

Training Considerations for Short Hurdles

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University of Nevada 2004-present Head Coach

Northern Illinois University 2000-2004 Head Coach

University of Northern Iowa 1997-2000 under Chris Bucknam

Coach 2 season at Berkeley Senior Highschool under Rod Staggs

Competed for University of Northern Iowa 1990-1995

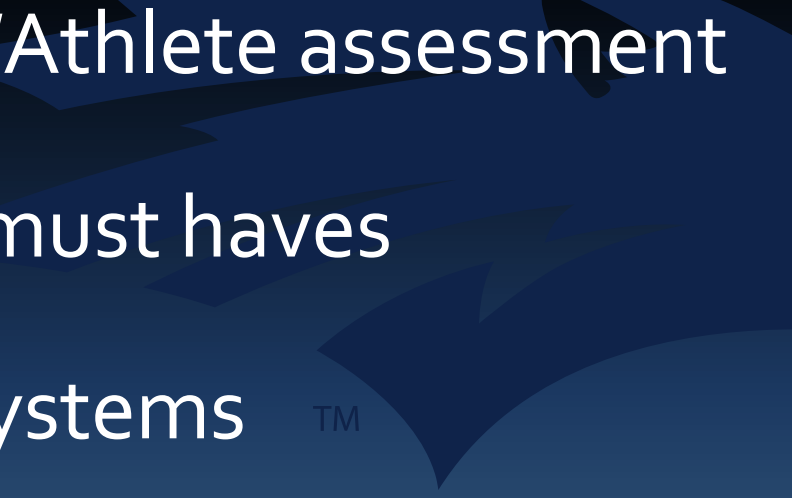
2x All American – 55m, 200m

NEVADA

My Influences – thank you

- Leann Shaddox
- Terri Soldan
- Coach Harris
- Rod Staggs
- Chris Bucknam
- William Lawson
- Joey Woody
- Doug Case
- Ronneye Harrison
- Boo Schexnayder
- Beverly Kearney
- Caryl Smith Gilbert
- Kebba Tolbert
- Sandra Williamson
- Kirk Elias
- Scott Williamson
- Cody Fleming
- Dennis Shaver
- Vince Anderson
- Charles
- USATF
- Track & Field Academy
- Ronald Harrison
- Dana Boone
- Curtis Taylor
- Elisha Brewer
- Yvonne Wade
- Tommy Badon
- Sheila Burrell
- Shawn Jackson
- Clyde Hart
- Boo Schynader
- Every athlete I have had the opportunity to coach
- Vince Anderson
- Bill Lawson
- John Coughlan
- Doug Case
- Lonnie Green

Overview

- Program/Athlete assessment
 - Training must haves
 - Energy Systems TM
 - Hurdle Technical Development
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Program & Athlete Assessment

- Bio Motor abilities: Speed, Strength, Skill, Endurance, Flexibility Should be addressed at all times.
- Testing: 30m, standing long jump, standing triple jumps, over head back, between legs forward, single leg hoping.
- What do these test tell you?
- Can they hurdle including 3 step?
 - Improving
 - Building
 - Rebuilding
- Athletes strengths & Weakness?
- Are they flexible?

Training must haves:


- A plan
- Progression
- Diversity

Bio motor Abilities

- Strength: Strength is the ability to produce large amounts of force.
- Speed: Speed is the ability to move the body and/or its parts rapidly.
- Flexibility: Flexibility is the ability to display high amplitudes of movement.
- Coordination: Coordination is the ability to perform motor skills with precision.
- Endurance: Endurance is the ability to perform large workloads and resist fatigue.

Balance approach in development of these physical performance components is essential to long term progress. These abilities are requisite to each other and are dependent upon each other. While specialization is necessary at times, the value of balanced development of these components in the program should not be underestimated.

