

Building Confidence Through Competency

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What Are We Seeing?

- Consistently site starts/blocks as their weakest point.
 - *The myth of “staying low” → Education*
 - *Lack of Aggression → Power dvlpmt + “going for it”*
 - *“Hard work” vs. Productive work → Respect the Neuromuscular System*

The Need for Teaching Acceleration

Most other issues can be corrected with a foundation of proper acceleration.

- Stamina
 - Proper Angles Maximize Force Application (Builds momentum)
 - Takeoff consistency and trajectory
 - Delay Max Velocity → Delay Deceleration
- Injuries
 - Sets up efficient foot-strike (front side mechanics)
- Hurdle clearance height
 - Build/maintain speed through hurdles

Teaching Acceleration

#1 Principle of any Position:

Body must be aligned in a way that directs all force in the same direction.

- Step away from finding specific angles and work with the body type.
- Feeling vs. copying

#1 Objective of any Position:

Overcome Inertia.

- Hip Displacement - Start the engine first.

#1 Way to Execute:

Start from the Ground Up.

- Quickest way between two points.



MAKE ROOM FOR THE HIPS

Raising the torso gives room for the hips to come through faster....
Faster the *HIPS (not the feet)* can move down the track, the more force athlete will produce.



Early Teaching Progressions

Static/Drills:

Early & Often, Great in Warm-up/Recovery

- Wall drills (doubles/triples)
- 1st Step Throws (UH/chest pass)
- Resistance Band/Sled (1st step/walking)
- Alternate Bounding (start small)

What are we teaching:

- Long lines, push through the ground.
- Chest up, higher angle
- Knee drive, active foot-strike.



MOVEMENT SEQUENCE

What are we looking for?

- Big, slow joints first
 - Hips, Torso, Knees/Arms, Ankles
 - “Push away”, avoid stepping out
- Push out and UP
 - This where most issues arise
 - Down the shaft of the front shin
 - Must raise the torso to make room for hips
- Joints should be “stacked”
 - Thigh is hammer, shin is nail
 - Torso is the arm that swings the hammer



MOVEMENT SEQUENCE

What are we looking for?

- Low Heel Recovery - “pull from the hip”
 - Step pattern small to big
 - Keeps the body loaded
 - Drive Knee
 - Quick to “Find the Ground”
- Push THROUGH the ground
 - Watch to be sure hips are still covering the ground
- They want to be fast...
 - Get them to be fast at pulling from the hip











Proper Set Up Positions (cont'd)



2-point position:

- Set up like a Deadlift
 - Hinge the hips, lower into quarter squat
 - Move back feet straight back 8-10 inches
 - Aligned from shoulder to shoes
 - Back flat, spine neutral
 - 95% of the weight on the front leg

Proper Set Up Positions (cont'd)



3-point position:

- Same as 2pt but deeper
 - Front foot can come under
 - Rise of torso becomes more important

Proper Set Up Positions (cont'd)



Blocks:

- Adjust based on body-type/strength
- Positions remain the same:
 - Shins parallel, front leg @ 90, back @ 120ish
 - Hips slightly higher than shoulders
 - Head Neutral with spine
 - Shoulders directly over hands
 - 3pt on an incline



Dynamic Teaching Progressions

Dynamic/Applied:

Progress 5-10m each week, some portion done everyday

- **Push- up Position**
 - Teaches low heel recovery, competitive
- **Stairs/Stadiums**
 - Doubles/Singles
- **Depth or Change of Direction Jumps, Hops to Start**
 - Overcome inertia, knee drive
- **2pt (rollover) starts (0-30m) - push away**
- **3 pt starts**
- **Resistance Band/Sled - weight added**

Variables of Successful Acceleration (reasons they don't "go for it")

1. Strength development

- Increase the horsepower of the engine!
- Postural strength - Single Support Phase

