

Swim Workouts

Variable-Paced 100s

Intensity/Category: Adjustable based on goals
When To Use: Anytime
Duration: 45 to 90 minutes

Goals:

- Learn how to change speed in the water
- Learn how to recover while swimming
- Learn how to read a swim pace clock
- Understand of how "pace versus effort" adjusts with fatigue

The Workout

Warm-up: *Your choice*

Main set: *Series of 100s swum on variable send offs*

*1/1/1/1
2/2/2/2 (12)
3/3/3/3 (24)
4/4/4/4 (40)
5/5/5/5 (60)*

If benchmarking Threshold pace then use 40x100 and set the final send off slightly quicker than Threshold pace. For example, if Threshold pace is 1:33 then you do:

*1 at 1:45, 1 at 1:40, 1 at 1:35, 1 at 1:30 then...
2 at 1:45, 2 at 1:40, 2 at 1:35, 2 at 1:30 then...
3 at 1:45, 3 at 1:40, 3 at 1:35, 3 at 1:30 then...
4 at 1:45, 1 at 1:40, 4 at 1:35, 4 at 1:30*

Tips

- Aim for a total main set duration of 30-60 minutes.
- Most athletes overestimate their speed at Threshold and use a pace that is closer to velocity at VO2max. If you are prone of over-estimation, or starting too quickly, then this workout will very quickly highlight that point.
- For a more strength-oriented swim, consider using gear (either band/buoy or paddles only) for one line of the main set. If you use gear then always finish with the final main set segment being without gear. This acts as a reality check.
- The key to getting the most out of this workout is changing speed in the water.

Where Do You Stack Up?

- Front pack elite triathletes: Can complete 40-60 x 100 (meters) with send offs going down to 1:15
- Top age-group triathletes: Can complete 24-40 x 100 (meters) with send offs going down to 1:20

5x400 & 5x200 Descending

Intensity/Category: Low to High
When To Use: Throughout the year
Duration: 60 to 75 minutes

Goals:

- Assess athlete awareness of pace
- Teach ability to change speed
- Assess capacity to recover after strong effort
- Benchmark different intensity bands

The Workout

Warm-up: 12x25 Every 3rd swim Fast, all others Easy on 10s rest
6x50 Steady on 10s rest
4x75 25 Easy, 25 Mod-hard, 25 Steady on 10s rest
3x100 Steady on 10s rest

Main set: 5x400 on no more than 15s rest
Goal is to descend the set with each one slightly faster
Then 5 min Easy
Then 5x200 Descend on 10s rest

Cool Down: 100 Easy choice
4x75 as 25 Back/Breast/Free on 15s rest
200 Easy choice

Tips

- Swim this workout so that the feeling within each main set progresses from Easy to Max as the intervals progress from one to five.
- When swimming fast, maintain technique and stroke rate. Avoid 'spinning your wheels' and flailing against the water. Keep your stroke mechanics together and focus on the strong application of force.
- While 15s/10s are noted for the 400s/200s rest interval, respectively -- well-trained swimmers will achieve a more accurate assessment with rest of 10s/5s, respectively.
- It's also possible to benchmark continuously, with a very short break between intervals (to note a split).
- When assessing HR per interval, short rate will give the most accurate feedback. Max HR per interval provides the best indication of stress for gives pace/effort.
- By comparing interval/effort information with long TTs and race performance, athletes can check their capacity to execute appropriate pace under stress and over time.

Where Do You Stack Up?

- Front pack elite triathletes: Will range from 5:40 down to sub-5:00 for their 400s (meters).
- Top age-group triathletes: Will range from 6:00 down to 5:20 for their 400s (meters).

The Pace Change Series

Intensity/Category: Moderate to High
When: Mid-Base through Race Week
Duration: 45 to 90 minutes

Goals:

- Train for the variable pacing of open water triathlon swimming
- Train the ability to recover when swimming, not resting
- Train tolerance for pace changes far above average race intensity
- Gain a realistic view of swim fitness and stamina
- Train sustained intensive endurance

The Workout

Warm-up:

400 Easy
400 as 100 Free Build; 100 alt by 50 Back/Breast; repeat
4x50 first 25 IM order Fast / second 25 Easy Free [Note: IM Order is Fly/Back/Breast/Free]
All of the above on 10-15s rest

Main set:

Choose one of the following:

PC 50s

40x50 Main Set

- 16x50 as 1 Fast, 3 Steady (x4); all on 5s rest
- 12x50 as 1 Fast, 2 Steady (x4); all on 10s rest
- 8x50 as 1 Fast, 1 Steady (x4); all on 15s rest
- 4x50 as all Fast; all on 20s rest

If you use paddles then you can put them on for the last 12 50s. Before that you should swim without gear.

