eating disorder that would last for more than two decades. My dream of swimming in college ended. I had to leave my team at Michigan State my freshman year in 1984 because I was physically incapable of participating.

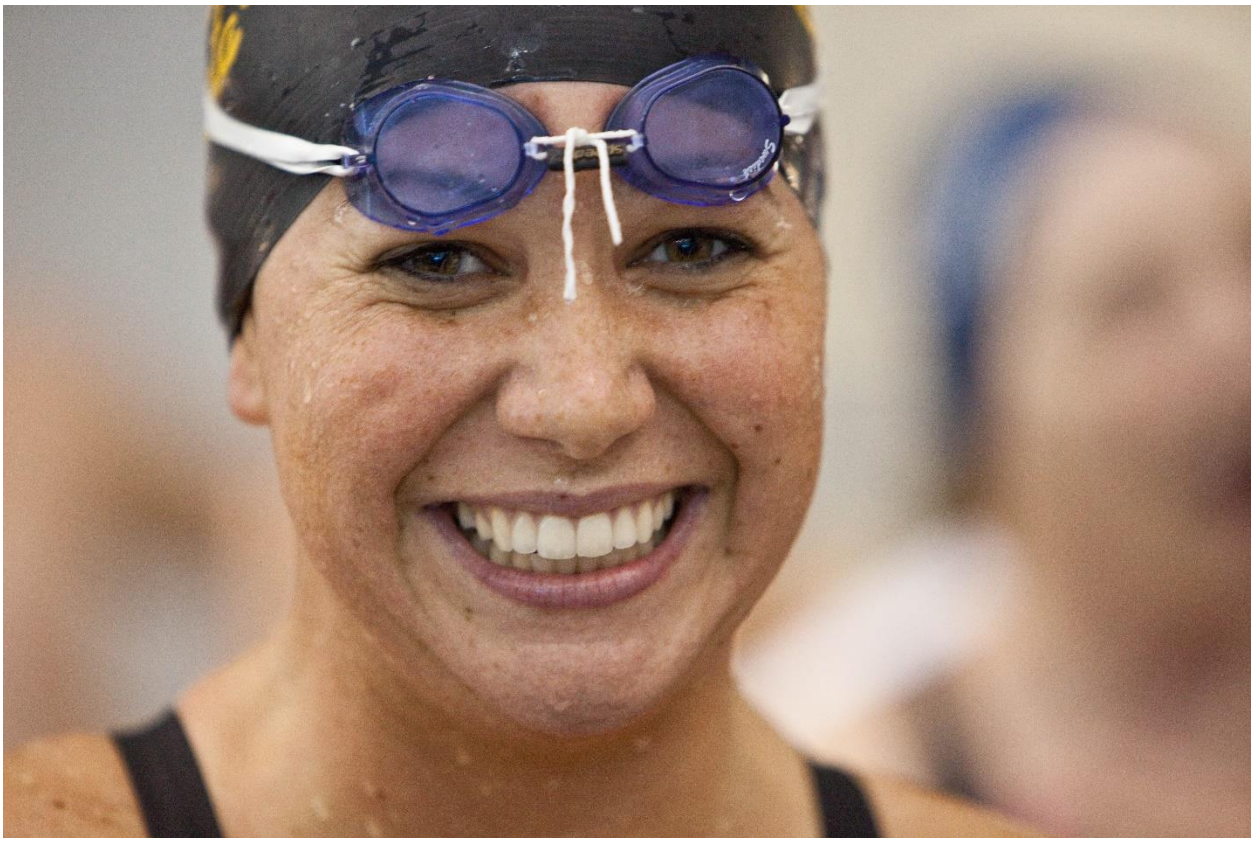
I was in and out of hospitals wrestling with the eating disorder until 1989 and then, much healthier, I managed to compete in a couple triathlons. But that was the extent of my swimming. There was no passion for a swimming lifestyle until that day I decided to see what the pool looked like at the gym.

Flash forward to 2014—the bulimarexia in remission and I'm living a positive lifestyle. Getting into the pool again that day at my local gym and starting a swim workout regimen inspired me to find out about coaching at our local club, where I've been a USA Swimming—certified assistant coach for three years.

It's the age-group kids who really motivated me to join Masters Swimming. Watching them compete awakened the competitive beast that had been lying dormant in me for more than three decades. I know my swimming endeavors enable me to be a better coach and role model. It shows the kids that they, too, can have a life around water on their terms, and that there are many ways to appreciate swimming.

I tell myself every day that getting back into swimming and competing was the best thing I ever did—both mentally and physically. The time away from the sport has given me a different perspective of how I see myself and treat my body. Coaching connects me to my father and keeps alive in me the values he held so dear: to live life on your own terms with mental grit.

