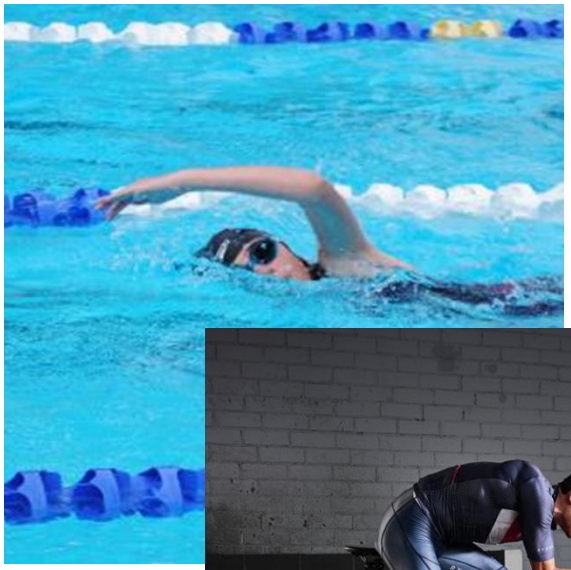
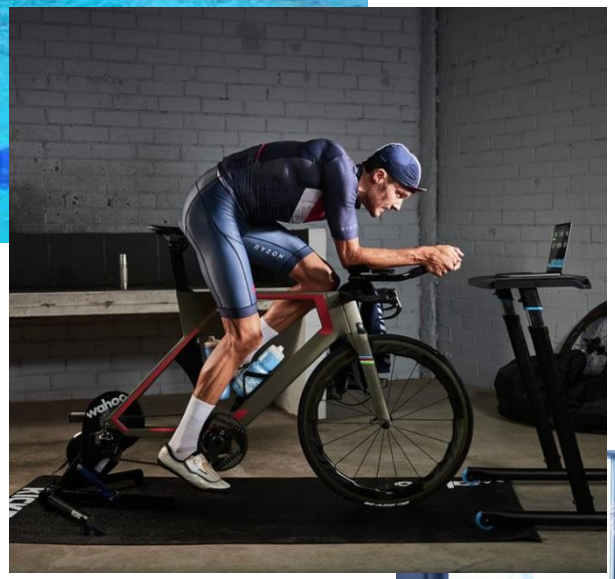
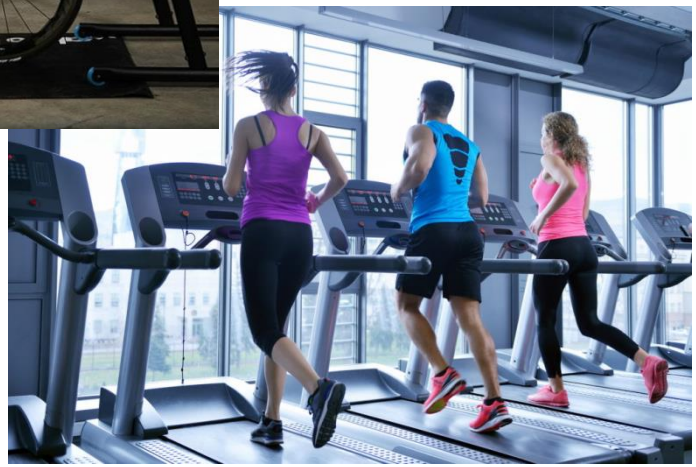




Creating a Training Plan

A goal without a plan is just a dream.

