

# STRENGTH & CONDITIONING GUIDE

Essential exercises for strength, core stability and flexibility  
By Phil Mosley

[myprocoach.net](http://myprocoach.net)

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# 1. Key Strength Exercises

There are 11 key exercises which are important for developing your overall body strength for swimming, cycling and running.

They are simple gym-based exercises, designed so you won't need anybody to help you.

The exercises should be done once or twice a week throughout the year and each session takes about 45 minutes.

We schedule one S&C workout per week in our training plans, but if you have enough spare time each week you should do two.

Just make sure you separate your strength workouts by at least one day. And if it's leaving you too tired for your swim, bike or run training, revert back to doing just one again.

We have broken up your strength work into phases which we'll explain on page 15.

On the following pages we show you how to do each exercise. If you don't have access to a gym, we suggest some home based alternatives in [this article](#).

EXERCISE



## LAT PULL DOWNS



Lat Pull-downs

Works: Upper back

Why? Improves pull phase of swim stroke

- Beginning position: Grasp bar with arms straight and slightly wider than shoulder-width apart.

Push chest forward; arch lower back

- Ending position: Pull bar behind head down to just above shoulder level.

Breathe out when pulling down and breathe in when raising the bar. Rest 90 seconds after each set.

See pages 15-17 for resistance, sets and repetitions.



## Leg Extensions

Works: Upper legs/quads

Why? Supports weight-catching phase of running and builds additional muscle mass necessary for half-marathon distances and up

- Beginning position: Sit on machine. Rest shin pad just above ankle. Line knee with pivot point of machine
- Ending position: Extend both legs fully to straight line

Breathe out when lifting and in when lowering of the weight. Rest 90 seconds after each set.

See pages 15-17 for resistance, sets and repetitions.

EXERCISE

3

LEG CURLS



## Leg Curls

Works: Upper leg/hamstring

Why? Boosts pull-through for both cycling and running

- Beginning position: Lay face down on machine bench. Place leg pad just above ankles. Keep legs slightly bent
- Ending position: Contract hamstrings fully. Keep stomach on pad at all times

Breathe out on contraction and in when lowering of the weight. Rest 90 seconds after each set.

See pages 15-17 for resistance, sets and repetitions.



EXERCISE

4

BENCH  
PRESS

Bench Press

Works: Chest

Why? Improves pull phase in swim

- Beginning position: Lay face up on bench, hands slightly wider than shoulder width. Bar in line above mid-chest
- Ending position: Lower bar to one inch above mid-chest. Keep lower back on bench at all times

Breathe out when lifting and in when lowering of the weight. Rest 90 seconds after each set.

See pages 15-17 for resistance, sets and repetitions.

EXERCISE

5

SQUATS



## Squats

Works: Glutes and quads

Why? Generates power for cycling and the strength necessary for hill running

- Beginning position: Stand with legs wider than shoulders. Find neutral spine posture. Keep weight over heels at all times
- Ending position: Lower butt toward floor as though you're sitting in a chair. Bend knees until thighs are parallel to floor

Breathe out on up phase and in when lowering. Rest 90 seconds after each set. You may need kettle bells or a barbell for this exercise.

NOTE: Don't overdo this exercise and then go running afterwards. It might cause a calf or knee injury.

See pages 15-17 for resistance, sets and repetitions.



EXERCISE

6

LATERAL  
DUMBBELL  
RAISE

## Lateral Dumbbell Raise

Works: Shoulders

Why? Supports healthy shoulders to prevent swimming injuries

- Beginning position: Hold a dumbbell in each hand, elbows even with the plane of your body and slightly extended away from your torso
- Ending position: Extend arms out sideways, keeping elbows still in the plane of your body. Stop arms parallel to ground

Breathe out on contraction and in when lowering of the weight. Rest 90 seconds after each set.

See pages 15-17 for resistance, sets and repetitions.



## Calf Raise And Lower

Works: Lower legs/Calves

Why? Helps push-off for running

- Beginning position: Place both feet on a step, with your heels hanging over the edge. Rise up onto your toes, so your heels are lifted up.
- Ending position: Lower the heels until you feel a moderate stretch.

Optionally hold a light weight in one or both arms.

Breathe out on the up phase and in when lowering. Rest 90 seconds after each set.

NOTE: Don't overdo this exercise and then go running afterwards. It might cause a calf strain.

See pages 15-17 for resistance, sets and repetitions.



