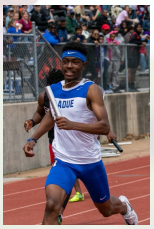
100m/200m Race Modeling





Presented by

Nick Buckvar
Ladue High School, St. Louis, MO

1

1

The Realities We Deal With…

All we gotta do is teach kids:

How to set up & execute the 100m dash & or 200m dash

- PROPERLY Warm up
- PROPERLY Cool down
- Proper sprint mechanics
- Increase flexibility
- Increase strength
- Increase power
- Increase self confidence
- Acceleration mechanics
- Set blocks
- accelerate from blocks
- take a blind exchange (Left hand)
- give a blind exchange(Left hand)
- take a blind exchange (Right hand)
- give a blind exchange (Right hand)
- share the lane on an exchange
- Take off at the right time for an exchange for a 4x1
- Take off at the right time for an exchange for a 4x2

JUMPER?

- *LJ/TJ/HJ approach*
- *Take off mechanics*
- *Flight mechanics*

HURDLER?

- *Trail legs*
- *Lead legs*
- *Lead arm*
- *Trail arm*
- *Alternate over the hurdles ?*
- *3 step rhythm*

Don't forget, our #1 responsibility:

Make them fast!!!

2

Rehearsing a Race Strategy is Critical

- We have a plan for training, therefore we should have a plan to help that training lead to results.
- Understand & teach what running the event ***feels like,*** as opposed to what it's supposed to ***look like****-practice the feeling*
- Be adaptable: Consider the strengths & weaknesses of the athlete when developing a race plan
- Keep the in-race cues simple & motor response oriented
- React & respond in races, not think & try
- Understand track markings: universal visual keys
- *Don't waste days: race modeling must also be a workout: Understand the WHY of a workout, address phases accordingly*

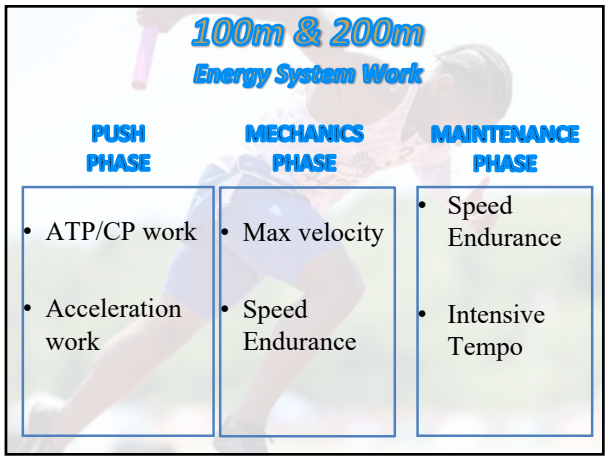
3


100m & 200m Race
Versatile Plans
PUSH PHASE
MECHANICS PHASE
MAINTENANCE PHASE
PUSH ourselves down the track
Proper Block position
Proper Acceleration Mechanics (*Shin Angles)
Transition when ready--- heels start recovering to the butt
Pushing ends
Heel is recovering fully
Tall & Stepping Over
100m: end of push through max velocity
200m: "Float" phase through the "punch" into the last 80m
KEY is to maintain stride frequency
GREAT Technique:
TALL & QUICK !
Tall, shoulders forward, hammer the elbows, "hot track" RELAX

