Sprint Relay Exchanges
and
Speed Development

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Sprint Relay Exchanges

- Sprint Relays
  - –400M Relay
  - –800M Relay
  - –1600M Relay
    - Technical aspects
    - Various requirement for individual legs
    - Psychological aspects ?

Getting Started

Key Points

Rule #1-

- The team that gets the BATON around the fastest wins

Rule # 2-

- You won't get to use the 4 sprinters you want to use

Rule # 3-

- Someone will screw up. . . Make sure they are ready

400 METER RELAY

- 400M Relay
  - Traditionally
    - 1st leg and Anchor Fastest
  - Special Requirements
    - Refer to Rule #1
    - Block Skills
    - Running the Curve
    - Ability to work with handoff partner
    - Nerves (can your fastest kid take the pressure of anchoring)
    - Weak link

Set up for First and Second Runners

Key Points

Know the Zone

Acceleration Zone?

Staggered in Lane

1st Runner must use Left

2nd Runner must use Right

400M Relay

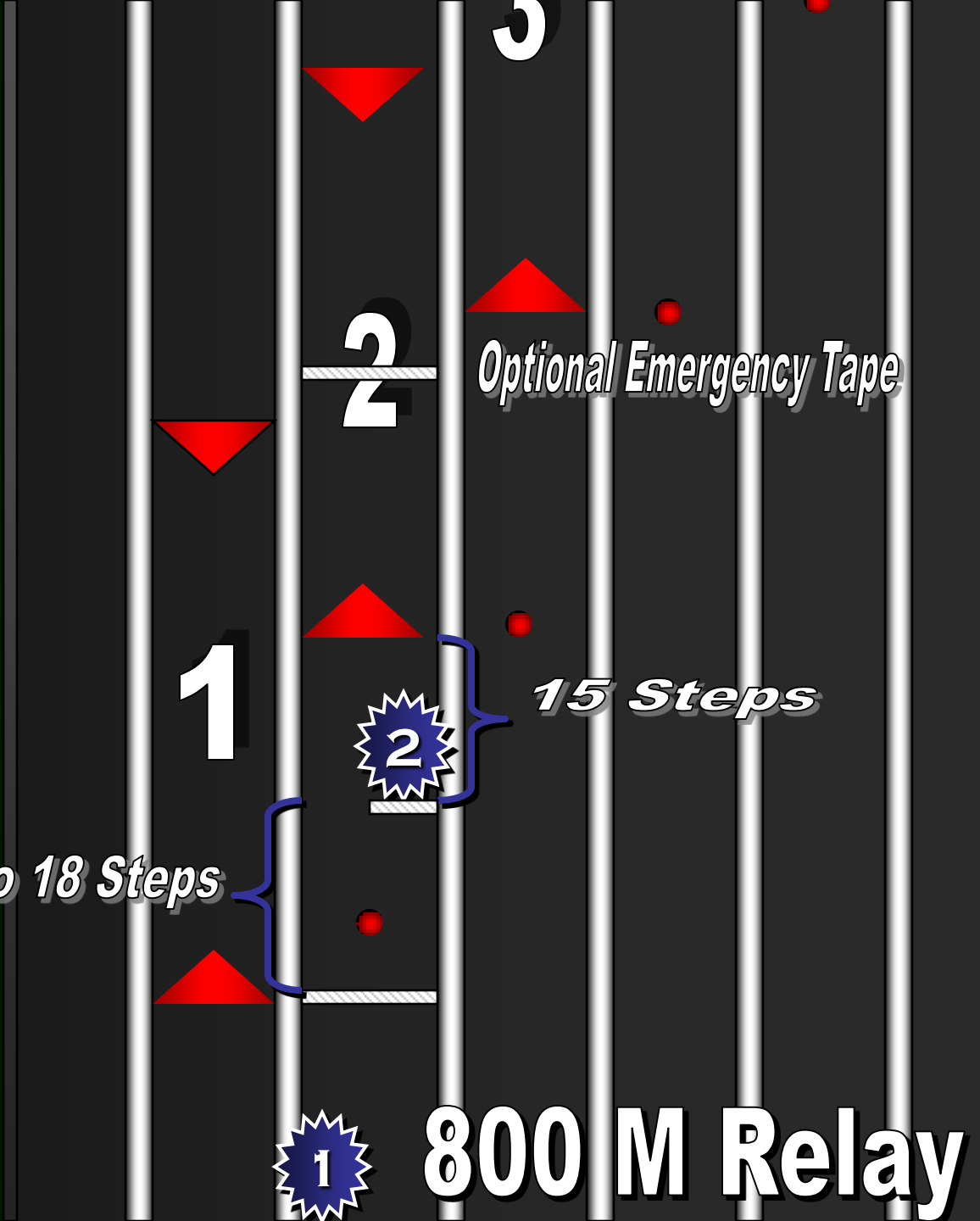
- Passing the baton
  - Closed exchange
    - Incoming runner
      - When to call stick
      - Aim for elbow then palm
      - Shoot arm straight forward
    - Outgoing Runner
      - Snatch vs layout
      - Check off point?
      - Hip check
- Practice
  - Checking for speed
  - Make this part of your speed training
  - VIDEO! ! ! ! !

