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### Background

- **Athlete**
  - 110H/300H Indiana HS State Qualifier
  - Saint Joseph's College (NCAA D2, Rensselaer, IN)
    - 3x National Qualifier (2x 60H, 1x 110H)
    - 110H, Decathlon, & 4x100 School Records
- **College Coach for 14+ years**
  - Stops at Divisions I, II, & III
  - 8 years at UN-Milwaukee (2013-2019)
  - Year 3 @ Wisconsin Lutheran College (2019-Present)
- **Certifications (USTFCCA Coaches Academy)**
  - Strength & Conditioning
  - Sprint, Hurdle, Relay Specialist
  - Jumps Specialist
  - Hurdle Master's Certificate (1 of 13 in World)
- **Hurdle Athlete Accomplishments**
  - 23 School Records (60H, 110H, 100H, 400H, SHR)
  - **Conference**
    - 19 Conference Champions
    - 29 Conference Runners-Up
    - 137 Conference Scores
  - **National**
    - 7 NCAA Participants (+12 Regional Participants)
    - 5 All-Americans
    - 2 National Leading Shuttle Hurdle Relay teams
  - **Elite Level**
    - 2 Olympic Trials Qualifiers (1 US / 1 T&T) - 110H
    - 1 Deaflympics Bronze Medalist - 400H
    - 1 US Deaf Record - 400H

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**FEAR IS THE PATH TO THE DARK SIDE...  
FEAR LEADS TO ANGER... ANGER LEADS TO HATE...  
HATE LEADS TO SUFFERING. - YODA**

Too many coaches fear/hate the weight room and strength training.  
It's time to END that fear!

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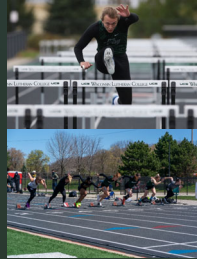
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## What We'll Cover

- Review of Principles and Biomotor Training Theory
- Exercise Inventory
- Planning for Your Program
  - Facilities
  - If ONLY 2 Exercises
  - Hurdle Specific Plans




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## Training Principles

### Principle of Progression

- Training must follow an organized progression
- Simple to Complex

### Principle of Overload

- Athletes must be subjected to loads beyond what they have adapted to
- Weight Training is KEY!

### Principle of Variation

- Training must have a varied approach to ensure continual adaptation
- Lower Volumes, Raise Intensities

### Principle of Recovery

- Most Overlooked
- 8% Rule (2h of 24)
  - Athletes control what happens outside practice

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## 5 Biomotor Abilities

### Speed

- Acceleration
- Max Velocity
- Agility

### Strength

- General – slow speed/high forces (Squats, Bench, Med-Balls)
- Special – transition (Olympic lifts, plyos, throws)
- Specific – Event specific (Buttkick, weighted sled runs, etc)

### Endurance

- Ability to tolerate high volumes
- Ability to recover from work loads
- Capacity to resist fatigue

### Flexibility

- Static – large ranges of motion without movement (ie. holds)
- Dynamic – large ranges of motion WITH movement (ie. leg swings)
  - More common & proven to prevent injury

### Coordination

- Balance
- Spatial Orientation – ability to feel body in space
- Rhythm
- Synchronization
- Reaction to Signals

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## Grouping Elements



**Neuromuscular (High CNS)**

- High intensity/Low volume
- Stresses muscles & nervous system at high levels while aerobic system is less active.
- Some endocrine manipulation possible
  - ie. testosterone
- Need 24-48 hours recovery between sessions
- Elements
  - Acceleration/Max Velocity
  - Olympic/Static/Ballistic Lifts
  - Plyometrics
  - Multi-Throws



**General (Low CNS)**

- Low intensity/High volume
- Stresses aerobic system while muscular & nervous systems are stressed at lower levels
- Some endocrine manipulation possible
  - ie. Human Growth Hormone
- Could be done everyday
- Elements
  - Tempo/Repeat Runs – Mid volume repeats of less than 100% effort (100-500m)
  - Long Runs – slow steady singular run over long distance (Fartleks)
  - Med-Ball & Bodyweight Circuits
  - Bodybuilding Circuits

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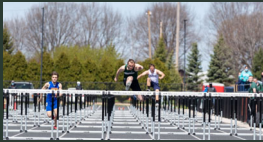
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## Grouping Elements

- Some elements can be BOTH General & Neuromuscular
  - Hurdle Mobility
    - Fast = Neuro
    - Slow = General
  - Static Lifts
    - Heavy/Intense = Neuro
    - Light/Volume = General
  - Flexibility Drills
    - Dynamic = Neuro
    - Static = General
  - Med-Ball Exercises
    - High Intensity = Neuro
    - Low Intensity = General



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## Event Specific Training

Should model the needs of the events of athletes

- Heavy Squats and Power Cleans for Distance?
- Endurance Training for Throwers?
- 400m repeats for High Jumpers?
- 300/400m hurdlers doing mileage runs?

