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Coaching the 800 meters A Tale of Two Athletes

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Order of Concepts

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- Introduction
- Sources of Information
- Two Student-Athletes
- Energy Contributions
- Principles of Training
- Training Considerations
- Organizing and Planning the Training
 - Transition
 - General Preparatory/ Specific Preparatory Training
 - Pre-Competition/ Competition Training
 - Competition/ Championship Training
- Energy System Progressions
- Energy System Comparisons
- Closing

Introduction

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Two student-athletes, two training programs, one result.

This sentence is the reason I decided to look deeper into the 800-meter race and the training that is necessary to achieve the desired results in this event. Our program had two student-athletes racing the 800-meters throughout the 2011 track seasons with relative success. While both women were very talented and very hard working; they trained differently to reach their athletic goals.

One student-athlete was coached with an emphasis on high intensity and low volume. This student-athlete was trained with the sprint group on most days and the emphasis was primarily anaerobic. The other, was coached with an emphasis on moderate intensity and high volume. This student-athlete trained with the distance group and ran cross-country in the fall.

With the different philosophies on how to train the same event, I decided to investigate what made different approaches successful in their own right.

Introduction

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I feel the middle distance events from 400-1500 meters are the most complex events to coach (the 800-meters possibly being the most complex). These events physiologically require the most diversity in training from speed, all the way to endurance, and everything in between.

I try look at the student-athletes 400, 800, and 1500 competition marks to get a starting point of the student-athlete's ability in various events. I look at the physiological and biomechanical data from competition and training, as well as the personality traits, of each potential student-athlete before determining if the 800-meters is the right competitive fit. Keep in mind, athletes can run the 800-meters successfully without the event being their primary event.

The questions that were floating through my head were these:

**“Is there a right and wrong way to train 800-meter student-athletes, and how is that determined?
Is there one 800-meter training system that is perfect, based on the science that makes up the 800-meter race?”**

Sources of Information

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- Bachelor of Science in Exercise Physiology (Black Hills State University)
- Master of Science in Exercise Physiology (University of North Dakota)
- United States Track & Field Level I, II, & III (Endurance)
- USTFCCA Track and Field Academy- Endurance Specialist Certification
- USTFCCA Track and Field Academy- Middle Distance Master Endorsement (In progress)
- USTFCCA Track and Field Academy- Cross Country Master Endorsement

- Mentors- Mike Thorson, Scott Walkinshaw, Gary Wilson, Boo Schexnayder, Scott Christensen
- Colleagues- Ray Hoffman, Jim Vahrenkamp, Ryun Godfrey, Joe Lynn

- Daniel's Running Formula (1st & 2nd Editions)- Jack Daniels
- Exercise Physiology: Human Bioenergetics and Its Applications (3rd Edition)- Brooks, Fahey, White, Baldwin
- Lore Of Running- Tim Noakes
- Managing Stress (3rd Edition)- Brian Luke Seaward
- Methodology of Training (5th Edition)- Tudor Bompa
- Optimal Muscle Recovery- Edmund Burke
- Self-Efficacy in Sport- Deborah Feltz, Sandra Short, Phillip Sullivan

- Training the 400 meters- Clyde Hart
- Coaching the 800m- Scott Abbott
- Coaching Middle-Distance and Distance Runners - Science or Art- Vin Lananna
- USA Rowing: Training of American Distance Runners- Scott Simmons

Two Student-Athletes

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Two Student-Athletes

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<u>Event</u>	<u>Brienna Lynch</u>
400	57.60
800	2:08.89
1500	N/ A

Brienna Personality Traits:

Enjoyed 'Sprinting' workouts
Loved 4 * 400 Relay
Believed anything over two laps was 'crazy.'
Responded well to low volume
H.S Sprinter (100 & 200 meters)

<u>Melissa Agnew</u>
60.80 (Relay Split)
2:08.99
4:21.45

Melissa Personality Traits:

Enjoyed 800 and 1000 meter intervals
Loved the 1500/ Mile (Loved XC)
Liked to run weekly volume
Responded well to moderate to high mileage
Distance runner specializing in the 1500 meters