PC 125s

8x125 as 50 Easy (long strokes), 25 Fast, 50 Steady on 15s rest
100 Easy
8x125 as 50 Easy (long strokes), 25 Fast, 50 Steady on 10s rest
100 Easy

PC 125s Extended

400 BB & Paddles (BBP) Steady
8x125 as 50 Easy (long strokes), 25 Fast, 50 Steady on 15s rest
400 BBP Steady
8x125 as 50 Easy (long strokes), 25 Fast, 50 Steady on 10s rest (Use Paddles Only)

PC 150s

10x150 as 50 Easy (long strokes), 50 Build, 50 Steady on 15s rest
100 Easy
10x150 as 50 Easy (long strokes), 50 Fast, 50 Steady on 10s rest
100 Easy

+++

If you use swim gear then OK to use paddles only for second 10x150

PC 150s Extended

500 Steady with middle 200 Threshold
10x150 as 50 Easy (long strokes), 50 Build, 50 Steady on 15s rest
500 Steady with middle 200 Threshold
10x150 as 50 Easy (long strokes), 50 Fast, 50 Steady on 10s rest
500 Steady with middle 200 Threshold

PC 200s

5x200 Easy on 10s rest
4x200 Steady on 10s rest
3x200 Mod-hard on 10s rest
2x200 Fast on 10s rest
200 Max

This swim can be shortened by dropping the 5x200 line. What you are looking for is ~40 minutes of high quality swimming.

PC 400s

8x400, repeat the following pattern twice

- #1 Easy on 10s rest
- #2 Steady on 10s rest
- #3 Mod-hard effort on 15s rest
- #4 Fast on 5s rest

Compare 1-4 with 5-8. Aim to have 5-8 slightly faster than 1-4.

+++

This main set gives a very clear view on your capacity to control effort as well as your true early swim pacing. Many swimmers will find that their arms are blown after the first Fast 400 (#4). If this happens to you then you need to be very careful with early race pacing.

Cool Down:

Once you've done the main set, swim at least 200 easy with a mix of strokes.

At that stage you can end the session or add 800-1,500 of additional swimming. We recommend either a series of 200s or a straight swim. It is best to do the swim on effort, not time, and keep the pace Easy to Steady. It's okay to use paddles, band/buoy or paddles/band/buoy. Pullbuoy only is not recommended, if you are so tired that you need pullbuoy or fins, then it is best to get out.

Tips

- The Fast sections should be done fast!
- Go for it with these sets. It's ok to blow up, so long as you learn, and adjust your approach, for next time.
- No extra rest. To get a clear view of your pace, stamina and top end tolerance – swim the sets as structured.
- Use send offs. Before doing the main set, spend a bit of time figuring out feasible paces and rest periods. Then create send offs, rather than rest intervals, for the workout.
- No Equipment. To get a clear view of your swim fitness, you must benchmark without equipment.
- Train with a buddy. These swims are mentally tough. Round up a couple friends and do the workout together. Social pressure can help when the workout is challenging. If you're swimming with friends then best to leave 10 second gaps between swimmers of similar ability.
- Aim for a strong effort, not a lifetime personal best. While these are some of the most important swim workouts that you will do, it is not necessary to set a personal best each time you undertake the Pace Change Challenge.

Where Do You Stack Up?

These workouts are a chance for you to assess yourself. Most triathletes start far too fast and are blown out the back of the pack at the first pace change. Base your race decisions on what you've proven in training.

Time Trials

Intensity/Category: High
When To Use: Throughout the year
Duration: 45 to 90 minutes

Goals:

- Assess athlete awareness of pace
- Teach ability to change speed
- Create a “race” situation to deal with performance anxiety
- Benchmark best effort performance
- See what happens under psychological stress

The Workout

Warm-up: 500 Easy on 20s rest
4x100 Descend on 15s rest
4x75 as 25 Build, 25 Steady, 25 Easy on 10s rest
4x50 Fast on 15s rest
100 Easy (extend this if you like)

Main set: Choose one of the following:

1,000 TT

1,000 Best Effort (the first 100 should feel Easy, the next 150 should feel Steady, then pick-it-up)
Calculate your average split per 100
Steady effort is likely 5s per 100 slower than average pace