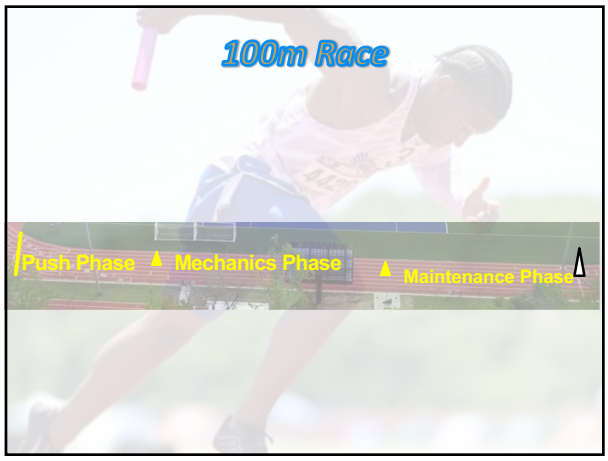
4


What are the demands of the event we are preparing for?
•In order to get faster, the athlete must expand the energy systems used during each event
100m
200m
400m
-Purely Anaerobic
-Speed Development ATP/CP Acceleration & Max Velocity
-small speed endurance
-Speed Development ATP/CP Acceleration & Max Velocity
- Slight Intensive Tempo
-Heavy on Speed Endurance
Cycle through it all!
-Speed Development ATP Acceleration & Max Velocity
-Speed Endurance
-Lactate Power
-Anaerobic Threshold/Capacity
-Extensive Tempo (aerobic)
Make the most of each training session by incorporating rehearsing the race.

5


100m & 200m
Energy System Work
PUSH PHASE
MECHANICS PHASE
MAINTENANCE PHASE
ATP/CP work
Acceleration work
Max velocity
Speed Endurance
Speed Endurance
Intensive Tempo

6



7

8

STAY PATIENT

Technical elements of acceleration are HARD TO MASTER
Race execution takes time to learn and apply
***THE VARIABLES!!!!!!!!!**

S.R.'s 2024
100m Progression

April 5	11.22
April 18	11.30
April 27	10.85
May 3	10.96
May 11	10.91
May 18	10.77
May 24	10.86
May 25	10.80 (Race 5)

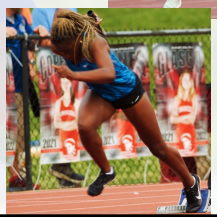
S.R.'s 2024
200m Progression

March 30	22.16
April 13	22.28
April 27	22.18
May 11	22.12
May 18	21.99
May 24	21.93
May 25	21.87 (Race 8)

9

PUSH PHASE

- PUSH ourselves down the track
- Proper Block position
- Proper Acceleration Mechanics (*Shin Angles)
- Transition when ready--- heels start recovering to the butt



10

PUSH PHASE: Shin Angle

Not my guy

- Shin angle determines drive & power output versus running bent over
  - More vertical shin = less drive we actually have (direction of force application)
- Be in a position to push
  - Everything relating to positioning blocks, position in the blocks, and initial explosion out of blocks is aimed at getting in the best position to push.

11

Push Phase: Shin Angle

- Hard as hell to master & replicate!
- ALL DRILLS CUE:
  - Posture: tight core, hips forward, straight line through body
  - Low feet, knee to chest
- DRILLS
  - Drive Step Wall drill
  - Clean the Track (1 step)
  - Sweeper Drill
  - Push drills: sled, hurdle, trash can, steps
  - Resistance Drills: sleds, cords

12

Wall Drill

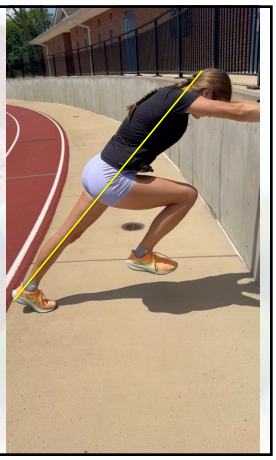
LOOK FOR…

1.Good posture: strait line head to heel

2. Heel away from butt

3. Knee drive to parallel

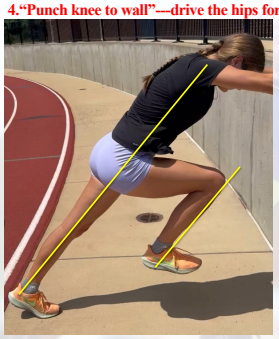
4.“Punch the knee to the wall”



