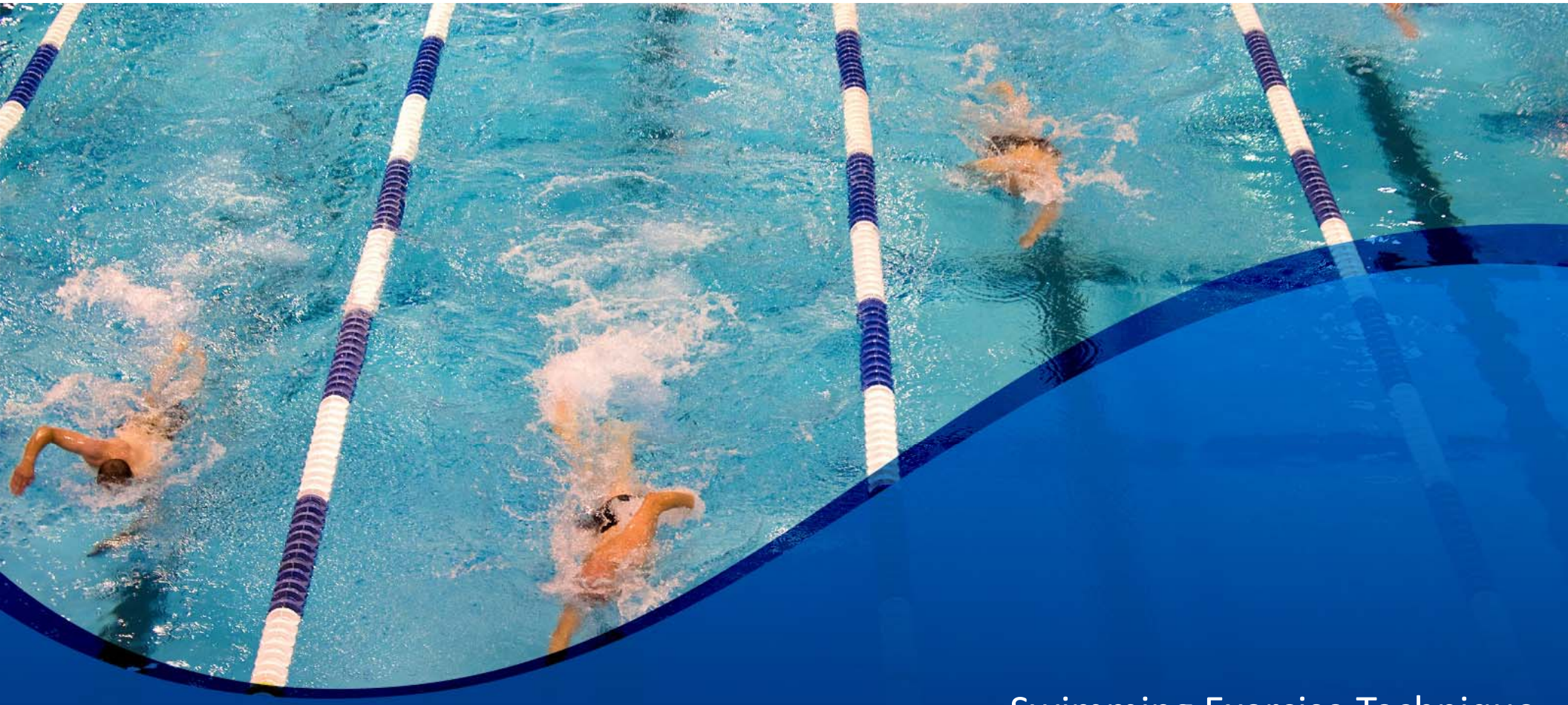


Swimming Exercise Technique

Karen Orman

Introduction

Swimming is one of the best and most popular sports worldwide and often requires the entire body to move through water as each stroke requires a set of specific techniques. Competitive swimming is one of the most popular Olympic sports and can especially be enjoyed by high-schoolers, aged anywhere from 13 to 17. The goal of the athlete is to try and break a personal time while beating other competitors in the same event.

Although a very popular sport and one that has many health benefits, it can also cause a range of injuries to any given individual. Swimming can also be considered a low-impact aerobic exercises, as the water tends to ease muscles and joints, and overall can improve physical performance without the impact on weight-bearing joints.