800 METER RELAY

- 800M Relay
  - Traditionally
    - Treated like 400M Relay
  - Special Considerations
    - Block Skills
    - Wind
    - Indoor Vs Outdoor
    - Consistency with the stick
    - Weak link (less room to play)

Set up 1st and 2nd 800 M Relay

- Outdoor
  - Where to start
  - Special Considerations
  - Soft Release
  - Emergency Check Point
  - Adjusting to the inevitable
  - Practice considerations
- Indoor
  - Order
  - Exchanges



1600M RELAY

- 1600M Relay
  - Promote the cult to the 4x4
  - It's an honor not a punishment
  - Traditionally
    - 1st leg and Anchor Fastest
  - Special Considerations
    - Indoor Vs Outdoor
    - Competition
    - Do you have a kid who would rather die than lose? If yes he or she is your anchor!
    - Preparing for #3

Rule # 3 in action

1600M Relay

- Passing the Baton
  - –Open Exchange
  - –Holding the Baton
  - –Incoming Runner
    - Candle Stick
  - –Out Going Runner
    - Three Step and Turn
    - Teach 2nd tangent at the break
  - –Indoor

Speed Training

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Personal Background

- High School
  - –Kettle Moraine
- College
  - –UW-Milwaukee/ UW La Crosse
- Arrowhead
  - –Head Coach since 2003

ALL-TIME SPRINT RELAYS

Updated 2008

400 Meter Relay

Jason Prekop, Eric Jankowski Zach Swan, Josh Hurlebaus	43.1	'03
Chris Pendergast, Ryan Hilgendorf Danny Zeigler, Blake Vassar	43.60	'08
Trevor Grieber, Cory Pinkner Jake Vis, Tony Gruenwald	43.79	'07
Wangerin, Tomasini, Vento, Eberhardt	43.9	'97
Luke Ceizki, Paul Schiller Tony Grunwald, Wes Kavelaris	44.23	'06
Cull, Semann, Eicher, Brophy	44.1	'94
Prekop, Jankowski, M. Berendes, Hurlebaus	44.2	'03
Wehlage, Swan, O'Shea, Prekop	44.4	'02

800 Meter Relay

Eric Jankowski, Mike Berendes, Brad Peterson, Josh Hurlebaus	1.29.3	'03
Carl Goehner, Erik Felt, Brad Peterson, Mike Berendes	1:29.47	'04
Luke Ceizki, Derek Steinbach Paul Shiller, Wes Kavelaris	1:30.82	'06
Trevor Grieber, Jake Vis Tony Gruenwald, Wes Kavelaris	1:30.90	'07
Erik Felt, Lucus Ceizki Mike Berendes, Brad Peterson	1:30.9	'04
Jason Prekop, Eric Jankowski, Mike Berendes, Josh Hurlebaus	1.31.3	'03
Luke Ceizki, Derek Steinbach Jave Vis, Wes Kavelaris	1:31.45	'06
Evan Resimius, Casey Panawash.B Danny Zeigler, Blake Vassar	1:31.78	'08
B. Le Monds, S. Kleinhans, R. Klienhans, Sarsfield	1.31.6	'87
M. Berendes, Wes Kavelaris Carl Goehner, E. Felt	1:31.8	'05
Lucas Ciezki, Paul Schiller, Jake Vis, Wes Kavelaris	1:32.67	'06
Momsen, Simpson, Tarkowski, Brevard	1.32.9	'90
Jason Prekop, Eric Jankowski Brad Peterson, Brendon O' Shea	1.33.01	'03
Eberhardt, Tomasini, Vento, Prust	1.33.0	'97
Trevor Grieber, Jake Vis Toney Gruenwald, Joe Greenhagen	1.33.18	'07
T. Le Monds, Justman, Simpson, R. Kleinhans	1.33.2	'88
T. Le Monds, B. Le Monds, Kowal, Sarsfield	1.33.3	'86