About the Author - Sallie Bartkowiak
Sallie Bartkowiak has been swimming since the age of 5. After primarily excelling in middle distance and backstroke through high school and as a walk-on at Michigan State, an illness sidelined her dreams of continuing her swimming career. After taking a break for 32 years, she found her love of swimming again through age group coaching as an assistant coach with the Spartan Aquatic Club in Novi, Michigan. She was inspired to get back into the pool and train again and joined USMS. As a Michigan Masters member, she has now been competing since 2015.



Exhaling: The Hidden Secret to Swimming Farther and Faster

Why breathing out is just as important as breathing in

Even before the development of scientific studies and advanced laboratories for metabolic analysis, swimmers became aware of the following basic facts:

- Breathing in while your face is underwater is NOT the best respiratory strategy, and
- Air is absolutely necessary if you're planning to swim more than about 50 yards.

These two obvious truths made it necessary to create swimming strokes that allow the mouth and nose to exit the water to access the air. Nearly everyone understands that part, and no one has trouble *inhaling* while their heads are turned.

But it's **underwater** where the magic *really* happens.

The CO_2 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 (CO_2) as a waste product. As CO_2 builds up within you, your body senses it and tells your brain that you need to breathe. Your breathing urges are driven by excessive CO_2, *not* by a lack of oxygen. Getting rid of the CO_2 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.

A word of caution: Hyperventilating (taking a series of deep, fast breaths before you swim) purges your CO_2 reserves, which eliminates the safety mechanism of the breathing reflex. This can cause shallow water blackout, a condition in which your body runs out of oxygen and you pass out and drown without ever recognizing that you're in danger. You should never hyperventilate before swimming and you should not attempt to swim long distances underwater.

Tips for Land Animals

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.

- Go for a hard run or bike ride, and pay attention to your breathing. You'll most likely find that air is *always* moving either in or out, and that you inhale and exhale for very close to the same duration.

- Apply that same breathing pattern in the pool. This means that you'll start blowing out *as soon as you finish inhaling*, and that you'll more effectively get the CO_2 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.

Alternate Breathing

Many coaches urge swimmers to breathe on every third freestyle stroke 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.

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 sprint effort, your body switches to metabolic processes that *require* oxygen. If you want to maintain power past that point, you *must* breathe. Although it's a wonderful stroke aid to swim with a snorkel to perfect your alignment and posture, you really do need all the air you can get when it's race time. If you're swimming any sort of distance at all, you should not *ever* hold your breath. Instead, work with your coach to develop a smooth and drag-free breathing motion and good inhale/exhale rhythm.

About the Author - Terry Heggy
Terry "Speed" 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. He's the head coach of Team Sopris Masters in Glenwood Springs, Colo., and is a USMS-certified Level 3 Masters coach and an NASM Certified Personal Trainer.

Watch Out for These Trouble Areas in Your Freestyle and Backstroke

Swim faster by finding and eliminating these dead zones

It's easy to assume that the propulsive part of your stroke extends from the catch to the beginning of the recovery. Your arms are getting tired, after all, so you *must* be applying force throughout the entire pull, right?

Well, maybe not. When we carefully examine strokes underwater, we find that nearly everyone manages to miss some small piece of the propulsion puzzle, and therefore passes up an opportunity to go faster. Let's look at a few common causes of dead spots in freestyle and backstroke and ways to eliminate them.

Kick

Identify

- The easiest dead zone to notice is when the legs stop moving. Some of us have sporadic or syncopated kicking where our legs merely float behind us at times. This might be OK for a long-distance swimmer concerned with energy allocation over the miles, but sprinters need to apply continual force throughout their races.
- A trickier dead zone is when the legs kick *too* much, creating more drag than thrust. If the feet go too deep or out sideways or bend 90 degrees at the ankle, they'll begin to push *forward* against the water, slowing you down. If they come too high out of the water, they're wasting energy in the air and creating disruptive turbulence as they reenter.

Eliminate

- Have your coach provide feedback while watching your kick. Pay attention to what your legs are doing until you're confident that what you feel and what the coach describes match up.
- Take your kick sets seriously, working on driving the legs from your core with a quick and steady cadence. If your abs and legs aren't burning after a kick set, you probably didn't work it hard enough.
- Think about your kick on the first and last length of every repeat you swim. Check in on your legs to make sure they're not goofing off.
- Developing a consistently strong kick is a demanding challenge that requires a lot of time and effort. Make the commitment to accept the pain and agony of continual kick work in exchange for the speed and power you'll gain in the long run.