Understanding the Energy systems

- Acceleration development
 - With out hurdles 10-40m from
 - Standing start, falling start, crouch start, rolling start, pretend block, block
 - With hurdles 1H-3H/4H
 - Standing start, crouch start, pretend block, block
 - Speed
 - Max velocity
 - 30-60m with
 - Flys 20-60m fly zone with 10m, 20m, 30m, acceleration zone
 - Ins and outs/sprint-float-sprint
 - Intensive tempo
 - Borders on speed endurance and special endurance is anaerobic/aerobic system. Lactate levels are high. Quantity and control pace at 80-90%+ intensity 6-12 reps up to 600m
 - Extensive tempo
 - 60-80% intensity of aerobic capacity, 6-30 reps 100-400m in distance
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Energy Systems

Table 3-12 Summary of Energy Systems and their Applications to Hurdling

Terms	Alactic		Anaerobic		Aerobic		
	Speed	Speed Endurance	Special Endurance I	Special Endurance II	Intensive Tempo	Extensive Tempo	Continuous Tempo
Intensity	95-100%	95-100%	95-100%	95-100%	80-90 + %	60-80%	40-60%
Distance of Run	20-60m	60-150m	150-300m	300-600m	up to 600m	up to 600m	Long
Number of Reps/set	3-4	2-5	1-5	1-3	6-12	6-30	—
Number of sets	3-4(5)	2-3	—	—	1-3	2-3	—
Total Dist. in set	80-120m	150-600m	—	—	Long	Long	Long
Total Dist. in session	400-600m	300-1200m	300-1000m	600-1800m	600-4000m	Long	Very long
Recovery/Reps	1 1/2-3'	2-5'	Near Full (10-20')	Full (20-30')	Pulse 110-115 (3-5')	Pulse 125-140 (2-3')	—
Recovery/Sets	8-10'	8-10'	—	—	Near Full (10-20')	Incomplete (5-10')	—
Examples							
Sprinting	1. $5 \times 30 + 4 \times 40 = 310m$ 2. $4(30 + 40 + 50) = 480m$	1. $3(60, 80, 100) = 720m$ 2. $5(120) + 2 \times 150 = 900m$	1. $2 \times 150, 2 \times 200 = 700m$ 2. $3 \times 250 = 750m$	1. $3 \times 400 = 1200m$ 2. $2 \times 300 + 1 \times 350 = 950m$	1. $2 (8 \times 100) = 1600m$ 2. $6 \times 600 = 3600m$	1. $20 \times 200 = 4000m$ 2. $10-20 \times 100 = 1000-2000m$	1. 2-8km 2. Cross country runs
Hurdling	3. $5 \times 50mH + 4 \times 30mH = 370m$	3. $3 (2 \times 100H) = 600m$	3. $3 \times 200mH + 1 \times 250H = 850m$	3. $3 \times 300mH = 900m$	as above	as above	as above

Terminology

- Accelerative Power - Distance of 0 – 40m, volume 200-400m; 1 to 2min rest
 - Resisted runs – harness, hill sprints, sled pulls distance of 20-60m, volume 300-500m; 1-2min rest
- Absolute Speed – Distance between 30 – 80m, volume 300-500m; 3 to 4min rest
 - Variable speed runs –alternating periods of relaxed running and max velocity runs; 2-3 max velocity runs contained within one effort; 80-120m long, ex ins and outs; sprint/float/sprint type runs. 4-5min rest
 - Overspeed – 50-70m; volume 300 to 500m
- Speed Endurance – Distance between 80m to 300m; volume 500-800m; 5-8min
- Working Capacity –
 - Extensive Tempo – 100-200m @ 70-80% intensity, volume 1000-1200m; 2-3min rest
 - Intensive Tempo – 100-300m @ 80-90% intensity, volume 1000-1200m; 3-4min rest

