



ACCELERATION AND CHANGE OF DIRECTION PROGRESSIONS

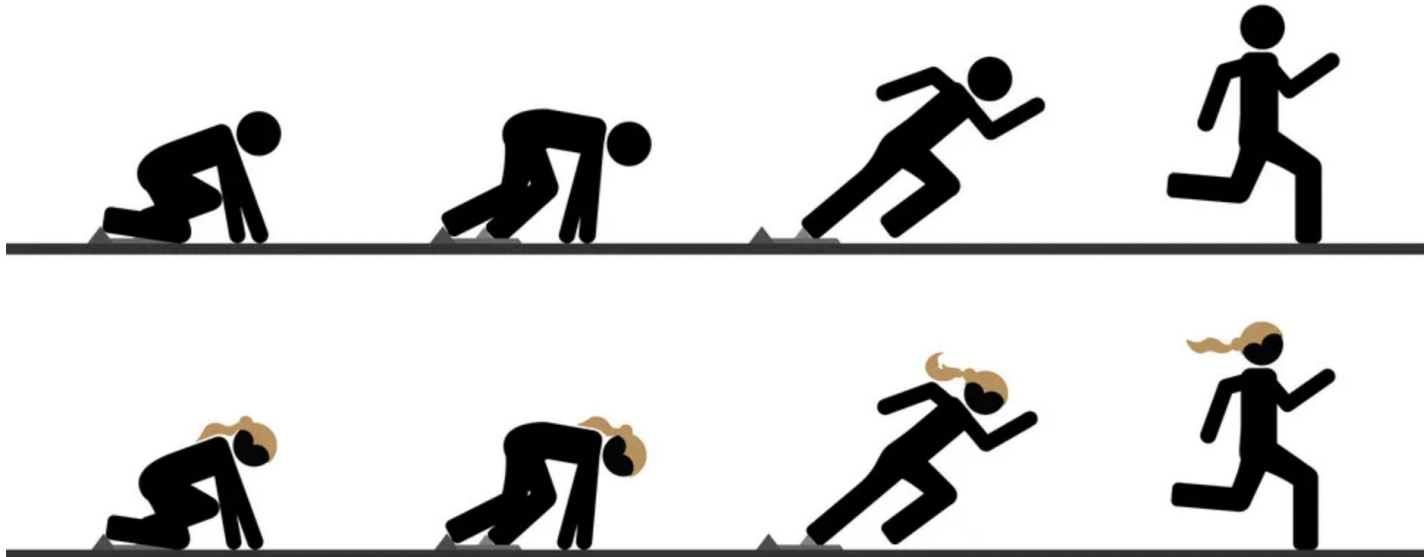
ACCELERATION 101

From a kinetic perspective, acceleration is about producing as much horizontal force as possible in a short period of time. For the youth athlete, it is necessary to develop the kinematics of acceleration as a foundation of speed development.

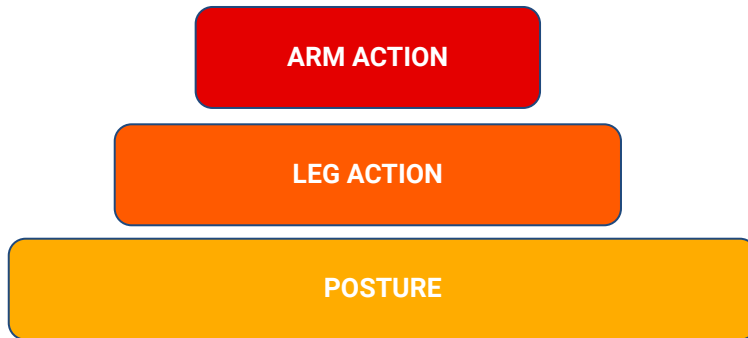
TECHNICAL MODEL

Synchronize explosive arm and leg movement through a “piston like” leg action that maximizes a low leg swing

Optimize the direction of force in an effort to maximize horizontal velocity



ACCELERATION GEARS












- RECIPROCAL MOVEMENT
- FRONT / BACK SIDE
- POSITION/DYNAMICS

SPEED DEVELOPMENT FOCUS			
FUNDAMENTAL MOVEMENT SKILLS	SPRINT TECHNIQUE	SPRINT TECHNIQUE & MAXIMAL SPRINTS	MAXIMAL SPRINTS
<ul style="list-style-type: none"> • Early Childhood 0-7 years 	<ul style="list-style-type: none"> • Prepubertal 7-11 years (female) 7-12 years (male) 	<ul style="list-style-type: none"> • Circumpubertal 11-15 years (female) 12-15 years (male) 	<ul style="list-style-type: none"> • Late Adolescence +15 years (female) +16 years (male)
0 years -----> Increase in training age -----> 12+ years			
Primarily neural adaptations		Combined structural and neural adaptations	