Arms

Identify

Dead zones in freestyle and backstroke pull typically occur when these elements break down:

- Acceleration—To achieve maximum thrust, your hand must move faster and faster throughout the stroke. If your hand only moves at a constant, clocklike speed, the force against the water *decreases* as the water begins to move in response to the initial pressure.
- Hand and forearm angle—If the palm and forearm flatten out in the water (lose vertical orientation), the propulsive surface of the arm slices through the water without creating thrust. This is also known as “dropped elbow” or “slippage.”
- Stroke length—If you lift your arm into the recovery too early (mid ribcage), you’ve cheated yourself out a significant part of your pull.

Though not strictly qualifying as dead zones, any motion that doesn’t move *toward your feet* will also rob you of propulsion. Especially common in backstroke, these include crossover, pushing water to the side, or pointing your palm toward your thigh at the end of the stroke.

Eliminate

- Use hand paddles to enhance your sense of force as you practice accelerating directly backward throughout the entire stroke. Try to feel your hand speed continually increasing as you move your arm. If you feel the pressure drop, you need to push harder during that part of the stroke.
- Tether yourself with stretch cords and swim hard against resistance. Try to maintain a constant distance from the wall. Any fluctuation in your position (bouncing forward and back) will identify a dead zone in your stroke you can work to eliminate.
- Consistently incorporate stroke count work into your practices. While “max distance per stroke” drills have value in teaching you how to create a long and smooth stroke, it’s also important to count strokes when you’re in a high-effort set to ensure the habit of staying focused on efficiency and full thrust production.

Keep in Mind

A dead zone is not necessarily synonymous with lack of motion. Streamlining off the walls and getting a good catch are nonpulling arm moments we want to maintain and maximize. But when your hands *are* moving in the water, work to develop awareness that they’re generating productive power throughout the stroke.

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Why You Need to Get a Snorkel Right Now

Snorkels are simple training devices, but they can make you a much better swimmer

Many swimmers, especially the seasoned ones, have been taught the best way to improve is to swim. While that's essentially true, I think we can all agree that our sport is one of the most complex on the planet and full of movements we don't do on land.

This makes trying to learn and do everything at once—from large to fine movements with breathing, timing, and training from a physiological standpoint all mixed in—overwhelming. This is where training tools and equipment can play a huge role in making you better.

One of the best tools out there, for everyone from a novice to an elite, is the snorkel. It helps you focus on one thing, encourages a pattern of movement, and helps you build skills.

The Why and the How

Focus on Just One Thing—We're a multi-tasking society, answering emails during a meeting or talking on a cellphone while driving. But if our body is desperately seeking oxygen, we don't have much room to think about anything else.
The snorkel takes away the task of when and where to breathe, so you can think about other things or notice little things in your stroke that you wouldn't ordinarily be able to.

Encourage a Pattern of Movement—Remember the old saying "Perfect practice makes perfect?" There's no such thing as muscle memory. Instead, we rely on a pattern of movement imprinted on our brains.

If our brain is consumed with the thought of getting oxygen, it's unlikely you'll be able to focus on improving your stroke. A snorkel can help with this.

To imprint a correct pattern of movement, we have to repeat it over and over again in order for it to be stored. Your brain can add other movements, such as rotating to breathe, to the original pattern after you've learned it.

Enhance a Skill—For those of you who have used a snorkel, you know that all is well until it's time to turn. If you're swimming freestyle and doing a flip turn, clearly there will be water in the snorkel. The key is to make sure you get enough air on the way in, so you can exhale while you're upside down on the wall. Water accumulating in the snorkel is displaced by that air as you right yourself after the flip and proceed to the streamline and breakout.

Back in the day, your coach probably said you should take at least a few strokes before breathing off the wall. Guess what you have to do with a snorkel? That's right—manage that breathing and think about your streamline and efficiency.

Final Thoughts

All training tools require some getting used to, and a snorkel is no different.
If you have a chance, try it out on your own outside of a structured practice, so you don't have the added pressure of the set or the clock making your experience miserable.

Long course, in many people's experience, is a little easier to get used to breathing through a snorkel because of the longer times between stops. Some of us also tend to breathe in through both our mouth and nose when we breathe, but after a few chlorinated water sinus rinses, we learn not to or that a nose clip can be helpful.

Snorkels (and other training tools) are great for helping you become a better swimmer, but you should never feel like these things are like Superman's cape or training wheels and that the only way you can swim well is with them.

Instead, use them to build skills, so you can be a better swimmer. The great thing about our sport is that, at a certain age, you may not be able to get fitter or stronger, but you can always get better.

