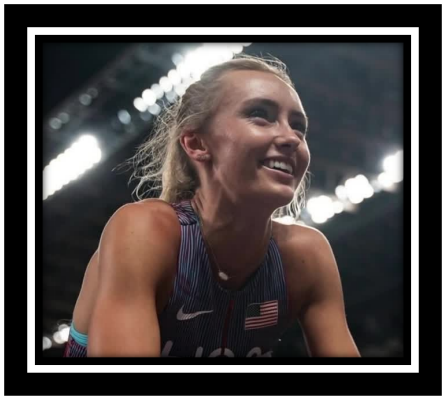
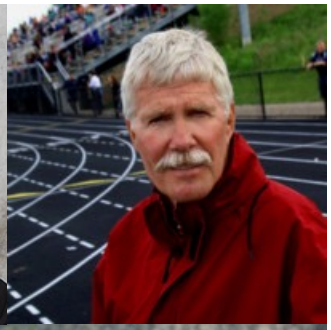
Coaching
800m/1500m/3k

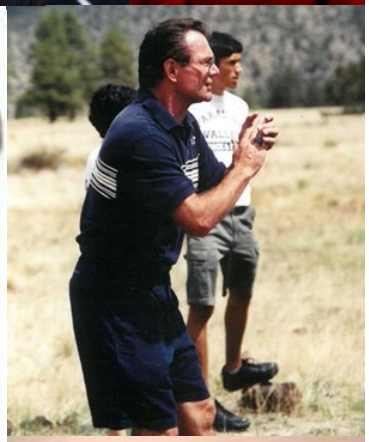


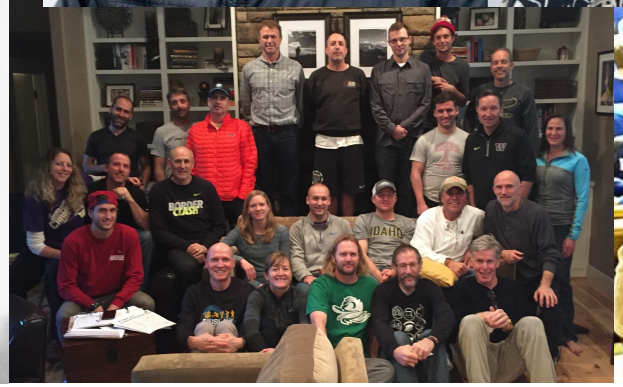
Mike Hickey

Athletics Northwest

Coaching Influence







Michael Hickey

Coaching:

University of Portland 2017-2019

- Assistant Coach XC/Track, strength and power development
- 2nd in the NCAA 2017, 3rd in the NCAA 2018

Camas High School

- 2 State Championship Titles 2011/2012 (Girls)
- 4th/2nd at the 2011/2012 Nike Northwest Championships (Girls)
- 13th at 2012 Nike Team National Nationals, Efraimson Won NXN

Portland State University

4 Years as Cross Country and Assistant Track Coach

- Women finished 11th in NCAA Western Region (Beat: WSU, Arizona)
- Distance Runners Scored 25 points at 2005 Big Sky Indoor Championships.

Clackamas Community College

3 Years as Head Cross Country / Assistant Track Coach

- 3 NWAACC Championships (2 Men's / 1 Women's)
- Paul Kezes (Top 5k Junior College Runner in Nation, 14:12)
- Andrew Dodge (Top 1500m Junior College Runner in Nation, 3:53)

Will Heslam

Oregon Relays: 800m 1:49.79 2023

OSAA State Track & Field Meet 2023:

- 1500m 3:49.36 *4A State Meet Record
- 800m 1:53.03 *State Champion

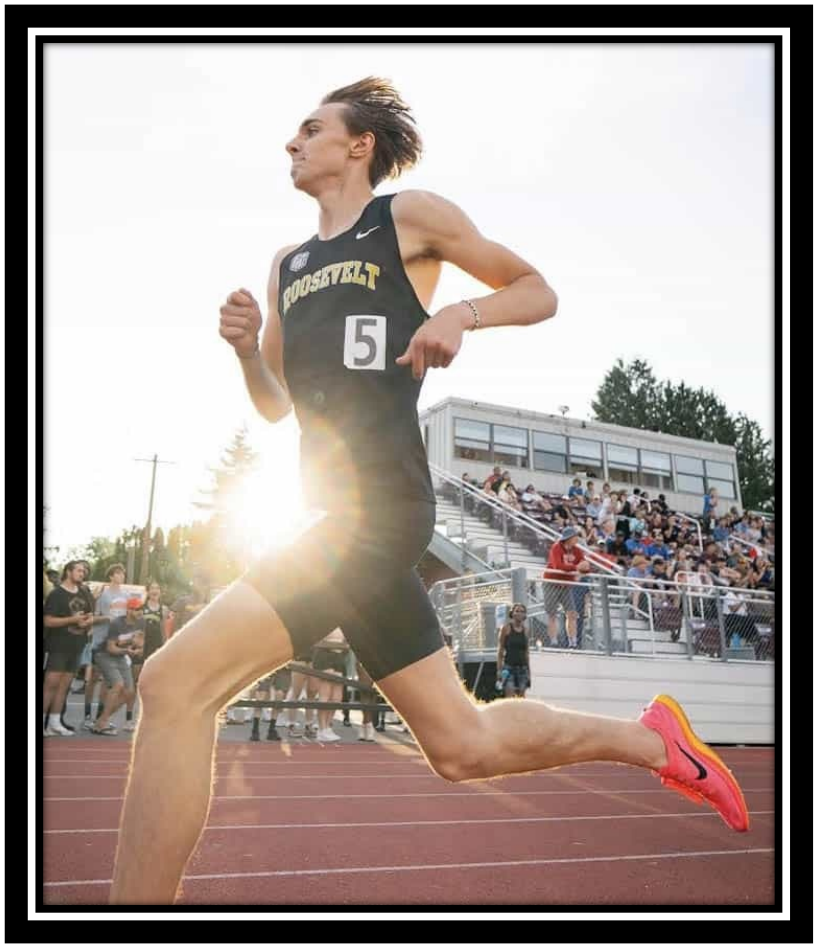
Jesuit Relays 2023 Mile 4:08.92

2023 Sherwood Night of Speed 3k 8:29.91

2022 OSAA State Cross Country Meet : 6th Place

2023 Nike Indoor Nationals 4:13.19 (2nd Place)

*Signed with the University of Oregon



Alexa Efraimson

Achievements:

- 6 Individual State Championships (2 Meet Records)
- 1st Place at the Nike Cross Country Nationals
- 1st Place 2014 Brooks PR (800m)
- 3rd Place at the 2013 World Youth Championships (1500m)
- 2nd Fastest 1500m runner in US High School History
- 6th Place 2014 World Junior Championships
- 3rd Place 2019 Pan American Championships

Team USA XC 2005:
Paul Kezes

Paul Kezes XC World Championships 2005

Notable Competitors:	
Men	Women
Dave Davis Adam Goucher Jorge Torres Ian Dobson **Paul Kezes (WA)** Dathan Ritzenhein Stuart Eagon Galen Rupp	Shaylene Culpepper Shalane Flanagan Lauren Fleshman Amy Mortimer Colleen De Reuck

Paul Kezes High School Career	Paul Kezes College / Post College Career
1600m 4:28	Mile 4:02
3200m 9:28	3k 8:02
	5k 13:50

McKayla Fricker

- Coached McKayla Fricker to 10th in 800m at 2015 USA Outdoor Track and Field Championships running 2:00.81 .
  - Prior to August 2014, McKayla had 2:06.18.
  - Signed contract with Brooks after 2015 Championships.

Emma Gates

*3rd Best HS jump in the nation

Year	Grade	Event
		100m
2020	10th	12.81
2021	**11th**	**12.30**
		200m
2019	9th	26.86
2021	**11th**	**25.35**
		HJ
2019	9th	5’7
2021	**11th**	**5’11”**

Who’s Next?