Training Tibits

– 0-30m

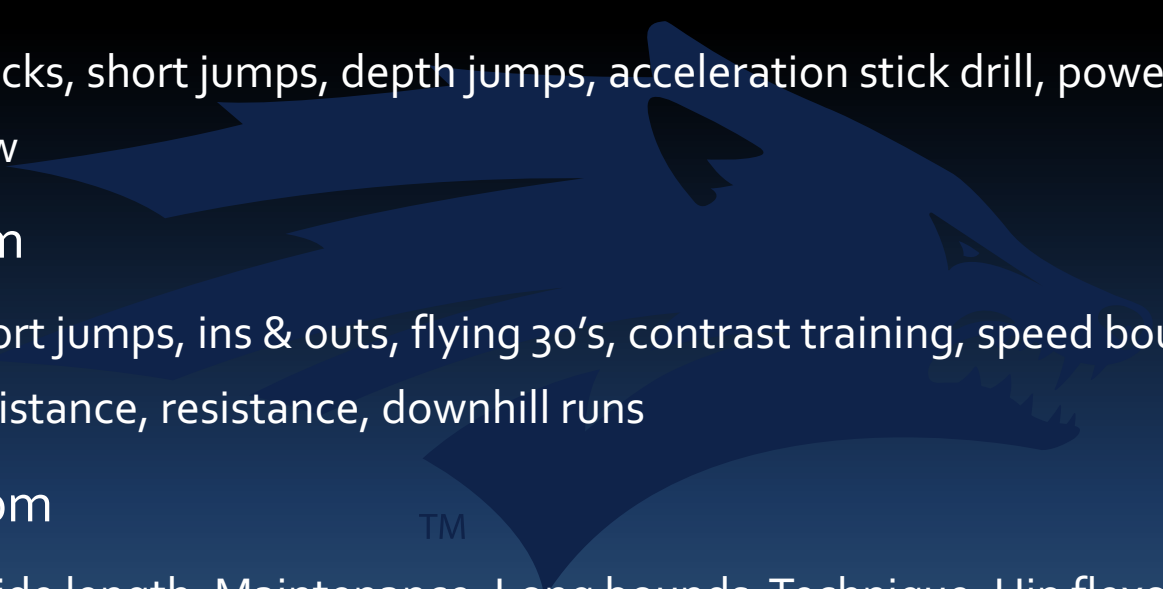
- Blocks, short jumps, depth jumps, acceleration stick drill, power snatch, quick paw

– 30-60m

- Short jumps, ins & outs, flying 30's, contrast training, speed bounds, assistance, resistance, downhill runs

– 60-100m

- Stride length, Maintenance, Long bounds, Technique, Hip flexor, Hip extensor, Low step ups



Technique Development

- Hurdle Mobility/Flexibility
 - Walk overs, over and under, walk over backwards, up and back walking hurdles, skipping (A, B, C series),
- Hurdle Drills
 - Walk over leads, trails and over top, Skipping Leads & Trails, over top,
 - 1step, (1 hurdle between)
 - 3quick step (3 hurdles in between)
 - 11,13,15,17,19, 21 over 33
 - 5 step trail leg drill (11-12m) or(Hurdle marks increase by 11s)
 - 3H @ 7.5m 5 steps to first hurdle
 - 4m 1 step drill (may start at 3.4m with goal of moving to 3.4m)
- Hurdle Take off
- Hurdle Clearance
- Hurdle Landing
- First 8 steps
- 7 step considerations