1600 Meter Relay

Joe Mcfarland, Jake Vis Derek Steinbach, Wes Kavelaris	3:21.06	'07
Danny Zeigler, Jeremy Grams Casey Panawash-B., Tim Hucke	3:21.58	'08
Mike Berendes, Erik Felt Jason Slesper, Brad Peterson	3:21.75	'04
Paul Schiller, Joe McFarland Derek Steinbach Wes Kavelaris	3:21.93	'06
Pat Carew, Erik Felt Wes Kavelaris, Mike Berendes	3:22.03	'05
Steinbauer, S. Kleinhans, Heidvogel, Sarsfield	3:22.1	'86
Sarsfield, Steinbauer, Linnan, G. Kleinhans	3:22.1	'85
Bolton, Brophy, O' Conner, Boldt	3:22.3	'93
Eicher, Brophy, O' Conner, Boldt	3:22.3	'??
Jake Vis, Tim Hucke Derek Steinbach, Wes Kavelaris	3:22.81	'07
Wes Kavelaris, Jake Vis Tim Hucke, Joe McFarland	3:22.90	'07
Mike Berendes, Alex Slesper Erik Felt, Brad Peterson	3.23.57	'03
Mike Berendes, David Hucke Erik Felt, Brad Peterson	3.24.1	'03
Pat Carew, Erik Felt Paul Schiller, Wes Kavelaris	3:24.5	'05
B. Le Monds, Pardun, R. Kleinhans, Sarsfield	3:25.9	'87

What constitutes a speed workout?

When do you do one?

Aren't we all starting from scratch?

Sprint Philosophy

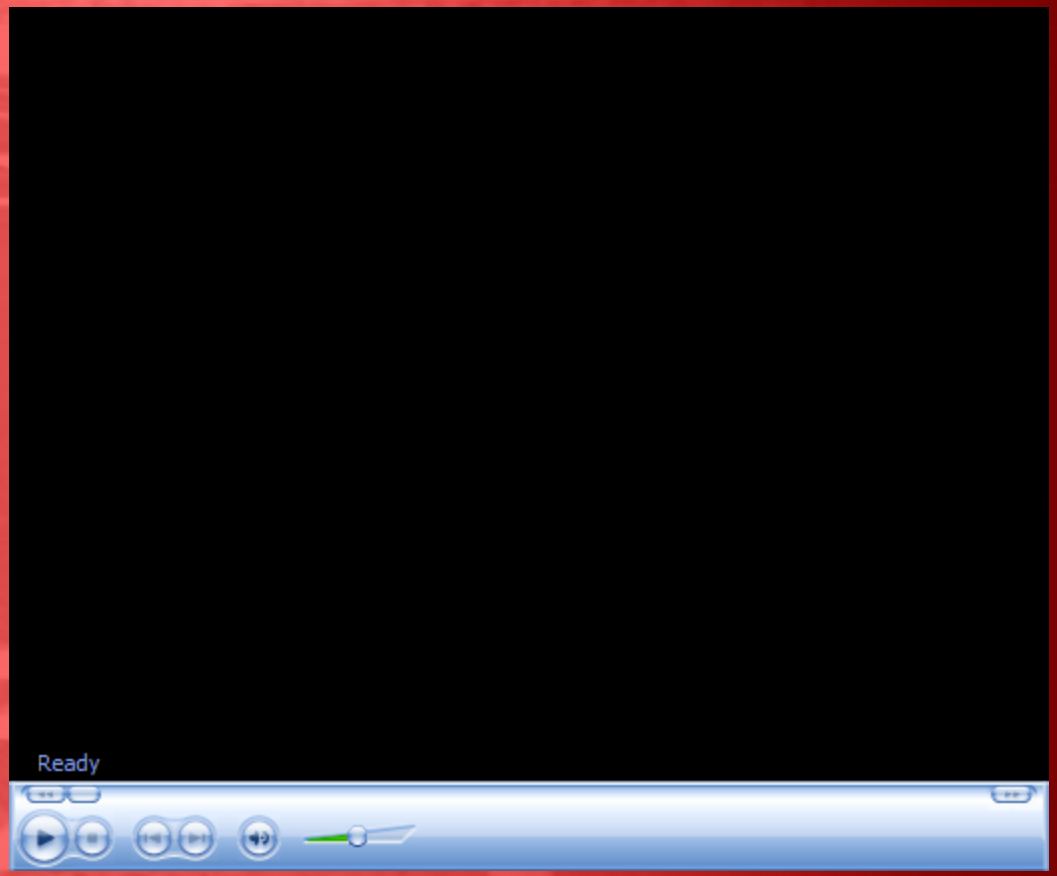
If you want to race fast you have to train fast!