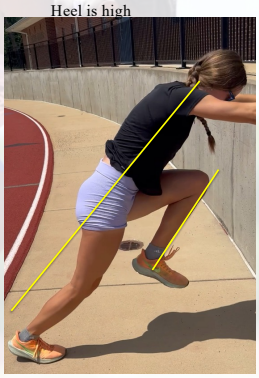
13

Wall Drill

1.Good posture: strait line head to heel
2. Heel away from butt
3. Knee drive to parallel
4.“Punch knee to wall”---drive the hips forward



-No hip projection
-lost triple extension
-shin angle is big
Heel is high

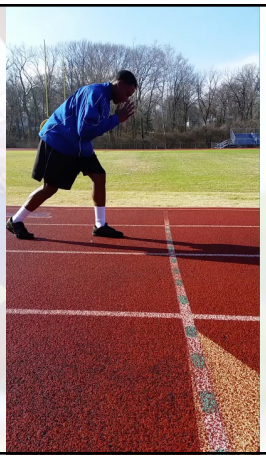


14

Clean the Track (1st step sweep)

1. Front thigh/knee lowers

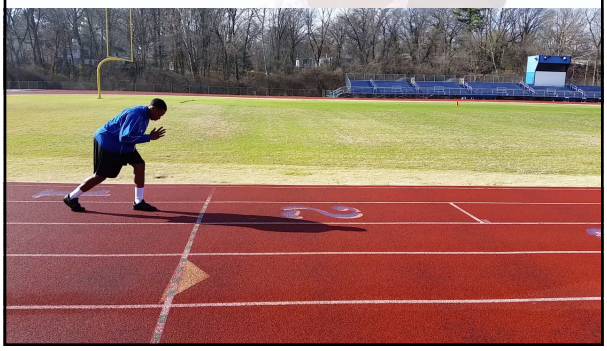
2. Back foot “sweeps through” low, brushes the item away



15

SWEEPER DRILL

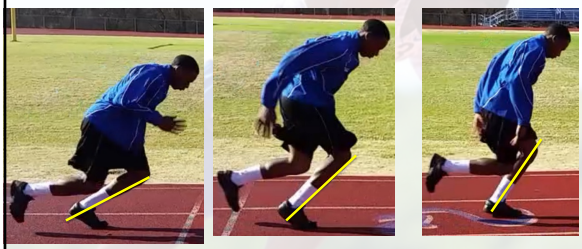
LOOK FOR…
1.Foot low, heel away from the butt
2. Shin angles are low



16

SWEEPER DRILL

LOOK FOR…
1.Foot low, heel away from the butt
2. Shin angles are low



17

SLED PUSH

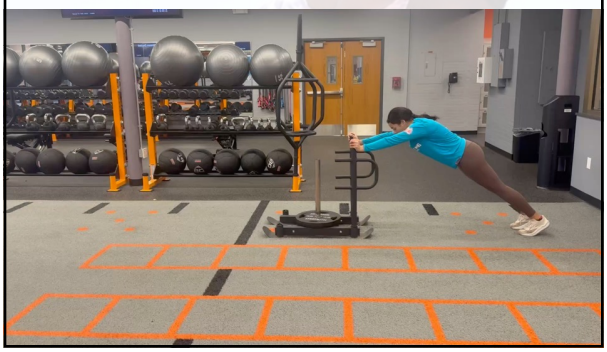
Feel the position
Sets up the angles & body positions
Progression: March, Position Push, Get after it

18

19

SLED PUSH

Feel the position
Sets up the angles & body positions
Progression: March, Position Push, Get after it



20

GUN!- Initial Explosion

- **Heavyweight fight: Ali vs Tyson: apply a force**

1. Throw big punches w/ knees & arms

2. "Sweep the feet"

21

"Separate the hands"

1. Don't care about exact 90 degree angles, but want bend for stretch reaction

1. "show the starter your arm pit"