Faysal Ibrahim

- 2025 OSAA State XC Championships (6A)
  - 5th Place (Sophomore)

Adaptation to Training Loads

By Georg Neumann and Dieter Gohlitz, Germany

- Phase 1 (Enzymatic Upregulation)
  - First 2 weeks of loading changes mainly the motor control programing.
- Phase 2
  - Weeks 2-4 increases the energy reserves and functional and structural protein synthesis.
- Phase 3 (Neural Adaptation)
  - Weeks 4-6 adaptation takes place through the central nervous system optimization and the subsequent reconstruction in musculature. Muscle hypertrophy is established.
- Phase 4
  - Follows after 6 weeks and is responsible for coordination of the transformation of all sport-specific functional systems to reach the adaptation stage.
    - Training can be increased at this point with greater stimuli.

Critical Components: Coaching the Mile/800m

I. Aerobic Development (HR 140)
   - Capillarization (+Capillaries/Fiber): Sedentary 2- Trained 6+ Capillaries per Muscle Fiber

II. Anaerobic Threshold Development (HR 170-Actual Anaerobic Thresh.)
   I. Cruse Intervals

III. Anaerobic Glycolytic System – **Repetition Training**
   I. Speed Endurance (80m-150m)
      I. Generally run at 400m Goal Pace (Under Under Distance
   II. Speed Endurance 1 (150m-300m)
      I. Generally run at 800m Goal Pace (Under Distance)
   III. Speed Endurance 2 (300m-600m)
      I. Generally run at Mile Date Pace

IV. VO2Max (Over Distance)
   I. 2k/3k Date Pace, although Vigil Says this may be Mile Date Pace (others 5k)

V. Speed and Strength Development (Anaerobic ATP-CP System)

*Judging the zone that needs development, is where we build our reputation.

Training Modalities

- Aerobic Development
  - 140 Heart Rate: Max Stroke Volume
    - Stroke Volume Adaptation: Long, slow, or moderate-intensity training (like at 140 bpm) helps build cardiac hypertrophy, allowing the heart to fill more efficiently and pump more blood per beat.
    - Additionally Increases Capilarization
- Threshold Training
  - Threshold Heart Rate (THR): THR represents the maximum intensity for a steady-rate, sustainable effort (approx. 30-75 minutes)
  - Cruse Intervals: Goal of less than 4mm of Lactic Acid
    - 6-10 x 1000m (3 minute reps)
    - Double Threshold Runs for Elite Athletes

Training Modalities cont.

- Speed Development
  - Maximum Velocity Training for 30-60m
  - Enhanced Coordinated Movement Patterns
  - Reactive Movement: Be Aggressive, Quick off the Ground
- Power Development
  - Hills
  - Stairs
  - Bounding
  - Hurdle Hops
  - In Place Jumps

Repetition Training

Repetition training

- High-Intensity Efforts with full recovery between sets,
  - Goal:
    - Improve speed & Power
    - Improve Running Economy
    - Focuses on muscular endurance and efficiency (Capacity)
    - Rest Ratio is Dependent on Training Age
      - Work-to-Rest Ratio of 1:2 to 1:10
      - When Pace Slows, Repetition Training is Finished
      - Psychological/Physiological Readiness to Run
        - Would Rather End Workout than Push Beyond The Athletes Desire to Continue
          - This Builds Trust

Indicator Workout – Test Systems

- 1600m @ 5k Date Pace
  - 3-5 minutes recovery or 1-1.5 mile tempo
- 1200m @ 3k Date Pace
  - 3-5 minutes recovery or 1-1.5 mile tempo
- 800m @ 2k Date Pace
  - 3-5 minutes recovery or 1-1.5 mile tempo
- 400m @ Finishing Velocity

Sample for 4:04 1500m Runner

- 1600m @ 4:56
- 1200m @ 3:30
- 800m @ 2:16
- 400m @ 64-60

- Michigan Workout

Testing-Repetition Training Used I &II

I. 40m Fly (20m lead in)
   - Training Modalities:
     - Dynamic Drills
     - Skip for Speed / Height
     - Bounding / Stairs / Hurdle Hops
     - Med Ball Throws (Forward / Backward)
     - Max Velocity Sprinting 40m-80m - Anaerobic ATP-CP Energy System (0-8 seconds)