Fast Start 1,000 TT

1,000 Best Effort (Start with a Fast 200 and hang on)
Calculate your average split per 100
Steady effort is likely 5s per 100 slower than average pace

1,500 TT

1,500 Best Effort use this pacing strategy
100 Easy, 100 Steady, 100 Mod-hard, 150 Fast, 50 Steady
100 Mod-hard, 250 Fast, 50 Steady
250 Fast, 50 Steady
150 Fast, 50 Steady
100 Fast
Note your average pace per 100.
3s per 100 slower than your average pace is a reasonable estimate of your Mod-Hard pace

2,000 TT

2,000 Best Effort use this pacing strategy
100 Steady,
400 Fast, 100 Steady,
400 Fast, 100 Steady
300 Fast, 100 Steady
200 Fast, 100 Steady
200 Fast
Note your average pace per 100.
2s per 100 slower than your average pace is a reasonable estimate of your Mod-hard pace – swims like this help you benchmark true effort early in a workout (or race)
If you struggle to think/count when you swim then take a split every 500 so you can review the information post-TT.

3,000 TT

3,000 Best Effort use this pacing strategy
100 Steady, 600 Mod-hard;
100 Steady, 500 Mod-hard;
100 Steady, 400 Fast;
100 Steady, 300 Fast;
100 Steady, 200 Fast;
100 Steady, 100 Fast;
100 Steady, 200 Fast;
Note your average pace per 100.

Tips

- If you are not used to long TTs then the most important thing you have to gain is the psychological benefit of wrapping your head around long, continuous, fast swimming.
- Release yourself from the pressure to set a lifetime PB every time. You can do these swims either for a best time or at a more moderate effort – for example, max three-stroke breathing pace.
- The pace variations are helpful to break up the mental pressure of having to push the entire way.
- Learning to cope with discomfort at pace is a key part of open water swimming.

Where Do You Stack Up?

- Front pack elite triathletes: Will be sub-1:15 pace (meters) for their 1,000 TT and have implied Steady paces around 1:20 pace (meters).
- Top age-group triathletes: Will be sub-1:20 pace (meters) for their 1,000 TT and have implied Steady paces in the mid-1:20s (meters).

Bike Workouts

Progressive Bike Test

Intensity/Category: Moderate to High
When To Use: Late Base Through Specific Preparation
Duration: 60 to 90 minutes

Goals:

- Assess aerobic fitness
- Generate training zones for use in the field
- Benchmark power versus heart rate and lactate
- Test top end performance

The Workout

Warm-up: 20-30 minutes with your power remaining under 50% of FTP

Main set: 5 minute steps starting at 50% of FTP

- See below for guidelines on step height
- Watch average watts per interval so you can ride smoothly at goal wattage
- Note HR each minute as well as max HR per interval
- Aim for cadence at 88-92 rpm
- Use TT Position

Cool down: Easy spinning for at least 15 minutes

Tips

- The test should start at a very easy intensity. To get a clear reading on your aerobic zones and breakpoints, you need to start quite low. The most common mistake in benchmarking, racing and training is "the fast start" -- it skews the data.
- Step Height - If your FTP is less than 125w then use 10w steps. From 125-175w use 15w steps. From 175-250w use 20w steps. From 250-350w use 25w steps and for 350w+ use 30w steps. Step height is another area where you can skew your data. If the steps heights are too large then you may miss an important breakpoint or training zone. So it is better to use smaller steps if you are unsure.
- If the test is done maximally then peak HR and lactate values provide useful benchmarks. Typically, an over-reached athlete will see reduced HR for a given power combined with an inability to lift HR/lactate at a high effort. This low HR response, for a given power, can be (correctly) interpreted as improved fitness, unless seen with lower than normal HR/lactate at the end of the test.
- Sub-maximal testing: by increasing test duration to ten minutes, and stopping the test at FTP power, an athlete can get a clearer view of their training zones for field use. We've found that a five-minute step gives reliable HR data but, often, perceived exertion is understated. By extending the step duration to ten minutes, athletes will experience better alignment of effort and heart rate. To be clear, maximal testing should be done with five-minute steps.
- If taking lactate samples then remember:
 - Baseline lactate must be ≤ 1.5 mmol prior to starting the test;
 - Sample lactate at the 3:30 mark of each step so that an alternative sample can be taken if the first reading is suspect;
 - Sampling procedure is dry the area; wipe with alcohol swab; lance; wipe first drop of blood away; sample second drop.
- How far to take it? That really depends on you. There are benefits of taking the test all the way to failure: checking for fatigue and seeing top end heart rates. However, these aspects do not need to be tested often. If you plan on frequent testing then you only need to go to failure once per quarter. The rest of the time, build to slightly past FTP.
- When noting perceived exertion, wait until the fourth minute of the test. This will give you a clear indication of your response to the step intensity. Also pay attention to the following physiological markers:
 - First deepening of breath, increase in respiratory rate – this is associated with the bottom of your Steady training zone.
 - The transition to breathing that you can hear, without any material burning in the legs – this is associated with the top of your Mod-hard training zone.
 - Burning in the legs with breathing that can hear – Functional Threshold Power is your best average power for an hour. Given that the test step duration is five minutes, it's common to over-estimate FTP. With most athletes, if the sensation of lactate burning kicks in on a

