

Elements of Speed Development

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Gambetta Sports Training Systems

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*Vern Gambetta
Gambetta Sports Training Systems*

*Do's & Don'ts with Particular Emphasis On Coaching The
Young and Developing Sprinter*

Complexity



Complexity

Two dancers in black leotards are captured in mid-air, performing complex, acrobatic movements. The dancer on the left is in a high kick, with one leg extended upwards and arms reaching up. The dancer on the right is in a more dynamic pose, with one leg bent and arms reaching out. The background is dark, and the floor is a light-colored, reflective surface.

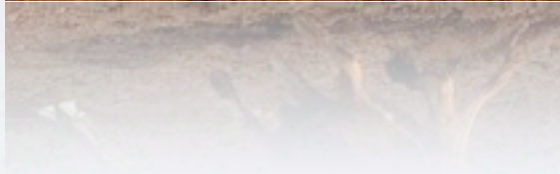
Systems cannot be understood simply by understanding the parts - the interactions among the parts and the consequences of these interactions are equally significant.

Achieving Speed

Achieving Speed



Achieving Speed



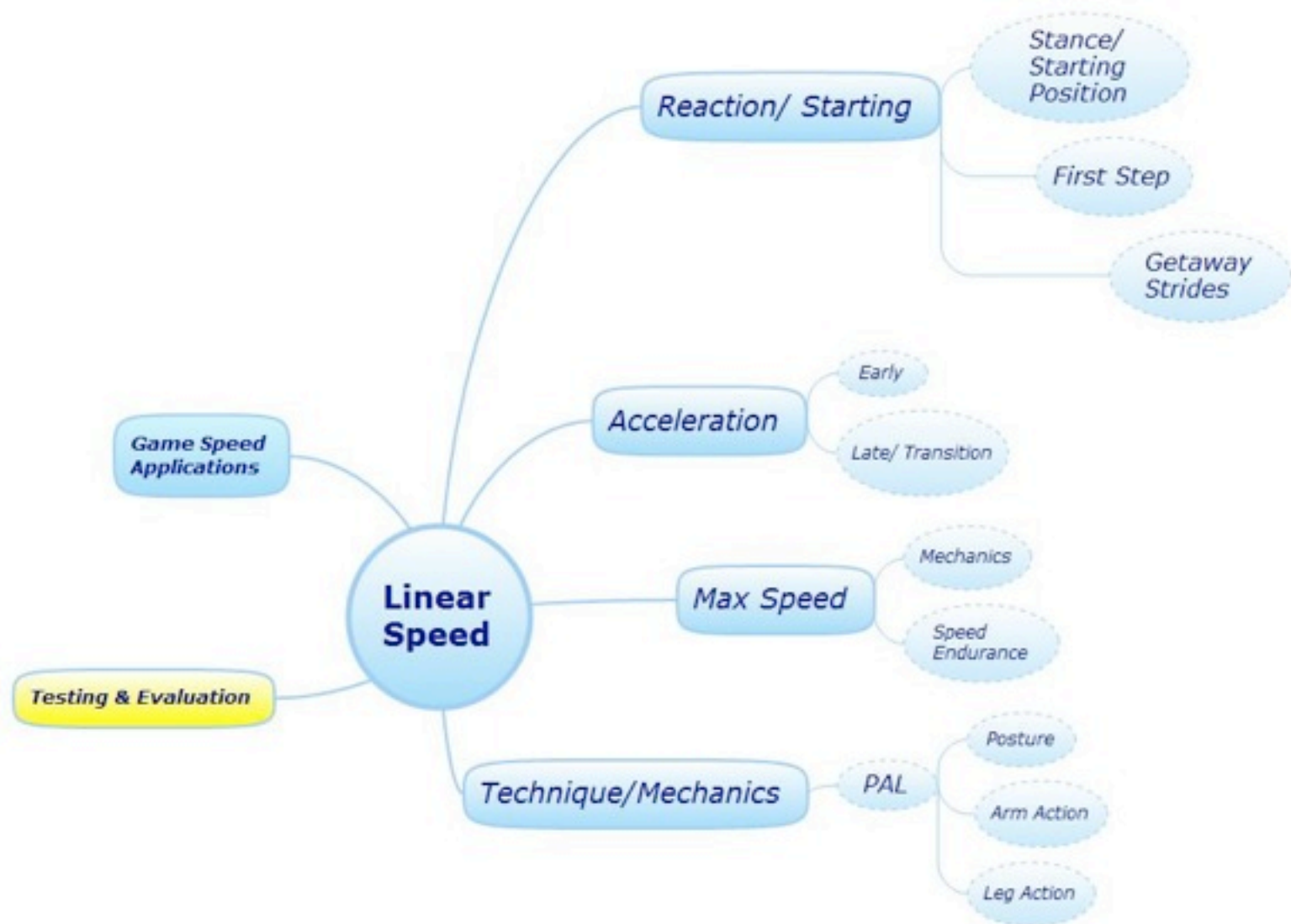
Achieving Speed



Achieving Speed



How much can you improve?



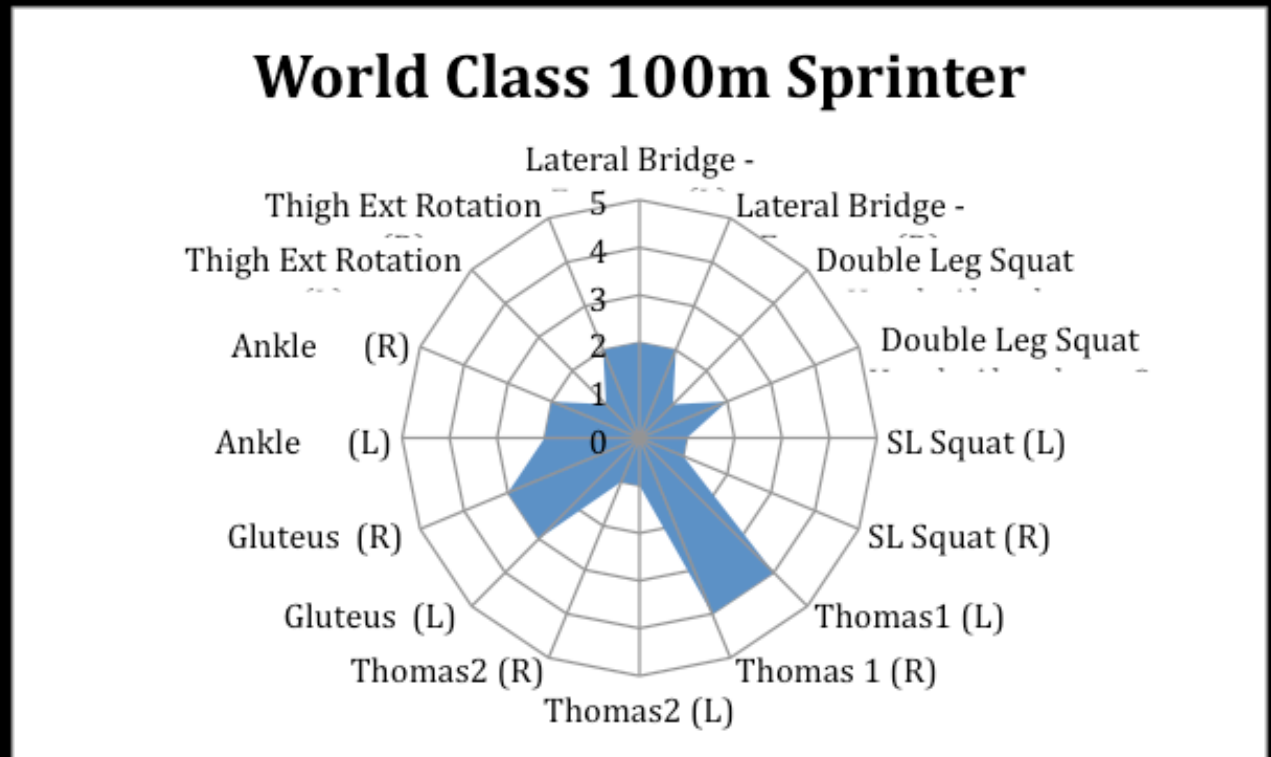
Accurate Assessment is the Starting Point

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At the end of the journey
all physical limitations are
eradicated and the
athlete is ready
technically, tactically,
physically and
psychologically to
compete to win in the
competitive arena.

Accurate Assessment is the Starting Point

At the end of the journey all physical limitations are eradicated and the athlete is ready technically, tactically, physically and psychologically to compete to win in the competitive arena.