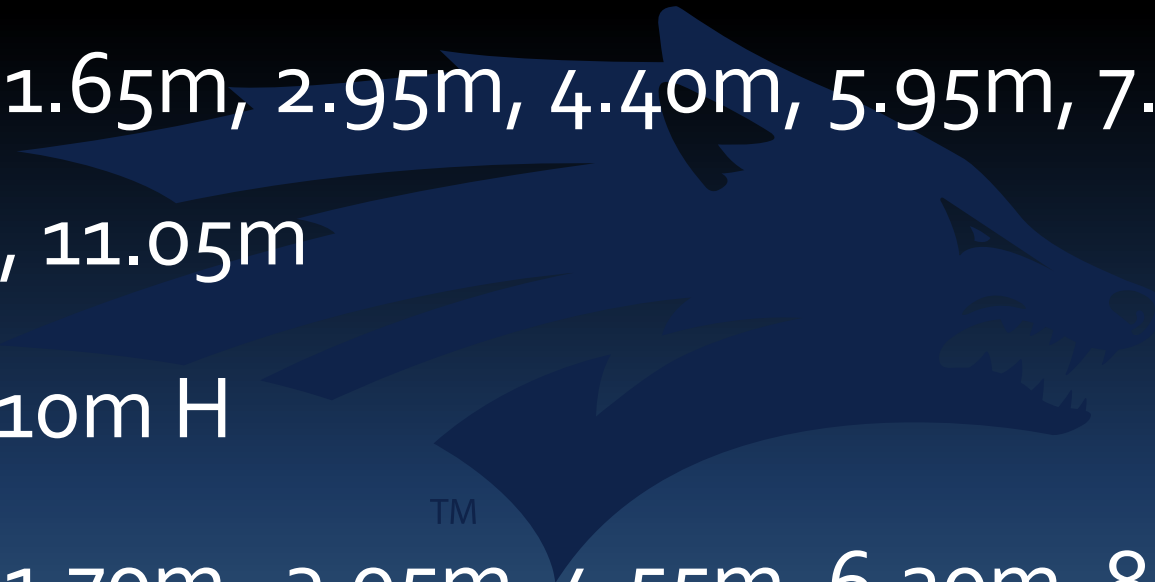
Hurdle Take off/Landing Distances

- Men
 - Take off 2.1-2.2m
 - Landing 1.4m
- Women
 - Take off 1.95-2.1m
 - Landing 1.0m (0.8m)



Stride Pattern to 1st H

- Women 100m H
- .60m, 1.65m, 2.95m, 4.40m, 5.95m, 7.60m, 9.35m, 11.05m
- Men 110m H
- .60m, 1.70m, 3.05m, 4.55m, 6.20m, 8.00m, 9.90, 11.70m



Examples Discounted Hurdle Training

Hurdle Race	Hurdle Level	Session Goal	Distance Between H	Distance Between H	Hurdle Height	# of H
100m H	Advanced	Acceleration Development	13m	8.2m	All at 30in	4
110m H	Intermediate	Speed Development	44ft	28ft	Hurdle 1, 2, 3 at 39 in Hurdle 4, 5, 6, at 36	6
100m H	Intermediate	Speed Endurance	13m	8.3m for first 3 Hurdles segments, 8.2 for remaining segments	Hurdles 1, 2, 3, 4 at 30in, 5, 6, 7, 8 at 27in	8
110m H	Beginning	Introductory Teaching	44ft	25ft	All at 36in	3

Hurdle Touch down Chart, 100H

Touchdown Time Chart, 100 Meter Hurdles											
Target Time	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Finish
11.8	2.2	3.2	4.1	5.0	5.9	6.9	7.9	8.9	9.9	10.9	11.8
12.0	2.3	3.3	4.2	5.1	6.0	7.0	8.0	9.0	10.0	11.1	12.0
12.3	2.3	3.3	4.2	5.1	6.1	7.1	8.1	9.1	10.2	11.3	12.3
12.8	2.4	3.4	4.4	5.4	6.4	7.4	8.4	9.5	10.6	11.7	12.8
13.2	2.4	3.4	4.4	5.5	6.6	7.7	8.8	9.9	11.0	12.1	13.2
13.8	2.5	3.5	4.6	5.7	6.8	7.9	9.1	10.2	11.4	12.6	13.8
14.0	2.5	3.5	4.6	5.7	6.9	8.1	9.3	10.4	11.6	12.8	14.0
14.3	2.5	3.6	4.7	5.9	7.1	8.3	9.5	10.7	11.9	13.1	14.3
14.8	2.6	3.6	4.9	6.0	7.2	8.4	9.6	10.9	12.2	13.5	14.8
15.0	2.6	3.8	4.9	6.1	7.3	8.5	9.7	11.0	12.3	13.6	15.0