*Annex A: Supplementary: Recommended guidelines for speed training progressions

ACCELERATION MATRIX

Phase	Level 1	Level 2	Level 3
Wall Drills	Posture Holds 	Load & Lift 	Single/Double Exchange 
Harness Drills	Acceleration March 	Acceleration Bound 	Acceleration Sprint 
Skill Application	Get-up sprint 	Medicine Ball Low Split to Press and Chase 	5-20 meters Free Sprint 
Intensity			

CHANGE OF DIRECTION 101

Mastering multi-directional movement involves developing change of direction speed in a multitude of directions. This involves a broad expression of quick deceleration and re-acceleration mechanics. The utility of multi-directional movement relies to a much larger extent on an athlete's ability to perceive, and respond to the sporting environment quickly.

TECHNICAL MODEL

BASE POSITION

- + Neutral spine position
- + Base width & depth based on sport
- + Load inside edge of shoes
- + Balanced COM

SHUFFLE/CUT

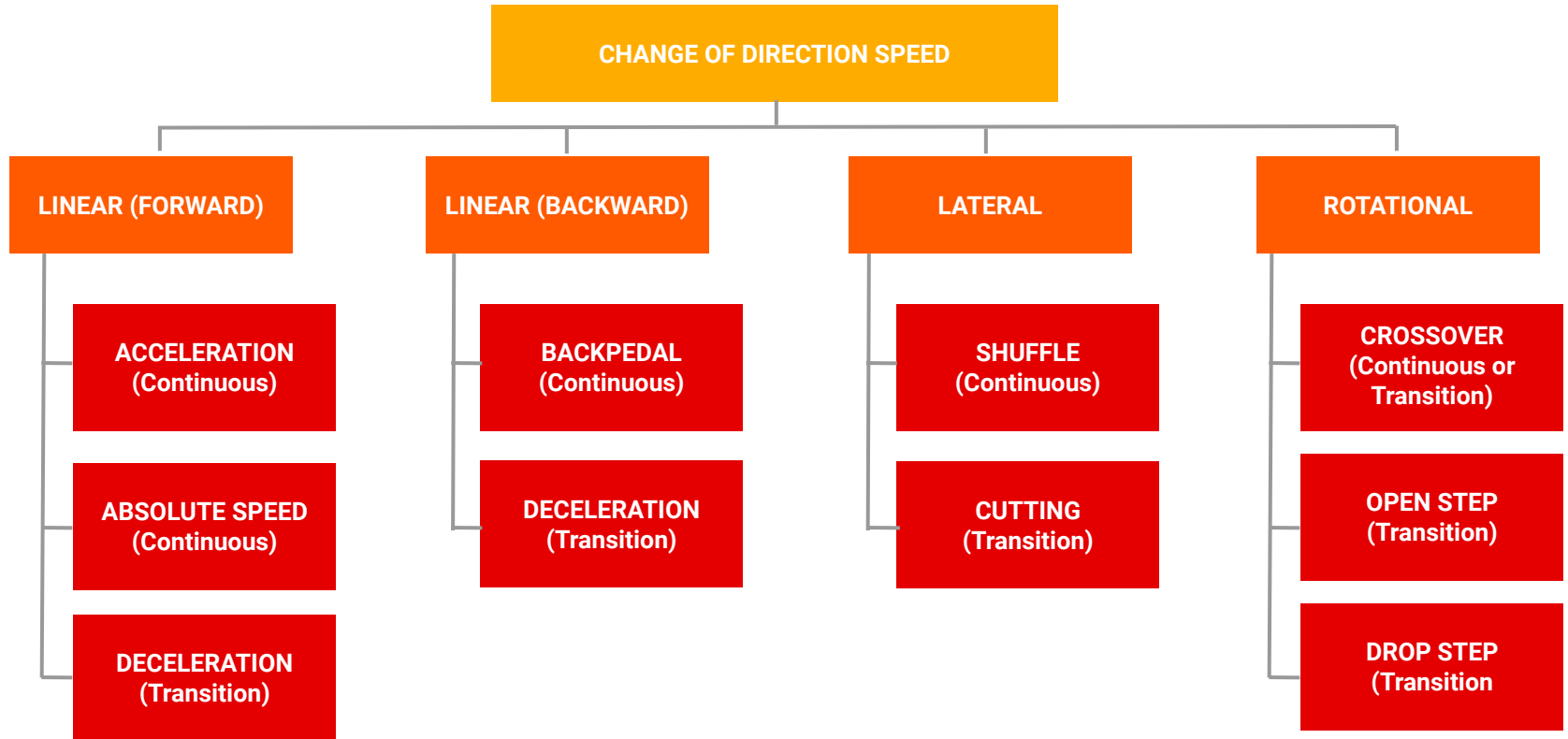
- + Low base > shoulder width
- + Outside leg push through inside edge loading
- + Inside leg hovers and stays within inside shoulder
- + Angle to minimize air time