Any crossover should have a specific purpose

- Light load squats for distance runners to increase strength & injury prevention
- Power Cleans for Mid-Distance to work Speed/Power
- 30-50m sprints for throwers – increase fitness & explosiveness
- 150m sprints for high jumper & pole vaulter – helps with coordination of running at slower speeds to help coordination at faster speeds
- Fartleks for 300H to more closely represent work loads for event
  - 30s @75% / 90s @jog for 10 min total

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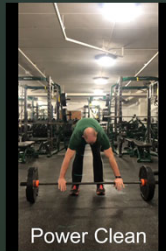
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## Weight Lifting Components

### Olympic Lifts

- Cleans, Jerks, Snatch, & Variations
- Develops High levels of Power & Speed in major muscle groups
- Performed all year
  - Low reps, low-med sets to keep intensity high
    - 1-5 Reps Per Set
    - 3-6 Sets Per Session
- 50-95% of 1RM
  - 50-70% - Higher Reps/Early Season
  - 75-90% - Lower Reps/Mid-Late Season
- Common Progression
  - 3x5 @ 50%
  - 3x4 @ 60%
  - 4x3 @ 70%
  - 3x2 @ 80%
  - 6x1 @ 90%
- Should be done before all other lifts
- Hurdles do the same as jumps/sprints
- Floor vs. Hang
  - Rate Force Development - Tie
  - Transition to Full Clean - Hang - easier early
  - Strength - Tie - Early, same, Advanced, PC more
  - Timing - Power - More complex, develops coordination
  - Posterior Chain Recruitment - Power - hamstring/glute
  - Which models the event more? - Power
    - 90° bend in front leg of back - same as PC lift
    - 90° bend in leg when in front of body at full speed
- Preseason or New
  - Hang Clean to teach
    - Progress to Power
- In-Season or Advanced
  - Power Clean all year
  - I always err on side of more muscle recruitment

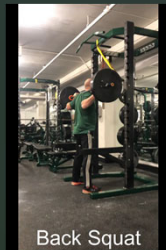


Power Clean

## Weight Lifting Components

### Static Lifts

- Squats, Deadlifts, Presses, & Variations
- Gross movements & major muscle groups with slow speeds
- Early/Mid season
- Emphasize ROM vs. Weight
- Medium reps & sets to keep intensity high
  - 1-10 Reps per Set
  - 3-8 Sets per Session
- 60-90% of 1RM
  - 60-75% - High Reps/Early Season
  - 75-90% - Low Reps/Mid Season
- Common Progression
  - 3x5 @ 60%
  - 4x6 @ 70%
  - 5x4 @ 75%
  - 6x3 @ 80%
  - 8x1 @ 90%
- Because of slower movements, should be done after Olympic lifts
- Hurdles do same as sprints/jumps

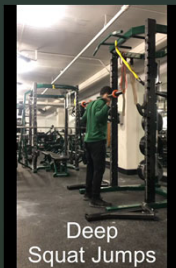


Back Squat

## Weight Lifting Components

### Ballistic Lifts

- Squat Jumps, weighted plyo, rope slams, etc.
- Fast, repeated, & weighted movements that involve gross movements
- All year
- Reactive & Elastic qualities
- ROM - Stiffer Early, Smoother Late
- Medium rep/set sets - keep intensity high
  - 6-12 Reps per Set
  - 3-5 Sets per Session
- Percentage of Bodyweight or light weight
  - Not any
  - 5-10% BW
- Common Progression
  - 3x12 @ 5% BW
  - 3x10 @ 5% BW
  - 3x8 @ 10% BW
  - 3x6 @ 10% BW
- Because of high intensity, before statics & in conjunction with Olympics
- Hurdles do same as sprints/jumps