step, then it's likely that they are near FTP. As a further check, most athletes will only be able to complete one additional step after crossing FTP. So the final full step completed is, typically, around 90% of FTP.

Where Do You Stack Up?

- Front pack elite triathletes: No material uptick in lactate until 3.5 watts per kilo and watts at 1 mmol over baseline of 4.0 watts per kilo (men).
- Top age-group triathletes: No material uptick in lactate until 3.0 watts per kilo and watts at 1 mmol over baseline of 3.5 watts per kilo (men).

Power Single Intervals

Intensity: Moderate to High
When To Use: Mid-Base to Early-Specific Preparation

Goals:

- Threshold and VO2max stimulus without extended recovery
- Position specific high power, high torque loading
- Very effective training for time constrained athletes

The Workout

Warm-up: 10 minutes Easy, 10 minutes Steady, 5 minutes Easy

Main set: Alternate 1 min "On" / 1 min Recovery
Start the "on" effort at Steady and build to Threshold by the end of the set – do not max out, stay under control.
Total set duration is 20-60 minutes (which includes the Easy segments)
Use TT Position

Cool down: Easy spinning for at least 5 minutes

Tips

- To make the main set "intensive" start at Threshold effort and build to VO2max by the end of the set. For most athletes this would be a progression from 90% to 120% of FTP
- Most athletes will be best served by increasing the rate of ramp up (from Steady) than exceeding FTP effort at the end of the set. This will make the overall workout challenging enough but not so hard that recovery is compromised/extended.
- If you are unsure of your VO2max power then use the average power from the final five minutes of your most recent Progressive Bike Test.
- At all times, do not exceed your current season high CP6 value (best six-minute power) in this workout. Max efforts in this session will reduce the overall effectiveness of your training week.
- Make sure that at least 50% of your intervals are done against personal preference for the wattage. For example, if you like to spin at 90rpm, or more, at FTP then be sure to include some big gear work. Likewise, if you prefer low cadences then make sure to include intervals at a cadence of 92 rpm.

Big Gear Work

Intensity: Moderate
When To Use: Any time

Goals:

- Moderate to high workloads with low to moderate cardiac stress
- High torque loading in specific movement patterns (TT, climbing, standing)
- Very effective training for time constrained athletes

The Workout

Warm-up: 10 minutes Easy, 10 minutes Steady, 5 minutes Easy

Main set:

One or more of the following options:

- 5x8 min, on 2 min spin recovery – best done early and/or late in the ride at 90% of FTP.
- 40-60 minutes of ABS work (ABS = anything but shift, leave yourself in a big gear – OK to change position). Best done in slightly variable terrain. Terrain variations will have watts all over the place. Seek to hold a Steady to Mod-Hard heart rate.
- 4-6 x 15-20 minutes odds Big Gear, evens TT cadence; 5-10 minutes choice between. Best done as the only main set in a ride with either Steady or Mod-Hard heart rate targets.

As Part of a Long Ride – Option 1

Think about this ride in 1/5ths.

- 1st/3rd/5th hours, ride as flat as possible.
- 3rd/5th hours should include 5x8 min Big Gear, low cadence, and build HR into Mod-hard zone.
- 2nd and 4th hours are an average of a Steady effort but will be variable because you ride on your aerobars, in rollers, with a big gear. HR and Power will spike during hours 2/4 but limit the time you are in your Threshold Zone.