- DRILL: arms only starts

22

Full Extension

- 1. Ankle through hips
  - Always emphasize this: weight room (squats & snatch, plyos, EDDs)
- 2. "Sweep the feet"
  - Low to the ground
  - keep foot tucked, helps shin angle
  - Foot lands under center of mass

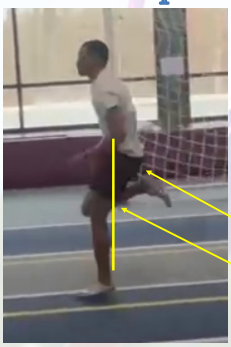
23

MECHANICS PHASE

- Push Phase over
- Heel is recovering fully (heel to hamstring)
- Tall & Stepping Over
- 100m: end of push through max velocity
- 200m: "Float" phase through the "punch" into the last 80m

24

Optimal Sprint Position



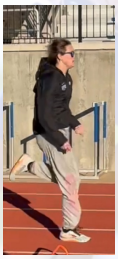
How do we get in position to:

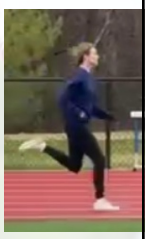
- Get everything out of the stride
- Apply a force to the ground
- Be stiff at ground contact,: through the knee & hip
- Reactive Strength
- Timing = body position @ ground contact
  - Swing leg
  - Heel recovery position (tight heel!)
  - knee even/behind

25

Optimal Sprint Position

THE MODEL | THE GOOD | THE BAD | THE UGLY



26

Optimal Sprint Position

"Hit the Positions" "Push Up" (go vertical to go forward)
Spacing: need to hold the cadence or increase

27

Optimal Sprint Position

"Hit the Positions" "Push Up" (go vertical to go forward)
Spacing: need to hold the cadence or increase

28

Optimal Sprint Position

2024 2025

29

Optimal Sprint Position

"Hit the Positions" "Push Up" (go vertical to go forward)
Spacing: need to hold the cadence or increase

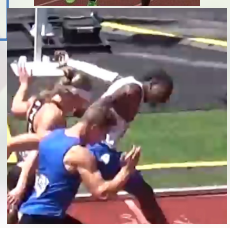
30

MAINTENANCE PHASE

- Key is to maintain frequency
  - SPEED = Stride length x stride frequency
- GREAT Technique
- Speed Endurance work as the foundation

TALL & QUICK !

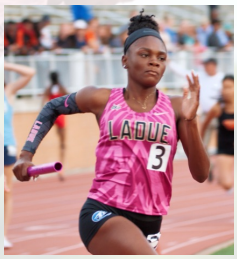
- Tall, shoulders forward, hammer the elbows, **RELAX**



FINISHING MOVE:
Palms to the sky
Ear to the track
3-5 strides away from line

31

200m Dash
Race Modeling



32

200m Race

PUSH PHASE

- Traditional 100m acceleration mechanics & drive phase
- be quick and powerful w/ arms around the turn, "down on the gas pedal"

MECHANICS PHASE

- 20m float zone (varies by athlete)
- It's not a race to the straight away, must conserve energy @ some point in the race
- Hold the speed, no more gas: be tall and quick into the zone
- Punch & hold
- Build w/ powerful elbows firing back (not an actual re-accel.)

MAINTENANCE PHASE

- Last 60/50m: maintenance phase, stay quick & relaxed

TALL & QUICK !

