



Building Your Triathlon “A” Race Training Plan

BY Coach Neal



What is your main reason for participating in triathlons?

Important to set SMART goals: Specific, Measurable, Achievable, Relevant, and Time Bound

What are your limiters?

- Psychological Factors: Confidence, Motivation, Ability to Focus
- Sociological Factors: Number of Hours to train, Professional obligations, Family social support
- Physiological Factors: Fitness Level, Medical History, Discipline Specific Capabilities

When putting a training plan together, additional training sessions for discipline-specific limiters may need to be added.

Athlete Evaluation

- **Running Evaluation:** Equipment, Level of skill, training history, medical history, fitness analysis (LTHR/Lactate Threshold Run Pace)
- **Biking Evaluation:** Equipment, handling skills, Bike fit analysis, fitness analysis (LTHR and Functional Threshold Power (FTP))
- **Swimming Evaluation:** Equipment and access to pool, Level of comfort, training history, stroke form analysis, Fitness test. Speed (min:sec / 100 yd./ meter repeats), Strokes (per length 25 yd./meters), heart rate, or Rating of Perceived Exertion (RPE).
- **Strength and Conditioning evaluation:** Dynamic movement screening - Overhead squat screening, Single-Leg Squat screening, and core muscle endurance screening.

Establishing “A” Race Training Plan

- **Suggested minimum amount of training time for the beginner triathlete**
 - **Sprint** – Consist of 200 to 400 meter swim, 6 to 16 mile Bike, and 1 to 3 mile Run – Train 12 weeks
 - **Olympic** – Consist of 1,500 meter swim, 24.8 mile Bike, and 6.2 mile Run – Train 16 weeks
 - **Ironman 70.3** – Consist of 1.2 mile swim, 56 mile Bike, and 13.1 mile Run – Train 20 weeks
 - **Ironman** – Consist of 2.4 mile swim, 112 mile bike, and 26.2 mile Run – Train 24 weeks
- How many hours are you currently training?
- **How many hours do you have to train?**
- What is the “A” race and race distance you want to train for?
- What days can you train?
- What is the best time of day for you to train?
- What are your heart rate zones for the run, bike, and swim?

Establishing “A” Race Training Plan - Phases

	Sprint Race	12 Week Plan											Race
	Weeks to Race	12	11	10	9	8	7	6	5	4	3	2	1
	Microcycle	1	2	3	4	5	6	7	8	9	10	11	12
Phases	Phase			Preparation Phase						Competition Phase			
	Subphase			General Prep			Spec Prep		Pre Competition		Competition		
	Mesocycle		One			Two			Three			Four	
	Microcycle Structure	L	L	D	L	L	D	L	L	D	L	L	T

A 12 week training plan (Macrocycle) for a Sprint Triathlon race consists of phases and cycles. There are two phases: the **Preparation Phase** (build aerobic endurance with volume and low intensity Zone 2 & 3) and the **Competition Phase** (improve capacity to work at higher intensity zone 3 & 4) . The Preparation Phase is broken down into the **General Prep**, longest phase to establish a physical and technical base and **Spec Prep** subphase, focus on establishing muscular endurance, strength and speed. The Competition Phase is broken down into **Pre Competition**, a short period with focus on race pace, tactics, and skills and **Competition phase**, emphasis on maintaining fitness with focus on mentally and physically being ready. The last week of the Competition Phase, week 12, consist of the **Taper Phase** with focus on rest and recovery.