Injuries, however, can occur in any given sport, but for swimming often musculoskeletal (MSK), muscle overuse and concussion injuries can happen. Shoulder injuries, increased lower back pain (LBP), and knee injuries can happen at any given time. Other such injuries as submersion and drowning can also occur.

An athlete often has tremendous passion and determination to do everything for the sport. Swimming has many psychological benefits, such as reducing stress, ease muscles, and increase positiveness to make a person feel good, and helps a person feel energized.

Intro continued

Swimming can be both mentally and physically exhausting. As a unique sport which happens in water, it can result in different gravitational and resistant forces. Environment factors, such as the water temperature can also play a large role in how the athlete or swimmer performs. Interestingly water temperature can have deep impacts to how an athlete breaths to body functionality.

It takes years of practice to build solid techniques and form the work for the stride or stroke in the water. Speed and strength are key elements to swimming and this can be measured both on the pool deck or on dry-land doing warm-up exercises, weight training and cardio.

Proper swimming techniques improve how the athlete performs. Having the right warm-up exercises and exercise techniques will help both the swimmer perform better and will help to reduce muscle overuse and increase ways to improve maximum strength and power so the athlete can perform best in the water. Pre warm-up exercises also includes Nutrition, as eating right is also a big factor in how a swimmer performs.

15 Minute Warm-Up Routine

Warm up routines prepare swimmers physically and mentally. Most effective when it tries to prevent the onset of injury, but also gain the maximum of performance levels.

Competitive warm-up helps to warm the swimmers' muscles, so they have better performance and can swim faster in the water.

Benefits of Warm-Up Exercises

Sport Performance Bulletin, 2022

- ❑ Raises heart rate and enables a swimmer's heart to pump larger amounts of oxygen-rich blood throughout their body while swimming.
- ❑ Mobilises and increases joints effectively. Increases the swimmer's flexibility and enhances the ROM, range of motion, range of movements.
- ❑ Engages the muscles and tendons for the physical demands that are about to by placed upon them during physical activity, reducing the risk of injury.
- ❑ Gives the swimmer confidence to work at maximal effort without the fear of aggravating an old injury.
- ❑ Provides the swimmer with an opportunity to rehearse the skills taught in order to work at the desired level without the fear of injury.

Pre-Warm Up:

***NUTRITION* -** Eat a hearty breakfast the morning of the competition. Include a healthy balance of carbs and protein to keep you fueled. Pack snacks that prioritise carbs and protein, fruit, sandwiches and juice. Drink lots of water or sports drinks to keep you hydrated.

***ARRIVE at the Pool Early and On-Time* -** This helps you stay focused and reduces any anxiety or nervousness about swimming. This ensures you have enough time to carry out an effective warm-up. An effective warm-up enables you to do your very best in the pool.

***WARM UP MUSCLES* - E**nsures muscles are warm and supple before swimming. Do not stretch cold muscles – it will not help increase flexibility.

Go for a quick walk around the pool deck or a gentle swim before starting the warm-up. (These are commonly called blood-flow stretching)

PREPARE MENTALLY – Get ready to race. Get focused and mentally rehearse the race from start to finish. Remind yourself you got this! It can help to listen to music with your headphones to get prepared, both mentally and physically.

WARM-UP Routine & Strength Training Exercises:

Before jumping into a warm-up routine, a gentle stretch on dry land/pool deck is highly recommended. This helps to raise body temperatures and warm muscles. Get the blood flowing and ease the muscles before diving into the pool.

Each of these stretches are designed to increase flexibility and mobility in shoulders, hips, chest and legs. Doing these eight simple stretches on the pool deck will help you be more efficient in the water. These warmup exercises will build up the power you need to beat your competitor.

Dynamic Stretching Exercises helps to warm up the body and raises body temperature. Dynamic stretching consists of a combination of soft tissue work, dynamic mobility, injury prevention, functional movements, and gentle cardio stretches and exercises. These types of exercises should be done for at least 5 minutes each, during a work-out and in between races.

The following pages include warm-up exercises and thirteen strength training exercise stretches to perform on dry-land and/or on the pool deck prior to any race or competitor event. It is a good idea to also perform some of these in between races while you wait for your next swim.