Lone Rider Brewery
Wednesday, February 28th, 2018
7:00 pm



Austin Tri-n-Run Coaching

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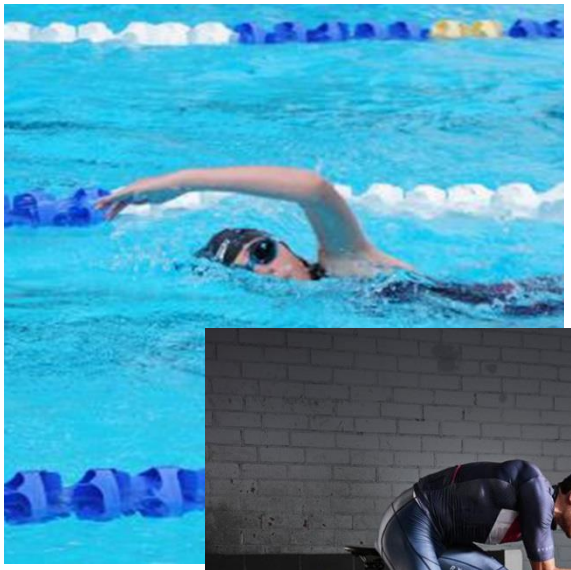
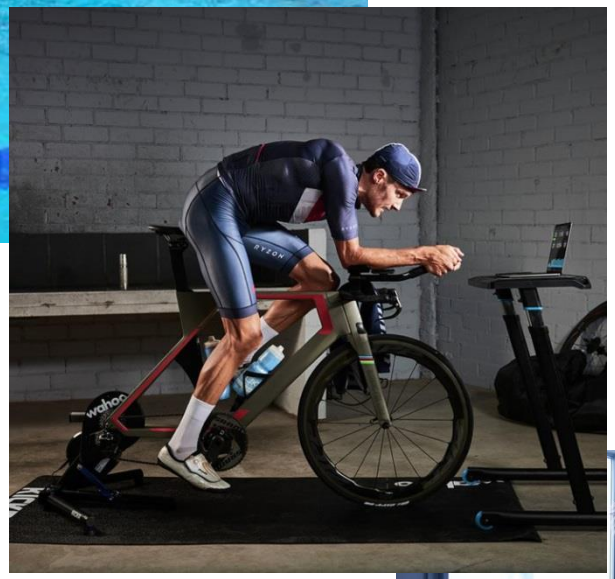
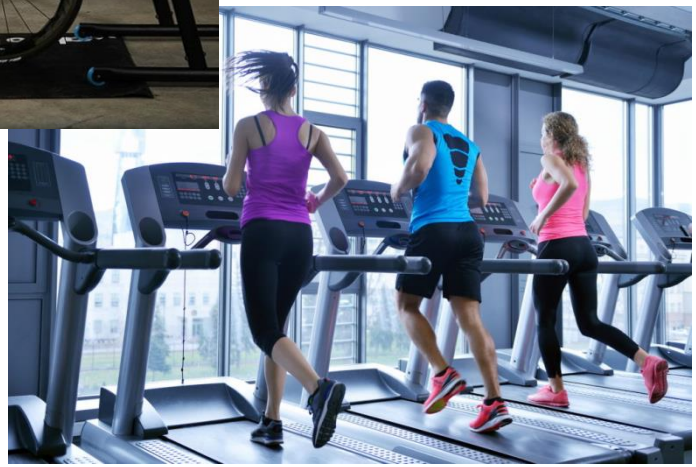
Creating a Training Plan







- *Purpose & Importance*
- *Elements*
- *Creation*
- *Execution*
- *Sources*

Austin Tri-n-Run Coaching

TRIANGLE TRIATHLON CLUB

John Austin

- Coaching Triathletes & Runners for 4 Years
  - Granite Falls Run & Tri Clubs
  - Individual Athletes
- Certifications – IRONMAN, USA Triathlon, RRCA, ACE Personal Trainer
- Experienced Age Group Athlete
  - 236 Running Races since 1989 including 42 Marathons
  - 143 Triathlons since 2002 including 7 IRONMAN's
  - 10 Boston Marathons
  - Triathlon World Championships - 5 ITU, 3 Ironman 70.3's, 2 Kona Ironman
  - USAT All American, IRONMAN All World Athlete
  - 2017USAT Long Course Duathlon Age Group Champion

Why Have a Training Plan?

Why Have a Training Plan?

- Accomplish goals
- Maximize probability of success
- Fit training into a busy life
- Enhance accountability
- Tap expertise
- Cause changes

A goal without a plan is just a dream.

Hierarchy of Goals

Dreams ← Long Term Goals ← Mid Term Goals ← Short Term Goals

Multi-year

Annual or Seasonal

Often process oriented

Goals must be measurable, challenging yet attainable, and time-bound.

Dreams and Long Term goals should be tied to why you do triathlon.

Shorter term goals should support your longer term goals. They are often process oriented vs outcome.

Improvement plans are most effectively designed around annual or seasonal goals.

Objective of Training Plans

- Cause change

Cause positive physiological adaptations and skill acquisition in a timebound fashion to meet performance or process goals.

Elements of Training Plans

Physiological Change

- Duration
- Frequency
- Intensity
- Recovery
- Fueling

Skill Acquisition

- Sport Specific
  - Swimming
  - Cycling
  - Running
  - Transitions
- Mental

Mary – 47 Year Old Triathlete

- Runner when she was in high school
- Did a lot of 5K's in her 20's
- Started triathlons in her 40's
- Has done one half iron distance race each of the last two years in addition to several sprint and international distance races. Won her first age group in a sprint race last year. Finished just off the podium in her 70.3 – run slowed in last 3 miles
- Enjoys the challenge and the sense of accomplishment from completing races
- Strength is running.
- Weakness is the swim and worries about completing long swims.
- Sometimes bonked on her long training rides. Queasy stomach.
- Signed up for IM Augusta 70.3 and IM Florida this year.