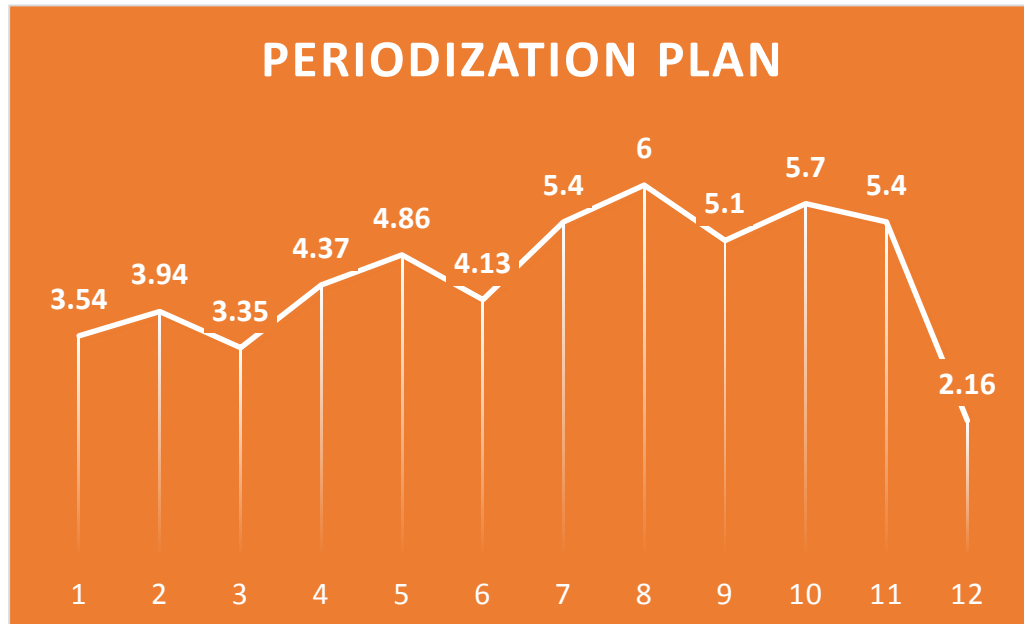
The 12 week training plan also consist of **4 Mesocycles** and **12 Microcycles**. Each **Mesocycle** Consist of a 3 week period which focuses on a particular goal of the overall training objective. Each Mesocycle consist of two weeks loaded and one week unloaded. Each **Microcycle** consist of a 7 day period. The content of each Microcycle determines the quality and structure of the plan by establishing the training priorities, i.e. Endurance, strength, speed, volume, intensity, and duration.

Establishing “A” Race Training Plan – Phases, Variables, Session Freq., and Session Duration (Sprint Race Example Plan)

	Sprint Race	12 Week Plan												Race
	Weeks to Race	12	11	10	9	8	7	6	5	4	3	2	1	
	Microcycle	1	2	3	4	5	6	7	8	9	10	11	12	
Phases	Phase	Preperation Phase						Competition Phase						
	Subphase	General Prep				Spec Prep			Pre Competiton		Competition			
	Mesocycle	One		Two			Three		Four					
	Microcycle Structure	L	L	D	L	L	D	L	L	D	L	L	T	
Variables	Volume in Hours	3.54	3.94	3.35	4.37	4.86	4.13	5.40	6.00	5.10	5.70	5.40	2.16	Max Hours
	Volume % of Max	0.59	0.66	0.56	0.73	0.81	0.69	0.90	1.00	0.85	0.95	0.90	0.36	
	Training Zone	2	2	2	2 to 3	3	2 to 3	3	3 to 4	3	3 to 4	3 to 4	3	
Session	Swim	2	2	2	2	2	2	2	2	2	2	2	1	
	Bike	2	2	2	2	2	2	2	2	2	2	2	1	
Frequency	Run	2	2	2	2	2	2	2	3	2	3	3	1	Brick
	Strength	2	2	2	2	2	2	2	1	1	1	0	0	
Total	Swim	0.51	0.59	0.47	0.67	0.77	0.63	0.88	0.88	0.69	1.04	0.98	0.43	Max Session
Session	Bike	1.27	1.47	1.17	1.69	1.93	1.57	2.20	2.64	2.76	2.60	2.45	1.08	
Duration	Run	0.76	0.88	0.70	1.01	1.16	0.94	1.32	1.98	1.15	1.56	1.47	0.65	
Hours	Strength	1	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0	

Periodization Training Plan

- It's smart and responsible to use a periodization plan. You can't stay in the same shape year around. Notice on the chart below how the training hours vary throughout the 12 weeks.