As Part of a Long Ride – Option 2

- Aim for about an hour on the flats before you hit a long, moderate climb.
- Climb should be done in a big gear (the entire way) with 2 out of every 3 miles done TT position. Aim for Mod-Hard watts with cadence <60 rpm for the TT position work.
- Ideally, keep the effort in your Steady HR zone on the descent with some high cadence work in the TT position.
- Finish the ride with an hour slightly under IM effort, in the flats, with cadence slightly over 90 rpms.

Mixed with Threshold Work

4x15 min as:

- Mod-Hard effort, 92 RPMs, TT position
- Same as #1 but stand for the middle 5 minutes, drop cadence to 60 rpm (you'll need to change gears) - don't let HR spike by more than 8bpm and work back into your mod-hard zone
- Big Gear the whole way, TT position, cadence 65-75 rpm, build HR gradually to where you ended at #2 (should be top of mod-hard zone)
- #4 is the same as #1
5 minutes EASY between all of the above -- HR might spike when you stand on #2 but don't spend any material time above your Mod-Hard zone.

Mixed with Threshold Work (longer set)

Main Set A is 3x5 minutes as:

- 2 minutes 92 rpm Mod-hard effort
- 1 minute standing Threshold effort;
- 2 minutes TT position, low cadence Mod-hard effort

Take 3 minutes Easy/Steady between reps

Main Set B is 3x15 minutes Big Gear (TT position rpm <= 60) – seek to hold FTP; 5 minutes easy spin between each

Log your max HR for each rep; keep HR in your mod-hard zone;

After the last rep, do 20 minutes at the bottom end of your Steady wattage with cadence slightly higher than normal TT cadence.

Tips

- Hold good form when doing your Big Gear work. Specifically, maintain stable hips and control your knee alignment through the entire pedal stroke.

- If you find that you experience knee pain then you may have a leg strength limiter that needs to be addressed via traditional strength training. In this case, reduce torque loads by keeping your cadence above 75 rpms.
- For the Big Gear Training outlined in this section, work at, or over, your Threshold heart rate zone is unnecessary and will lead to extended recovery. This type of training is most effective when done with a moderate heart rate.
- Keep your head up when moving fast outside!
- Build your torque tolerance gradually. Be moderate in your approach.
- Make sure you follow a balanced approach to cadence-specific training. Most athletes will have a preferred cadence and training against preference should be done weekly and as a part of your key sessions.
- Be sure to balance your low-cadence training with time spent at 92 rpm.
- Reduce work interval and increase rest interval within 10 days of an important competition. You want to reduce the total load of high torque training prior to competition.
- In Specific Preparation, consider inserting 20 minutes at 90% of FTP at the end of your key rides wattage. Use this modification sparingly to create a race simulation for the heavily legs that are typically felt running out of T2 on race day.

Triple 3s

Intensity/Category: Moderate
When To Use: Mid-Base to Specific Preparation

Goals:

- Become skilled in a range of cadences and positions
- Roll up extensive and intensive aerobic volume

The Workout

Warm-up: *20-45 minutes of Easy cycling with a few builds to the top of the Steady heart rate zone*

Main set: *For a main set duration of 30-60 minutes change cadence every three minutes – 60/75/90 rpm and stand/sit/TT for your position, respectively.*

Tips

- This session can be done in the flats or on a climb.
- When climbing, a moderate grade works best and offers the ability to do sustained high cadence work on the descent.
- If you have time then adding 20-45 minutes of Steady riding before/after the main set makes a nice addition.
- Across the main set, build heart rate from your Steady to Mod-Hard heart rate zone. Do not exceed the top of your Mod-Hard heart rate zone.

Race Simulation

Intensity: Moderate to High
When To Use: Specific Preparation

Goals:

- Test goal race efforts on bike and run
- Perform an intensive endurance workout
- Check ability to choose effort, and relax, in a non-race situation

The Workout

Prep workout:

Start with a run or a swim.

- *If run then start at an Easy pace and build to Steady heart rate for the second half of the opening session.*
- *If swim, use open water if possible. Do your exact pre-race warm-up then 6x5 minutes continuous as 5 minutes Fast, 5 min Steady, 10 min Goal Race Effort, 5 min Fast, 5 min Steady.*
- *If swimming in a pool then do your exact pre-race warm-up then swim 5x400 as Fast, Mod-Hard, Steady, Mod-Hard. Fast. Rest interval is 20s/10s/5s/10s/20s by interval.*

70.3 main set:

Transition from the prep workout in a simple, and efficient, manner.