2018 Goals :

- **Complete her first 140.6 at Florida finishing "strong".**
- **Finish in top 3 in her age group at IM Augusta 70.3**
- **Set a PR in a half iron distance swim swimming under 40 minutes.**

What Needs to Change

Generating an improvement plan requires an understanding of what needs to change – these are called “Limiters”

Physical Changes

- Endurance for 140.6
- Swim endurance & threshold swim pace
- Bike – Strength / muscular endurance
- Fueling – digestion and metabolic efficiency

Skill Changes

- Swim stroke
- Open water skills
- Mental strength / pacing to maintain run pace.

Steps in Skill Attainment

Practice , practice, practice …….

- Unconscious Incompetence
- Conscious Incompetence
- Conscious Competence
- Unconscious Competence

“Practice puts brains in your muscles” - Sam Snead

What Limits How Fast We Swim / Bike /Run?

Anaerobic Power	Aerobic Efficiency VO2 Max	Endurance Fatigue Resistance
Type IIX Muscle Fibers Glycolytic Enzymes Neuromuscular Recruitment Biomechanical Efficiency	Muscles Type I/IIA Muscle Fibers Mitochondria Density Oxidative Enzymes Neuromuscular recruitment Oxygen Transport Capillary Density Heart Rate Stroke Volume Hemoglobin Content Respiratory Capacity Biomechanical Efficiency	Lactic acid accumulation from anaerobic glycolysis Glycogen depletion – Energy stores & metabolic efficiency (glycogen vs fat oxidation) Durability Biomechanical Efficiency Neuromuscular recruitment

Genetics is very important, but all these systems adapt to training.
All involve biomechanical efficiency (form) and neuromuscular recruitment.

What systems does Mary need to change?

Anaerobic Power	Aerobic Efficiency VO2 Max	Endurance Fatigue Resistance
Type IIX Muscle Fibers Glycolytic Enzymes Neuromuscular Recruitment Biomechanical Efficiency	Muscles Type I/IIA Muscle Fibers Mitochondria Density Oxidative Enzymes Neuromuscular recruitment Oxygen Transport Capillary Density Heart Rate Stroke Volume Hemoglobin Content Respiratory Capacity Biomechanical Efficiency	Lactic acid accumulation from anaerobic glycolysis Glycogen depletion – Energy stores & metabolic efficiency (glycogen vs fat oxidation) Durability Biomechanical Efficiency Neuromuscular recruitment

Mary principally needs to improve her bike strength and overall endurance and fatigue resistance – potentially requiring both physical and mental conditioning. Swimming biomechanical efficiency also requires improvement.

Principles of Training - Running History

Most of the key principles of endurance training have been long known although they have been refined through scientific understanding and testing.

- *Arthur Newton : 1883-1959: Nine Laws of Running*
- *Franz Stampfl : 1913-1995 : Interval Training (Roger Bannister)*
- *Arthur Lydiard : 1917 – 2004 : Base running and periodization*
- *Jack Daniels : 1933 – current : Refinement of periodization based on physiology*
- *Tim Noakes : 1949 – current : Physiology, injury prevention*

Similar histories for cycling and swimming

Principles of Training

- The human body reacts to stress – acute response and chronic adaptations.
  - Chronic adaptation to repeated stress occurs during rest and recovery over 2 – 6 weeks.
- Specificity - the system you stress is the system that adapts.
- Progressive overload and overstress
  - More stress leads to more adaptation
  - Continuing overstress without recovery leads to overtraining syndrome & setback
- Diminishing Returns & Personal Limits
  - As fitness increases, the rate of improvement will decrease
  - Each individual has unique limits
- Reversibility & Maintenance
  - If the stress is discontinued, adaptations will reverse and the body will return to its untrained state.
  - Fitness can be maintained with much less stress than what was required to build it.