II. 150m, 300m, 600m Anaerobic Development
   - Training Modalities:
     - High Velocity Running: Anaerobic - Glycolytic Energy System (8-100 seconds)
     - 2-3 x 300m @ 400m DP with 10-15 minutes recovery

III. 6 mile / 10 mile Test Effort or Hard Training Run
   - Training Modalities:
     - Aerobic Running of 100 seconds – hours
     - Special Focus Should be Paid to Velocities and Volumes Near Goal Distance/Time

Testing Continued…

IV. VO2Max: 2k or 3k:

- VO2max can be built for 8-12 weeks, before taking an aerobic reset.
- This training can down regulate aerobic enzymes and harm mitochondria (above 10mmols lactate)

V. Testing Workouts / Repetition Work

- 2-3 x 300m @ 400m DP with 10-15 minutes recovery
- H.S. 2-3 x 600m @ 1500m/mile DP
- Elite 3-5 x 800m @ 1500m DP
- 2 x mile @ 2 mile DP
  - Prior to NXN 2 x mile: too hard, but needed confidence
    - Efraimson: 4:52, 4:42 (10 minutes recovery)

The Inverse Relationship of Enzymes

Aerobic Enzyme	**Untrained**	**Anaerobically Trained**	**Aerobically Trained**
Succinate Dehydrogenase	8.1 (mmol*g-1*min-1)	8.0	20.8
Malate Dehydrogenase	45.5	44.0	65.5
Anaerobic Enzymes	**Untrained**	**Anaerobically Trained**	**Aerobically Trained**
Phosphofructo-Kinase	19.9	29.2	18.9
Lactate Dehydrogenase	766.0	811.0	621.0

Date Pace (Interval) / Goal Pace (Repetition)

Date Pace (Interval Training)	Goal Pace (Repetition Training)
800m	800m
1-2 x10 x 100m w/ 15-30 seconds recovery	200m Reps w/ 2-3 minutes recovery
2 x 5 x 200m w/ 60-90 seconds recovery	300m Reps w/ 3-5 minutes recovery
4-8 x 300m w/ 60-90 seconds recovery	400m Reps w/ 5-10 minutes recovery
	600m Reps w/10-15 minutes recovery

*When coordination and/or speed are reduced, you are finished.

**Very hard on the body, downregulates aerobic enzymes and destroys mitochondria (above 10mmols of lactate).

Date Pace (Interval) / Goal Pace (Repetition)

Date Pace (Interval Training)	Goal Pace (Repetition Training)
1500m	1500m
1-2 x 10 x 100m w/ 15 seconds recovery	200m Reps w/ 2-3 minutes recovery
2-4 x 5 x 200m w/ 60-90 seconds recovery	300m Reps w/ 3-5 minutes recovery
2-3 x 5 x 300m w/ 60-90 seconds recovery	400m Reps w/ 5-10 minutes recovery
	600m Reps w/10-15 minutes recovery
	800M Reps w/10-15 minutes recovery

*When coordination and/or speed are reduced, you are finished.