Energy Contributions

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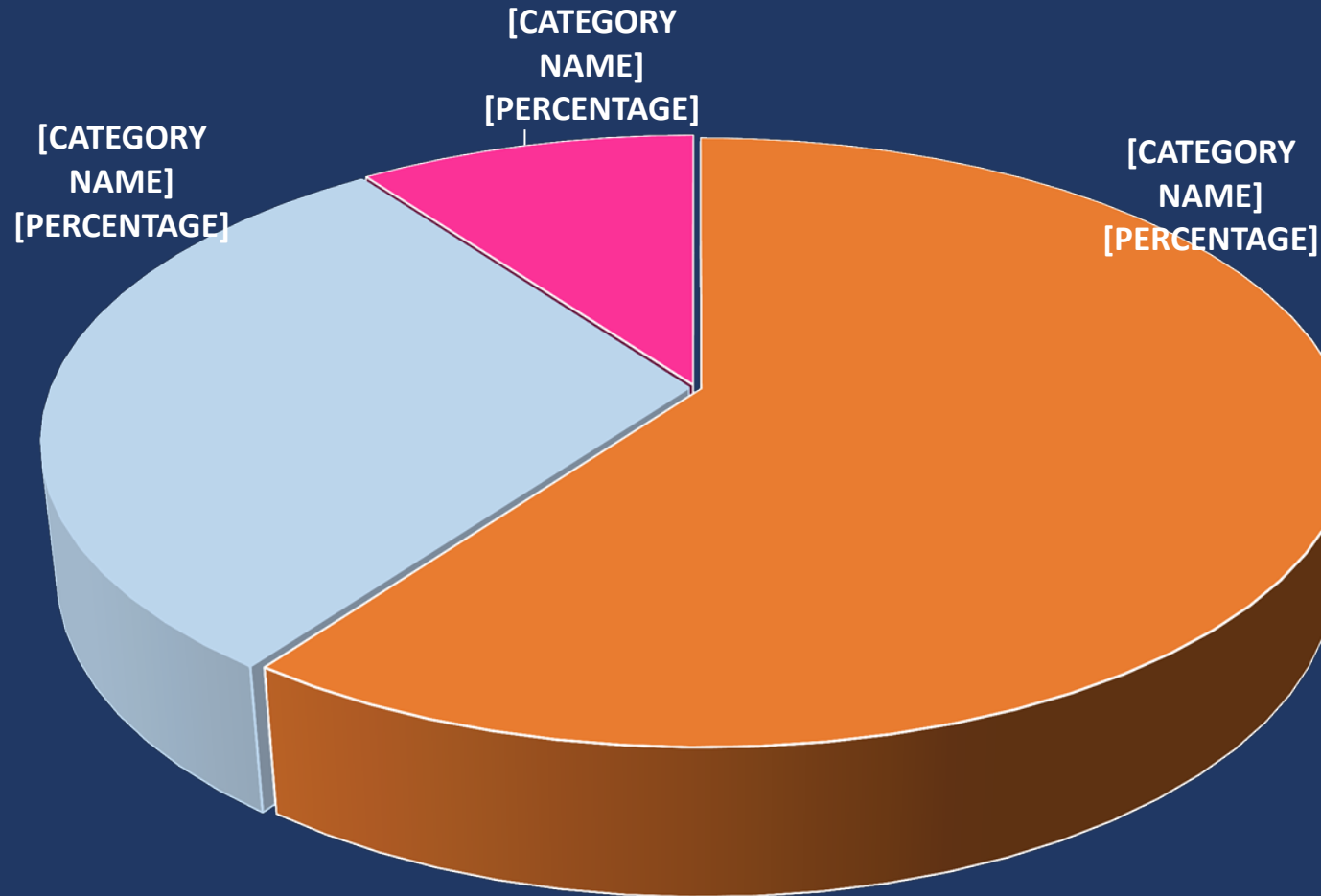
<u>Event</u>	<u>Anaerobic A-Lactic (ATP-CP) %</u>	<u>Anaerobic Lactic (Glycolytic)%</u>	<u>Aerobic %</u>
30 meters	80	19	1
60 meters	55	43	2
100 meters	25	70	5
200 meters	15	60	25
400 meters	12	43	45
800 meters	10	30	60
1500 meters	8	20	72
3,000 meters	5	15	80
5,000 meters	4	10	86
10,000 meters	3-2	12- 8	85-90
Marathon	0	5-2	95-98