Hurdle Touch down Chart 110H

Touchdown Time Chart, 110 Meter Hurdles											
Target Time	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Finish
12.8	2.4	3.4	4.3	5.2	6.2	7.2	8.2	9.2	10.3	11.4	12.8
13.0	2.4	3.4	4.4	5.4	6.4	7.4	8.4	9.4	10.5	11.6	13.0
13.2	2.5	3.5	4.4	5.4	6.4	7.4	8.5	9.6	10.7	11.8	13.2
13.6	2.5	3.6	4.6	5.6	6.6	7.7	8.8	9.9	11.0	12.2	13.6
14.0	2.5	3.6	4.6	5.7	6.8	7.9	9.0	10.1	11.2	12.4	14.0
14.4	2.6	3.6	4.7	5.8	6.9	8.1	9.3	10.5	11.7	12.9	14.4
14.6	2.6	3.7	4.7	5.8	7.0	8.2	9.4	10.6	11.8	13.0	14.6
15.0	2.6	3.7	4.9	6.0	7.2	8.3	9.5	10.7	12.0	13.2	15.0
15.5	2.7	3.8	5.0	6.2	7.4	8.6	9.8	11.0	12.3	13.6	15.5
16.0	2.8	3.9	5.1	6.4	7.6	8.8	10.1	11.3	12.6	14.0	16.0

8 step/7 step Considerations

- 8-step to 7-step approach must do so carefully, considering the power demands necessary to perfect this technical pattern. To increase power, incorporate specific strength and power training, including standing long jumps of 3, 5, and 10 bounds that can increase acceleration power to reach hurdle #1 in 7 steps. Increasing these jump distances in shorter time frames can either reveal abilities to make the hurdler a candidate for a 7-step approach or reveal weaknesses that should keep the hurdler at an 8-step approach. The athlete's height alone cannot be the reason to run 7 steps. Being tall is not a prerequisite for moving to the 7-step approach if the athlete cannot generate the necessary strength and elastic power needed to run a step less during his or her hurdle approach.

Developing Frequency

Frequency

Since emerging and elite hurdlers use the same number of steps in the approach and between the hurdles, the number of steps in the race is fixed. This implies that the coach should address development of the highest level of step frequency between the hurdles.

Stride Length Reductions

The average male or female sprinter produces a stride length on average of 2.50 to 2.15 meters respectively. But the male and female hurdler must manage an average stride length between the hurdles of 1.88 to 1.90 meters respectively (a reduction from a normal sprint stride of 24.8% for men and 19.2% for women).

Developing Frequency cont

- Stride Length/Frequency Relationships. Stride length and stride frequency are inversely proportional. This fact, combined with the limited spacing available in the sprint hurdles, mandates the development of very high frequencies in the sprint hurdles. This concept is also useful when adjusting takeoff locations. When a hurdler is getting too close to the hurdles, increasing frequency will decrease stride length and locate takeoff further away from the barrier. Lowering frequency can put an athlete closer to the hurdle.

Developing Frequency - cont

- Discounted Hurdle Training

The primary goal in teaching hurdle rhythm is creating a practice environment where hurdle spacings and heights require stride frequencies similar to race demands. This leads to a philosophy of discounted hurdling, where hurdle heights and spacing are decreased in training to permit such adjustments. Regardless of changing parameters during discounted hurdling, the coach should assure takeoff distances are maintained. No hurdle height or spacing should be considered to low or close for a developmental hurdler, and even elite hurdlers use slight discounts in nearly all of their training.