About the Author - Scott Bay
Scott is a USMS-certified Masters coach and an ASCA Level 5 coach and has been actively coaching and teaching swimming since 1986 to swimmers of all ages. He's also written numerous articles on technique and coaching and contributed to USMS's coach certification curriculum. Bay presents at clinics across the country and has written an instructional book, "Swimming Steps to Success." (Human Kinetics, 2015). Bay is the past chair of the USMS Coaches Committee, and the Head Coach of YCF Masters.



Bonus Swim Workout #1

- 400 warm up (your choice of stroke)
- 6 x 75s w/:20 seconds rest (25 free/25 non-free/25 free)
- 10 x 25s w/ :10 seconds rest (focus on rotating your hips and reaching out in front of your stroke)
- 300 easy pull (focus on body position and keeping your head down)
- 4 x 75s w/ :30 seconds rest (get faster every 25 within the 75 and the last 25 should be FAST)
- 100 cool down

Total: 1,800 yards

Get Your Feel for the Water and Stop Slipping

Slipping can be a major problem in your technique

Slipping is an important technique problem to watch for. Slipping is when your strength matches your stroke, but you just can't seem to "hold" the water after the catch. This is often due to overpowering your stroke, but it can also be from a lack of feel.

Going too fast? Your brain will pay attention to pulse and breathing. Working too hard? Your brain will pay attention to how your muscles feel. So how can you tell if you're slipping? Slow down and pay attention.

Developing Your Feel for the Water

If you've ever been mystified how an elite swimmer takes just seven strokes in a 25, the answer is feel for the water. This is tough for most swimmers to do and most coaches to teach because it's a tactile thing. It's not just how much pressure you place on the water, but how well you go through the water at your best speed.
Coaches can explain movements and swimmers can follow these instructions and try to mimic the movements of faster or more efficient swimmers, but what it feels like is specific to each person. You've got to determine what's best for you.

Here are some tips for how to develop feel in the water.

- **Sculling drills—**These help develop hand strength but also make you aware of what it feels like when the water slips off your hands and other surfaces.
- **Build sets—**This is when you increase or try to increase the speed of your swim by putting more pressure on the water. As you add strength to the movement, be careful to pay attention to what the water feels like on your hands.
- **Distance-per-stroke sets—**DPS sets are the best bet to find your connection to holding the water and keeping it throughout the stroke cycle. Do this with a pull buoy to make sure you don't cheat by doing too much kicking.

Get Creative

Now that you're paying attention to where the water is slipping and you're developing a feel for the water, what's next? Simple: Turn on your creative side and start experimenting with the pitch of your hands, your body position, where your elbows are, your kicking efficiency, and your general rhythm for swimming. Drop out of the workout from time to time and just concentrate on your feel for the water.
Here are some things to do on your own:

- If you have a snorkel, use it. If you take the immediacy of needing to breathe away, it is easier to pay attention to the smaller things like when and where the water is slipping.

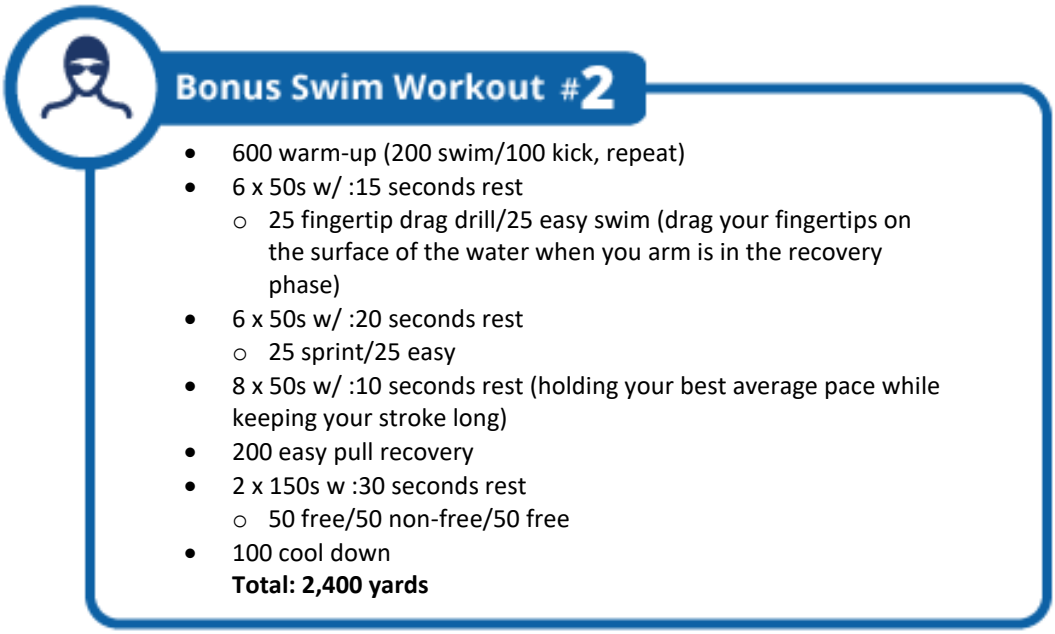
- Fingertip paddles are your friends. Unlike traditional paddles, these little beauties don't take the feeling away from your hands but still increase the surface area you can use to hold the water. A bonus is that they work for every stroke.
- Ignore the clock. This is so difficult for most of us. We like immediate results and feedback, but remember that if you're programming a new pattern of movement in your brain, the muscles in your body need time to develop the strength to support that new movement. Your times on sets may be slower at first, but in the long run, as the movement strength develops, the short-term setback will be well worth it.