## Dumbbell Pullover

Why? Works all muscles in catch phase of freestyle stroke

- Beginning position: Lay face up on a bench. Hold one or two dumbbells between both hands with arms extended straight toward the ceiling.
- Ending position: Arms fully extended behind your head, with weight touching floor, if you are that flexible!

NOTE: Breathe out when lowering the weight and in when lifting it. Rest 90 seconds after each set.

See pages 15-17 for resistance, sets and repetitions.

EXERCISE

9

## BACKWARD LUNGES

### Backward Lunges

Works: Adductors and glutes

Why? Targets all muscles used in push phase of hill running

- Beginning position: Stand with legs together; rest a bar comfortably on your upper back.
- Ending position: Step back, extending leg out behind, and lower your body into a split squat. Drag the toes of the extended foot on the floor on the way back up to the starting position.

Rest 90 seconds after each set.

See pages 15-17 for resistance, sets and repetitions.



## Bicep Curls

Works: Front of upper arm

Why? Assists in part of the pull phase in the swim and provides climbing leverage on the bike

- Beginning position: Grasp a weighted bar with both hands, using an underhand grip. Elbows tight against the sides of your body and arms slightly bent
- Ending position: Elbows fully flexed, bar raised up to collarbone height. Make sure to keep elbows locked tight against your sides

Breathe out on up phase and in when lowering. Rest 90 seconds after each set.

See pages 15-17 for resistance, sets and repetitions.



## Tricep Extensions

Works: Back of upper arm

Why? Maintains form through back half of swim stroke

- Beginning position: Kneel one leg on a bench or chair, place the other foot on the floor. Bend forward 45 degrees from the hips.

Hold a weight in one hand with the opposite knee on the bench/chair. Keep elbow tight against your side. Begin with weighted arm bent.

- Ending position: Arm extended back fully in straight position

Breathe out on up phase and in when lowering. Rest 90 seconds after each set.

See pages 15-17 for resistance, sets and repetitions.

# 3. Phases of Strength Training

The strength program cycles through four distinct phases.

1. Adaptation, 2. Endurance, 3. Strength and 4. Taper.

Each phase has a different level of resistance and number of reps.

## **Phase 1: Adaptation Phase**

### **1 set of 12-15 repetitions**

During this phase, the goal is to adapt your body to lifting. Each exercise is to be done as follows:

One set of 12 to 15 repetitions.

The correct weight choice for each exercise will allow you to feel like you could complete an additional three repetitions with good form.

The weight is too heavy if you feel a strong burn in the muscles at the end of the set.

This Adaptation phase can last two to four weeks. Go to the Endurance Phase once you can complete the Adaptation Phase workouts without feeling at all sore the next day.

## **Phase 2: Endurance Phase**

### **Two sets of 12-15 repetitions**

During this phase, increase the number of sets to two, with each set still consisting of 12 to 15 repetitions.

Again, the correct weight is one that allows you to complete the two sets knowing you could have done three more repetitions with good form and without any major burning in the muscles.

Each set should be challenging without requiring maximum effort.

## **Phase 3: Strength Phase**

### **Three sets: 1 x 10, 1 x 8, 1 x 6**

This phase is where the largest improvements in strength occur. It is also where the sluggishness that weights can cause will carry over most into swimming, cycling and running.

The correct weight is one that allows you to complete the three sets knowing you could have done three more repetitions with good form and without any major burning in the muscles.

## **Phase 4: Taper Phase**

### **Two sets of 12 repetitions**

In this phase, you should reduce the weight back down to a level equal to or slightly less than you used during the Base Phase.

Do two sets of 12 repetitions to the count of two on both the contraction and the relaxation. The weight should be chosen so it feels light yet becomes challenging at the end of set. The rest period between sets is dropped from 90 seconds to about 30 seconds.

Fatigue is caused mainly by the speed of the move, not the load you are lifting. Focus on good form, and make sure that there are still two or three repetitions left in you at the end of the second set.

### **How Long To Spend In Each Phase**

The length of time you spend in each strength training phase depends on the length of your training plan (ranging from 8 to 40 weeks).

1. 3-6 weeks in the Adaptation Phase.
2. 8-12 weeks in the Base Phase.
3. Do the Strength Phase for the remainder of your training plan, until the last 4 weeks.
4. Taper Phase strength training for the last 4 weeks of your plan, leading to your key race.

## 4. Core Stability

In addition to your strength exercises, we recommend you include core stability into your weekly training.