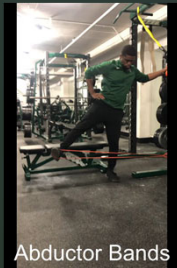


Deep Squat Jumps

## Weight Lifting Components

### Bodybuilding Lifts

- Curls, Upright Rows, Lunges, etc.
- Slow, repeated, and weighted movements that involve small muscle groups
- All Year
- RDM - Large ranges
- High reps, Med-Hi sets
  - 8-15 Reps per Set
  - 2-10 Sets per Session
- Percentages vary based on individual
  - Should feel burn on last 2-3 reps of each set
- Little recovery (60-90 sec)
- Circuits are common
  - 10 exercises, 2 rounds, 10 reps
- Some Hurdle Specifics
  - 4-Way Leg Machine
  - Adductor/Abductor w/Bands
  - 1-Leg Romanian Deadlifts
  - Single Leg Squats
  - Lunges



Abductor Bands

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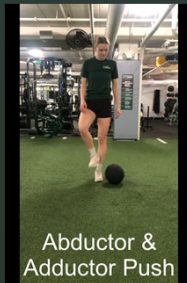
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## Other Strength Components

### Medicine Ball Exercises

- 2-16 lbs
- Slow movements
- Light Tosses/Throws with emphasis on the Catch
- Circuits are common
  - Rest is 1/2 of work
  - 8-15min total work
  - 30s on/15s off w/15 exercises
- Types
  - Early - Hi Rep/Lo Int (10Rx12E)
  - Mid - Med Rep/Med Int (10RxBE)
  - Late - Lo Rep/Hi Int (5Rx10E)
- Hurdle Specific Exercises
  - Adductor/Abductor Pushes
  - Butterfly Toss & Reverse
  - Between Knees Side to Side
  - Zombies



Abductor & Adductor Push

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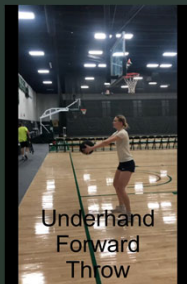
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## Other Strength Components

### Multi-Throws

- Med-Balls or shot puts
- 2-16 lbs
- High intensity exercises
- Used on High CNS days
- Intense throws with emphasis on distance/height (NO Catching!)
- Explosiveness, Coordination, and Intense CORE
- Low Reps/High Intensity
  - 15-40 throws total
  - 5 throws x 6 exercises = 30 reps
- Can replace Olympic Lifts
- Hurdle Specific Exercises
  - Lunge & Chest Throw
  - Lunge & Overhead Throw
  - Box Drop & Underhand Back Throw



Underhand Forward Throw

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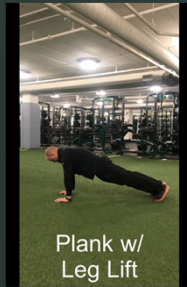
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## Other Strength Components

### General Strength Exercises

- Bodyweight exercises with slow movements
- Examples:
  - CORE/Ab
  - Functional Movements
  - Bodyweight Exercises
  - Light Plys
  - Swiss/Voga Ball Exercises
- Injury Prevention
  - Like Most Ball – Usually Common
  - 5-10 min of work
  - Rest is 1/3 of work
  - 30s on/15s off – 20 exercises = 10 min work
- Hurdle Specific Exercises:
  - Planks w/ Leg Raises
  - Partner Leg Raises
  - Swiss Ball Hurdling Cuts
  - Lunges
  - Kung-Fu Kicks
  - Jerni Fendies (lateral leg raises)
  - VMO Leg Lifts

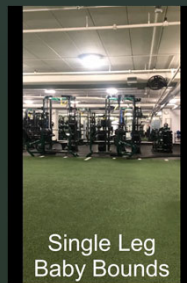


Plank w/  
Leg Lift

## Other Strength Components

### Plyometrics

- Jumping/Hopping Exercises
- Low Intensity
  - Baby Bounds & Jump Rope
- Medium Intensity
  - Bounds & Standing Jumps
- High Intensity
  - Depth Jumps & Hurdle Hops
- Build Explosiveness, Power, Elastic/Reactive Strength
- NEVER for endurance
  - Quality over Quantity
  - If breathing hard, REST
- Can replace Olympic Lifts
  - Box Jump
- Hurdle Specific Exercises:
  - HURDLING!
  - Bounding