- Tall, shoulders forward, hammer the elbows, "hot track" **RELAX**

80-20-100
build 80, float 20, build 100

33

34

Push - Mechanics Phase

Float Phase Work

80s on the turn: on a Speed Day

Start the session with blocks (Push Phase work)

EX: 3x20m, 3x30m

4-5x80m reps @ "race pace" or race simulation with 5-8 min rest

Start 20m **into** the race in a 3pt stance

Build/ Accelerate for 60m, then hold even for 20m segment

Should see a difference in arm action

35

36

Mechanics - Maintenance
Float & Punch Zone

Flying 120s: Speed Endurance session

-5 reps @ 90-95% 6 min recovery:

-fast but under control to work the zones

- 10-15m fly zone to build up speed
- Float through the 20m zone, punch/build for 50m, maintain for 50m

Even last 50s (should not be all out)

37

38

Race Model Workout Variations

- Know what you want to work on
- What energy system are we targeting (determines volume & intensity

SAMPLE SESSION

-2x120 (200m race model)

-2x50m race model off turn

(20m fly , 20m float, 10m punch)

SAMPLE SESSION

-4X30m Block starts (Push)

- 1x180 @ 92% fly into it Push - Mechanics (Float& Punch)
- 3x60m @ 92% last 60m into the finish (Maintenance)

39

Structure of Training: Meso-Cycle

Progressive Loading Principles when planning workouts and progressing workouts: VOLUME & INTENSITY

inverse relationship: V↓ I ↑ OR V ↑ I ↓

Weekly Themes 1: *SPEED* 2: *STRENGTH* 3: *RECOVERY*

Theme	MON	TUES	WED	THUR	FRI	SAT
Week 1 *Speed*	Accel. , power	Int. Tempo (85-87%)	Active Rec.	Speed Endurance (90+%)	Pre-Meet	COMPETE
Week 2 *Strength*	Special End 1 (85-90%)	Ext Tempo (83-88%)	Active Rec.	Lactate Threshold (85-90%)	Pre-Meet	COMPETE
Week 3 *Recovery*	Special End 1 (90-93%)	Intensive Tempo (backend 400 pace)	Active Rec.	Race Specific Endurance (90%- Race Pace)	Pre-Meet	COMPETE

40

Themed Meso-Cycles Helps focus on 100m & 200m

Theme	MON	TUES	WED	THUR	FRI	SAT
Week 1 *Speed- 100m focus*	Speed Develop.	Intensive Tempo	Active Recovery	Short Speed Endurance OR Max Velocity	Pre-Meet	COMPETE 100, 4x1, 4x2
Week 2 *Strength 200m focus*	Speed End	Ext Tempo	Active Recovery	*Lactic Work*	Pre-Meet	COMPETE 4x2, 200, 4x1
Week 3 *Recovery*	Speed Develop.	Lactic work or Intensive Tempo	Active Recovery	Race Specific Endurance/ model	Pre-Meet	COMPETE

Theme	MON	TUES	WED	THUR	FRI	SAT
Week 1 *Speed 100m*	Ladder drill 6x20m Sweeper drill 3x20 Blocks: 3x20m, 3x30m, 2x50m Total 430m	4x2 exchanges 5x120@ 88% 3min 1300m	Hurdle mobility Block tech 4x1 stationary drill	4x1 exchanges 2x3x80m @ 95% 4min b/w reps 8min b/w sets PLYOS (720m)	Pre-Meet	COMPETE 100, 4x1, 4x2
Week 2 *Strength 200m*	4x220m@ 93% 8-10min PLYOS (880m)	2x3x200@ 85% 2:30 b/w reps, 4min b/w sets (Total 1200m)	Hurdle mobility Block tech 4x1 stationary drill	2(3x30-250)@88% 1min, 5min…10' sets	Pre-Meet	COMPETE 4x2, 200, 4x1 (4x4)
Week 3 *Recovery*	Bounding series Multi Throws STARTS: on turn 3x30m, 3x 60m, 1x80 (TOTAL 350m)	5x270m @ 85% 6min 1350m	Active Recovery	2x20m starts on turn 2x30m starts on turn 3x3x flying 120' s (set up & work last 120 of 200m race) (Total 460m)	Pre-Meet	COMPETE

41

Got more questions?

npbuckva@gmail.com

42