* (Mader/ Hartmann)

Energy Contributions

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Energy Contributions/ 800 Meters



Principles of Training

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- **Individuality**
 - Everyone has different strengths and weaknesses. Adjust to meet those individual needs.
- **Specificity**
 - Training must be as specific as possible to the demands of the goal task.
- **Overcompensation**
 - So that it can handle stress again in the future, the body reacts to current stress by overcompensating.
- **Overload**
 - To achieve overcompensation, an overload of greater previous stress must occur.
- **Recovery**
 - Planned recovery should be an integral part of any training plan.
- **Reversibility**
 - If you stop using a system, a pattern, etc., it will lose its effective capacity.
- **Purpose**
 - Coach with purpose and intent. Use **Science** whenever possible, followed closely by **Logic**.
- **Efficiency**
 - Avoid wasting energy, efforts, and time in doing something or in producing a desired result.

Training Considerations

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<u>Categories/ Variables:</u>	<u>Purpose:</u>	<u>% VO2max</u>	<u>Race Pace</u>	<u>Work: Rest</u>
<u>Aerobic Conditioning:</u>	Improve the body's ability to transport blood and Oxygen Increase ability of running muscles to effectively use their available oxygen to convert carbohydrate and fat fuel into energy			
Long Run	Cardiovascular, Respiratory, and Cellular Development	65-75%		
Endurance Run	Cardiovascular, Respiratory, and Cellular Development	65-75%		
Tempo	Increase Lactate Threshold	85-88%	1/2 M RP-60:00 All-Out Effort	5:1
Critical Velocity	Increase Lactate Threshold	90-92%	10k RP	3:1
VO2	Increase Aerobic Power	95-105%	5k-3k RP	3:2
<u>Anaerobic Lactic/ (Glycolytic) Conditioning:</u>	Improve the body's ability to tolerate lactate in the blood and continue to work Improve the body's ability to clear lactate from the working muscles and blood while working			
Repetition	Lactate Tolerance	110-112%	1500 RP	2:3
Tempo Endurance	Lactate Tolerance	120-136%	800 RP	1:2
Lactate Loading	Lactate Tolerance	120-136%	800 RP	Varies
Speed Endurance	Extendibility of Speed Development	140-156%	400 RP	Varies
<u>Anaerobic A Lactic/ (ATP-CP) Conditioning:</u>	Improve neuromuscular coordination (CNS) in body Specific muscle recruitment (Fast Twitch) and biomechanical movement patterns Improve biomechanical efficiency			
Form Drills	Neuromuscular Coordination/ Biomechanical Efficiency/ Flexibility/ Mobility/ Body Awareness/ Balance			Full
Strides	Neuromuscular Coordination/ Biomechanical Efficiency/ Flexibility/ Mobility/ Body Awareness/ Balance			Full
Speed Development	Increase Maximum Velocity/ Increase Speed Development			Full
Acceleration Development	Increase Explosive Power/ Increase Maximum Velocity			Full
Strength/ Weights	Postural Strength/ Injury Prevention/ Increase Explosive Power - (Olympic, Static, Body Building, General Strength, Med Ball Routines, etc.)			Varies
Hurdle Drills	Flexibility/ Mobility/ Body Awareness/ Coordination/ Balance			

Organizing and Planning the Training

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Transition (Rest, Recovery, Regeneration Period)

- 2 Weeks

General Preparatory/ Specific Preparatory Training (Gradual Building of General Fitness and Strength)

- 8 Weeks

Pre-Competition/ Competition Training (Increasing training to improve goal task performance)

- 8 Weeks

Competition/ Championship Training (Training specifically to meet demands of goal task performance)

- 8 Weeks

MacroCycle 3-12 Months/ Up to Four Years

MesoCycle 2-4 Weeks/ Up to 8 Weeks

MicroCycle 7-21 Days

Transition

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Day

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

Brienna

30:00 Endurance Run + 6 * 80m Strides
30:00 Endurance Run, General Strength
30:00 Endurance Run
30:00 Endurance Run + 6 * 80m Strides
30:00 Endurance Run, General Strength
40:00 Endurance Run
OFF

