

THE MARATHON

GULF WINDS TRACK CLUB

SPEAKERS



- Ann Centner
- Marathon PR: 2:38
- PhD in Nutrition at FSU
- Current Research Assistant at FSU
 - Born in Athens, GA



- Stan Linton
- Marathon PR: 2:18
- Wakulla HS & FSU Cross Country
 - Navy HR Officer
 - Born in Tampa, FL



MARATHON TALK AGENDA

- Physiological Terms
- Training Concepts
- Periodization Schedule
- Strategies, Tactics, and Fueling

INGREDIENTS FOR MARATHON SUCCESS



PHYSIOLOGICAL TERMS & STATS

AEROBIC VS ANAEROBIC



AEROBIC FITNESS INDICATORS

- VO2 Max
- Running Economy
- Lactate Threshold



Frank Shorter, Olympic Gold Medalist in the Marathon at the 1972 Olympic Games in Munich, recorded a VO2 max of 71 ml/kg/min.

PHYSIOLOGICAL CHARACTERISTICS

	< 2:30 (Average = 2:21)	2:30 – 3:00 (Average 2:37)	> 3:00 (Average 3:24)
Type 1 Fiber %	76	64	56
Years of Training	7	4	2.5
# of Marathons	5	4	1
Average Weekly Miles	90 mi/week	70 mi/week	35 mi/week
VO2 Max (ml/kg/min)	71.8	65.6	58.7
VO2 @ 6:20 pace	45.4	48.6	51.4
% VO2 @ 6:20 pace	64	74	88
% VO2 @ Marathon Pace	80	80	71
% LT @ Marathon Pace	93	92	85

Sjödin, Bertil & Svedenhag, Jan. (1985). Applied Physiology of Marathon Running. Sports medicine.

TYPES OF RUNNING



TRAINING PACES



EASY RUNNING



- Benefits
 - Type 2 -> Type 1 Fiber Conversion (i.e. improved muscular endurance/fatigue resistance)
 - Muscular-structural development from "time on feet"
 - Stroke Volume
 - Capillary Density
 - Mitochondrial Development
- Intensity
 - Conversational
 - 60-70%
- Duration
 - Purpose of the Run
 - 80% of total weekly volume

MARATHON PACE



Benefits

- Benefits of Easy Running
- Practice at Race Pace
- Pre-race and Intra-nutrition
- Intensity
 - Marathon Race Pace (or slightly faster)
- Duration/Length
 - Intermittent Bouts
 - WU, 3 x 4 mile/1 mile EZ, CD
 - Steady Running
 - WU, 12 miles, CD



1983 World Marathon Champion Rob de Castella of Australia battles the 1984 Olympic Marathon Champion Carlos Lopes of Portugal. Both men set world records in the event and have personal bests faster than 2 hours, 8 minutes.

THRESHOLD TRAINING



Exercise Intensity

- Benefits
 - Improved Endurance
 - Reduced Blood Lactate Accumulation
 - Increased Speed at LT
- Intensity
 - Comfortably Hard, 1 hour race pace
 - **82-88%**
- Duration/Lengths
 - Cruise Intervals (3-5 min)
 - Longer Broken Segments (5-15 min)
 - Continuous (20-30 min)

CRITICAL VELOCITY (CV)



Benefits

- Improved Aerobic Capacity of Fast Twitch Fibers
- Can lead to improvements to VO2 max and lactate threshold
- Intensity
 - Hard, 30-35 min race pace
 - 90% effort
- Duration/Lengths
 - Short Intervals (1-3 min) with float recovery
 - Long Intervals (4-7 min) with jog/walk recovery
 - Total volume can be twice as much as VO2 max sessions (next slide)



VO2 MAX WORKOUTS

- Benefits
 - Improved Aerobic Power
 - Improved Economy at VO2 Max
- Intensity
 - Uncomfortably Hard, 11 min race pace
 - 95-100%
- Duration/Lengths
 - Short Intervals (1-2 min)
 - Long Intervals (3-6 min)



REPETITIONS & HILL SESSIONS

Benefits

- Enhanced Elasticity of Muscles, Tendons, and Ligaments
- Improved Leg-Muscle Power and Resistance to Muscle Fatigue
- Improved Running Economy
- Intensity
 - Hills = 5K to 10K Race Pace
 - Reps = Mile Race Pace
- Duration/Lengths
 - Short Intervals (30s to 2 min)
 - Long Recovery (1:2, 1:3, etc)



1972 Olympic 1500m Champion Pekka Vasala (right) running a hill session, following the New Zealand tradition of natural strength training founded by Arthur Lydiard).

STRENGTH TRAINING



Olympic Champion and Marathon World Record Holder, Eliud Kipchoge, during a strength training session.