Key Sprint Bio-motor Abilities

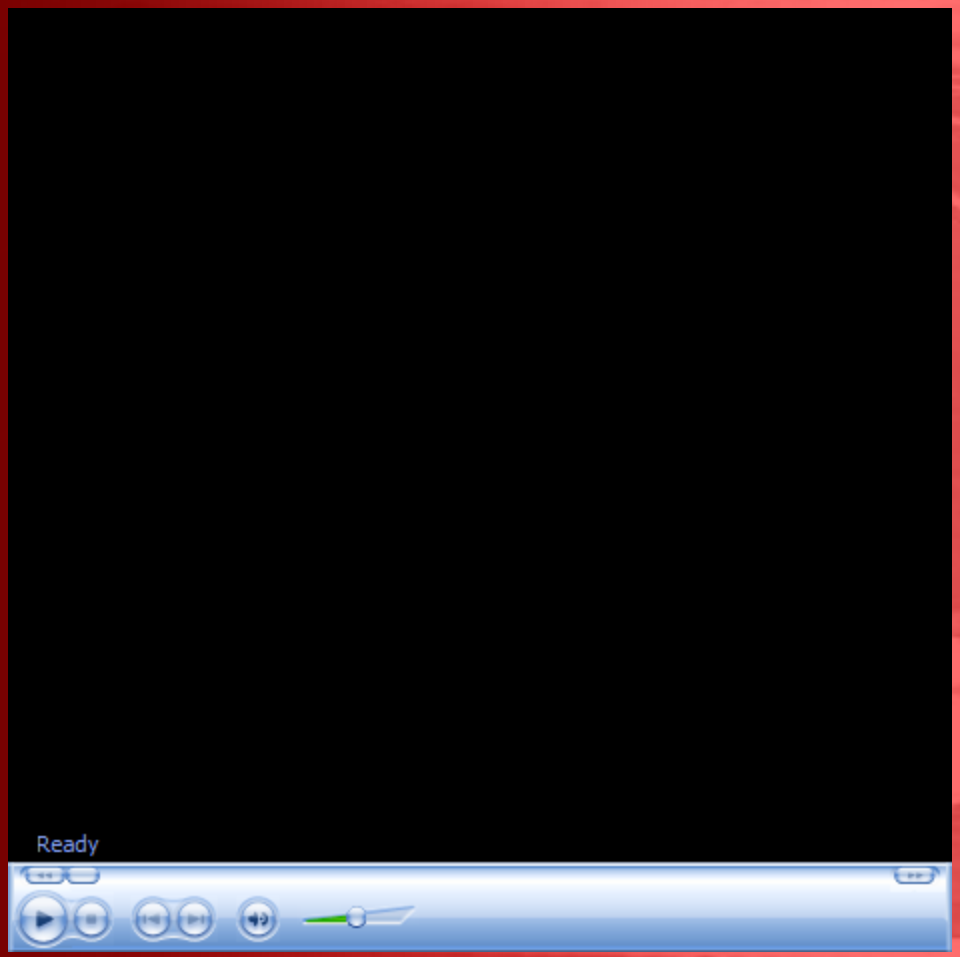
1. Flexibility
2. Coordination
3. Work Capacity
4. Strength
5. Speed

Proper Form

- Start with the basics
  - Arm action
    - Shoot for 90°
    - Hands
  - Drills
  - Stress at all TIMES



Proper Form

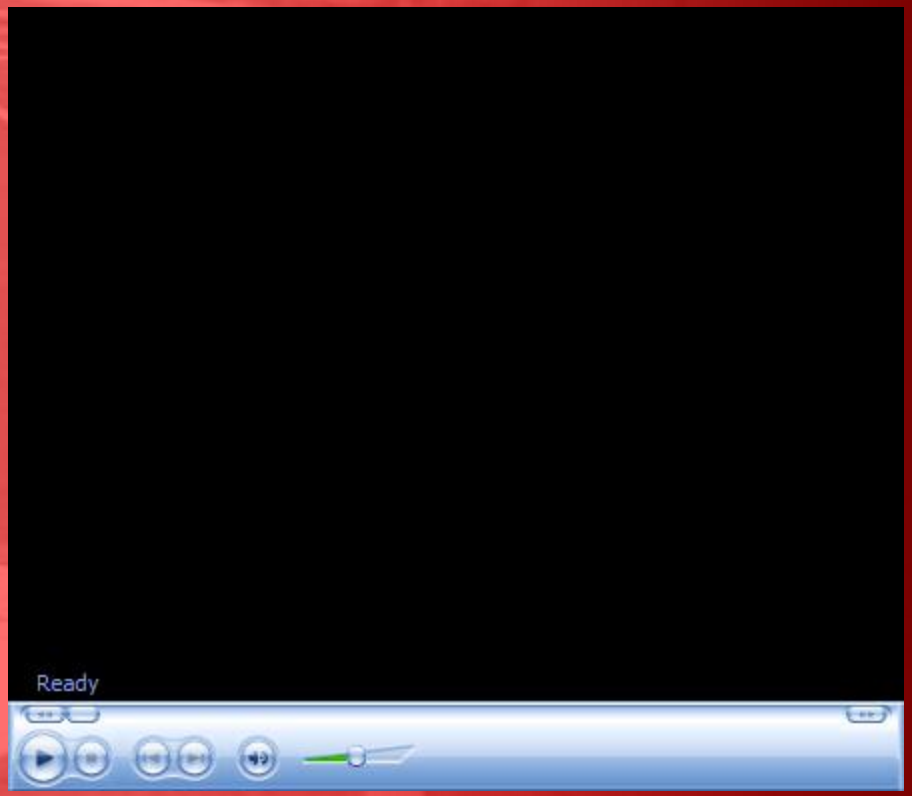


- Dorsiflextion
  - Why is it important?
  - Drills
    - Claw Drills
      - Draw In
      - Pelvic Tilt
    - Wall
    - Side lying