Warm Up & Strength Training Exercises

Arm Circles:

Stand straight and place each arms at the side of you, stretching as far as you can go.

Next rotate each arm and make big circles with your arms, one arm at a time, then try both arms together and make a big circle.

Raise your arms above your head and down to your side again, Repeat 20 times.

While standing raise one arm directly forward and upward while the opposite arm stretches upward and behind you. Stretch your arms until they form one smooth line.

Wall Press:

Stand facing a wall and extend your arm to place your hand against the wall. Next slowly rotate your entire torso away from the wall. You should feel the stretch across your chest muscles and your shoulder.

Rotate back and forth a few times.

Switch to the other arm and repeat.

Arm Circles

Wall Press

Warm Up Stretches

Arm Swing:

Stand with one leg slightly more than shoulder width apart from the other. While your knees are slightly bent, lower your head down (look to the ground) and place your forearm above the knee of your forward leg.

Rotate your opposite arm slowly in a full circle to work the shoulder joint through its full ROM, range of motion

Repeat for both arms and switch each leg. Place left leg first with right leg behind, and then switch to right leg forward and left leg behind.

Repeat 25 times on each side.

Arm Rotations:

Raise your arms to you side with your elbows bent forward and in line with your shoulders at a 90 degree angle.

Rotate your arms up to the post position, without dropping your elbows below your shoulders.

Repeat 10-20 times.

Arm Swim & Arm Rotations

Elbow Pull:

This warm-up warms up your shoulder muscles and triceps muscles.

Stand up, raise one elbow upward until it is level with your head.

With your opposite arm, take hold of your elbow and gently pull backward and inward. You should feel a stretch along the back of the arm, around your armpit and in your shoulder.

Repeat 15 times on both arms.

Shoulders:

As you compete in the pool preforming a butterfly or breaststroke, this is an important warm-up to do. Try this stretch to warm up your shoulder before you swim.

Shoulder Rotation:

Straight arm swim – stand with one foot forward and the other back, Lean forward and rest one elbow on your knee.

Swing the opposite arm upward and complete a full circle. Switch your footing, and repeat

Of the same stretch with the other arm.

Raise each of your arms upward and hold them at 90 degrees. Keep your elbows in line with your shoulders, while you raise and lower your forearms, rotating your shoulders.

Cross Body Stretch:

While standing on the pool deck, or dry land, take one arm and shoulder height and stretch it across your entire body. Use your opposite arm to pull further across your chest.

Now you should feel the stretch, maybe in the shoulder and chest muscles.

Repeat 15 times on both sides.

Towel Stretch:

Stand with your legs hip-distant apart while holding your towel with both hands behind your back.

Keep pulling your shoulder muscles down your back as you gently raise the towel upward behind you.

You should hold the stretch for a few seconds and then relax your arms.

Repeat a few times. You should feel a stretch across the front of your chest.

Towel Stretch
https://www.spine-health.com

Hips:

This will engage in range of motion into the hip joint, and warm up the muscles so you can maintain a smooth swimming stroke.

Bend one leg and stretch the other straight behind you. You can lean onto a wall to maintain balance.

Keep chest straight, stand up tall and lean into bending the knee forward.

Repeat for the other leg.

Angry Cat Stretch:

On a floor mat, kneel on the floor and guide your torso towards your heels. Try and keep toes and feet together.

Arch your back up like an angry cat to round out your spine.

Keep your back rounded and drop your rear to your heels.

Reach out in front of you as far as you can go and push your shoulders down into the ground to feel the stretch.

Hold for 15-20 seconds

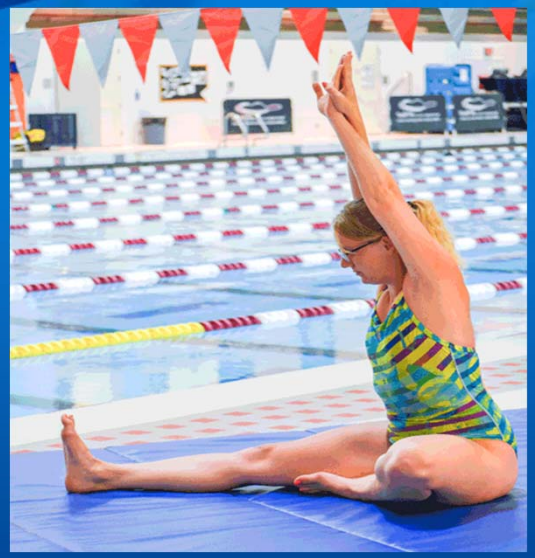
Angry Cat

Hamstring Stretch:

Lie on the floor with both knees bent and your feet flat on the floor.