Good Struggle

There is no progress without struggle, but I, for one, am not a fan of unproductive struggle. It's best for you to pick a time in your year when you have some time to work on things without the pressure of an upcoming championship or overwhelming demands from the world outside the pool.

It's OK to have trouble with feeling the water. For many people, that awareness comes and goes at first. But with some conscious effort and attention to where the water slips, it's a skill that you'll eventually develop.

About the Author - Scott Bay
Scott is a USMS-certified Masters coach and an ASCA Level 5 coach and has been actively coaching and teaching swimming since 1986 to swimmers of all ages. He's also written numerous articles on technique and coaching and contributed to USMS's coach certification curriculum. Bay presents at clinics across the country and has written an instructional book, "Swimming Steps to Success." (Human Kinetics, 2015). Bay is the past chair of the USMS Coaches Committee, and the Head Coach of YCF Masters.



Shoulder Exercises for Swimmers

Increase strength and mobility in your shoulders for improved performance

Many swimmers have missed some amount of time away from the water due to some type of shoulder injury, either minor or severe. Some shoulders are too tight and others aren't strong or stable enough. Swimmers need shoulders that have:

1. Mobility: the ability to move through an optimal range of motion
2. Stability: the ability to produce and absorb force through a joint

Depending upon your training history and whether or not you've had injuries, you might need more mobility, stability, or both. Here are some quick self-tests to find out which exercises will help you more.

Mobility

Raise one arm above your head and bend your elbow, pointing your hand down the middle of your back. Bend the other arm behind the middle of your back and try to touch the other hand. If you can't touch your hands together in this position, you might be able to make some mobility gains in your shoulder joints.

These shoulder mobility exercises might help improve the range of motion available in your shoulders. Throughout all of these exercises, make sure you breathe and can smile—if you can't, then it's too intense and you need to back off. Your body will only make lasting changes that it's comfortable with and your facial expression and breathing are strong indicators of this.

- **Shoulder mobility + tennis ball:** This can be uncomfortable at first, but over time it really helps to open up the shoulder joint. Lie on your back and place a tennis ball between your spine and scapula with your palm up and arm on the floor. Bring the arm across your body toward the opposite hip and bring it back up overhead in a diagonal motion. You can also take your arm across your body, then bring it up overhead, and then return it to your side in a snow angel motion.
- **T-spine mobility + double tennis ball:** Lying on your, back and place two tennis balls (either taped together or in a tied-off sock) at the bottom of your spine where your ribs connect. Perform a quarter sit-up movement a few times and then slide the balls up one vertebra. Perform the same sit-up movement on this vertebra and then scoot up to the next one. Continue until you've reached where your shoulder meets your spine. Focus on the mid-back and not the lower back or neck for this exercise.
- **Seated wall angel knees bent:** Sit on the floor with your back upright against a wall. Place your forearms and elbows against the wall. Squeeze your shoulder blades together and while holding them tight, move your arms up and down the wall as long as you can keep contact with the wall and your elbows.

- **Wind-up stretch:** With one hand, grab onto something solid that's about your height. Swing your leg (the one on the same side as the arm that's holding onto the wall, chair, or whatever stable item you're using for support) around behind you and lean toward that side with your torso. You should feel a stretch along your back and lats.

Strength

Are you able to do five pull-ups with full extension without kicking to get over the bar? If you can't, then you can make some gains in strength to stabilize your shoulders.
Try these shoulder strengthening exercises to help improve strength in your shoulders.

- **Batwing + Dumbbell:** Lying facedown on a bench, grab a dumbbell in each hand and pull your hands to your arm pits. Squeeze and hold your shoulder blades together with your elbows as high as possible for about five seconds.
- **Waiter carry + Dumbbell:** Lift a weight overhead and hold your shoulder so that it's "sunk into" your socket as opposed to you lifting your shoulder up and out of the socket. Walk as slowly as possible while maintaining control of the weight and your arm.
- **Kneeling single-arm press + Dumbbell:** Kneeling on one knee and with the same side arm, press a weight overhead. Keep in mind how wide you place the foot of the bent leg on the floor from the kneeling knee; the smaller your base of support, the harder this exercise will be. The wider out you put your front foot, the easier it will be.
- **Pull-up:** Grasp the pull-up bar and start fully extended and pull yourself up until at least your chin, neck, or even chest reaches above the bar height. Lower to full extension.