Train Fast to Be Fast!



Train Fast to Be Fast!



Train Speed In

Train Fast to Be Fast!



Train Speed In

Optimum Not Maximum

“Feel your eyelids flop”

“Feel your eyelids flop”



Work Capacity Is NOT a Biomotor Quality

Work Capacity Is NOT a Biomotor Quality



Use The Ground

Use The Ground



Use The Ground



Drill With a Purpose



Drill With a Purpose

Be Precise & Exact



Drill With a Purpose

Be Precise & Exact

Prescriptive To Meet
Individual Needs



Drill With a Purpose

Be Precise & Exact

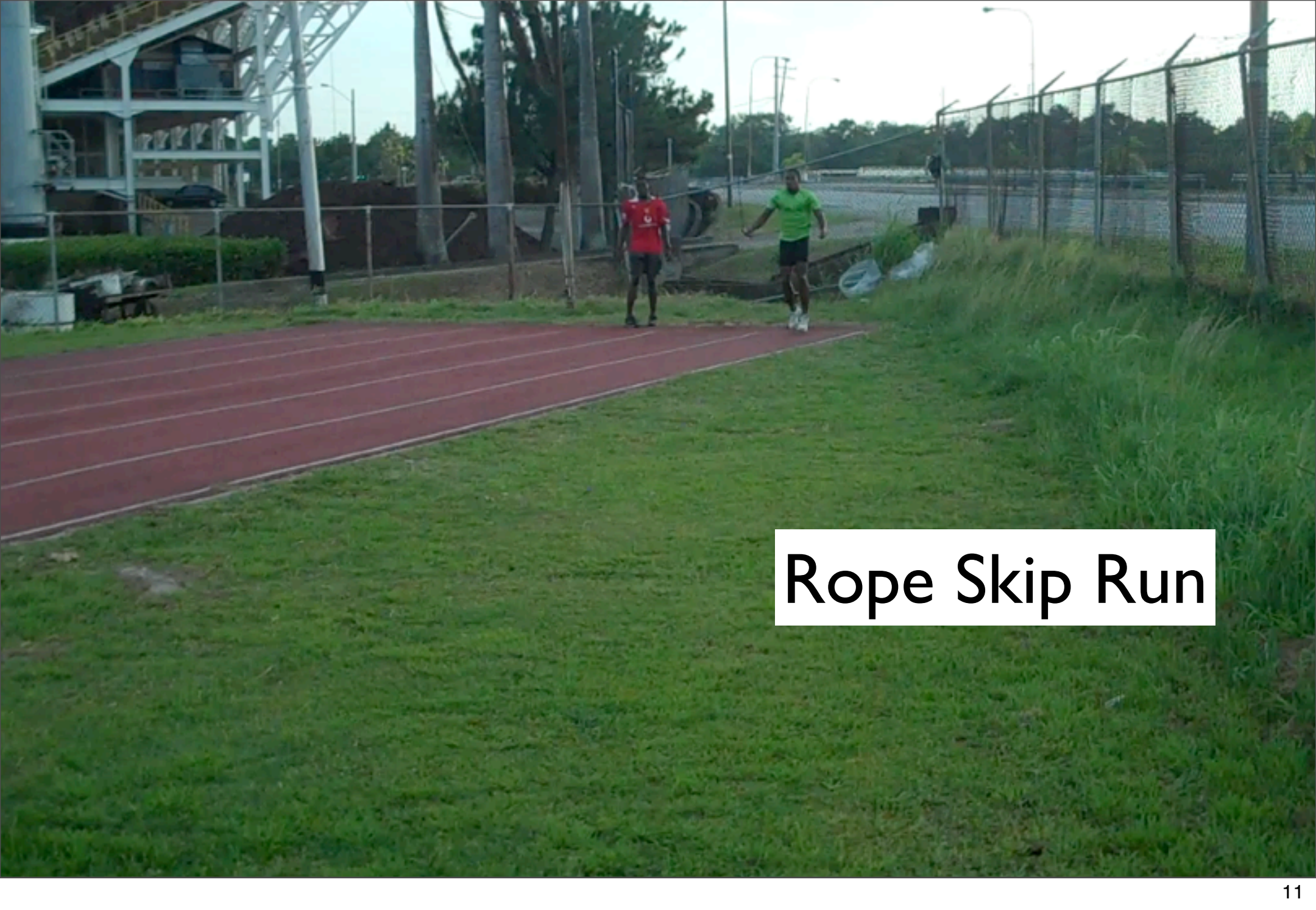
Prescriptive To Meet
Individual Needs

Focus on need to do, as