Increasing your core stability and functional strength helps reduce muscular imbalances, enabling you to become a more efficient and less injury-prone athlete. In this chapter we'll explain how.

Time-starved athletes need only dedicate 10 minutes, three days a week to make a difference.

Coach's Tip: "I try to do these exercises for 10 minutes at 8pm, after we've put our daughter to bed. You can fit them in whenever it suits you best."

Below there are two versions of a functional core workout that can be done in as little as 10 minutes (performing the sequence once through) or expanded to 30 minutes by repeating the sequence three times.

Begin with the four exercises in the Introductory level workout, then gradually work towards the two combined exercises in the Advanced level workout.

## **Introductory Level Core Strength Exercises:**

Perform each core exercise for 30 to 60 seconds, moving from one to another to complete the sequence.

For a short workout, perform the sequence once. For a longer workout, repeat the sequence two or three times with 30 seconds of rest between sets.

Engage your core by bracing your stomach muscles as if someone was going to punch you. And also engage your pelvic floor muscles as if you're trying to stop yourself from taking a pee.

1. Front plank.
2. Side plank (left and right)
3. Lying hip abduction (left and right)
4. Glute bridge single leg (left and right)

Once you can do these exercises easily, with full control, move onto the Advanced level exercises below.

## **Advanced Level Core Strength Exercises:**

Perform each core exercise for 60 to 120 seconds, moving from one to another to complete the sequence.

For a short workout, perform the sequence once.

For a longer workout, repeat the sequence two or three times with 30 seconds rest between sets.

1. Front plank with straight leg extension (left and right)
2. Side plank with lying hip abduction (left and right).

See exercise images on p20.

## Introductory: 1. Plank



## Introductory: 2. Side Plank



## Introductory: 3. Lying Hip Abduction



## Introductory: 4. Glute Bridge Single Leg



Advanced: 1.  
Front plank with straight leg  
extension



Advanced: 2.  
Side plank with lying hip  
abduction



# 5. Stretching

Stretching: When and how long for?

- Before training. It can help to stretch any tightness before training to prep the muscle ready for the session and also to ensure that muscle balance is as good as possible before training, therefore reducing injury risk.
- Post training. This is normally when the most comprehensive stretch programme is completed as part of the recovery from training.
- Anytime. You can't overstretch a muscle if it's already tight. Professional athletes sometimes stretch 6-8 times per day.
- The only time it's not a good idea to stretch, is when you have an acute injury such as a muscle strain. At this stage it's better to let it heal.
- There are lots of different theories about stretching, but the general consensus is that stretches should be anything from 30 seconds to 2 minutes. You should also breath deeply and relax to increase the stretch.
- You should then repeat the stretch to retest any changes in muscle length.

# The 6 Essential Stretches

## 1. Soleus (lower calf)

- Stand with one leg in front of the other close to a wall. Place your hands on the wall for balance. Bend both knees, focusing on the back knee.
- Move your weight forwards onto your toes but make sure you keep the heel down at the back.



## 2. Gastrocnemius (upper calf)

- Keep your right leg forward, foot flat on the floor, and extend your left leg straight back, placing your heel flat on the floor. Don't bend your back knee.
- Lean into the wall until you feel the stretch in the calf of the straight leg.



### 3. Quadriceps

- Bend your top knee and hold onto your foot with your hand.
- Pull your heel toward your butt. If you find it tough to balance, then bend your bottom knee as well.
- Hold the stretch, pressing your hips slightly forward to increase the stretch in the front of your thigh.



### 4. Hip Flexors

- Start in lunge position with back knee on the floor. Drive the hips forward. Feel a stretch at the front of your upper thigh.
- “Activate” the glute of your back leg. “Squeeze your butt”.
- “Progress” the stretch by reaching arms up and away from the back leg.



## 5. Thoracic Spine Extension

- Put a foam roller under your upper back / thoracic spine. Keep your knees bent and feet flat on the ground. Place your hands behind your head and pull your elbows as close together as they'll go.
- Let your head fall to the floor and try to wrap yourself around the foam roller, extending the thoracic spine over the roller. This is the most important part.
- Roll, slowly up and down the vertebrae, pausing on any painful parts (do not roll the neck or lower back, focussing solely on the thoracic spine).



## 6. Pectoral (chest)

- Begin by standing tall with your forearm against a wall or door and your elbow bent to 90 degrees. Gently turn your body away from the wall until you feel a mild to moderate stretch across your chest.