Seek the advice of a qualified trainer for help performing shoulder exercises. If you are already experiencing shoulder problems, consult your medical professional before starting a new exercise regimen. Having strong and mobile shoulders can help swimmers find more success and longevity in the pool.

About the Author - Chris Ritter
Chris is the founder of RITTER Sports Performance online training programs and the author of the e-book, SURGE STRENGTH, which details how to strength train specifically for swimming performance. Ritter, a swimmer himself, has a degree in kinesiology and exercise science and he specializes in training athletes of diverse abilities, ranging from beginners to Olympians.



Four Ways to Fend Off Foot Cramps

Here are some tricks to avoiding those painful set-killers

Foot and calf cramps have a knack for striking swimmers mid-pool, leaving them gripping their legs and feet and grimacing in pain. Given the chance, a cramp will turn a beautiful sprint set into mush in less than a second.

Fortunately, we can help fend off these frustrating cramps by following these four tips.

Hydrate Often

Coach Charles McPeak takes hydration seriously—any swimmer showing up to one of his practices without water or a sports drink has to stand up and tell a joke.

Since most of his swimmers would prefer to avoid that situation, they almost always remember to bring something to drink to practice, says McPeak, head coach of SilverPeak Performance, a U.S. Masters Swimming club in Los Angeles.

“You don’t have to drink a ton” to keep your muscles limber, adds Lance Ogren, head coach of Palmetto Masters in Mount Pleasant, S.C. “Just be sure to bring a water bottle to practice to sip on.” Because swimmers exercise mostly in the water, he explains, they don’t realize how much they’re sweating during a typical practice.

Ogren also advises drinking water before practice. If you swim in the morning, have a glass of water when you first wake up. If you swim in the evening, sip on water during the afternoon.

“Wintertime can be worse than summer,” he adds. We’re apt to drink less water in the winter because of the colder temperatures, “and you may even reach for something hot, like coffee or caffeinated tea, which can dehydrate you” because of the caffeine.

And watch your wine. If you have a glass of wine the night before a practice, you’re already behind on your hydration when you wake up. In that case, “speaking from experience, I recommend having an extra glass of water in the morning,” Ogren says.

Stretch Frequently

Most swimming strokes call for pointed toes, and that’s one of the reasons feet and calves cramp up in the pool, says Clay Evans, Olympian and head coach of LA-based Southern California Aquatic Masters.

“Only in swimming and ballet do you point your toes,” he says, and that’s not a normal position for people to hold.

Counter all that toe pointing with a good stretch before practice. Sit with your feet flexed and your legs straight out in front of you, and then fold over and hold for a few seconds, McPeak suggests. Then, lie back, with your legs still straight out in front of you, but with your toes now pointed. Repeat the pair of stretches a few times.

Another good prepractice stretch: Sit on the pool deck with one ankle on the opposite knee, and pull the top of that foot back to give it a little stretch. Then, repeat with the other side, says Ogren, who founded Ogren Swim Coaching in 2015 and is a USMS Certified Level 4 Coach. You can also do this stretch in the pool, with your back against the wall, and your ankle flexed over your knee. The stretch develops ankle flexibility, which helps ward off foot and calf cramps, Ogren says.

Calf stretches help, too. Facing a wall, extend one leg behind the other, with your feet flat on the floor and parallel to each other, Ogren says. Press into the wall with your arms and hands, stretching the calf of the extended leg, then switch legs and repeat.

When not at practice, be mindful of your activity level, Ogren adds. If you work at a computer, get up and walk around at least a few times during the workday. Too often, he says, swimmers "spend the day at a desk, get up once or twice, jump in the pool, and their calf cramps."

And consider giving weekly yoga classes a try, McPeak adds. It's a great way to get in some stretching and develop flexibility in the lower legs.

Warm Up Slowly and Stay in Shape

McPeak's practices generally include slow-paced warm-ups of at least 1,000 yards. Of course, that may be the length of your workout. That's OK—just be sure to spend some time warming up at every practice. "That will help avoid cramping in the long term," McPeak says.

Kick sets help, too. McPeak recommends kicking with short fins and not spending too much time behind a kickboard, because boards force swimmers into an unnatural body position, which can also lead to foot and calf cramps.