Creating a Training Plan -Steps

1. Goals – Performance and Process
   a) Long Term
   b) Annual and Season
   c) Interim Goals
2. Identify Limiters – What needs to change
3. **Identify Time Available to Train**
4. Select Races and Events (A,B,C)
5. High Level Annual Plan – Typically by week
   a) Races, Events, Vacations
   b) Areas of focus – by discipline
   c) Weekly indication of volume and intensity, include recovery time
6. Two to Five Week (Mesocycle) Plan
   a) Daily schedule of workouts – Duration and type of workouts
   b) Consistent with training availability
   c) Provides recovery time
7. Detailed Workouts

Time Available to Train

Maximum Hours Available								
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
AM	3	2	1	1		6	3	
PM	1		1	1.5			1	
	4	2	2	2.5	0	6	4	20.5
Swim	Long		Key		OFF		Supporting	
Bike	Supporting			Key		Long		
Run		Supporting		Key		Brick	Long	
S&C	x		x					

Mary has up to 20 hours per week to train if scheduled well ahead but 15 is more typical.

Creating a Training Plan -Steps

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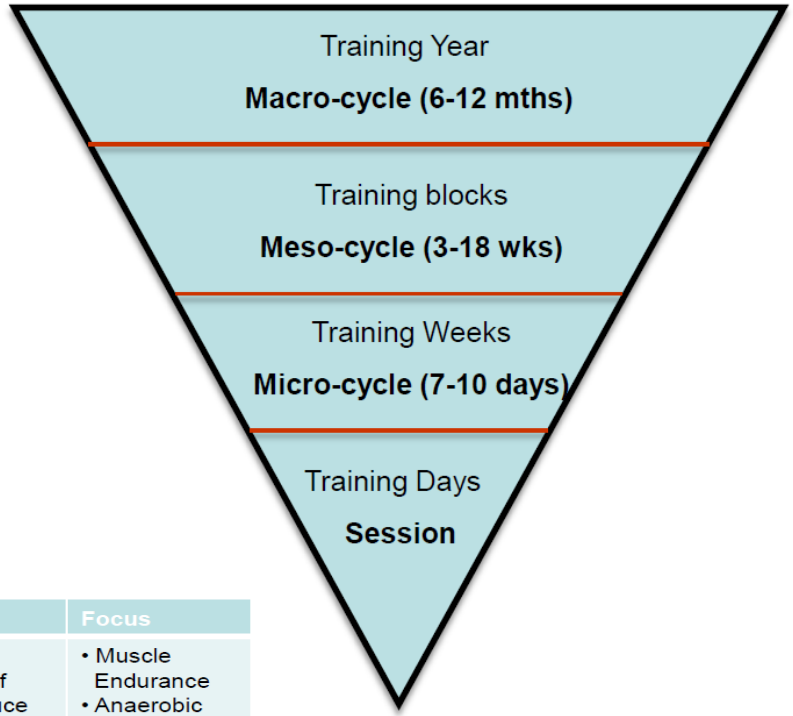
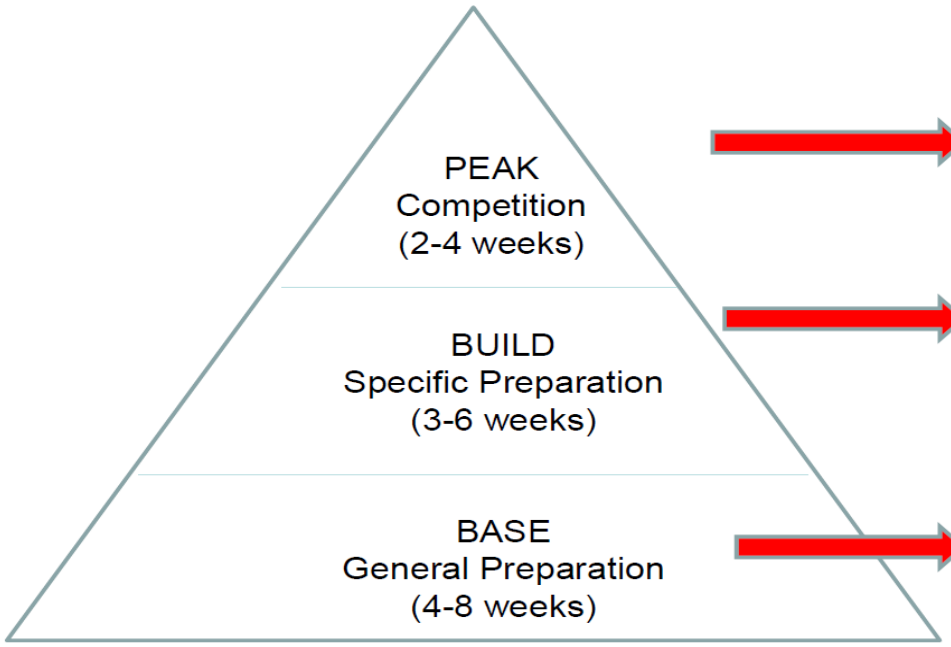
Mary's High Level Training Plan - First Half 2018