Cycle Drill

Proper Form acceleration

- Improving Acceleration Form
  - Wall Drills
    - Keep Body in straight line
    - Back leg and front shin should be at same angle
- Speed harness
- Face to Face Drill
  - Never over resist



Wall Drill

Form Drills for Max V

- A-Skips (Focus on Front side or Back side mechanics)
- Butt Kicks
  - Don't reveal the heal
  - Quick step alternating Butt Kicks
- Fast Leg
- Hurdles
  - March
  - Fast Leg
- Ankling
- Step over run

Sample Form Drills

1. A-Skips
2. B-Skips
3. Alternating D. B. Kick
4. Alternation S. B. Kick
5. Butt Kick
6. Alternation D.B. Kick
7. C-Skips

www.youtube.com/watch?v=nTRnyGe_wpk&feature=related

Form Drills should be placed in warm-up

Active Dynamic Warm-up

Why not just StaticStretching?

Exercise	Set	Rep/Dis/Dur
Neck Clock	1	5
Arm Hug	1	5
Arm Circles Micro/Mac	1 ea	5
Hurdle Seat Change	1	5
Leg Swing Supine Alternate	1	5
Prone Scorpion	1	5
Rocker Half w/ Inside Hurdle	1	5
Leg Swing Sagital	1	8
Quadriceps Stretch Walk	1	20
Inverted Toe Touch	1	20
A Skip	**1**	**20**
Backward A Skip	**1**	**20**
1/2 Speed Build-Up	**1**	**20**
Knee Hug	1	20
Straight Leg March	1	20
Butt Kicks	**1**	**20**
Butt Kick Alternating Legs	**1**	**20**
3/4 Speed Build-Up	1	20
Elbow to Instep	1	20
Scale Walk	1	15
Fast Leg R	**1**	**20**
Fast Leg L	**1**	**20**
3/4 Speed Build-Up	1	20
Lung Walking	1	20
Leg Cradle	1	20
Ankling	**1**	**20**
Step Over Run	**1**	**20**
Full Speed Build-Up	4	50

See handout for full warm-up

Speed Barriers

- Avoid Bad Stereotypes
  - –Always Stress FORM!
  - –Excessive Speed Training
    - Trying to maintain max levels for long periods of time (>10 sec)
- Running Slow
  - –Pace Workouts

Speed Development Before Speed Endurance

- Begin Late fall Early Winter Training
- Workouts with Speed Component
  - –Block Starts
  - –Short Sprints over 20 to 40 M sometimes 60
- After new stereotypes of speed are produced work speed endurance (Beginning of Season)

Stride Length and Frequency

- How to Improve
  - –Must change Central Nervous System
    - Over Speed
    - Resistance Runs
    - Contrast Training
      - –Resistance –Assistance- Normal
        - » Sled, Bungee, Flat
      - –In and Outs


Sample In and Outs
15/20-15/30-15/40-15/30-15/20-15

Generating Workouts

- How to set up Sprint Workout Season
  - Start End of the Season
  - Plan every day of the season all at once
  - Everything must be periodized
    - Running
    - Lifting
- Use K.I.S.S method

What is periodization

Periodization is simply dividing an athlete's training program into a number of periods of time, each with a specific training goal or goals. –

William H. Freeman "Peak When it Counts"

What is the purpose?

To cause the Body to continually adapt to new conditions of overload and to allow the muscles to recover from the stress of training.

Don't do this!