But don't kick too hard at first with fins, Ogren cautions. Build the pace up slowly, letting your calves and shins get used to the fins' force.

Unfortunately, when it comes to foot and calf cramps, it doesn't help if a swimmer is out of shape, Evans says. "Too much, too soon," Ogren adds, can definitely lead to cramping.
When returning to the pool after a bit of a break, Evans advises stretching at the wall between lengths or laps. Stretch out your right calf and foot arch, swim a length, then stretch out the other side, he says. Stretch out all through the workout, and you'll lessen your risk of cramping.

Keep up this extra stretching during practice until you're more in shape.
"A lot of people come in, and they'll get cramps right away," McPeak says, "but as time goes on, they rarely have cramping."

If All Else Fails

But what if you do all that and still get a cramp?

"Stop swimming, get to the wall, and stretch [the cramp out] gently," Ogren says. "Give yourself a couple of seconds, breathe, and give it some time to go away. The worst thing to do is to gut it out," by trying to swim through it or by giving it an over-exuberant stretch or yank.

“And if the cramp doesn’t go away,” which can happen toward the end of practice, “your day may be done,” Ogren adds. “Speaking from experience, swimming on a cramp can lead to muscle stiffness for days.”

“It’s just one practice,” he says, so get out of the pool, give yourself a gentle stretch, have some water, and keep showing up to practice. Remember: The more in shape you are, the less likely you’ll be to get a cramp in the first place.

About the Author - Laura L. Thornton
Laura is a writer who specializes in healthcare reporting. A former age-group, high school, and Division III college swimmer, she now enjoys swimming for exercise and health, making rare appearances on the blocks at Masters meets. Her favorite event—to swim and watch—is the 50-yard or 50-meter freestyle.



Bonus Video Playlist

USMS FREE Swimming Video Series:

These video cover common freestyle breathing mistakes, hip rotation, pulling and how to improve your stroke.

Bonus Article List

Masters Swimming 101 Articles:

This series covers off on the most common mistakes and frequently asked questions. It will give you a great frame of reference to keep in mind as you swim.

Kick Timing 101

Discover untapped power in an often-overlooked aspect of freestyle

Kick timing is an important but often-overlooked aspect of freestyle. But when your swimmers find the right kick pattern, they can tap into previously unavailable core power to push themselves forward.

I usually describe kick timing to swimmers by comparing it to the more familiar, upright, terra firma counterparts of walking, jogging, or running. When you're walking or running, as your left leg swings forward your right arm swings forward as counterbalance. The same is true for the opposite side: When the right leg swings forward, the left arm also swings forward. We've acquired this instinctive diagonal timing since taking our first steps as infants.

But put a human in a horizontal position in an aquatic environment and the instinctive diagonal left-right/right-left sync is fleeting or disappears altogether. Worse, swimmers isolating their legs only by using a kickboard or arms only when using a pull-buoy further disengage the core and coordination of their arm strokes with leg kicks. Legs and arms are not mutually exclusive departments and must be trained to work together, not independently. Engaging the core's large muscle groups requires syncing the arms and legs—no sync, no core, and none of the power that comes with that synchronicity.

Often, I see swimmers kicking on the wrong leg, which inhibits the momentum that is generated from the body's rotation. It's as if the swimmer has separate departments: arms-only or legs-only. I characterize swimmers with an untimed or out-of-time kick as zombie or camel swimmers. They're easy to spot with their busy, kicking legs and splashing arms, flat swimming, and unstable body position. More often than not, this swimmer is kicking down on the same side as the forward spearing arm, much like a camel lunges forward from side to side as it moves across the Sahara.

When working with your swimmers to improve their kick timing, you may want to use the strategies below for describing two-,four-, and six-beat kick patterns. And remember, count the kick as it snaps down, not up, as you would if you were running and counting foot strikes—the foot strike happens immediately after the leg swings forward, not when it swings back on recovery.

Counting Two-, Four, and Six-Beat Kicking Patterns

Regardless of whether your swimmer prefers to use a two-, four-, or six-beat kick, one downward kick should always be timed with the recovery of the opposite arm as it slices in to forward extension. This will aid both rotation and help the swimmer drive his momentum forward.

- **Six-beat kick:** You can think of this common kick pattern as being similar to the timing of a waltz: Count "One-two-three—one-two-three" or "Right-two-three—left-two-three" and so on. In short, your swimmer should complete six kicks per stroke cycle or three kicks per single arm stroke. The first kick is down, timed with the opposite recovery arm

spearing to forward extension. So, in this pattern, the right leg kicks down (one) and rotates the torso to the left skating edge, which is followed by a downward kick on the left side (two). The third beat comes with the right leg kicking down (three), then the left leg kicks down (one). Next, the torso rotates to the right skating edge, which is followed by another downward right kick (two) and finally a downward left kick (three). That's one complete six-beat kick cycle.