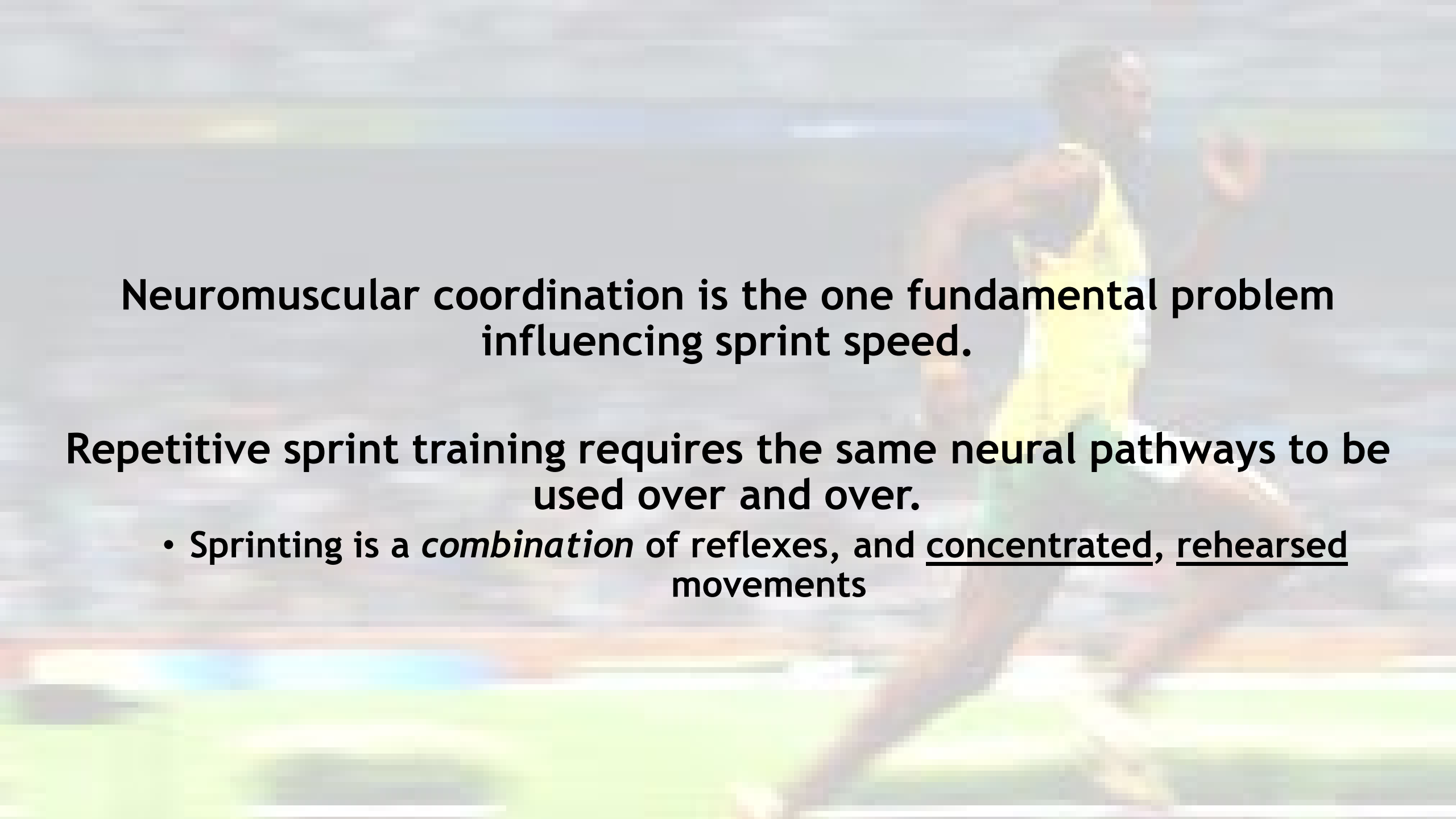
2. Coordination development

- Body must work in concert
- One side pushing (extending) while other side pulling (flexing)
 - Has to happen quickly in order to keep the athlete from falling (casting)

3. Muscle fiber composition

- Find your dual-sport athletes - may have more natural acceleration patterns

4. Patience and focus



Neuromuscular coordination is the one fundamental problem influencing sprint speed.

Repetitive sprint training requires the same neural pathways to be used over and over.

- Sprinting is a *combination* of reflexes, and concentrated, rehearsed movements

Strength Development

- **Absolute/General Strength:**

- Squats, Squats, Squats, Deadlifts (DB, Hexbar), Walking Lunges, Step Ups, etc.
 - Lower Back, Lower Abs, Rotational movements to support
 - MUST DEVELOP GLUTES
- If S&C Program: Clean Progressions and Hang Snatch
- If no S&C cert but weight room: Weighted Jumps (DB, Hexbar, Bands)
- Upper-body too: Stick to basics - Bench, Pull-ups, Shoulder Press
- Want them to want to lift

- **Elastic/Speed Strength:**

- Will hit with Olympic/Weighted Jumps
- Bodyweight plyometrics
- Medicine Ball Throws
- Hills/Stadiums

Coordination Development

- **Sprint Drills** (watch ground contact)
- **Change of direction**
 - Shuttle runs; depth jumps; multi-response plyometrics, GAMES!; med ball throws
- **Plyometrics into acceleration**
 - Response and ability to get body into positions; low heel recovery
- **Basic Hurdle Drills**
 - 12-18” 1-steps both sides; develops coordination and helps hurdlers improve speed of technique

Things That Make Them “Go For It”

- Heavy Med Ball Throws - OHB, UHF, Squat to Press
 - Add change of direction, add box, etc.
- Broad jumps, bounding for distance
 - Add incline, acceleration, MB Throw, etc.
- Competition
 - Sled/Resistance Band Races, Reaction Accels (push-up, from depth, etc.)
- Identify Ways to Challenge
 - Know the athlete