Keep one leg in front of you, while the other leg is bent.

Bend your whole body while stretching out your arms above your head trying to hit the top of your toes on your extended leg until you feel a stretch along the back of your leg. (If you can't reach that far, that is okay, but stretch as far as you can in order to be comfortable).



Repeat the exercise on the other side.

Full Body Stretch:

While lying on your back, raise your arms straight up by your ears and keep your legs straight.

Stretch your arms and legs in opposite directions.

Then Stand up straight with your feet together.

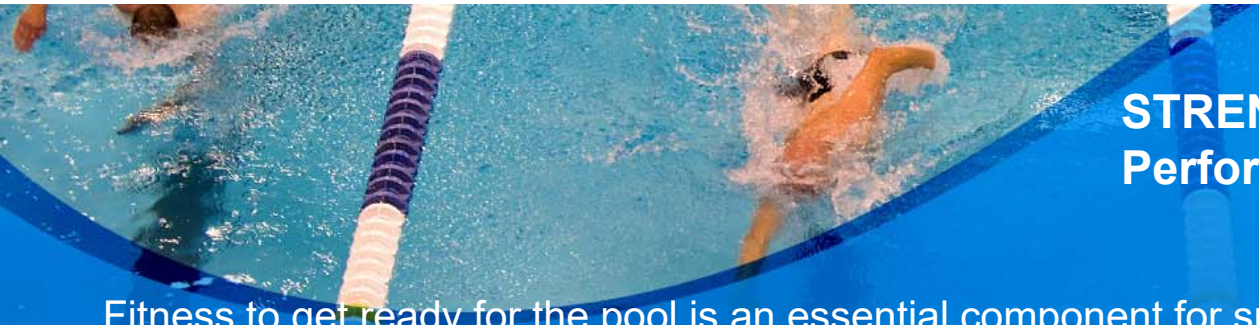
Raise your arms above your head and bring your hands/fingers together.

Keep your shoulder muscles pulled down your back and away from your ears.

Slowly bend to one side while continuing to look straight ahead.

Hold the position for a few seconds, then repeat on the other side.

Stretch should be felt in your ribcage and hips.



STRENGTH TRAINING EXERCISES & Performance Tests

Fitness to get ready for the pool is an essential component for success in swimming.

Certain swimming techniques are essential to see how the athlete/individual performs in (or out of the water). Each one depends on the other and can include race distance, and stroke ability.

Fitness training for swimmers includes getting the athletes in top performance so they can do their best in and out of the pool. If an athlete is competitively swimming, or for any type of swimming group, it is still important to get the individual ‘ready’ for the pool. One advantage is a tall person, and someone who is fairly lean – this type of body composition may have a better advantage to say someone who is overweight. Being tall is an excellent advantage.

Speed, distance and performance all have a relative impact as to how you will do in the water.

Performance tests can indicate how well the person will do, what endurance they have, how strong they are and can indicate powerful methods so they can determine what kind of strength they have. These types of performance tests can monitor heart rate, blood flow, stroke rate etc.

STRENGTH TRAINING EXERCISES & Performance Tests

Vertical Jump Test / Sargent Jump or Vertical Leap –

This test is used to measure strength and power of an athlete's legs. Once the swimmer is ready to dive into the pool, they normally stand on a swimmer's block as they get ready to jump. They need to have the form, physical endurance and powerful strides to do it well. Verticals Jump Test is used to test the lower body power, a timed measure test that measures the time of the jump and then calculates the jump height.

The purpose is to measure leg muscle power. Measurements used are a measuring tape or marked wall. The athlete would stand side to the wall and then try and jump to the highest point. The jump test can affect how much muscle power an athlete uses in their knees and legs, and how much bending movement is in the knees. It can also be an effective use of the arms to help strengthen the upper body.

STRENGTH TRAINING EXERCISES & Performance Tests

Bench Press Test -

Specific repetition maximum (RM) tests for the upper body using a bench press exercise.