Weight lifting

- Olympic lifts – 4-8 sets of 1 to 6 repetitions, recoveries should be long enough to guarantee the quality of work
- Static lifts – 4-8 sets of 4-8 repetitions, recoveries should be long enough to guarantee the quality of work
- Ballistic lift – 5-12 repetitions
- Body building lifts – 20-24 total sets of 10-12 repetitions with 1min to 90sec recovery

Olympic lifts



Static Lifts



Training Design – Body Building



Multi Throws

- Multi throws – High intensity exercises, performed from various positions, using shot, heavy medicine ball as a load. May use jumps in combination with throw to intensify the loading phase of the exercise.
 - Develop power and coordination
 - Loads of 15-40 per session
 - OHS, BLF, lunge overhead throw, hop, hop, blf

Multi-throws



Med Ball – General Strength

- Medicine Ball Exercises – catch/throw combination exercises, abdominal and spinal exercises with med ball and callisthenic type exercises using a ball as a light load.
 - Improves coordination, body control, muscular strength, and strength endurance
 - Can be strength training or recovery
 - Variety of exercises 8-15min in duration 1-3 sets
 - Focus on stability during the catch – target should be reasonably outside the frame of the body to increase the postural demand

Med Ball Throws



Circuit Training

Circuit Training for Fitness and Recovery Design Guidelines				
	General Strength	Medicine Ball	In Place Jumps	Bodybuilding
Exercises	10-16	10-16	8-16	8-12
Total Sets	10-16	10-16	10-16	20-24
Work Interval	15-30 sec	20-40 sec.	12-20 sec.	10-12 reps.
Recovery Time	1/2 to 2x Work Interval	1/2 to 1x Work Interval	1-2x Work Interval	60-90 secs.
Total Circuit Time	8-12 min.	8-12 min.	10-16 min.	24-36 min.

General ideas to build Strength/Power

General Strength exercises:	Body building:	Depth jumps:
Finger tip push ups Prisoner squats Side to side in place lunges Back and forward lunge in place Vups Superman Single leg body bridge Leg raise body bridge Squat lunge walks on ball foot B/F Side body bridge leg raise Seated leg raise extend Ball foot squats Lunge walks on ball of the foot	Behind head press Behind head pull down Hamstring curl Lunges with weight on back Side twist step up with dumbbells Plate twists stationary Lunge plate twist Weighted Hanging alternating diagonal leg swings Weighted plated toe touch twists Weighted sit up knees in air	From box to ground to sand From box to ground over hurdle to sand Box to ground to box to ground to sand Box to ground to box to ground to hurdle to sand Sideways box to ground to box to sand Single leg hops off box to ground to box to sand (short box) In place jumps



Multi Jumps

- develop reactive strength and elastic response.
- Enhance force application to the ground are considered.
 - Short bounds - 1-5 takeoffs 30-70 per session
 - In place jumps- 8-20 contacts, 150-300 contacts per session (improves work capacity for jump training)
 - Extended bounds – jumps over significant distance. 20-40m volume not to exceed 400m
 - Depth jumps – 20-50 contacts per session
- Full footed contacts with a rolling contact of the foot
- Good posture