Establishing “A” Race Training Plan - Microcycles

- Example: **Microcycle 8 workout** – Goal: perform one moderate intensity workout and one high intensity workout

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Run 1:00 Zone 3 Key Endurance Session	Off Day	Run :30 Zone 3 & 4 Key High Intensity Session	Swim :25 Zone 3 & 4 Key High Intensity Session Strength :30 Maintenance	Bike 1:00 Zone 3 & 4 Key High Intensity Session	Swim :30 Zone 3 Key Endurance Session	Bike 1:40 Zone 3 Key Endurance Session Run :30 Zone 3 Key Endurance Session

Here are some general rules of thumb to remember as you finish constructing your microcycles. Follow a heavy volume Day with a lighter volume day. Follow an overload session with a recovery session. Avoid training that stresses the same Energy system(s) on successive days. Approximately 50% of training time should be recovery activity. Put at least one rest or active recovery day in every microcycle.

Run – Establish LTHR and Lactate Threshold Pace

- **30 minute test for LTHR**, athletes should warm up thoroughly and then gradually accelerate to tempo which they believe they can sustain for 30 continuous minutes. Athletes will push the lap button on their heart rate monitor 10 minutes into the test. This will allow the device to capture the last 20 minutes as a stand alone interval. An athlete's average heart rate for that portion of the run is close to his or her LTHR. The athlete is also capturing his or her LT Pace by capturing the average pace over the entire 30 minutes. This pace would be your Zone 4 Heart Rate training Zone (half-marathon to 10K pace). Zone 3 training sessions are conducted at more of a steady-state run pace, which is approximately 40-60 seconds slower than Zone 4. Zone 2 sessions are typically 90 seconds to 2 minutes slower per mile.
- **VO2max – Intervals**, VO2max training represents a special form of interval training in which the quality intervals are conducted at exactly VO2max (high end of the Zone 4 intensity range.) The amount of recovery is maintained in a 1:1 ratio of duration of work at an intensity of 50% VO2max. Example 30 seconds at Zone 4 and 30 seconds at Zone 1.
- **Estimating VO2Max pace**

Step	Calculation
1. Distance to run in 6 minutes	A = _____ meters per 6 minutes
2. Multiply answer (A) x 360 to convert to seconds	B = A/360 = _____ (meters per second)
3. Calculate time to run 200 meters	200 / B seconds to run 200 meters
4. Calculate time to run 400 meters	400 / B seconds to run 400 meters
5. Calculate time to run 600 meters	600 / B seconds to run 600 meters
6. Calculate time to run 800 meters	800 / B seconds to run 800 meters

Run Training Intensity Heart Rate Zones

Zones	RPE (1-10)	Run Pace (Based on 30-minute test)	% THR Run	Primary Fuel Source	Carbs%	Fat%
1 - Easy	1 to 2	Very Easy	< (85% THR)	Blood Glucose	40%	60%
2 - Light Aerobic	3 to 4	Easy (LT Pace + 90 to 20 minutes)	(85% to 89% THR)	Glycogen	65%	35%
3 - Moderate	5 to 6	Moderate close to marathon pace (LT Pace + 40 to 60 sec)	(90 to 94% THR)	Fat	80%	20%
4 - Threshold	7 to 8	1/2 Marathon pace (LT Pace)	(95 to 99% THR)	Glycogen / Blood Glucose	92%	8%
5 - Above Threshold	9 to 10	LT Pace - 20 sec	> (100% THR)	Glycogen / Blood Glucose	89-100%	< 2%

Bike – Establish LTHR and Functional Threshold Power

- **20 minute Time Trial test for LTHR and FTP**, athlete should warm up thoroughly using a road bike with power meter and HR device or indoor spin bike with power meter and heart rate device. Once warmed up, athlete should gradually accelerate on the bike to a tempo which they believe they can sustain at 90 RPM for 20 continuous minutes. An athlete's average heart rate at the end of the 20 minutes is his or her LTHR. The athlete is also capturing his or her average watts at the end of the 20 minute ride which is their Functional Threshold Power.