opposed to nice to do

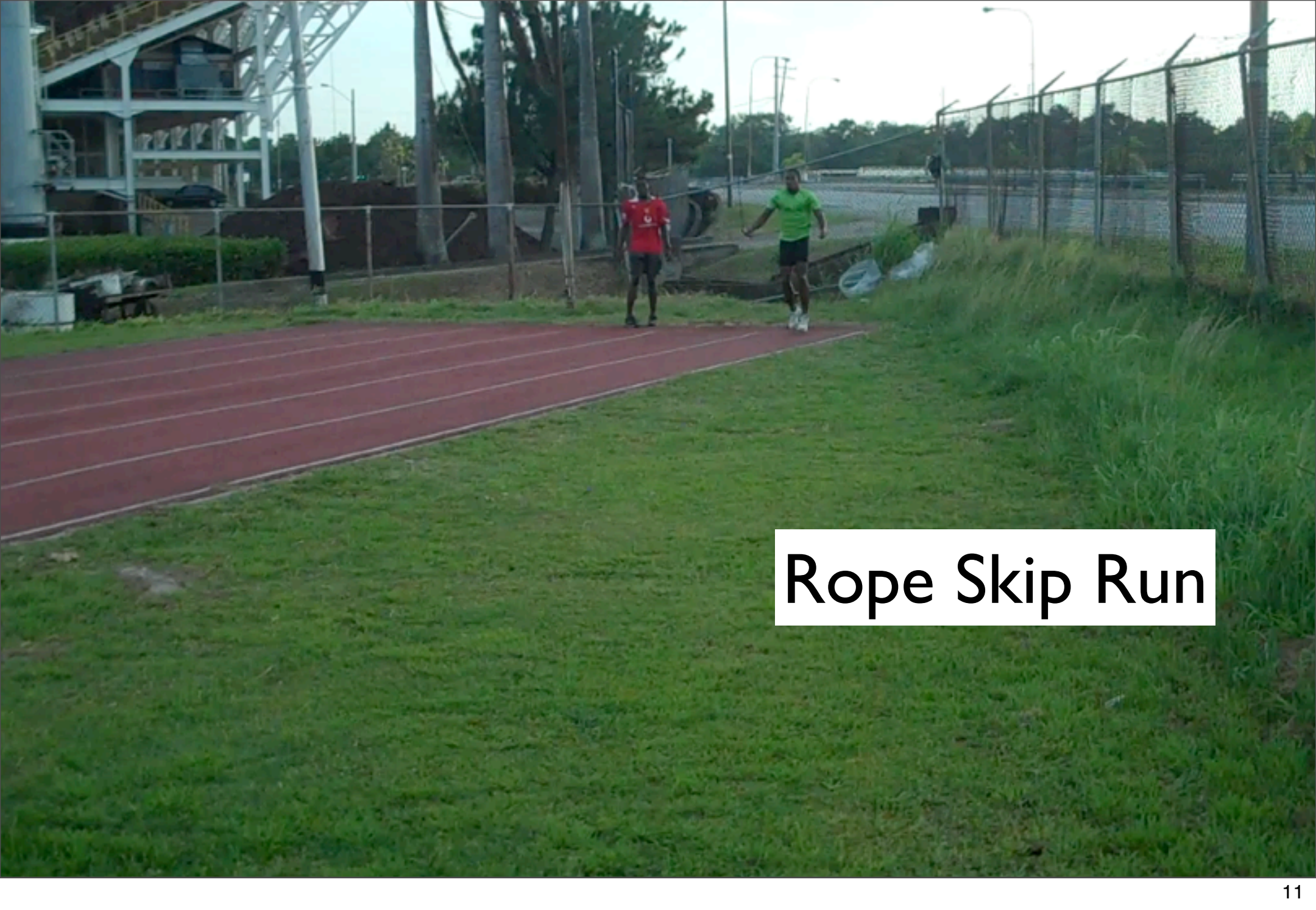




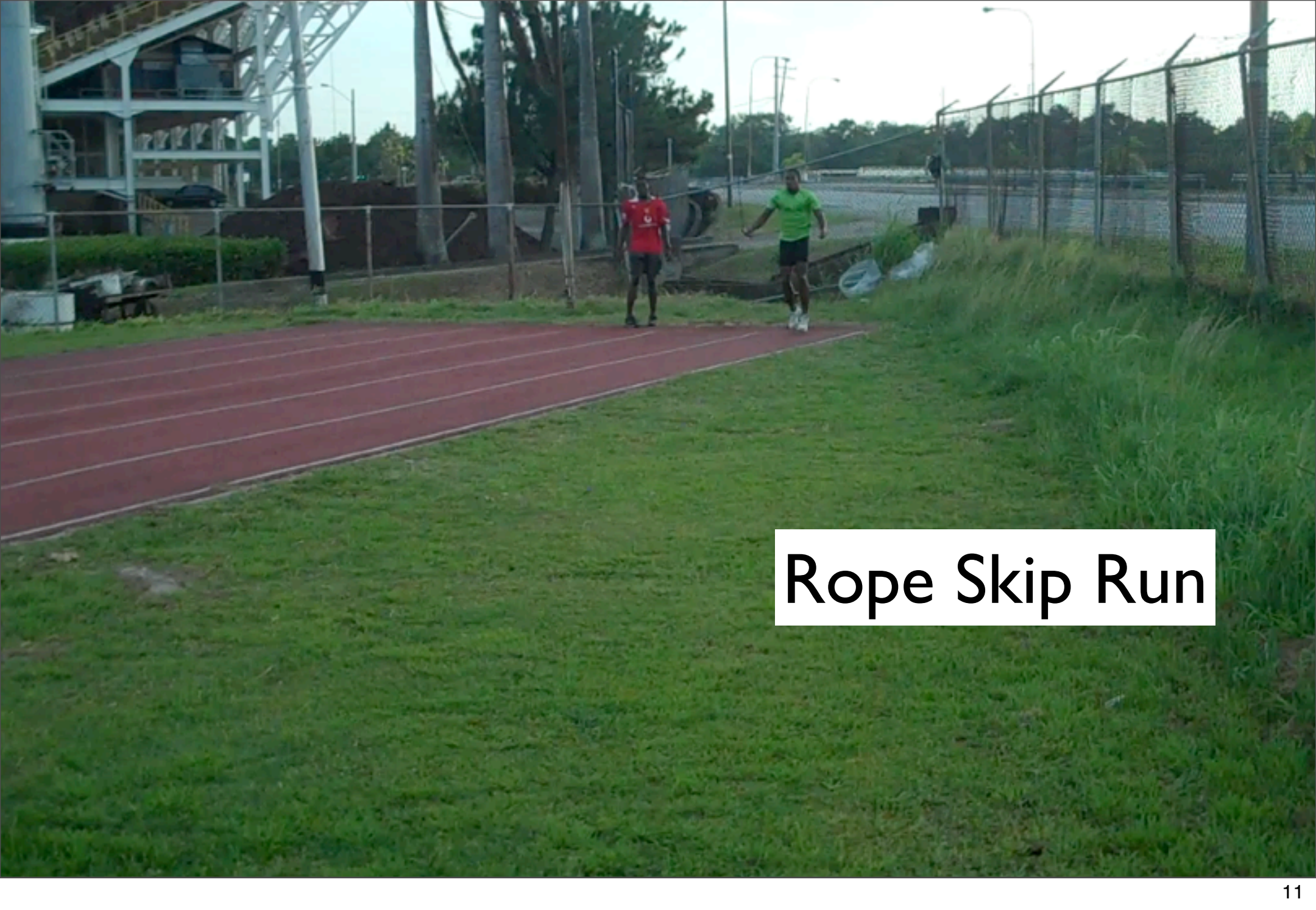
Rope Skip Run



Rope Skip Run



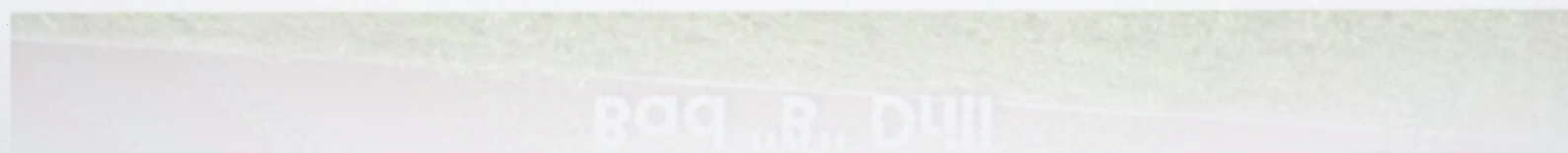
Rope Skip Run



Rope Skip Run



Bad "B" Drill







Overhead Stick Run

Overhead Stick Run