Ride 2:15 as:

- *10 minutes choice then*
- *2 hours as 4x (20 minutes / 10 minutes) alt Steady/Mod-Hard continuous*
- *5 minutes choice straight into a transition run*

Run 0:45 alt by 5 minutes Steady / Mod-hard

IM main set

Transition from the prep workout in a simple, and efficient, manner. If swimming first then consider extending the prep workout to at least 4,000 meters equivalent.

Ride Five Hours:

- *The first two hours contain 2x40 minutes slightly easier than IM effort with cadence slightly over 90 rpm.*
- *At Hour 2 insert 5x8 min Big Gear, 2 min spin recoveries, low cadence, TT position, 90% of FTP.*
- *At Hour 3 insert (3x) 12/3 minutes - 12 minute segments are 80% of FTP with cadence 92 rpm, TT position, 3 minute segments are standing at 100% FTP.*
- *At Hour 4 insert 45 minutes as 15/15/15 minutes at 75%/85%/90% of FTP at a cadence of 92 rpm, TT position.*

Run 0:45 with first 5 minutes Easy then 40 minutes benchmarking Steady HR to pace.

Tips

- For this workout, Steady = IM power/pace and Mod-hard = HIM power/pace.
- For each of the ten-minute intervals, build HR slowly so that you are at least 10bpm higher than where you ended your previous steady interval.
- Early in the workout, use power, not HR.
- If your HR is slow to come down after the higher efforts then drop power to whatever-it-takes to get back into your desired heart rate zone. This is very important for you to get an accurate assessment of sustainable race effort.
- Choose a bike route that is race specific and has as few stops as possible.
- Eat and drink at race levels.
- To check intake and estimate sweat rate, check body weight before/after session, note total food/drink consumption.
- Long course athletes should build the stamina to extend the swim to 5,000 meters equivalent. Always place the fastest part of the swim workout at the end of the session.
- For short-course and middle-distance Specific Preparation, the 70.3 Main Set can be adjusted to:
 - 2x 20/10 (Steady/Mod-Hard)
 - 10/10/10 (Steady/Mod-Hard/Threshold)

- 20/10 (Mod-Hard/Threshold)
- With Threshold being Olympic distance power
- Demonstrate mastery of the standard version before increasing workout intensity. Most athletes ride too intensely when they are learning this session.
- If you increase the intensity of the 70.3 Main Set then adjust the transition run to: 3x 5/5/5 (Steady/Mod-Hard/Threshold).

Where Do You Stack Up?

You should have minimal (<5%) run decoupling from normal training performance. If you find that you decouple more than 7% then you will need to reduce anticipated bike effort.

Run Workouts

Long Run with Specific Pace Work

Intensity/Category: Moderate to High
When To Use: Specific Preparation
Duration: 75 to 165 minutes

Goals:

- Specific pace work – structured in a manner to aid recovery
- Reality check of goal pace against current fitness
- Improve specific economy at goal pace

The Workout

Warm-up: Consider 20-30 minutes of easy spinning to establish cadence

Main set: Split the run into quarters based on distance or duration. Examples follow for both approaches. Review the tips for advice on “Race Pace” relative to distance and your experience.

Specific Pace By Distance

12 miles

- 3 miles build to Steady pace; then
- 4 miles alternate slightly faster than Race Pace with slightly slower than race pace
- 1 mile run 1 minute per mile slower than Race Pace
- Repeat 4-mile main set
- Choice Cool Down

15 miles

- 3 miles build to Steady pace; then
- Repeat this pattern three times
- 3 miles slightly faster than Race Pace
- 1 mile at 60 seconds per mile slower than Race Pace
- Choice Cool Down

18 miles

- 3 miles build to Steady pace; then
- Repeat this pattern three times
- 4 miles slightly faster than Race Pace
- 1 mile at 60 seconds per mile slower than Race Pace
- Choice Cool Down

Cool down: This is the ideal workout to follow with an afternoon ice bath to aid in recovery

Tips

- In all cases, strides are useful before and after.
- Loops work best for this type of running and enable you to set up an aid station so you can practice hydration. In summer conditions, you should stop for fluids and get used to running at pace with a full stomach.
- Slightly faster than Race Pace means 8-15s per mile quicker than likely pace on race day. Base your target pace on reality!
- **Ironman** – Typically best-case scenario is AeT pace (bottom of Steady); elites and top amateurs will be able to deliver LT pace (Mod-hard) in favorable run conditions.
- **Half Ironman** – Typically best-case scenario is LT pace; athletes that will be racing for more than six hours should look to AeT pace; elites and top amateurs will be able to deliver Threshold pace in most conditions.
- Consider your distance based on goal duration as well as your average weekly run mileage. As a guideline, your long run should account for no more than one-third of your total weekly run volume (distance and duration) measured for the previous six weeks.