								Rock n Roll 13.1 4/8	Jordan Lake Open Water Challenge 4/15	White Lake **Sprint** 4/22			Beaver Dam 5/12 Intl			Race 13.1 Raleigh 6/2- Bike Relay		
	20-Feb	27-Feb	6-Mar	13-Mar	20-Mar	27-Mar	3-Apr	10-Apr	17-Apr	24-Apr	1-May	8-May	15-May	22-May	29-May	5-Jun	12-Jun
		36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21
Swim			Form , Endurance			Open Water Skills, Strength				Muscular Endurance, Threshold							
Bike			Endurance			Muscular Endurance				Pacing, Threshold			Threshold, Lactate Tolerance				
Run			Speed (Form), Endurance			Endurance, Threshold				Pacing, Lactate Tolerance							
Strength & Conditioning			Endurance			Endurance				Strength			Power				
Triathlon										Bricks						Transition	
Week			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Swim	Sessions		2	2	2	2	1	3	3	2	2	3	2	2	1	1	2
	Yards		4000	4500	3500	4500	2000	5000	4000	5200	5500	4000	4500	4500	2000	1200	2500
	Hours		1.3	1.5	1.2	1.5	0.7	1.7	1.3	1.7	1.8	1.3	1.5	1.5	0.7	0.4	0.8
	Avg Zone		2.5	2.5	2.5	3	2	3	3.5	3.5	3.5	3.5	2	2.5	2	2	2
Bike	Sessions		2	2	2	2	1	2	3	2	2	3	3	3	3	1	2
	Hours		3	3.2	2.5	3.5	1.25	3	2	3	3.5	3.2	4.5	5	4.5	1	3.0
	Miles		52.5	56.0	43.8	61.3	21.9	52.5	35.0	52.5	61.3	56.0	78.8	87.5	78.8	17.5	52.5
	Avg Zone		2.5	2.5	2.5	3	2.5	3	3.5	3.5	3.5	3.5	3	3.5	4	1.5	2
Run	Sessions		2	3	2	3	3	2	3	3	3	3	2	2	1	1	2
	Hours		2.5	3.0	2.0	2.8	3.5	1.8	2.0	2.8	2.75	1.5	1.5	1.5	0.75	0.5	1.3
	Miles		16.1	19.3	2.5	3.5	22.5	11.6	12.9	17.7	17.7	9.6	9.6	9.6	4.8	3.2	8.6
	Avg Zone		2.5	2.5	2.5	3.0	3.5	2.5	3.5	3.0	4.0	3.5	2.0	2.0	2.0	4.0	1.0
S&C	Sessions		2	2	2	2	1	1	1	1	2	1	2	2	1		
	Hours		1.50	1.50	1.50	1.50	0.75	0.75	0.75	0.75	1.50	0.75	1.50	1.50	0.75	0.0	0.0
	Phase		Endurance	Endurance	Endurance	Endurance	Endurance	Endurance	Endurance	Max Strength	Max Strength	Max Strength	Power	Power			
Sessions		0	8	9	8	9	6	8	10	8	9	10	9	9	6	3	6
Bricks Included Above						1			1	2	2	1					
Volume (Hours)		0.0	8.3	9.2	7.2	9.3	6.2	7.2	6.1	8.2	9.6	6.8	9.0	9.5	6.7	1.9	5.2

Periodization

Measured and timed approach for application of frequency, duration, intensity, and specificity in varied amounts to continually introduce different stresses on the body to cause the adaptive process and response to occur gradually and consistently throughout the year and thus





Purpose	Focus
Simulate portions of race, reduce volume, rest, maintain fitness, focus on race	• Muscle Endurance • Anaerobic Endurance • Power
Build strength & speed while maintaining endurance. Race fitness	• Muscle Endurance • Anaerobic Endurance • Power • Speed
Build Endurance & prepare body for distance. Work on technique	• Endurance • Force • Technique • Speed Skills

Training Variables

- **Intensity**

Zones	% of Threshold HR				
	Lower	Upper			
1	66%	85%	Recovery		
2	85%	91%	Aerobic Endurance		
3	92%	95%	Muscular Endurance		
4	96%	99%	Threshold Runs		
5A	100%	102%	Lactate Tolerance		
5B	102%	106%	VO2 Max Intervals		
5C	107%	111%	Speed, Anaerobic Endurance		