**Very hard on the body, downregulates aerobic enzymes and destroys mitochondria (above 10mmols of lactate).

2 Week Training Cycle (General Prep Phase) *Build Capacity

Monday	**Tuesday** (8-9/10)	**Wednesday**	**Thursday**	**Friday** (7/10)	**Saturday**	**Sunday** (7/10)
Recovery HR: 140 -strides	**Power Development** **-Hills (100m-300m)** **-Track (100m-200m)**	Recovery HR: 140	Recovery HR: 160-170	**Speed Dev. 2 x 40m-60m** -10-15 minutes at 140HR **Cruse Intervals (10k Pace)**	Recovery HR: 140	**Steady State** **6-10 miles** **@ 170-182**
+Gen. Strength	**+Olympic Lifts**	+Gen. Strength Med Ball Throws	+Gen. Str.	**+Olympic Lifts**	+Gen. Str.	Stretching Med Ball Throws
Monday	**Tuesday** (8-9/10)	**Wednesday**	**Thursday**	**Friday** (8/10)	**Saturday**	**Sunday** (7/10)
Recovery HR: 140	**AM: CV (10k)** **PM: Repetition 400m/800 DP/GP(UUD)** **CV (10k Pace)**	Recovery HR: 140	Recovery HR: 150-170	**AM: Cruse Intervals** **PM: Continuous Hills** **-150-300m (Medium Hard)**	Recovery HR: 140	**Long Run** **HR 140** ***Squat**
GS	**+Olympic Lifts**	+Gen. Strength Med Ball Throws	+Gen. Str.	**+Olympic Lifts**	+Gen. Str. Med Ball Thr.	

2 Week Training Cycle (Pre-Competitive Phase) *Build Capacity

Monday	**Tuesday** (8-9/10)	**Wednesday**	**Thursday**	**Friday** (7-8/10)	**Saturday**	**Sunday (7/10)**
Recovery HR: 140 -strides	**2-4 x 120m** -10-15 minutes at 140HR **1500m DP/GP** **400m DP**	Recovery HR: 140	Recovery HR: 160-170	**VO2Max 3k DP (OD)** **Cruse Intervals**	Recovery HR: 140	**Long Run** **HR 140**
+Gen. Strength	**+Olympic Lifts**	+Gen. Strength Med Ball Throws	+Gen. Str.	**+Olympic Lifts**	+Gen. Str.	Stretching Med Ball Throws
Monday	**Tuesday** (8-9/10)	**Wednesday**	**Thursday**	**Friday** (8/10)	**Saturday**	**Sunday**
Recovery HR: 150-170	**AM:Cruse Int. (10k)** **PM:** **800m DP/GP (UD)** **400m DP/GP(UUD)**	Recovery HR: 140	Recovery HR: 160-170	**-Continous Hills (100m-300m)** **-Cruse Intervals (10k pace)**	Recovery HR: 140	**Steady State** **8-12 miles** **@ 170-182**
+Gen. Strength	**+Olympic Lifts**	+Gen. Strength Med Ball Throws	+Gen. Str.	**+Olympic Lifts**	+Gen. Strength Med Ball Throws	Stretching

2 Week Training Cycle (Competitive Phase) *Build Capacity

Monday	**Tuesday** (8-9/10)	**Wednesday**	**Thursday**	**Friday** (7/10)	**Saturday**	**Sunday** (7/10)
Recovery HR: 140 -strides	**2-4 x 150m** **1500m DP/GP**	Recovery HR: 140	Recovery HR: 160-170	**Cruse Intervals(CV)** **-Speed Endurance** **150/300**	Recovery HR: 140	**Long Run** **HR 140** ***Squat**
+Gen. Strength	**+Olympic Lifts**	+Gen. Strength Med Ball Throws Hurdle Mobility	+Gen. Str.	**+Olympic Lifts**	+Gen. Str. Med Ball Throws Hurdle Mobility	Stretching Med Ball Throws
Monday	**Tuesday** (8-9/10)	**Wednesday**	**Thursday**	**Friday** (8/10)	**Saturday**	**Sunday**
Recovery HR: 150-170	**AM: Cruse Int.** **PM:** **800m DP/GP (UD)** **400m DP/GP(UUD)**	Recovery HR: 140	Recovery HR: 140	**AM: Cruse Int.** **PM:** **-VO2Max 3k DP** **-100-150m at 800m GP**	Recovery HR: 140	**Steady State** **8-12 miles** **@ 170-182**
GS	**+Olympic Lifts**	+Gen. Strength Med Ball Throws Hurdle Mobility	+Gen. Str.	Stretching	+Gen. Str. Med Ball Thr. Hurdle Mobility	**+Olympic Lifts**

Heart Rate Training
-Coe & Martin

- Aerobic Conditioning
  - 70-80% of Maximum Heart Rate
- Threshold: 80-90% of Maximum (Often Higher in Women, due to smaller hearts)
  - Increasing Glycolytic and Oxidative Enzymes
  - Increases Capillarization and Plasma Volume
  - Minimal Lactate Accumulation

Dr. Joe Vigil

- 100m-800m Repeats at a HR of 190-200.
- 800m-10k at a HR of 180-190.
- Aerobic Threshold at a HR of 140-160.
  - Improve Capillary Density
- Anaerobic Threshold at a HR of 160-180.

