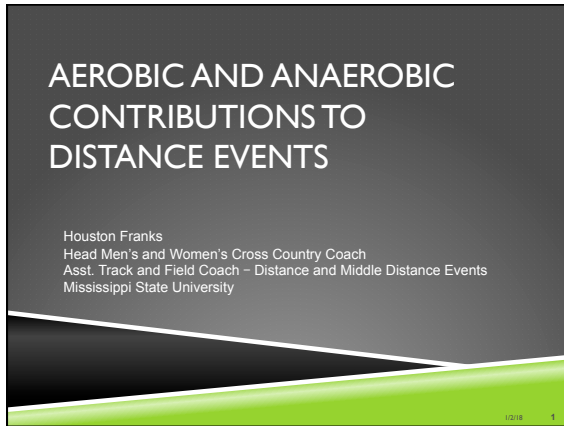


## AEROBIC AND ANAEROBIC CONTRIBUTIONS TO DISTANCE EVENTS

Houston Franks  
Head Men's and Women's Cross Country Coach  
Asst. Track and Field Coach - Distance and Middle Distance Events  
Mississippi State University



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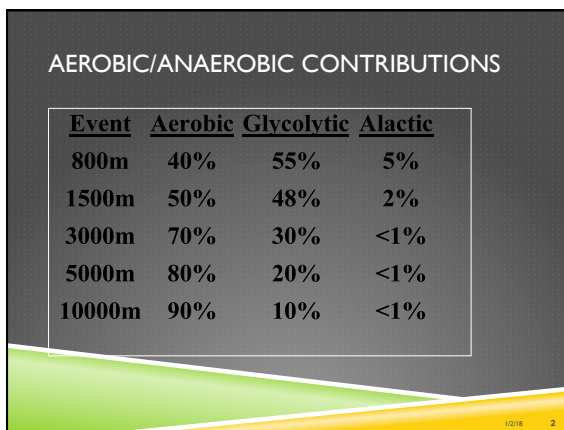
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### AEROBIC/ANAEROBIC CONTRIBUTIONS

<u>Event</u>	<u>Aerobic</u>	<u>Glycolytic</u>	<u>Alactic</u>
800m	40%	55%	5%
1500m	50%	48%	2%
3000m	70%	30%	<1%
5000m	80%	20%	<1%
10000m	90%	10%	<1%



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- ### PHYSIOLOGICAL DEVELOPMENT IN ENDURANCE EVENTS
- ▶ Aerobic
  - ▶ Anaerobic
  - ▶ Strength
  - ▶ Biomechanical
  - ▶ Critical Zone
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**AEROBIC:  
AEROBIC EFFICIENCY**

- \* Development of Lactate Threshold & Aerobic Threshold
- \* Substrate Capability
- \* Cellular Oxygen Uptake
- \* Capillarization
- \* Aerobic Metabolites



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**AEROBIC EFFICIENCY**

- How well we transport Oxygen
- How well we extract Oxygen from the blood
- How well we use Oxygen at the cellular level



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**AEROBIC EFFICIENCY TRAINING REGIMES**

- Long Runs
- Distance Runs
- Recovery Runs
- Tempo / Lactate Threshold / Anaerobic Threshold / Steady State Runs (same things but different common terminologies)
- Cruise Intervals (up to 92-95%  $\dot{V}O_2$  pace)
- Fartlek (depending on intensity)



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# The Maximization of Aerobic Power

**AEROBIC:  
AEROBIC POWER**

- ▶ Development of Cardiovascular System
- ▶ Cardiac Output
- ▶ VO2 Max
- ▶ 27 weeks to fully develop
  - ▶ Significant improvements usually occur around 8-12 weeks

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**AEROBIC POWER**

- ▶ Development of vVO2 and VO2
- ▶ How much blood we can move (building a big engine)

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**AEROBIC POWER TRAINING REGIMES**

- ▶ Examples of Aerobic Power Training Regimes
  - ▶ Long Intervals of 2-6 minutes in duration primarily
  - ▶ Example: 6 x 1000m at 3:20, 3 min. b/rep
  - ▶ Intervals run between 92% vVO2 Max (10k pace) and 100% vVO2 Max (3200m pace)
  - ▶ Rest b/rep is between 1/4 time at 92% up to equal rest at 100%
  - ▶ Training to train vs. Training to race
    - ▶ May use shorter distances to prepare for the full workout

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**ANAEROBIC:  
ANAEROBIC ALACTIC**

- ▶ Anaerobic Power
- ▶ Maximum Velocity
- ▶ Contractile Strength, Metabolic

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**ANAEROBIC ALACTIC TRAINING REGIMES**

- ▶ Max Velocity Work
- ▶ 5-7 seconds in duration
- ▶ Example:
  - ▶ Fly work: 5 x 30m flys
  - ▶ Fly work: 4 x 60m flys

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**ANAEROBIC:  
ANAEROBIC GLYCOLYTIC**

- ▶ Anaerobic Capacity & Efficiency
- ▶ Lactate Tolerance
- ▶ Buffering Capacity @ Event Speed
- ▶ 8-12 weeks to greatly improve buffering capacity

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**ANAEROBIC GLYCOLYTIC TRAINING**

- ▶ Typically Interval or Repetition Work
- ▶ Things that are run at or faster than race velocities typically
- ▶ In terms of  $\dot{V}O_2$ , 100%  $\dot{V}O_2$  Max and faster (3200m pace and faster)
- ▶ Typically emphasis on Lactate Tolerance work needs to be done at paces of 1 to 2 events under your primary distance.
  - ▶ Example: A miler doing session at 800m pace and even down to 400m pace

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**CRITICAL ZONE**

- ▶ End of the race that determines places and medals
  - ▶ Physiological (Aerobic/Anaerobic)
  - ▶ Biomechanical
  - ▶ Psychological
  - ▶ Tactical

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**Strength**

- ▶ Strength Endurance: Contractile Endurance
- ▶ Elastic Strength
  - Contractile Power
  - Elasticity
- ▶ Maximum Strength
  - Relative Strength

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**BIOMECHANICAL**

- ▶ Body Mechanics
- ▶ Recovery Mechanics
- ▶ Ground Preparation Mechanics
- ▶ Impulse Mechanics
- ▶ Arm Action Mechanics

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