Where Do You Stack Up?

Cap your heart rate at 10bpm below what you think you will be able to average for the second half of the run leg in your race. It's essential that you be honest with yourself in these assessments. If you make a mistake then start with pace goals slower than your best-case scenario.

For example, if you expect to be able to run at 165bpm in the race, then cap your workout HR at 155bpm.

Let's illustrate with the 18-mile run workout. You want to ensure that your HR never goes over 155bpm. Taking into account cardiac drift, cap HR as follows:

18 miles

- 3 miles *build gradually to 140bpm*; then repeat this pattern three times
- 4 miles slightly faster than Race Pace (*capping at 148bpm / 152bpm / 155bpm by repeat*)
- 1 mile at 60 seconds per mile slower than Race Pace (*letting HR fall by at least 10bpm*)

By capping the HR as shown above, you should be able to meet your pace goals (if realistic) and hold, or ideally, slightly increase pace across the workout.

Once your heart rate is up, it's normal that you will try to convince yourself that it's okay to disregard pace and HR guidelines. However, to give yourself the best chance of hitting your specific pace on race day, you need to follow these guidelines exactly. If your pace results in exceeding these HR targets then it needs to be adjusted to a slower target.

These sessions should require focus but they should not feel like racing.

Descending Pace Intervals

Intensity/Category: Moderate to High
When To Use: Anytime

Goals:

- Develop a sense of pace
- Become smooth and economical throughout your aerobic range
- Increase understanding of sustainable pace

The Workout

Warm-up: 10 to 30 minutes starting at Easy pace and building to Steady pace

Main set: **Descending to Mod-Hard Pace**

The main set is 5x8 minutes continuous: if everything goes well you'll have each eight-minute interval done slightly faster. However, I do this workout two to three times a week and I only get it "right" a couple times per month!

5x8 minutes, or five times a distance that will take about 8 minutes.

The game is:

- Lap 1 - Easy pace
- Laps 2 and Laps 3 - Steady pace
- Laps 4 and 5 - Sit just under the top of your Mod-Hard HR zone

While I track pace, I don't worry about it. In other words, you can spike your HR if you are worried. So relax, accept pace and get the work done.

Progressive to Threshold Pace

Think about this main set as 5x12 minutes continuous

- 12 min Easy
 - 12 min Steady
 - 12 min Mod-hard
 - 2x5 min Threshold (1 min Easy between)
 - 12 min Steady
- End with strides*

Double Descend

You can create a variable pace long run by doubling either of the main sets above. To check if "Easy pace" is really easy, the second time through the main set can give much more accurate heart rate information.

Dave Scott 5311s

Similar to the patterns above, you can create a variable paced main set of any duration by following this pattern I learned from Dave Scott:

- 5 min Mod-hard
- 3 min Threshold
- 1 min VO2max
- 1 min Easy

For the 5311 pattern, three to six times through the progression is ample and you must be experienced with hitting the appropriate pace zone. Given that nearly everyone goes a little too fast, start with a conscious decision to go "too easy."

Tips

- Be patient with letting HR settle into alignment with goal effort.
- Slightly rolling terrain is best, this will help you develop a sense of moderating pace ahead of heart rate response.
- Make effort changes slowly and smoothly. If you find yourself chasing HR up/down then relax and settle down.
- Experiment with short (10-15s) Power Walking segments inserted every 8-10 minutes and on any short/sharp hills. See how strategic walking reduces pace-fade, relative to heart rate, at the end of the workout.
- If you make a mistake then go a little too easy and stick to your heart rate caps.
- Once heart rate is up, you may be tempted to hammer. To execute your plan on race day, you need to master pace discipline in training.

Where Do You Stack Up?

- The primary mistake with race day running is starting too fast. Learn to build pace gradually and understand how you respond to subtle changes in effort.
- Top athletes have the ability to tolerate a wide range of pace changes. Seek to create comfort in a wide range of paces.