Bike Training Intensity Heart Rate Zones

Zones	RPE (1-10)	% FTP Bike Power	% THR Bike	Primary Fuel Source	Carbs%	Fat%
1 - Easy	1 to 2	< 55% FTP	< (68% THR)	Blood Glucose	40%	60%
2 - Light Aerobic	3 to 4	56 to 75% FTP	(69% to 83% THR)	Glycogen	65%	35%
3 - Moderate	5 to 6	76 to 90% FTP	(84 to 94% THR)	Fat	80%	20%
4 - Threshold	7 to 8	91 to 105% FTP	(95 to 105% THR)	Glycogen / Blood Glucose	92%	8%
5 - Above Threshold	9 to 10	> 105% FTP	> (106% THR)	Glycogen / Blood Glucose	89-100%	< 2%

Swim – Establish Pace, Stroke Count, Stroke Rate, and Time to Complete

- **Swim test measurements**, if the athlete can swim 1,000 yards or meters, the test is conducted using 100 yard/meter intervals. For less experienced swimmers, the test can be conducted using 50 yard / meter intervals. **Pace** is measured in the amount of time it takes the athlete to swim 100 yards / meters.
- **Stroke rate** – is a measure of the number of strokes or hand hits per minute, counting both arms. That is, one left and one right are two strokes. To calculate stroke rate: Number of strokes in 15 seconds x 4.
- **Stroke count** – is the number of strokes or hand hits per length of 25 yard / meter pool.
- **Heart Rate** or **Rate of Perceived Exertion (RPE)** – due to issues with heart rate monitors in the pool we can use RPE along with pace. The revised RPE Borg Scale (1 to 10) more closely reflects the metabolic (lactate) test. Using this measure in addition to pace can provide a qualitative analysis of the athlete's current fitness.

Swim Training Intensity Heart Rate Zones

Zones	RPE (1-10)	Swim Pace/ 100 YD/MTR	% HR Max	Primary Fuel Source	Carbs%	Fat%
1 - Easy	1 to 2	Technique Only	68 to 73%	Blood Glucose	40%	60%
2 - Light Aerobic	3 to 4	Fitness Test Pace + 10 seconds	73 to 80%	Glycogen	65%	35%
3 - Moderate	5 to 6	Fitness Test Pace + 5 seconds	80 to 87%	Fat	80%	20%
4 - Threshold	7 to 8	Fitness Test Pace	87 to 93%	Glycogen / Blood Glucose	92%	8%
5 - Above Threshold	9 to 10	Fitness Test Pace – 5 seconds	90 to 100%	Glycogen / Blood Glucose	89-100%	< 2%

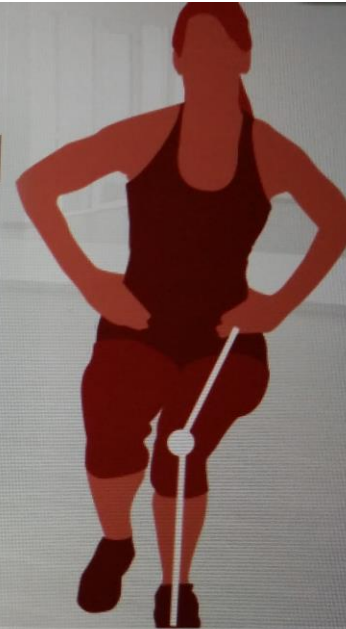
Strength and Conditioning

- [Ironman Core-Endurance-Screening.pdf](#)
- [Ironman Dynamic-Movement-Screening.pdf](#)

Example:

Checkpoints for the Single-Leg Squat

Checkpoint	Compensation	Probable Overactive Muscles	Possible Underactive Muscles
Knee	Knees move inward (adduct and internally rotate)	Adductor Complex	Gluteus Medius
		Bicep Femoris (short head)	Gluteus Maximus
		Tensor Fasciae Latae (TFL)	Vastus Medialis Oblique (VMO)
		Vastus Laterals	



Identifying the Issues in a Single-leg Squat Screening

Strength and conditioning phases:

General Prep – Stability and Endurance, Reps 12 -20, Sets 2 to 3, Conditioning exercise 60-90 sec, Rest 30 sec's, Weight 40 to 60% (1 Rep Max)

Spec Prep – Max Strength Phase, Reps 6-10, Sets 4 to 6, Rest 2 to 3 min, Weight 70 to 80% (1 Rep Max)

Pre Competition – Power Phase / Plyometric Exercise (jumping) Reps 1-6 or 1-8 for Plyometric, Sets 3 to 5, Rest 2 to 3 min, Weight 0 to 85% (1 Rep Max)

Competition Phase - Maintenance Phase /Reduce Resistance, Reps 5-15, Sets 1 to 3, Rest 30 to 120 sec, Weight 0 to 85% (1 Rep Max)

Nutrition

- **Establish Daily Calorie Needs Based on Activity Level (TDEE)**

Intensity	Calories per Pound
Mild activity	12 to 14 Kcal/ lb.
Up to 1 hour Moderate	15 to 17 Kcal/lb.
High activity day with 1 to 2 hours moderate intensity	18 to 24 Kcal/lb.
Very High level of activity with several hours of training	24 to 29 Kcal/lb.

- **Nutrient Requirements:** Carbohydrates 45 to 65%, Fat 20 to 35%, and Protein 10 to 35%
- **Carbohydrates Storage Facts and Information:**
 - Blood glucose, Liver glycogen, and muscle glycogen are the source of stored carbohydrate. Endurance training increases your muscle storage capacity of glycogen.
 - There are approximately 500 grams (2,000 calories) of available carbohydrates in the average 175 pound person.
 - Muscle glycogen can provide approximately 1,600 calories of carbohydrates, depending on the athlete's body weight.
 - Liver glycogen provides 400 calories of carbohydrates. Liver glycogen lasts generally 3 to 5 hours and maintains blood glucose levels which is the brain fuel.
 - Elevated pre-exercise muscle and liver glycogen concentrations are essential for optimal performance.
- **During prolonged exercise,** muscle glycogen directly provides energy to muscle cells. When glycogen stores are depleted, the body is forced to slow down. During low intensity exercise, Zone 1-3 glucose is metabolized via aerobic pathway. During high intensity exercise, Zone 4-5 glucose is metabolized via glycolytic and anaerobic pathways.
- **Electrolyte Requirements :** Sodium – maintain fluid level, Calcium – muscle concentration, Magnesium – transports oxygen into the blood and muscles, and Vitamin D – Bone Health and muscle function.

Nutrition –Continued

- **Hydration is extremely important.** The body is approximately 60% water. An athlete who is not fully hydrated is forcing his or her body to work at less than full capacity, especially during physical activity.
- **Sweat Rate** calculations determine how much fluid an athlete should consume during a training session by calculating the amount of fluid that is expelled through sweat during exercise. Sweat rate is specific and sweat test should be done for swim, bike, and run.
 - **To determine accurate sweat rate follow these steps:**
 1. Athlete should void all urine, then weigh-in wearing little to no clothing.
 2. After weigh in, athlete should exercise for at least one hour while tracking the quantity of water consumed.
 3. After exercise, the athlete should towel off, weigh themselves again.
 4. The athlete weight before and after exercise, as well as the amount of fluid that was consumed during exercise, will be used to determine the athlete sweat rate.
 5. Subtract the post-exercise weight from the pre-exercise weight in pounds, and convert the difference to ounces of fluid loss. One pound equals 16 fluid ounces.
 6. Then add to the number the amount of milliliters of fluid that were consumed during the exercise. This will determine how much sweat was lost during exercise.
 7. Divide the sweat loss by the duration of the exercise to determine total fluid loss during exercise.
- **The Numbers:** On average, you lose about one liter (approx. 34 ounces) of fluid per hour of exercise. Extreme heat and humidity can raise that amount to three liters in one hour. A trained athlete will store enough muscle glycogen to provide energy for approximately 90 minutes of aerobic exercise. As your muscles burn glycogen, water is released as a metabolic by-product and excreted as sweat.
- **Electrolyte concentration** in 33.814 oz. of sweat - Sodium 805 mg, Chloride 1065mg, Potassium 195 mg, Calcium 33.814 mg, and Magnesium 9.6 mg.