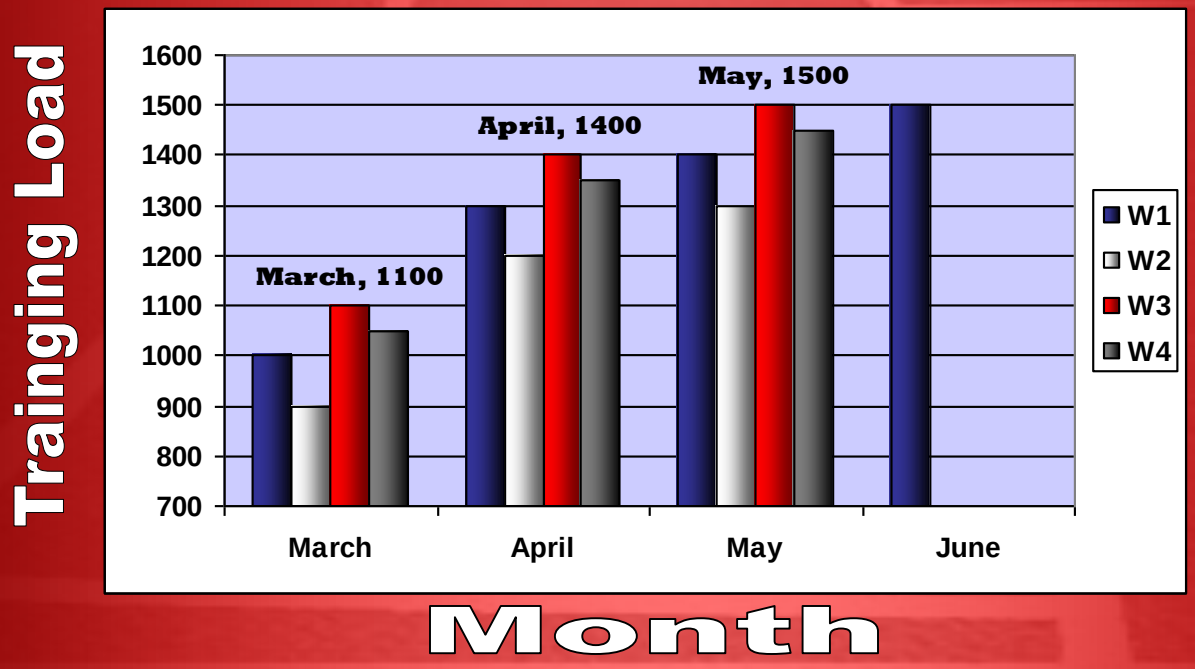
Training Load

Training load for sprinters is not simply found by adding up the distance run. You must also incorporate the intensity of the workout and the amount of rest

10 x 200 @ 30/ 2min rest = 2000m

compared to

8 x 200 @ 27/ 45 sec rest = 1600m



						Volume Range per session based on best race distance.					
		COMPONENT		Percent	Rest	100		200		400	
COMMON	LENGTH	AND DESCRIPTION	Energy	of	Interval	Meters		Meters		Meters	
TERMI-	OF	OF OBJECTIVE	System	Best	Between	Min.	Max.	Min.	Max.	Min.	Max.
NOLOGY	RUN			Performance	Reps / Sets						
	>200m	AEROBIC CAPACITY [AC]	AEROBIC	<69%	<45" / <2'	1400	3000	1800	3000	2400	4000
EXTENSIVE											
TEMPO											
	>100m	AEROBIC POWER [AP]	AEROBIC	70-79%	30"-90"/2-3'	1400	1800	1800	2400	1800	3000
INTENSIVE	>80m	LACTACID CAPACITY [LAC]	MIXED	80-89%	30"-5' / 3-10'	800	1800	800	2000	1000	2800
TEMPO		Anaerobic Capacity	AER./ANAER.								
SPEED	20-80m	SPEED [S]	ANAEROBIC	90-95%	3-5' / 6-8'	300	800	300	800	300	900
		Anaerobic Power	ALACTIC	95-100%	3-5' / 6-8'	300	500	300	600	300	600
		Alactacid Strength									
		ALACTIC									
	30-80m	SHORT SPEED END. [ASSE]	ANAEROBIC	90-95%	1-2' / 5-7'	300	800	300	800	600	1200
		Anaerobic Power	ALACTIC	95-100%	2-3' / 7-10'	300	800	300	800	600	1200
		Alactacid Capacity									
		GLYCOLYTIC									
SPEED	<80m	SHORT SPEED END. [GSSE]									
ENDURANCE		Anaerobic Capacity	ANAEROBIC	90-95%	1' / 3-4'	300	800	300	800	600	1200
		Anaerobic Power	GLYCOLYTIC	95-100%	1' / 4'	300	800	300	800	600	1200
		Lactacid Capacity									
	80-150m	SPEED ENDURANCE [SE]	ANAEROBIC	90-95%	5-6'	300	900	600	1200	400	1000
		Anaerobic Power	GLYCOLYTIC	95-100%	6-10'	300	600	300	600	400	800
		Lactacid Strength									
SPECIAL		LONG									
ENDURANCE	150-300m	SPEED ENDURANCE [LSE]	ANAEROBIC	90-95%	10-12'	600	900	600	1200	600	1200
I		Anaerobic Power	GLYCOLYTIC	95-100%	12-15'	300	900	300	1000	300	1000
SPECIAL	300-600m	LACTACID POWER [LAP]	LACTIC ACID	90-95%	15-20'	600	900	600	1200	900	1200
ENDURANCE		Lactic Acid Tolerance	TOLERANCE	95-100%	FULL	300	600	300	600	300	900
II											
Gary Winckler, 1987											