Single Leg  
Baby Bounds

## TESTING: Highest intensity in-practice training

- When?
  - 1<sup>st</sup> day/week of practice
  - Before/After breaks (Christmas)
  - Between seasons (In/Out)
- What to Test:
  - 30m Dash & 10m Fly – Speed
  - SLJ & 5 Bound – Speed/Coordination/Flexibility
  - Overhead Backward Throw & Between Leg Forward Throw – Strength/Speed/Coordination
  - 200m – Endurance
  - Power Clean, Back Squat, Bench Press – Strength/Coordination/Speed/Flexibility
    - Multi-Rep vs. 1 Rep max
    - Ratio is Weight lifted divided by Bodyweight
- Scoring Table & Publish Results

Men				Women			
Evert	Name	Year	Mark	Evert	Name	Year	Mark
30D (FAT)	Keith Bowling	2020	4.09	30D (FAT)	Anna Raasch	2021	4.71
10Fly (FAT)	Keith Bowling	2020	0.94	10Fly (FAT)	Kendra Schumacher	2020	1.12
SLJ	Sam Rodryns	2019	3.22	SLJ	Anna Raasch	2021	2.46
5-Bound	Sam Rodryns	2020	14.92	5-Bound	Leah Rosenow	2019	11.59
OHBT	Michael Shaffer	2021	16.40	OHBT	Stephanie Schaffer	2021	11.64
BLFT	Michael Shaffer	2021	15.31	BLFT	Kendra Schumacher	2020	12.30
200 (FAT)	Keith Bowling	2020	23.54	200 (FAT)	Kendra Schumacher	2020	27.36
PC Ratio	Sam Boone	2020	1.50	PC Ratio	Abbi Pechman	2021	1.06
Squat Ratio	Sam Rodryns	2019	2.20	Squat Ratio	Anna Raasch	2021	1.64
Bench Ratio	TJ McHyde	2019	1.49	Bench Ratio	Abbi Pechman	2021	1.04
Overall Score	Sam Rodryns	2019	638	Overall Score	Anna Raasch	2021	452

## Multi-Rep Max Chart

1	2	3	4	5	6	7	8
45	47	49	50	52	53	55	56
50	52	54	56	58	59	61	63
55	57	59	61	63	65	67	69
60	62	65	67	69	71	73	75
65	67	70	72	75	77	79	82
70	72	76	78	81	83	85	88
75	78	81	84	86	89	92	94
80	83	86	89	92	94	98	100
85	88	92	95	98	100	104	107
90	93	97	100	104	106	110	113
95	98	103	106	109	112	116	119
100	104	108	112	115	118	122	126
105	109	113	117	121	124	128	132
110	114	119	123	127	130	134	138
115	119	124	128	132	136	140	144
120	124	130	134	138	142	146	151
125	129	135	139	144	148	153	157
130	135	140	145	150	153	159	163
135	141	147	153	158	162	167	171
140	147	153	158	163	168	173	178
145	152	158	164	169	174	179	184
150	157	164	170	175	180	185	190
155	162	169	175	181	186	192	197
160	168	175	181	187	192	198	203
165	173	180	187	193	198	204	209
170	178	186	192	198	204	210	216
175	183	191	198	204	210	216	222

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## Testing – Weight Room

- Power Clean
  - Snatch is 75-80% of PC max
- Back Squat
  - Front Squat = 75-80% Back Squat Max
  - Deadlift = 105-115% Back Squat Max
- Bench Press
  - Dumbbell Bench = 40% of Bench Max (200 Bench = 80 DB in each hand)
- All Workouts are based off of these 3 tested lifts
  - Post their estimated 1-RM in weight room
  - % Conversion chart on back of weight sheets
    - Example: DB Bench workout - 3x8 @50% 1RM
      - DB 1RM is 65 lb
      - 50% of 65 is 32.5 (start at 30, but don't be afraid to go up to 35 if 1" rest goes easy)
  - Always allow athletes to do more if 2 conditions are met:
    - Can still do all reps
    - Form does not deteriorate

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## Now What? Putting it all together...




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## Facilities

- Track (Indoor/Outdoor)
- Gymnasium
- Weight Room
- Fitness Center
- Can determine what you can or can't do with your team
  - Equipment?
  - Access?
  - Comfortability?
- Every school is different
- May change daily, weekly, monthly, etc.




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## If I Could ONLY do 2 exercises...