- Benefits
 - Enhanced Elasticity of Muscles, Tendons, and Ligaments
 - Improved Leg-Muscle Power and Resistance to Muscle Fatigue
- Duration/Frequency
 - 1 hour per session
 - Recommend 2-3 sessions per week
- Focus
 - Mobility, Strength, Function

RACES AND TIME TRIALS

- Fitness Indicators
- Aspect of Training
- May or May Not Require Taper



Legendary runner and coach, Gary Droze, has set several course records for races in Tallahassee. Some of his course records are still standing after 25 years.

SCHEDULING & PERIODIZATION





PHASES OF TRAINING (LYDIARD)



WEEKLY MARATHON TRAINING: EX 1

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
LONG	REC or OFF	Q1	MLR	EZD*	EZD	Q2

* Can substitute for a lighter/shorter session

- 2-3 Long Runs (LR & MLR)
 - 1 Regular Long
 - 1-2 Medium Long
- 2-3 Harder Sessions (Q1 & Q2)
 - LT Workouts
 - VO2 Max Workouts
 - Repetition/Hill Session
 - Time Trial or Race
- Easy Runs & Recovery Runs
 - DWYC

WEEKLY MARATHON TRAINING: EX 2

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Q1/ LONG	EZ	EZ, strides	Q2 (3-week rotation)	OFF	MLR or Q3*	EZ
After est. base, complete for 8 weeks before taper							

* Optional; can sub EZ

- Q=quality Sessions (2-3*/Week)
 - Long (16-20 mi) with MP Miles
 - LT Workout (Week 1 Q2)
 - CV Workout (Week 2 Q2)
 - VO2 Max Workouts (Week 3 Q2)
 - Medium Long (MLR)
 - Repetition/Hill Session (Q3)
 - Time Trial or Race
- Easy/Recovery Runs
 - Do not overdo these
 - MP + 1min/mile or slower
- Most people need an off day
 - Other aerobic activity (walk, swim, bike) okay

STRATEGIES, TACTICS, AND FUELING

STRATEGIES & TACTICS

- Pacing Strategies
 - Negative or Even Split
 - Checkpoints
 - Stick to your paces
- Tactics
 - Drafting & Pack Running
 - Evaluating the Course
 - Running the Tangents
- Mentally Train

FUELING STRATEGIES

- Carb Loading
 - 2-3 day carbo-load
 - Keep calories constant but reduce fat intake
- Hydration
 - Sports drink day before to top off glycogen/carb stores and sodium/salt stores
- When to take Gels
 - Early
 - Every 30 minutes/3-4 miles
 - 6 gels; take with water

KEY TAKEAWAYS

- Improve the physiological aspects you can control (Ingredients of success)
- Train your mind to command your body what to do
- Structure your weeks & months systematically to optimize your performance
- Run within your current ability (pace calc vdoto2.com/calculator/)
- Rehearse your game plan in training and stick to it race day.
- Believe in your ability

SOURCES

- Levine B. D. (2008). .VO2max: what do we know, and what do we still need to know?. The Journal of physiology, 586(1), 25–34. https://doi.org/10.1113/jphysiol.2007.147629
- Sjödin, Bertil & Svedenhag, Jan. (1985). Applied Physiology of Marathon Running. Sports medicine (Auckland, N.Z.). 2. 83-99. 10.2165/00007256-198502020-00002.
- Sjodin, B., Jacobs, I. and Svedenhag, J. (1982). Changes in blood lactate accumulation (OBLA) and muscle enzyme after training at OBLA. European Journal of Applied Physiology. 49, 45-57.
- Sjödin, B., & Jacobs, I. (1981). Onset of blood lactate accumulation and marathon running performance. *International journal of sports medicine*, 2(1), 23–26. <u>https://doi.org/10.1055/s-2008-1034579</u>
- https://www.runnersworld.com/uk/training/a32365145/what-is-critical-velocity-training/
- https://www.chaski.run/post/critical-velocity-training-what-it-is-and-how-to-implement-it-into-thetraining-cycle
- Burke LM, Hawley JA, Wong SH, Jeukendrup AE. Carbohydrates for training and competition. J Sports Sci. 2011;29 Suppl 1:S17-27. doi: 10.1080/02640414.2011.585473. Epub 2011 Jun 9. PMID: 21660838.
- Jeukendrup AE. Nutrition for endurance sports: marathon, triathlon, and road cycling. J Sports Sci. 2011;29 Suppl 1:S91-9. doi: 10.1080/02640414.2011.610348. Epub 2011 Sep 15. PMID: 21916794.
- Rapoport BI. Metabolic factors limiting performance in marathon runners. PLoS Comput Biol. 2010 Oct 21;6(10):e1000960. doi: 10.1371/journal.pcbi.1000960. PMID: 20975938; PMCID: PMC2958805.