Helps to strengthen the arms, muscles and overall upper body using chest muscle groups. This type of test can be done by simply lifting weights and then the maximum weight lifted is tested and recorded.

Sometimes the score may be useful to calculate a score proportional to the person’s body weight. The sequence of lift repetitions should be recorded and then used in subsequent tests to try and reach a goal.

Test is easy to perform and often times can be done at the gym before going to the pool deck.

STRENGTH TRAINING EXERCISES & Performance Tests

Swimming Beep Test –

Conducted in the water to test the aerobic fitness level of the swimmer. Waterproof speakers are placed in the bottom of the pool and once the swimmer swims lengths, every few seconds the beep goes off.

The test is normally conducted in a 25m pool, starting at a speed of 1 m/sec and increasing by 0.05 m/sec every two minutes.

The swimmer's score is then recorded and the number of laps is recorded. All ages of swimmers can use this test, which tests aerobic fitness levels. One disadvantage, however, is practice and motivational levels can influence the score.

Swimming Beep Test - When the swimmer swims lengths, the beep goes off.

STRENGTH TRAINING EXERCISES & Performance Tests

Swimming V02max Tests –

Tested both outsides and inside the pool.

For outside the water, a land-based treadmill is often used to record treadmill V02max, although statistics show that a swimming V02max test can be somewhat difficult to conduct, it often has better results for swimming.

V02Max result on a Garmin SmartWatch

STRENGTH TRAINING EXERCISES & Performance Tests

V02max Test –

Advantage for treadmill running involves whole-body exercise and is more likely to produce a higher V02max level. A Cycle V02max test provides less movement and is easier to test for accurate push/pull/gas collection, and measurement of heart rate, including the same for swimming.

Oxygen and carbon dioxide analyzers, heart rate monitors and a stopwatch are normally used, including the appropriate ergometer or equipment machine such as a treadmill, bicycle or even a swim bench. V02max oxygen level can measure the ventilation and the oxygen levels of the athlete and the maximal levels are determined. Results are presented as either l/min (litres per minute) or ml/kg/min (ml of oxygen per kilogram of body weight per minute). Then the athlete is considered to have reached their V02max.

A smart-watch is often used to measure movement, physical endurance and can automatically record these levels while in and out of the pool. Once the recordings are done, they can then be transferred to a Smartphone and PC to view full statistics and analytical data, and be shared with their mentor or swimming coach. These types of tests are a great measure for body oxygen consumption. Works for long-distance runners, cross-country skiers, rowers, triathlon or cycling. The Garmin Fenix smart-watch is amazing to track progress in these areas.

STRENGTH TRAINING EXERCISES & Performance Tests

Max Heart Rate performance tests - Treadmill walking, running or on a Bike – Great way to measure heart rate. The maximum heart rate is the highest number of beats per minute (bpm). For a swimmer, it is a handy measurement tool to measure exercise intensity.

220 less your age is your max heart rate

Example: 34 years of age, heart rate is 186 bpm (220-34)

ALTERNATIVE METHODS FOR EXERCISES

High Kneeling and Wall Slides

Start in a half-kneeling position on the floor mat with your legs apart.

Bend your front knee at 90 degrees and keep your back knee on the floor.

Keep your chest forward and bring your arms up so your hands are over your head.

Rotate your torso to the direction of your front leg.

Keep in this position for a second, and then return to your starting position.

Repeat the process a few more times.

Jumping Jacks:

Only do this warm-up exercise on dry-land in a stable environment to prevent injuries and sprains.

Stand up straight with your arms to your sides.

Jump as high as you can while raising your hands high in the air

Return them to side upon landing and repeat.

This warm-up forms the cardio portion, raises body temperature, warms up muscles and raises heart beat.

ALTERNATIVE METHODS FOR EXERCISES

Push-Ups:

Lie on your tummy, on a floor mat with the arms folded at the elbows.

Place your arms perpendicular to the side your body and put your palms firmly on the floor.

Try and raise your body off the floor until your elbows are at a right angle, then slowly lower yourself.

Support your lower body with your toes and maintain a straight back to prevent from straining it.

Push-Ups

Skipping on the Spot:

Skipping is a dynamic swimming warm-up exercise that every swimmer needs to do.

You can use a skipping rope.

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