Fueling Guidelines Before, During, and After Exercise

- **Fueling before exercise:**

- Consume 4 gm of carbohydrates per 2.2 pounds of body weight 4 hours before
- Consume 3 gm of carbohydrates per 2.2 pounds of body weight 3 hours before
- Consume 2 gm of carbohydrates per 2.2 pounds of body weight 2 hours before
- Consume 1 gm of carbohydrates per 2.2 pounds of body weight 1 hour before
- Or consume 30 gm carbohydrates 30 minutes before exercising

- **Fueling during exercise:**

- 0 to 60 min - Hydrate with water or sports drink (use sports drink with 8% carb mix)
- 1 to 3 hours – Consume up to 60 grams of carbs (240 calories) per hour
- Exercise over 3 hours – Consume approximately 60 to 70 grams of carbs per hours.

- **Fueling after exercise:** (30 min up to 2 hours after)

- Take 0.5 to 0.6 grams of carbs per pound of body weight
- Take 15 to 20 grams of protein in addition to carb recommendations
(12 oz. of Chocolate milk meets this requirement)

- **Fluid and Sodium Guide:**

Timing	Fluid	Sodium
Before	4 hour before 1 oz. per 10 lb. BW 2 hour before 1.2 oz. per 10 lb. BW Up to exercise: ad Lib	450 to 1120 mg per 32 fl. oz. (Sports drink, small amounts of salty food)
During	Based on sweat loss: maximum absorption at 32oz.	500 to 700 mg per liter (or 32 fl. oz.)
After:	16 to 24 fl oz. per lb. lost	Consume foods and fluids that contain sodium to facilitate rehydration

Race Day

- **Checklist:**

- Swim – Goggles and Swim Cap
- Bike – Bike, Helmet, Cycling Shoes, Socks, Spare Tube, CO2 Cartage, Tire Levers, and Water Bottle
- Run – Running Shoes, Hat, Race Belt, and Sunglasses
- General – Race Clothes, Transition Towel and Bag, Energy Bars/Gels, Energy Drink, GPS Watch, Heart Rate Monitor and Strap, Race Number, and Salt Pills/Tablets

- **Race Factors to Consider: USAT sanctions each race and therefore USAT rules apply.**

- Be sure to show up early to get your body marked with race number and age.
- Rack your bike with the seat next to your race number on the bike rack. Front tire should be touching the ground on the same side your number is facing.
- Set up your transition towel next to your front tire. Place Helmet, Bike Shoes, Socks, Run Shoes, Hat, Race Belt with Race Number, and Sunglasses on towel.
- Swim considerations: What is the course layout? How many swim lanes are there? Swim on right side of lane except to pass on left. Swim start one athlete at a time. No diving. Your position in the swim line is based on your race number. Your race number is determined by the estimated swim finish time you gave during registration. Once out of the pool you head to the transition area where your bike is racked.
- Bike considerations: Once at your bike in transition area place your helmet, socks, and bike shoes on. Un-rack your bike and head to **Bike Out** in transition area. You can't mount your bike until you are past the **bike mount line** outside of transition. The bike course will be well marked, but you should be familiar with the course. Stay to the right of the course except to pass. There is no drafting in Triathlon, so you need to stay approximately 5 bike lengths between bikes. If you want to pass you have 20 seconds to pass and the passed athlete must immediately drop back out of the draft zone. When finishing the bike you should get your muscles ready for the run by standing up on the peddles to stretch out the hamstrings, hip flexors, back and calves. When coming into transition make sure you stop the bike before the **bike dismount line**.
- Run considerations: Once you have racked your bike and changed into your running shoes, hat, sunglasses, and put on your race belt/race number (Required on run) head out of transition via the **Run Out** section. Ease into the run, don't force pace. Fatigue and stiffness may lead to shuffle form which isn't bad as you ease into run. **Smile at finish line you did it!**

Questions and Answers