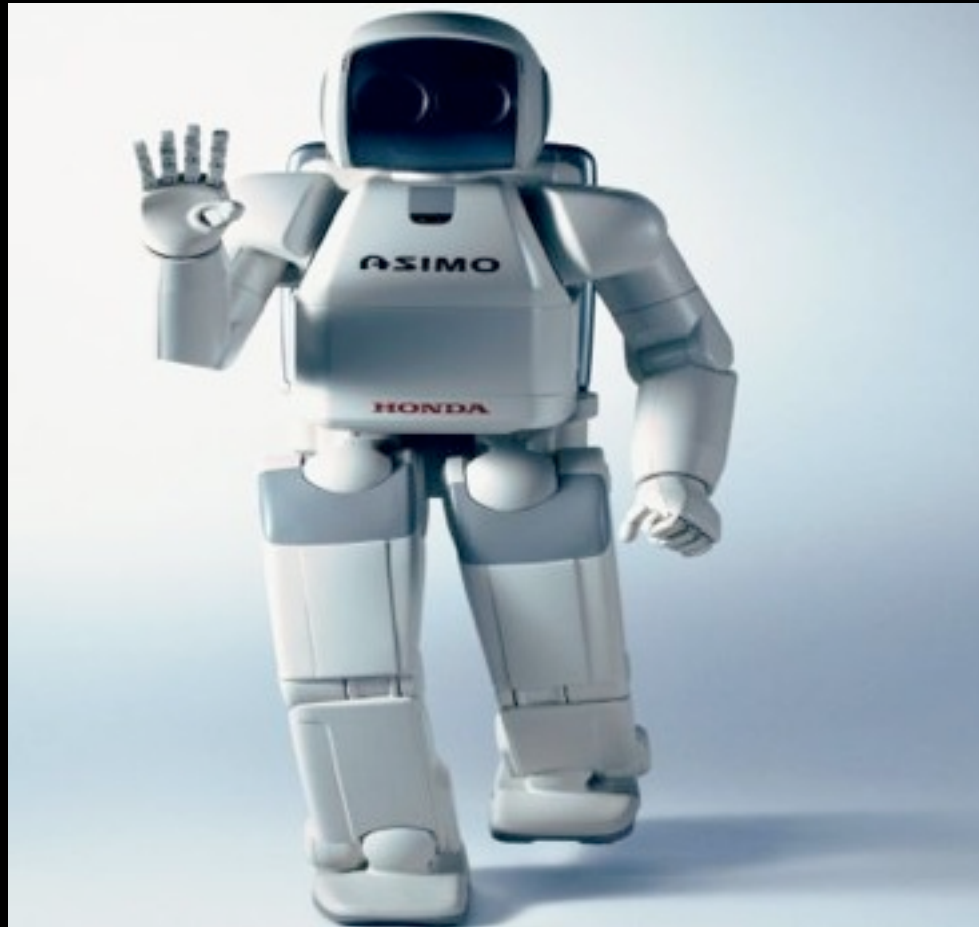
Fast Leg Drill

Fast Leg Drill

Technique

W/O Being Overly Technical

Technique W/O Being Overly Technical



Technique



Technique

Don't
Clone



Similar Is Not The Same

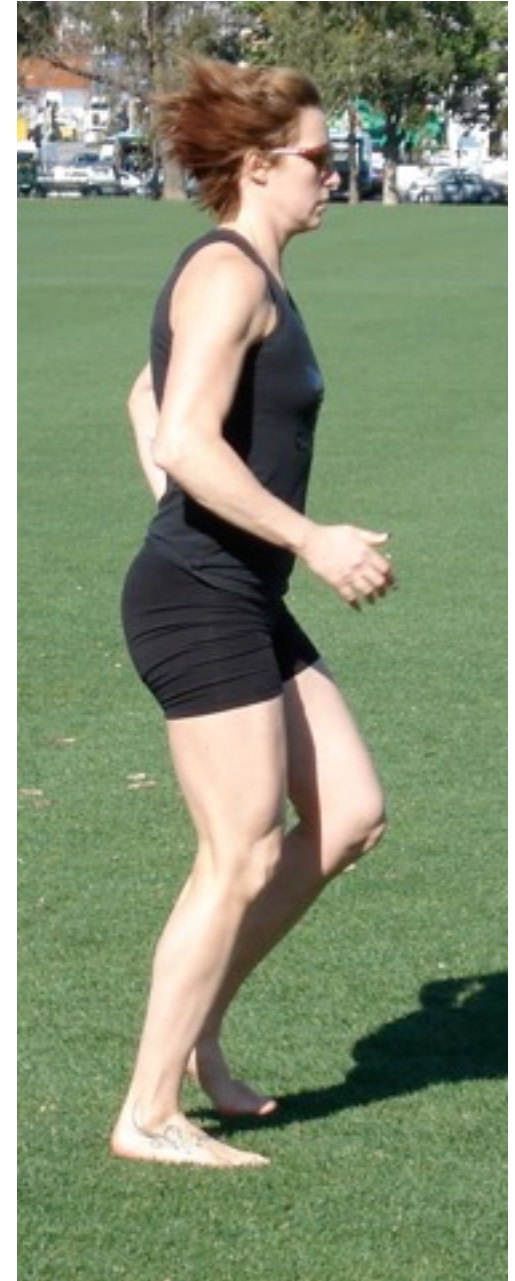


Similar Is Not The Same

Teach them to
RUN
Not to drill!