High School Weekly Plan

Week 1

Monday						Tuesday						Wednesday						Thursday						Friday					
Running: Extensive Tempo 70%						Running: Speed 95%						Running: Intensive Tempo 80%						Running: Speed Endurance 95%											
1	x	4	x	100	400	1	x	5	x	50	250	3	x	4	x	80	960	1	x	3	x	30	90	1	x	3	x	200	600
1	x	2	x	150	300	2	x	5	x	20	200	1	x	1	x	0	0	1	x	1	x	100	100	1	x	0	x	0	0
1	x	4	x	100	400	2	x	5	x	20	200	1	x	1	x	0	0	1	x	1	x	150	150	1	x	0	x	0	0
1	x	2	x	150	300	1	x	0	x	0	0	1	x	2	x	0	0	1	x	1	x	100	100	1	x	2	x	0	0
1	x	4	x	100	400	1	x	1	x	0	0	1	x	2	x	0	0	1	x	1	x	150	150	1	x	2	x	0	0
1	x	0	x		0	1	x	1	x	0	0	1	x	2	x	0	0	1	x	1	x	100	100	1	x	2	x	0	0
Daily Total					1800	Daily Total					650	Daily Total					960	Daily Total					690	Daily Total					600
Rest: 45 sec 2min between sets						Rest: Walk Back (1:00-2:00)**						Rest: 90 sec 5min between sets						Rest: 3 Min for 30's 5 Min 100's 15						Rest:					
Technical Work						Technical Work						Technical Work						Technical Work						Technical Work					
						Work 30M out of blocks then work sticks for 50M **A3 back for 2 of each set												100= 12 150= 19											
On field Strength Conditioning						On field Strength Conditioning						On field Strength Conditioning						On field Strength Conditioning						On field Strength Conditioning					
						Plyos												**Plyos**											
						2 x hop both feet over line 30 sec												2 x hop both feet over line 30 sec											
						2 x hop 1 foot over line 30 sec												2 x hop 1 foot over line 30 sec											
						Hop for distance and Height both												Hop for distance and Height both											
						Hop for distance and Height 1 leg												Hop for distance and Height 1 leg											
						Lunges 1 x 20M																							
						Bleachers												**Bleachers**											
						1 leg sit and stand x 10												1 leg sit and stand x 10											
						Alt Leg Step ups for height 2 x 8												Alt Leg Step ups for height 2 x 8											

Percentage Chart

200 Time	60%	65%	70%	75%	80%	85%	90%	95%
22.0	36.7	33.8	31.4	29.3	27.5	25.9	24.4	23.2
22.5	37.5	34.6	32.1	30.0	28.1	26.5	25.0	23.7
23.0	38.3	35.4	32.9	30.7	28.8	27.1	25.6	24.2
23.5	39.2	36.2	33.6	31.3	29.4	27.6	26.1	24.7
24.0	40.0	36.9	34.3	32.0	30.0	28.2	26.7	25.3
24.5	40.8	37.7	35.0	32.7	30.6	28.8	27.2	25.8
25.0	41.7	38.5	35.7	33.3	31.3	29.4	27.8	26.3
25.5	42.5	39.2	36.4	34.0	31.9	30.0	28.3	26.8
26.0	43.3	40.0	37.1	34.7	32.5	30.6	28.9	27.4
26.5	44.2	40.8	37.9	35.3	33.1	31.2	29.4	27.9
27.5	45.8	42.3	39.3	36.7	34.4	32.4	30.6	28.9
28.0	46.7	43.1	40.0	37.3	35.0	32.9	31.1	29.5
28.5	47.5	43.8	40.7	38.0	35.6	33.5	31.7	30.0
29.0	48.3	44.6	41.4	38.7	36.3	34.1	32.2	30.5
29.5	49.2	45.4	42.1	39.3	36.9	34.7	32.8	31.1
30.0	50.0	46.2	42.9	40.0	37.5	35.3	33.3	31.6
30.5	50.8	46.9	43.6	40.7	38.1	35.9	33.9	32.1

Problems with Junior High Season

- Too short for major adaptation
  - –21 Days for training affect
- Lack of access to Facilities
- Days available for practice
- Athletes at very different levels of fitness

Possible Solutions

- Kids can do general endurance workouts before the season starts
- Running can be done anywhere
- Training can work on a three day rotation
- Workouts can be easily adapted for all ability levels