Example of a Early Week

MONDAY: do as series 4x (4' rest)

- Wall Drills - x6 Doubles
- Hurdle 1-steps - 5-6H x2/side
- MB Throws/Broad jumps - x5
- Sprint from 2pt - 20m x3
- Can load up hills or stadium doubles from here
- Weight room (Olympic/Weighted Jumps)

TUESDAY: do as series 5x (2' /4-5')

- SL line hops to 10m sprint
- SL lateral hops to 10m sprint
- Pogos 5-8x to 10m sprint
- Push-up burpee to 10m sprint
- 60" jump rope
- Weight room (squats, lunges, upper-body)

WEDNESDAY: Game

- Skill and/or Endurance related
- Reaction Runs to start
- Something that engages everyone

THURSDAY: do as series 4x (4' rest)

- Wall Drills - x6 Doubles
- Hurdle 1-steps - 3-4H x2/side
- MB Throws/Broad jumps - x3
- Resisted Sprint - x2 walking, x2 running - 20m
- Can load up hills or stadium doubles from here
- Weight room (Olympic/Weighted Jumps)

FRIDAY: Go Hard & Go Home (4-6')

- 5-6x Bounding
- 5-6x 150m-250m - MUST ACCELERATE INTO

Acceleration Development Session

- **Medicine Ball throws**
 - Firing of the hips; triple extension
- **Broad jumps; single leg jumps; box jumps**
 - Hip displacement; single leg power; firing of the hips; triple extension
- **Weight room**
 - Squats (front); Olympic Lifts (Power cleans; Snatch); Single leg lifts
- **0-20m max - Track/Turf accelerations**
 - 0-10m more realistic until strength and power develop further
 - Single sets of 5-10 reps (less reps longer the distance)
 - Rest intervals of 2-3 minutes (longer rest better for development over work)

Application to Hurdling

Start out fast and get faster.

- Hurdlers who don't push hard out of the blocks end up taking long strides to the first hurdle.
- If done right, they should feel themselves gaining speed.
 - *“hurdlings downhill”*
- Same rules from acceleration apply
 - Knee drive into hurdle, push through ground @ takeoff, get to trail-leg front-side
- Using a step pattern
 - Only as acceleration develops

Working Step Patterns for 100/110H

	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
W 100H	3-1	6-8	10-8	15-1	19-11	25-1	30-7	36-4
M 110H	3-4	7-2	11-6	16-3	21-5	26-11	32-9	38-10

- Source: Vince Anderson's 2004 Chart (*MUCH* manipulation)
- 12.7/13.0 & 11.3/11.5 in the early fall
- Hurdlers have to get hips up earlier
- Can help force some aggression - especially with females
- Can help to identify problem areas, 0-3 vs. 4-6, etc.
- Can help build confidence by reinforcing rhythm
- PROCEED WITH CAUTION

Application to Building Confident Long Sprinters

- How does this help your 400m kids? Especially those with more of an endurance base?
- How does this help your short sprinters who need to run the 4x4 but won't try very hard because they don't think they're in shape?
- EDUCATE on speed and speed endurance

Speed and Speed Endurance

- Training **true absolute speed** becomes training the ATP-PC system
 - Neuromuscular system demands repetition and rest
 - Development vs. work
- Training speed endurance must come after development of max velocity
- **Real** speed endurance is done at 95-100% with full recovery
 - *Over distances of 80-300m*
 - Anything less than 90% is no longer training speed endurance rather capacity/fitness (tempo)
 - Be sure about objective and what movement pattern you want to train
- Teach them the value of getting to the 1st 200 fast and relaxed
 - 1-1.5sec off of 200m PR
 - 95-100-90-85 - it's going to hurt no matter what

ANAEROBIC (ATP-CP) ENERGY SYSTEM

- Speed component is trained when fatigue is not present
- Recovery rates for CP resynthesis.
 - 30 seconds - 50%
 - 1 minute - 75%
 - 90 seconds - 80%
 - 3 minutes - 98%
- Four (4) sets, involving 4 X 4 X 45m (i.e., 720 meters) in total distance in a practice session is sufficient to stimulate this system.
 - 1' between reps will train speed endurance ALONG WITH efficient movement patterns
 - 3' between reps will help to DEVELOP efficient movement patterns

Training tables

Speed Endurance	<80m	[GSSE]									
		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 Endurance I	150-300m	Long Speed End. [LSE]									
		Anaerobic Power	ANAEROBIC	90-95%	10-12'	600	900	600	1200	600	1200
			GLYCOLYTIC	95-100%	12-15'	300	900	300	1000	300	1000
Special Endurance II	300-600m	Lactacid Power [LAP]	LACTIC ACID	90-95%	15-20'	600	900	600	1200	900	1200
		Lactic Acid Tolerance	TOLERANCE	95-100%	FULL	300	600	300	600	300	900