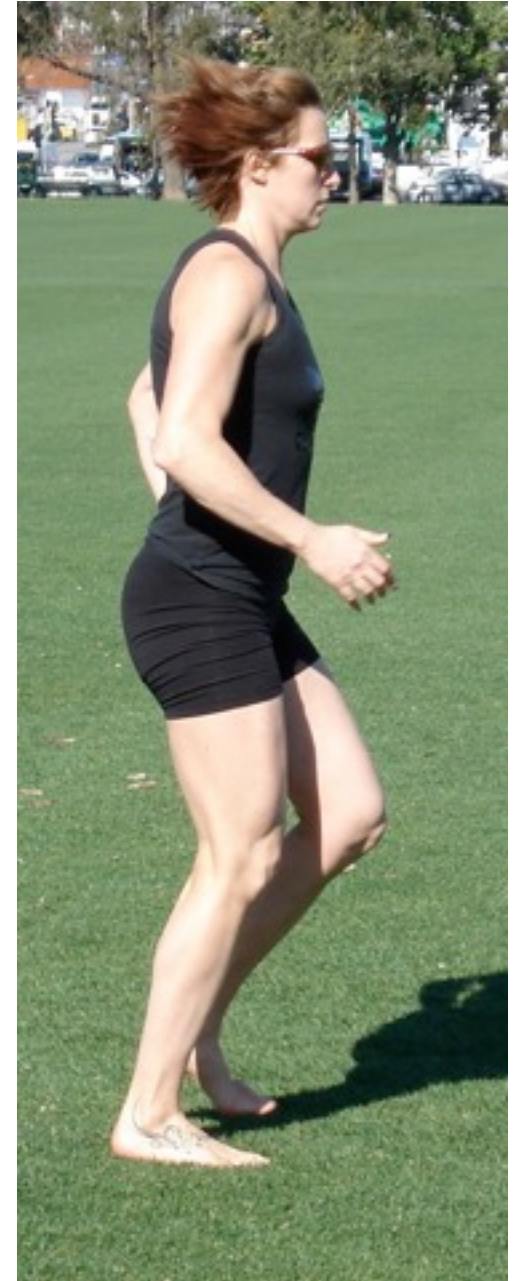


Technique



Technique

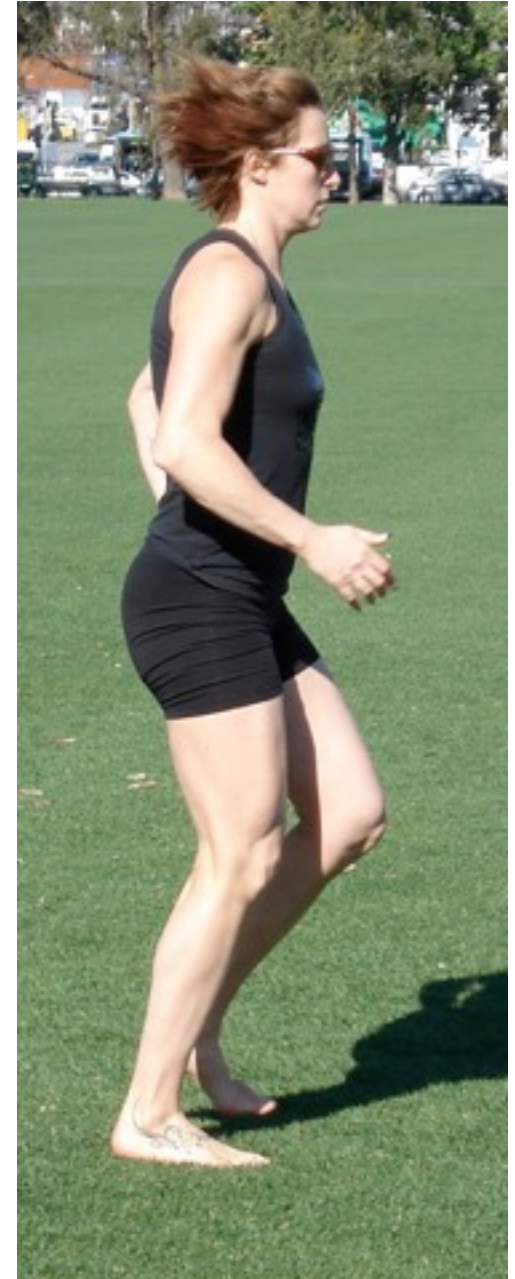
Basic Sprint Mechanics