Melissa

40:00 Endurance Run + 6 * 80m Strides
40:00 Endurance Run, General Strength
40:00 Endurance Run
40:00 Endurance Run + 6 * 80m Strides
40:00 Endurance Run, General Strength
80:00 Progressive Endurance Run
40:00 Endurance Run

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

30:00 Endurance Run + 6 * 80m Strides
30:00 Endurance Run , General Strength
30:00 Endurance Run
30:00 Endurance Run + 6 * 80m Strides
30:00 Endurance Run, General Strength
40:00 Endurance Run
OFF

40:00 Endurance Run + 6 * 80m Strides
40:00 Endurance Run, General Strength
40:00 Endurance Run
40:00 Endurance Run + 6 * 80m Strides
40:00 Endurance Run, General Strength
80:00 Progressive Endurance Run
40:00 Endurance Run

General Preparatory/ Specific Preparatory

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Day

Brienna

Melissa

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

6-8 * 30m Starts, Olympic
6 * 800 @ VO2, Med Ball
30:00 Endurance Run
30:00 Endurance Run + 6 * 80m Strides
12-16 * 200 @ TE, Static
50:00 Endurance Run
OFF

50:00 Endurance Run + 6 * 80m Strides, Med Ball
3 * 2000 @ Critical Velocity, Static
50:00 Endurance Run
50:00 Endurance Run + 6 * 80m Strides, Med Ball
4 Miles @ Tempo, Body Building
90:00 Progressive Endurance Run
50:00 Endurance Run

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

6-8 * Flying 40m's, Olympic
12-16 * 300 @ Rep, Med Ball
30:00 Endurance Run
30:00 Endurance Run + 6 * 80m Strides
12-16 * 150 Hills @ Hard, Static
50:00 Endurance Run
30:00 Endurance Run

50:00 Endurance Run + 6 * 80m Strides, Med Ball
4 * Mile @ Critical Velocity, Static
50:00 Endurance Run
4 Miles @ Tempo, Body Building
12 * 300 @ Rep, Med Ball
50:00 Endurance Run
90:00 Progressive Endurance Run

Pre-Competition/ Competition

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Day

Brienna

Melissa

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

6-8 * 40m Starts, Olympic
12 * 400 @ VO2, Med Ball
30:00 Endurance Run
30:00 Endurance Run + 6 * 80m Strides
12-16 * 200 @ TE, Static
50:00 Endurance Run
OFF

50:00 Endurance Run + 6 * 80m Strides, Med Ball
8 * 800 @ VO2, Static
50:00 Endurance Run
50:00 Endurance Run + 6 * 80m Strides, Med Ball
4 Miles @ Tempo, Body Building
1:40 Progressive Endurance Run
50:00 Endurance Run

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

6-8 * Flying 60m's, Olympic
30:00 Endurance Run
12 * 300 @ Rep, Med Ball
30:00 Endurance Run
30:00 Endurance Run + 6 * 80m Strides
1000 meters/ 4 * 400 Races
50:00 Endurance Run

6 * 1000 @ VO2, Static
50:00 Endurance Run
5 * 300 @ Rep, 4 * 200 @ TE, Body Building
50:00 Endurance Run
40:00 Endurance Run + 6 * 80m Strides
1000 meters/ 4 * 400 Races
1:40 Progressive Endurance Run

Competition/ Championship

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Day

Brienna

Melissa

- Monday 6-8 * 50m Starts, Olympic
- Tuesday 10 * 400 @ Rep, Med Ball
- Wednesday 30:00 Endurance Run
- Thursday 30:00 Endurance Run + 6 * 80 Strides
- Friday 600 meters Race
- Saturday 400 meters/ 4 * 400 Races
- Sunday 50:00 Endurance Run

- 50:00 Endurance Run + 6 * 80 Strides, Med Ball
- 16 * 400 @ VO2, Static
- 50:00 Endurance Run
- 50:00 Endurance Run + 6 * 80 Strides
- 1500 meters Race
- 1500 meters Race
- 90:00 Endurance Run

- Monday 6-8 * Flying 80's, Olympic
- Tuesday 30:00 Endurance Run
- Wednesday 12 * 200 @ TE, Med Ball
- Thursday 30:00 Endurance Run
- Friday 30:00 Endurance Run + 6 * 80 Strides
- Saturday 800 meters/ 4 * 400 Races
- Sunday 50:00 Endurance Run