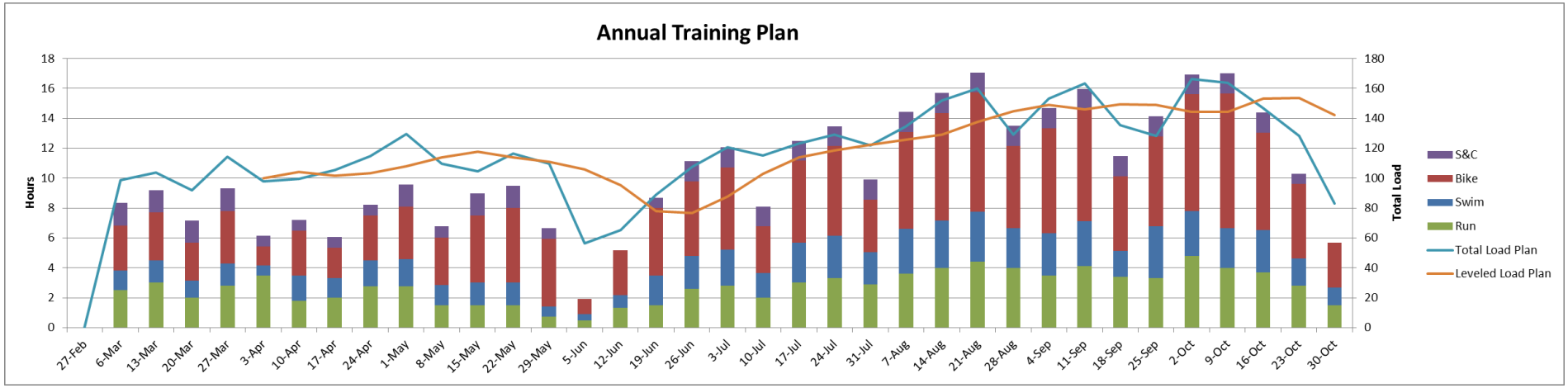
- **Frequency** : Must fit schedule constraints & enhance consistency

Sessions/Week	Swim	Bike	Run	Strength & Conditioning
5	2	1	2	
8	2	2	2	2
9	3	2	2	2
11	3	3	3	2

- **Volume** : Measured in hours or miles – Build no more than 10% / week to minimize injury risk.

- **Recovery** : Seasonal, Build & Recovery Weeks, Within a week, Within a workout

Mary's Annual Plan – Volume & Load



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7. **Detailed Workouts**

Types of Workouts – Run Examples

Workout Type	Purpose
Aerobic (Conversational Pace Runs)	
Short	Recovery
Moderate	Endurance
Long	Endurance, Durability
Strides	Form & Efficiency
Hills - Sub Thresold	Strength, Muscular Endurance
Tempo	
Sub-Threshold	Build lactate threshold
Race Pace - Half or Marathon Pace	Mental conditioning
Intervals	
Fartlek	Strength, Endurance, Form, Mental fitness
Long Intervals - 1200m - 3200m	Lactate threshold & tolerance
Short Intervals - 100 to 800m	VO2 Max, Anaerobic endurance, speed

- Select workouts to overload the system targeted for improvement while maintaining other systems.
- Variation of durations, work/recovery ratios, & paces and combination of workout types generate a range of workouts only limited by the imagination.

Weekly Schedule Example – a 140.6 Build Mesocycle

Week 33	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday		HRS	# SESSIONS	% VOLUME
	6/26/2017	6/27/2017	6/28/2017	6/29/2017	6/30/2017	7/1/2017	7/2/2017				
Session 1	BI-1:00[1] Recovery	RU : 0:30 [1] Recovery	DAY OFF	SW-3000[2]	SC : 0:45 Endurance	BI : 3:00 [2] E	SW-1500[2]	SWIM	1.4	2	18%
Session 2							RU : 1:20 [2] Endurance	BIKE	4.0	2	50%
Session 3								RUN	1.8	2	23%
								STRENGTH	0.8	1	9%
Zone 1.7									8.0	7	100%