- Olympic Lifts
  - Power Cleans, Snatch, etc.
  - Works explosiveness, strength, and hits triple extension
- Multi-Throws
  - Med-Balls, Shot Puts, Large Rocks, etc.
  - Works explosiveness, strength, and hits triple extension

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## Typical Plan – Pre-Season (November)

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Track Workouts	Hurdle WU 2x5/1H starts 1x5 15m starts	4x300m @ 80% or 4x500m @ 80% (7 min rest)	Hurdle WU 5x10H Kiam-Jam 1x50m sprint	Baylor Workout 8x200 @ 70% or 12x200 @ 70% (2 min rest)	Hurdle WU 2x5/1H starts 1x5 15m starts	Off or CVO 10-20 min Fartlek (30s on, 60s off)	Off or CVO 10-20 min Fartlek (30s on, 60s off)
Strength Workouts	Power Clean 5x5 @ 90% 1R Back Squat 3x5 @50% 1R Bench Press 3x5 @50% 1R Hurdle Mobility	Bodybuilding Circuit 2x10 of 10 ex. Or Med-Ball Circuit 30s on/15s off 15 total min (10 on)	Snatch 5x5 @ 50% 1R Rope Stairs 3x5 Front Squat 3x5 @ 50% 1R Hurdle Mobility	Gen Strength Circuit 30s on/15s off 15 total min (10 on)	Multi-Throw Circuit W 6-8 lb M 10-12 lb 30 Throws	Gen Strength or Off	Gen Strength or Off

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Typical Plan – In-Season (Mid-March)

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Track Workouts	Hurdle WU 3xH 1-Step 2x1H/2x2H (8) 2x30m starts or 5x1H (400H) 2x30m starts	3x(2x150m) @ 90% or 3x(2x200m) @ 90% (90 sec/7 min rest)	Hurdle WU 3xH or 5x1H (400H) 1x50m sprint	3x125 @ 90% or 3x250 @ 90% (7 min rest)	Hurdle WU Pre-Meet 3xH 1-Step 2-3x 1H	Early Season Competition	OYO 10-20 min Fartlek (30s on, 60s off)
Strength Workouts	PC w/FS 3x5 @ 70% 1R DB Bench 3x5 @ 70% 1R Hurdle Mobility	Bodybuilding Circuit 2x10 of 10 ex. or Med-Ball Circuit 3x5 on/15s off 15 total min (10 on)	Snatch w/CH Squat 3x5 @ 70% 1R Deep Squat Jump 3x5 @ 25% BW Hurdle Mobility	Gen Strength Circuit 30s on/15s off 15 total min (10 on)	Multi-Throw Circuit W 4 lb M 10 lb 20 Throws	N/A	Gen Strength or Off

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Typical Plan – Post-Season (Mid-May)

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Track Workouts	Hurdle WU 3xH 1-Step 5x34 or 5x1H (400H)	3x100 @ 90% or 3x150 @ 90% (7 min rest)	Hurdle WU 3xH 1-Step 3xH or 5x2H (400H)	3x150 50m @90% 50m @90% 50m @90% or 4x150 (7 min rest)	Hurdle WU Pre-Meet 3xH 1-Step 2-3x 1H	Late Season Competition	OYO 10-20 min Fartlek (30s on, 60s off)
Strength Workouts	Speed Squat Jump 3x5 @ 10% BW Depth Jumps 3x5 Hurdle Mobility	Med-Ball Circuit 30s on/15s off 15 total min (10 on)	Multi-Throw Circuit W 4 lb M 8 lb 20 Throws Hurdle Mobility	Gen Strength Circuit 30s on/15s off 15 total min (10 on)	Multi-Throw Circuit W 4 lb M 8 lb 20 Throws	N/A	Gen Strength or Off

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Mentors/Teachers

- Uncles – Tom & Jerry Lange
  - Ran hurdles or high jumped in HS (first coaches)
- Mike Cunningham (former Ball State & MS State)
  - Coached me in summers during HS
- Bill Massoels (former SJC HC, current MSOE HC)
  - College coach
- Paul Sargent (former HC @ Franklin College)
  - Pushed education at state and national clinics like this
- Pete Corfield (retired HC @ UW-Milwaukee)
  - Encouraged and funded certifications at USTFCCCA Academy
- Boo Schexnayder, Vince Anderson, Todd Lane, Dennis Shaver, Joey Woody, Kebba Tolbert, and many more
  - Instructors &/or Partners in Academy classes and at USTFCCCA Convention

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Questions?

- Want any charts, tables, ideas shared here?
- Want to shadow a practice?
- Email: [eric.kramer@wlc.edu](mailto:eric.kramer@wlc.edu)
- Cell: 630-390-9569

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