CROSSOVER

- + Inside leg push through outside edge loading
- + Outside leg snaps tightly across body
- + Shoulder/arm rotation counters hip rotation
- + Angle to minimize air time



CHANGE OF DIRECTION 101



CHANGE OF DIRECTION GEARS

ARM ACTION

LEG ACTION

POSTURE

- ROTATIONAL BALANCE
- INSIDE VS. OUTSIDE
- CENTER OF MASS VS. BASE OF SUPPORT

CHANGE OF DIRECTION DEVELOPMENT FOCUS

PRE- PEAK HEIGHT VELOCITY

- **Movement Diversification**
 - Multi-sports
 - Agility games

CIRCA- PEAK HEIGHT VELOCITY









- **Movement Quality**
 - Closed drills
 - Pre-planned drills

POST - PEAK HEIGHT VELOCITY

- **Movement Specification**
 - Sport-specific drills
 - Position-specific drills

Training Age <-----> Growth and Maturation <-----> Training Load







SHUFFLE / CUT MATRIX

Specificity	Phase	Level 1	Level 2	Level 3
	Wall Drills	Posture Holds 	Load & Lift 	
	Activation Drills	Lateral March 	Lateral Skip 	Lateral Bound 
	Harness Drills	Cut to Base 	Cut w/ assisted crossover to Base 	Shuffle cut-sprint 

Intensity

CROSSOVER MATRIX

Specificity

Phase	Level 1	Level 2	Level 3
Wall Drills	Posture Holds 	Load & Lift 	
Activation Drills	Lateral March 	Lateral Skip 	Lateral Bound 
Harness Drills	Crossover to Base 	Crossover w/ assisted cut to Base 	Shuffle crossover-sprint 

Intensity

ACCELERATION COMPETENCY CHECKLIST



BIG FORCE

- ☐ Maximizing the magnitude of force that can be generated above vertical force requirements will optimize acceleration performance

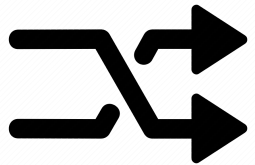
CORRECT DIRECTION

- ☐ Optimize the direction of force through efficient technique that emphasizes horizontal force production

FAST TIME

- ☐ Optimize the magnitude and direction of force by applying the largest forces in the least amount of time while minimizing excess flight time

CHANGE OF DIRECTION COMPETENCY CHECKLIST



REACTION

- ☐ Optimizing multidirectional speed involves a balance of non-reactive and reactive based movements within single pattern and pattern sequences

POSITION

- ☐ Rapidly lower COM and position within the base of support relative to desired direction of movement

DIRECTION

- ☐ Load the inside or outer edge of shoe (foot) to optimize the direction and magnitude of force

ANNEX A:**SUPPLEMENTARY:
RECOMMENDED GUIDELINES FOR SPEED TRAINING PROGRESSIONS**

STAGES OF DEVELOPMENT	EARLY CHILDHOOD	PRE-PUBESCENT	CIRCA-PUBESCENT	LATE ADOLESCENCE
	Primarily Neural Adaptations	Primarily Neural Adaptations	Structural and Neural Adaptations	Structural and Neural Adaptations
OBJECTIVE	FMS (locomotor)	Sprint technique and resisted sprints	Sprint technique, resisted sprints and maximal sprints	Maximal sprints
COMPLEMENTARY TRAINING SELECTION	Physical literacy, strength training	Plyometric, strength training, coordination, FMS	Plyometric, strength training, coordination, hypertrophy	Plyometric, strength training, coordination, complex training
REPETITIONS	10 – 20 m	10 – 20 m	40 – 60 m	40 – 60 m
SETS	≤16	≤16	3 - 5	3 - 5
INTENSITY	Sub-maximal 70 - 90%	Sub-maximal 70 - 90%	Maximal 90 - 100%	Maximal 90 - 100%
REST INTERVALS	1.5 – 2 min	1.5 – 2 min	5 – 7 min	5 – 7 min
TRAINING FREQUENCY	-	1 - 2	2 – 3	2 – 3

REFERENCES

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