Week 34	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday		HRS	# SESSIONS	% VOLUME
	7/3/2017	7/4/2017	7/5/2017	7/6/2017	7/7/2017	7/8/2017	7/9/2017				
Session 1	SW : 3700 [2.5] E	RU : 0:40 [2] Moderate	SC : 0:45 Endurance	BI-1:20 [3.5] Tempo		BI : 5:00 [2] E	RU : 1:45 [2.5] Endurance	SWIM	2.1	3	16%
Session 2	SC : 0:45 Endurance		SW-1200 [3] Tempo*	RU : 0:45 [3] Tempo*			SW-1800[2]	BIKE	6.3	2	48%
Session 3								RUN	3.1	3	24%
								STRENGTH	1.5	2	12%
Zone 2.8									13.0	10	100%

Week 35	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday		HRS	# SESSIONS	% VOLUME
	7/10/2017	7/11/2017	7/12/2017	7/13/2017	7/14/2017	7/15/2017	7/16/2017				
Session 1	SW : 4000 [2.5] E	RU : 0:50 [2] Moderate	SC : 0:45 Endurance	RU : 0:45 [3] Tempo*		BI : 100 Miles [2.5] E Velo4Yellow	RU : 2:00 [2.5] Endurance	SWIM	2.4	3	16%
Session 2	SC : 0:45 Endurance		SW-2500 [3] Tempo*	BI : 1:10 [3] Tempo*			SW-1800[2]	BIKE	7.7	3	51%
Session 3	BI : 1:00 [2] Aerobic							RUN	3.6	3	24%
								STRENGTH	1.5	2	10%
Zone 2.9									15.2	11	100%

Week 36	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday		HRS	# SESSIONS	% VOLUME
	7/17/2017	7/18/2017	7/19/2017	7/20/2017	7/21/2017	7/22/2017	7/23/2017				
Session 1	SW : 4200 [2.5] E	RU : 1:00 [3.5] Cruise Intervals	SC : 0:45 Endurance	BI : 1:10 [3.5] Tempo*	RU : 2:15 [2.5] Endurance	DAY OFF	Brick	SWIM	2.3	2	17%
Session 2	SC : 0:45 Endurance		SW-3000[2]				BI : 3:00 [3] E	BIKE	6.0	3	44%
Session 3	BI : 1:50 [2] Aerobic						RU : 0:30 [3] Transition	RUN	3.8	3	28%
								STRENGTH	1.5	2	11%
Zone 2.9									13.5	10	100%

Loosely follows weekly totals and average intensity from Annual Training Plan, considering schedule conflicts and balancing life's priorities.

Detailed Workout - Examples

Pacing Workout on the Track

Warm Up : 10 minutes easy, 400 meters w/ 4x25 meter pickups, 200 meters easy

Mainset :

- 2 x 400m @ 1:55 with 200m recoveries
- 2 x 800m @ 4:00 with 200m recoveries
- 1 x1600m @ 8:20 with 400m recovery
- 2 x 200m @ 0:50 with 200m recoveries

CD : 10 minutes easy

Endurance Swim Workout

Warm Up : 300 Easy, 300 Kick, 6 x 50 Swim (2 back, 2 breast, 2 fly) on 20 sec rest.

Mainset :

- 3 x 800 on 1 min rest
- 6 x 150 (100 fast / 50 moderate) on 20 sec rest

CD : 300 Easy

Detailed workouts provide for Warm Up, the Main Set of the workout, and Cooldown.

Applications like Training Peaks are ideal for documenting detailed workouts as actual results can be easily uploaded into the workout and permit total volume and intensity tracking

Executing the Plan

Monitoring

Log all workouts
Include objective & subjective data
Compare actual vs plan
Expected fatigue vs. overtraining

Measure & Analyze

Test periodically (races are great tests)
Are results consistent with expectations?
Is measured intensity consistent with perceived effort?

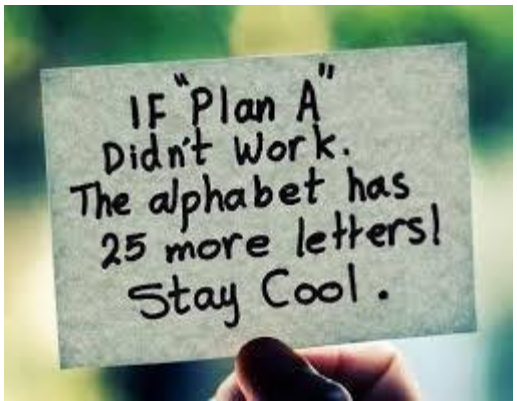
Modifying

Changing the plan doesn't mean changing the goal.
Don't set plans in stone. Change for :

- Faster or slower progress than expected
- Injuries – DON'T IGNORE
- Illness
- Significant environmental changes

How to manage schedule conflicts

- *Missing occasional workouts is not a problem*
- *Prioritize workouts and schedule / rearrange to miss the least important ones*
- *Flexibility is the key.*
- *Recovery and rest are important training elements*
- *Trying to makeup workouts can do more harm than good*



Sources of Training Plans

- Books
  - *The Triathlete's Training Bible* – Joe Friel
  - *Going Long* – Joe Friel & Gordon Byrn
  - *Fast-Track Triathlete* – Matt Dixon

- Magazines – *Triathlete*, others ….