- 8 * 800 @ VO2, Static
- 50:00 Endurance Run
- 5 * 300 @ Rep, 4 * 200 @ TE, 3 * 150 @ SE Med Ball
- 50:00 Endurance Run
- 50:00 Endurance Run + 6 * 80 Strides
- 1500 meters/ 800 meters Races
- 90:00 Endurance Run

Energy System Progressions

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<u>Transition</u>	<u>Brienna</u>	<u>Sessions</u>	<u>Percentage</u>
	<u>Emphasis</u>		
	Aerobic	12	86%
	Anaerobic	0	0%
	A Lactic	0	0%

<u>Melissa</u>	<u>Sessions</u>	<u>Percentage</u>
<u>Emphasis</u>		
Aerobic	14	100%
Anaerobic	0	0%
A Lactic	0	0%

<u>GP/ SP</u>	<u>Brienna</u>	<u>Sessions</u>	<u>Percentage</u>
	<u>Emphasis</u>		
	Aerobic	8	57%
	Anaerobic	3	21%
	A Lactic	2	14%

<u>Melissa</u>	<u>Sessions</u>	<u>Percentage</u>
<u>Emphasis</u>		
Aerobic	13	93%
Anaerobic	1	7%
A Lactic	0	0%

<u>Comp.</u>	<u>Brienna</u>	<u>Sessions</u>	<u>Percentage</u>
	<u>Emphasis</u>		
	Aerobic	8	57%
	Anaerobic	3	21%
	A Lactic	2	14%

<u>Melissa</u>	<u>Sessions</u>	<u>Percentage</u>
<u>Emphasis</u>		
Aerobic	12	86%
Anaerobic	2	14%
A Lactic	0	0%

<u>Champ.</u>	<u>Brienna</u>	<u>Sessions</u>	<u>Percentage</u>
	<u>Emphasis</u>		
	Aerobic	7	50%
	Anaerobic	5	36%
	A Lactic	2	14%

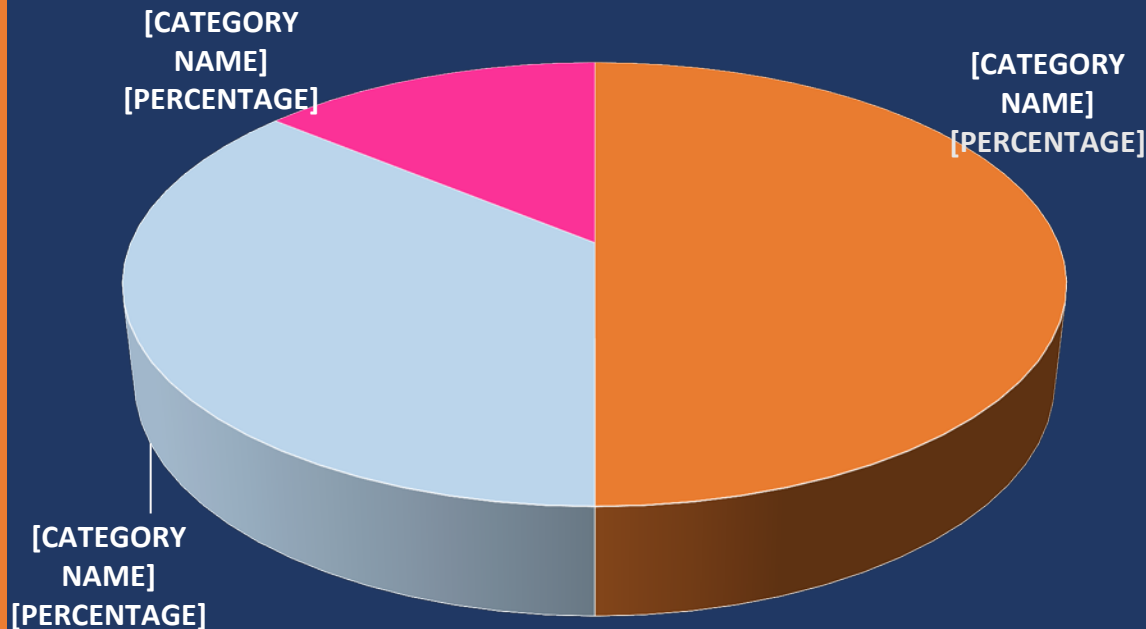
<u>Melissa</u>	<u>Sessions</u>	<u>Percentage</u>
<u>Emphasis</u>		
Aerobic	10	72%
Anaerobic	4	28%
A Lactic	0	0%