Training Zones of World Class Cyclists: Andy Coggan Training Zones

Andy Coggan Training Zones (from TrainingPeaks article: https://www.trainingpeaks.com/blog/power-training-levels/)

Level	Name	Average Heart Rate (% of HR threshold)	Average Heart Rate (% of HR Max)	Description
1	Active Recovery	< 68%	< 61%	"Easy spinning" or "light pedal pressure", i.e., very low level exercise, too low in and of itself to induce significant physiological adaptations. Minimal sensation of leg effort/fatigue. Requires no concentration to maintain pace, and continuous conversation possible. Typically used for active recovery after strenuous training days (or races), between interval efforts, or for socializing.
2	Endurance	69 - 83%	62 - 75%	"All day" pace, or classic long slow distance (LSD) training. Sensation of leg effort/fatigue generally low, but may rise periodically to higher levels (e.g., when climbing). Concentration generally required to maintain effort only at highest end of range and/or during longer training sessions. Breathing is more regular than at level 1, but continuous conversation still possible. Frequent (daily) training sessions of moderate duration (e.g., 2 h) at level 2 possible (provided dietary carbohydrate intake is adequate), but complete recovery from very long workouts may take more than 24 hs.
3	Tempo	84 - 94%	76 - 85%	Typical intensity of fartlek workout, 'spirited' group ride, or briskly moving paceline. More frequent/ greater sensation of leg effort/fatigue than at level 2. Requires concentration to maintain alone, especially at upper end of range, to prevent effort from falling back to level 2. Breathing deeper and more rhythmic than level 2, such that any conversation must be somewhat halting, but not as difficult as at level 4. Recovery from level 3 training sessions more difficult than after level 2 workouts, but consecutive days of level 3 training still possible if duration is not excessive and dietary carbohydrate intake is adequate.
4	Lactate Threshold	95 - 105% (May not be achieved during initial phases of efforts)	86 - 95% (May not be achieved during initial phases of efforts)	Just below to just above TT effort, taking into account duration, current fitness, environmental conditions, etc. Essentially continuous sensation of moderate or even greater leg effort/fatigue. Continuous conversation difficult at best, due to depth/frequency of breathing. Effort sufficiently high that sustained exercise at this level is mentally very taxing – therefore typically performed in training as multiple 'repeats', 'modules', or 'blocks' of 10-30 min duration. Consecutive days of training at level 4 possible, but such workouts generally only performed when sufficiently rested/recovered from prior training so as to be able to maintain intensity.
5	Max Aerobic (VO2max)	> 106%	> 96%	Typical intensity of longer (3-8 min) intervals intended to increase VO2max. Strong to severe sensations of leg effort/fatigue, such that completion of more than 30-40 min total training time is difficult at best. Conversation not possible due to often 'ragged' breathing. Should generally be attempted only when adequately recovered from prior training – consecutive days of level 5 work not necessarily desirable even if possible. Note: At this level, the average heart rate may not be due to slowness of heart rate response and/or ceiling imposed by maximum heart rate)
6	Anaerobic Capacity	N/A	N/A	Short (30 s to 3 min), high intensity intervals designed to increase anaerobic capacity. Heart rate generally not useful as guide to intensity due to non-steady-state nature of effort. Severe sensation of leg effort/fatigue, and conversation impossible. Consecutive days of extended level 6 training usually not attempted.
7	Neuromuscular Power	N/A	N/A	Very short, very high intensity efforts (e.g., jumps, standing starts, short sprints) that generally place greater stress on musculoskeletal rather than metabolic systems. Power useful as guide, but only in reference to prior similar efforts, not TT pace.

Any Questions?