Possible Junior High Season

	Monday	Wednesday	Friday
1	Intensive Tempo (AP)	Speed (S)	Extensive Tempo
2	Intensive Tempo (AP)	Speed (S)	Extensive Tempo
3	Intensive Tempo (AP)	Speed (S)	Extensive Tempo
4	Intensive Tempo (LAC)	Speed (S)/ Speed (AASE)	Speed Endurance (GSSE)
5	Intensive Tempo (LAC)	Speed (S)/ Speed (AASE)	Speed Endurance (GSSE)
6	Intensive Tempo (LAC)	Speed (S)/ Speed (AASE)	Speed Endurance (GSSE)
7	Intensive Tempo (LAC)	Speed (S)/ Speed Endurance (SE)	Pre-Meet
8	Intensive Tempo (LAC)	Speed (S)/ Speed Endurance (SE)	Pre-Meet
9	Intensive Tempo (LAC)	Speed (S)/ Speed Endurance (SE)	Pre-Meet

4 Week Junior High Season

	Monday	Wednesday	Friday
1	Intensive Tempo (LAC)	Speed (S)/ Speed (AASE)	Speed Endurance (GSSE)
2	Intensive Tempo (LAC)	Speed (S)/ Speed (AASE)	Speed Endurance (GSSE)
3	Intensive Tempo (LAC)	Speed (S)/ Speed Endurance (SE)	Pre-Meet
4	Intensive Tempo (LAC)	Speed (S)/ Speed Endurance (SE)	Pre-Meet

Sample High School Seasonal Breakdown

	General Preparation	Special Preparation	Competition
Monday	Intensive Tempo	Intensive Tempo	Intensive Tempo
Tuesday	Speed- /Short Speed Endurance	Speed/ Short Speed Endurance	Speed-Short Speed Endurance
Wednesday	Extensive Tempo	Extensive Tempo	Extensive Tempo
Thursday	Speed- Aerobic Alactic	Speed- Short Speed Endurance Anaerobic	Special Endurance I
Friday	Speed Endurance Short Speed Endurance	Special Endurance I	Warm-up Light Speed (Sticks)
Saturday	Restoration	Restoration/ Competition	Restoration/ Competition

Compatible Workouts

1. Endurance Runs and Strength Endurance
2. Speed Development Runs and Speed Strength development (jumping and bounding)
3. Speed Development Runs and explosive dynamic strength developments exercise (Short jumps)
4. Speed Development runs with movement coordination development exercises (Starts, Sticks, form drills)

Non-Compatible

1. Speed development with any type of endurance runs over 80M
2. Speed development with strength endurance development exercises.
3. Speed development with strength development exercise (maximal strength method)
4. Strength development (Maximal Strength method) with any type of endurance runs.
5. Exercise complexes for the development of coordination with strength development exercises.

Time to Plan

- Turn to the sample Seasonal breakdown in your packet
- Use the Classification of Energy System training Chart to create a Preiodized workout

Parting Words

Good luck this season!

Don't be afraid to try something new.

Tempo Endurance

- -Very Important for 400M
- -Helps Increase Oxygen Uptake
- -Runs done at slower pace
- -Emphasis should be quantity and not quality
- -Short 2 to 3 minutes

	General Preparation	Special Preparation	Competition
Monday	Intensive Tempo	Intensive Tempo	Intensive Tempo

Speed Endurance

- Runs at 90 to 95% maximum efforts

Sample Seasonal Breakdown

	General Preparation	Special Preparation	Competition
Monday	Intensive Tempo	Intensive Tempo	Intensive Tempo
Tuesday	Speed- Short Speed Endurance	Speed/ Short Speed Endurance	Speed-Short Speed Endurance
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Common Terminology	Length of Run	Component and Description of Objective	Percent of Best Performance	Rest Interval Between Reps/Set	Volume range per session			
					100M		200M	
					MIN	MAX	MIN	MAX
Extensive Tempo	>200M	AEROBIC CAPACITY (AC)	<69%	<45"/ <2'	1400	3000	1800	3000
Intensive Tempo	>100M >80	AEROBIC POWER (AP) LACTACID CAPACITY (LAC) Anaerobic Capacity	70-79% 80-89%	30"-90"/2-3' 30"-5'/3-10'	1400 800	1800 1800	1800 800	2400 2000
Speed	20-80M	SPEED (S) Anaerobic Power Alactacid Strength	90-95% 95-100%	3-5'/6-8' 3-5/6-8'	300 300	800 500	300 300	800 600
	30-80M	ALACTIC SHORT SPEED END. (ASSE) Anaerobic Power Alactacid Capacity	90-95% 95-100%	1-2'/5-7' 2-3/7-10'	300 300	800 800	300 300	800 800
Speed Endurance	<80M	Glycolytic SHORT SPEED END. Anaerobic Capacity Anaerobic Power	90-95% 95-100%	1'/3-4' 1'/4'	300 300	800 800	300 300	800 800
	80-150M	Lactacid Capacity SPEED ENDURANCE (SE) Anaerobic Power Lactacid Strength	90-95% 95-100%	5-6' 6-10'	300 300	900 600	300 300	1200 600