Progressive Run Test

Intensity/Category: Moderate to High
When To Use: Late Base Through Specific Preparation
Duration: 60 to 90 minutes

Goals:

- Assess aerobic fitness
- Generate training zones for use in the field
- Benchmark pace versus heart rate and lactate
- Test top end performance

The Workout

Warm-up: Warm up with 15-20 minutes of Recovery effort running or cycling

Main set: Perform this test at a track (1 lap = 400 meters or ¼ of a mile)
Total test distance is 10-12K (continuous)
Run Increasing 2,000 meter Repeats
Start first 2K at 20bpm below the bottom of your Steady zone
Increase effort by 10bpm for each successive 2K interval
Track your average pace and max/average HR for each 1,000-meter leg
Continue until 2K beyond Functional Threshold Heart Rate

Cool down: Easy spinning or jogging for at least 15 minutes

Tips

- The test should start at a very easy intensity. To get a clear reading on your aerobic zones and breakpoints, you need to start quite low. The most common mistake in benchmarking, racing and training is "the fast start" – it skews the data.
- Step Height - If most of your steps would take longer than ten minutes then drop the interval duration to 1,600 meters. If most of your steps would take longer than twelve minutes then drop the interval duration to 1,200 meters.
- If the test is done maximally then peak HR and lactate values provide useful benchmarks. Typically, an over-reached athlete will see reduced HR for a given pace combined with an inability to lift HR/lactate at a high effort. This low HR response, for a given pace, can be (correctly) interpreted as improved fitness, unless seen with lower than normal HR/lactate at the end of the test.
- If taking lactate samples then remember:
 - Baseline lactate must be ≤ 1.5 mmol prior to starting the test;
 - Sample lactate at the 3:30 mark of each step so that an alternative sample can be taken if the first reading is suspect;
 - Sampling procedure is dry the area; wipe with alcohol swab; lance; wipe first drop of blood away; sample second drop.
- How far to take it? That really depends on you. There are benefits of taking the test all the way to maximum effort: checking for fatigue and seeing top end heart rates. However, these aspects do not need to be tested often. If you plan on frequent testing then you only maximal testing once per quarter. The rest of the time, build to slightly past FTP.
- When noting perceived exertion, wait until the fourth minute of the step. This will give you a clear indication of your response to the step intensity. Also pay attention to the following physiological markers:
 - First deepening of breath, increase in respiratory rate – this is associated with the bottom of your Steady training zone.
 - The transition to breathing that you can hear, without any material burning in the legs – this is associated with the top of your Mod-hard training zone.
 - Burning in the legs with breathing that can hear – Functional Threshold Pace is your best average pace for an hour. Given that the Threshold step duration is five to eight minutes, it's common to over-estimate FTP. With most athletes, if the sensation of lactate burning kicks in on a step, then it's likely that they are near FTP. As a further check, most athletes will only be able to complete one additional step after crossing FTP.

Where Do You Stack Up? **Ironman Race Pace** can be estimated by the highest pace that can be sustained without elevating lactate beyond baseline.

Half Ironman Race Pace can be estimated by the pace that corresponds to 1mmol above baseline.

G-Style Molina 800s

Intensity/Category: Moderate to High
When To Use: Late Base Through Specific Preparation
Duration: 90 minutes

Goals:

- Assess aerobic fitness
- Improve neuromuscular skills at faster than race velocity
- Improve fitness across all run zones

The Workout

Warm-up: 2 miles (3K) nice and relaxed (not on track). Additionally, many athletes like to do an Easy paced spin to/from the track.

Main set: Perform this set at a track (1 lap = 400 meters or ¼ of a mile)

The main set starts with low-, and high-, aerobic benchmarking:

- 3200m benchmark pace at bottom of Steady HR Zone and take 800m splits straight into...
- 3000m benchmark pace at top of Mod-Hard HR Zone and take 1000m splits

Relax and have a drink for a few minutes

The fast part of the main set is 8x 800/200:

- 800s are fast and smooth (check split and note your max HR)
- 200s are easy jog

Relax and have a drink for a few minutes

Finish with:

- 6x 100m strides on 100m walking
- 3k nice and relaxed (not on a track)

Tips

- The pace that you target for the 800s should be at, or slightly faster than, your average pace for a recent open 10K running race. The overall session is designed to be sustained, rather than searing.
- Aim to lift cadence when you lift speed.
- The workout is a package deal. You must do the aerobic benchmarking and extended warm-up before the 800s. This will take the total session length to 21k.
- Run no faster than indicated. You need to balance your run fatigue against your entire program.
- Stay smooth with a quick cadence. As you fatigue, watch for areas of tension (jaw, shoulders, neck). Also watch that your arms don't open up. To maintain your run economy, stay smooth, relaxed and compact.