Multi-jumps - In place jumps



Multi-Jumps -Depth Jumps



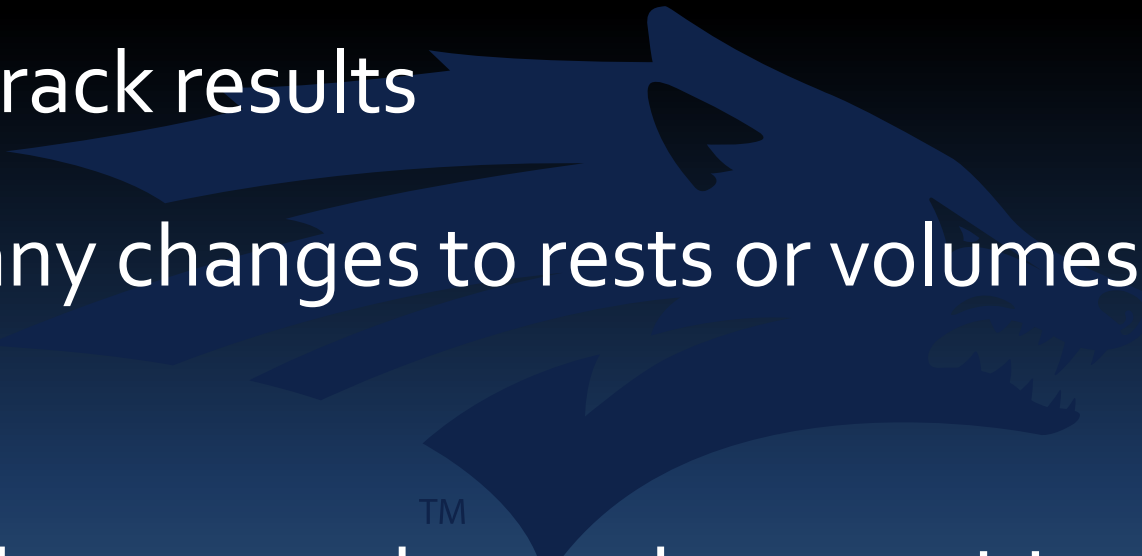
Multi-jumps - Short Jumps



Multi-jumps - Extended Bounds



Collecting Data

- Write down your training plan
 - Keep track results
 - Note any changes to rests or volumes and why
 - Note dates, weather and competition performance results
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Take off/Touch down



Accel. Dev. 1H



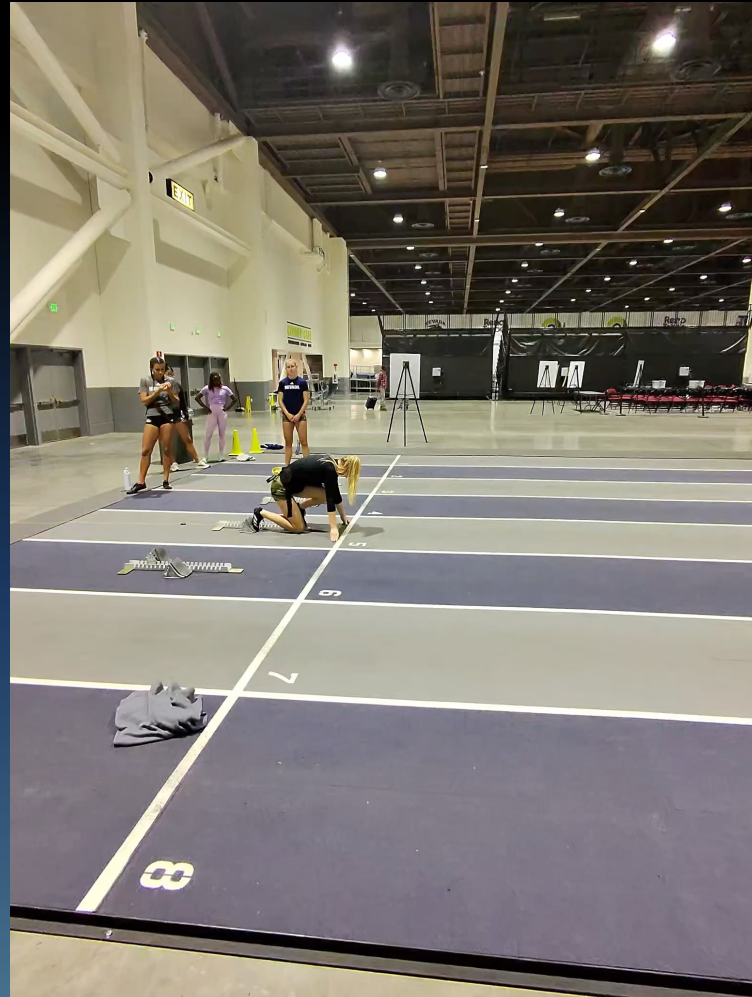
Acceleration Dev 3H



Acceleration Dev



1080 – Acceleration Dev



3 quick step increasing distance 11,13, 15, 17, 19, 21 steps



5 step trail leg drill



Skipping H Drills



6 step in to 7.5m



1 step Drill 4.0m



Training Consideration for Short Hurdles

- Any Questions???
- Thank you for your time!
- If you would like to reach me:
- Shantel Twiggs, stwiggs@unr.edu