Energy System Comparisons

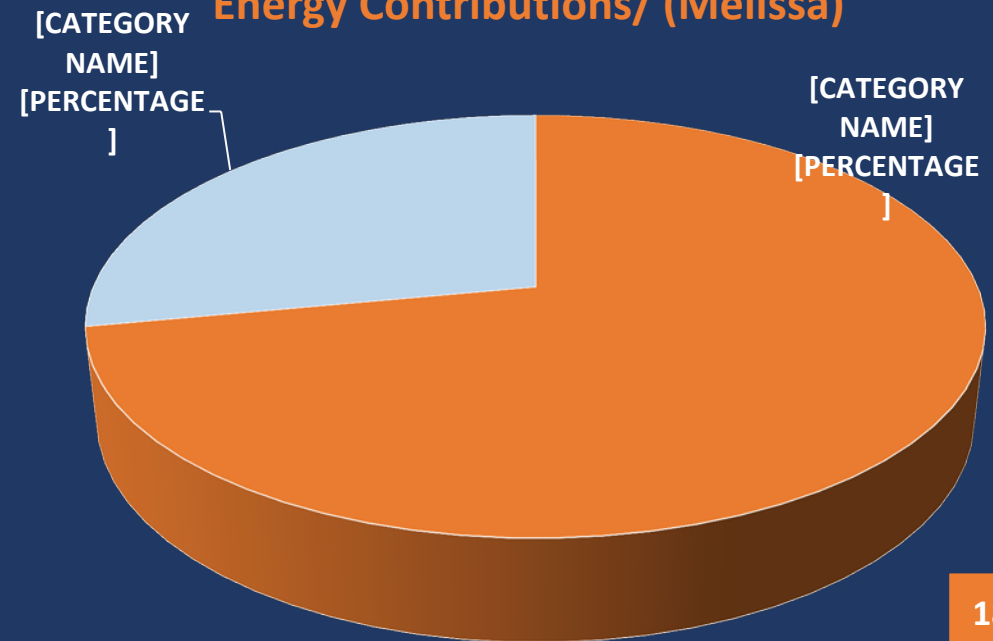
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This is a parallel comparison of two different ways to train an 800-meter runner based on their individual strengths and weaknesses. Brienna is clearly training with more Anaerobic and less Aerobic emphasis. Melissa is training with more Aerobic emphasis and no Anaerobic A-Lactic work. **However, the key is that they both trained relatively equal in the Anaerobic Glycolytic energy system by the end of their racing seasons. This is important because the Anaerobic Glycolytic energy system encompasses the most specific paces to the 800-meters.** Therefore, although Brienna and Melissa train on different ends of the spectrum, they also train very similar in regards to the percentage of training they spend in arguably the most important energy system to having success in the 800-meters.

Energy Contributions/ (Brienna)



Energy Contributions/ (Melissa)



Closing

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Going back to the original questions of why I wanted to investigate this event and subject; **there is a right and wrong way to train the 800-meters, but no one way to train this event.** The individual needs to be considered over the event demands. **A GOOD coach makes the system fit the athlete...** not the other way around. There is no 'one way' or this worked for 'enter awesome athlete's name here,' so I know it works for anyone who puts in the work.

Individuals need individual attention based on their strengths and weaknesses. The more time we can put into understanding each individual's needs, the greater the chance for that individual to reach their potential.

Closing

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There needs to be an open line of communication, honest feedback on both sides, and respect for each other for a great working relationship to be present. Communication between the student-athlete and the coach is of vital importance to develop each student-athlete to their potential.

These ideas and concepts are built around individuality. We as coaches, and teachers, need to be creative enough and open minded enough to understand that concept.

- **Experience + Education/ Knowledge + Application = Results**
- **Results + Feedback + Evaluation = Experience**
- **Repeat**