- **Four-beat kick:** The four-beat kick pattern has the same timing as the six-beat kick but uses two fewer kicks. But unlike its six-beat counterpart, the four-beat kick is asymmetrical, with three kicks on one side and one kick on the other side making a total of four kicks per stroke cycle. This pattern would sound like, "One-two-three-one—One-two-three-one." The first kick aids rotation. As the right leg kicks downward (one), the torso rotates to the left skating edge, which is then followed by a left kick downward (two) and another right kick down (three). Finally, the cycle completes when the swimmer kicks the left leg downward again on the count one, rotates torso to the right skating edge. That's one complete four-beat kick cycle.
- **Two-beat kick:** The two-beat kick also mimics the timing of the six-beat kick pattern, just with four fewer kicks. As with the six-beat kick pattern, the two-beat kick is symmetrical, but the swimmer takes only a single kick per arm stroke or two kicks per stroke cycle. This is the most economical kick and it's most similar to walking or running on land. However, this kick pattern requires the most balance of the three patterns since there are no stabilizing kicks between rotational kicks.

The two-beat kick is often used for long distance events. The four- and six-beat kick can be used for virtually any distance. Elite swimmers sometimes change up their kick patterns, depending on the event they're swimming. Michael Phelps and Sun Yang use mostly a four-beat kick in their events. Sun Yang also changes his pattern depending on his breathing pattern; he mixes in a two-beat kick when he's breathing on threes, a four-beat kick when breathing on twos, and finishes the last 100 meters of his 1500-meter freestyle with a six-beat kick.

The choice of which kick to use is personal and swimmers may stick with one pattern or prefer come combination. The key is finding what works best for each individual swimmer and what is sustainable for whatever distance they're swimming.

Most importantly, the kick is timed with the opposite arm, which aids body rotation and engages the large muscle groups of the core. If you want to swim from your core and get the most power, start by refining your kick timing first.

About the Author - Stuart McDougal
Stuart is a USMS Level 3 Coach and a Total Immersion Certified Professional. He is head coach of SoCal Tri Masters in Los Angeles. He got hooked on triathlons with his first open water swim in 2003. Although he still loves triathlon, he now really enjoys long distance swims in San Francisco Bay.

Five Reasons Why You Should Join USMS

Being a part of USMS can help you achieve your fitness goals

Join U.S. Masters Swimming to see what more than 65,000 people on 1,500 clubs and workout groups across the country have already found out: Being part of the Masters Swimming community will change your life. Whether you want to get or stay fit, swim faster, rehabilitate an injury, train for triathlons, or even learn to swim for the first time, your local Masters Swimming club is the place to start.

Don't believe us? Here are five reasons why you should give it a try.

Speed Doesn't Matter

You might think you're not fast enough or in good enough shape to join your local Masters Swimming club. It's something our coaches hear often, but it's just not true. Most clubs feature a range of abilities, so you'll have the chance to swim with someone your speed. It'll only be a matter of time before you start getting in better shape and going a little faster. Many USMS clubs have Adult-Learn-to-Swim instructors for people who are starting from the beginning.

Learn from the Experts

USMS-certified coaches are experts in their field. They know how to create fun workouts that will challenge you. And they have an extensive background in the technical aspects of swimming—they can help you fix that problem in your stroke that's slowing you down. Whether you want to get faster, get into better shape, or just enjoy the camaraderie of working out with other swimmers, your coach is there to help you reach your goals.

Better Training

If you have fitness goals, you need a training plan. Joining your local Masters Swimming club will give you access to structured practices that provide better workouts than just swimming laps on your own. Being a part of USMS can make whatever you're trying to accomplish easier. Many triathletes train with USMS clubs because it's the best way to improve at the most difficult and technical aspects of their sport.

Fun and Friends

Let's face it: Most of us need motivation to go work out, whether it's early in the morning or after work. When you join a USMS program, you become part of a group of friendly people with similar fitness goals. Being with other motivated swimmers helps you swim faster and have fun while getting and staying fit. Most USMS clubs also have social events outside of practice.

Exclusive Content

Why should you join USMS even if there's no local club or workout group in your area or if its practice schedule doesn't fit with yours? All USMS members have access to in-depth and exclusive technique articles and videos produced in our publications: SWIMMER magazine, the STREAMLINES newsletters, and usms.org. Our website also has workouts for swimmers ranging from beginners to veterans, as well as for triathletes, open water swimmers, and expectant mothers. We also have discussion forums where you can interact with swimmers and coaches from across the country.

USMS Can Provide Technique Tips for ...



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