- Free or Available to Purchase
  - Online - USAT, Active.com, Ironman, Training Peaks, ……

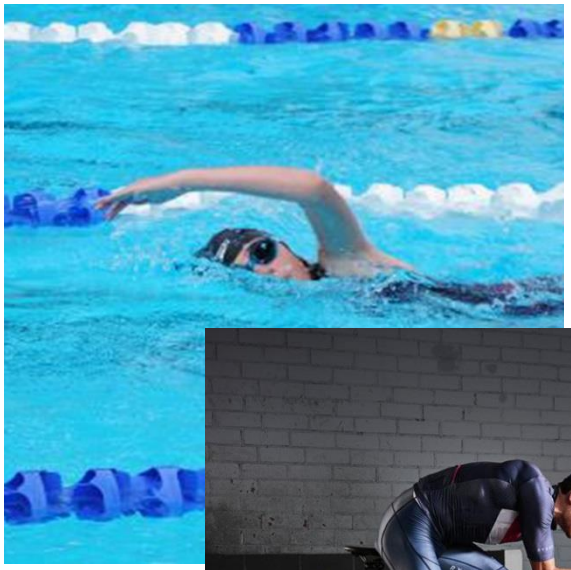
- Coaches
  - Packaged plans
  - Some customization with limited followup
  - Customized with email followup
  - Highly customized, weekly updates / changes, frequent communication, hands-on training

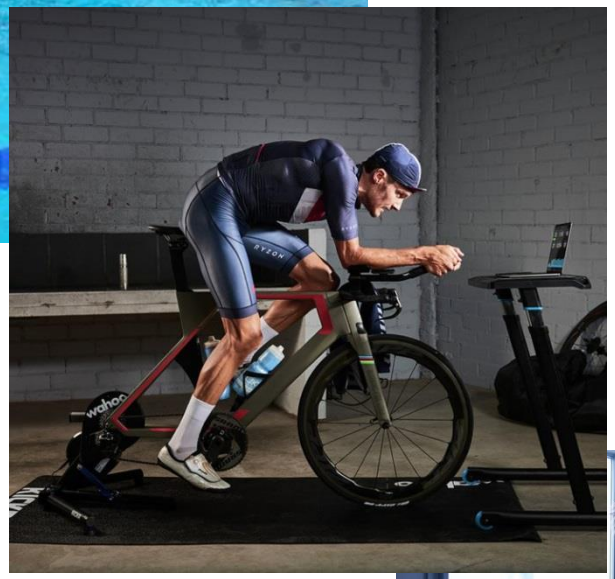
Which is right for you?

Considerations :

- Skill Level – the need to acquire new skills
- Past experience with plans
- Time to prepare a plan and keep current
- Knowledge of how to adapt a plan to real life schedules and constraints
- Need for accountability
- Importance of achieving goals
- Relative difficulty of further improvement

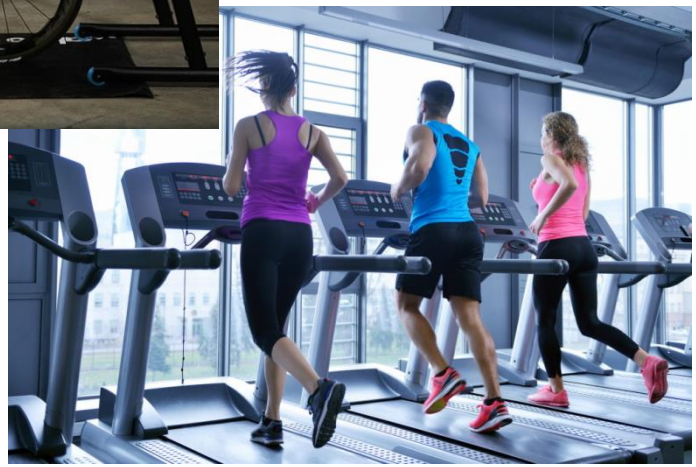
Creating a Training Plan





- *Purpose & Importance*
- *Elements*
- *Creation*
- *Execution*
- *Sources*

QUESTIONS ?
About anything.



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