Technique

Basic Sprint Mechanics

Start

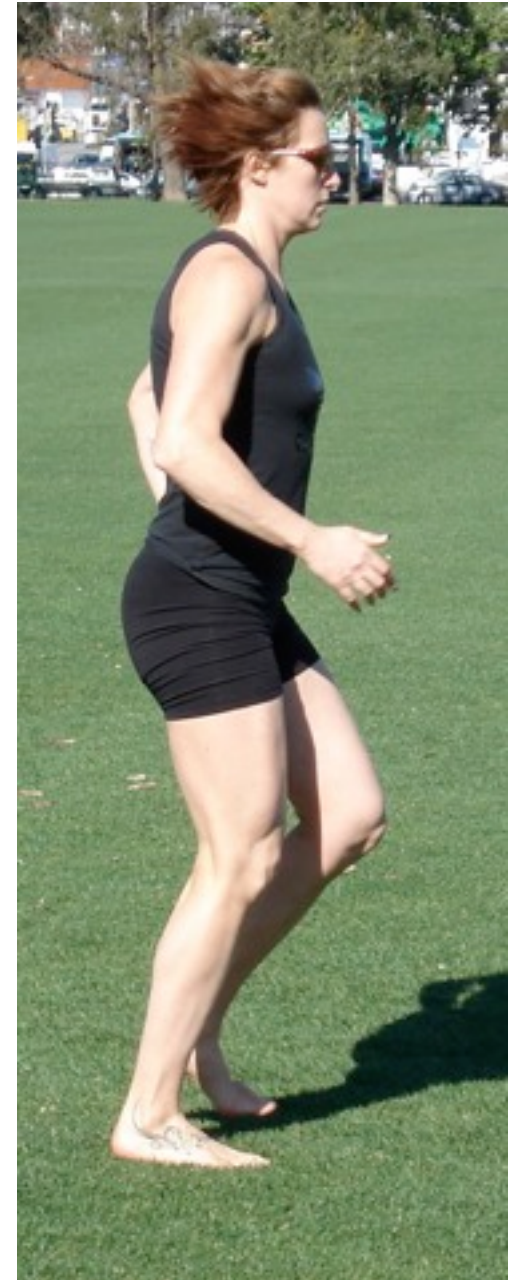


Technique

Basic Sprint Mechanics

Start

Acceleration



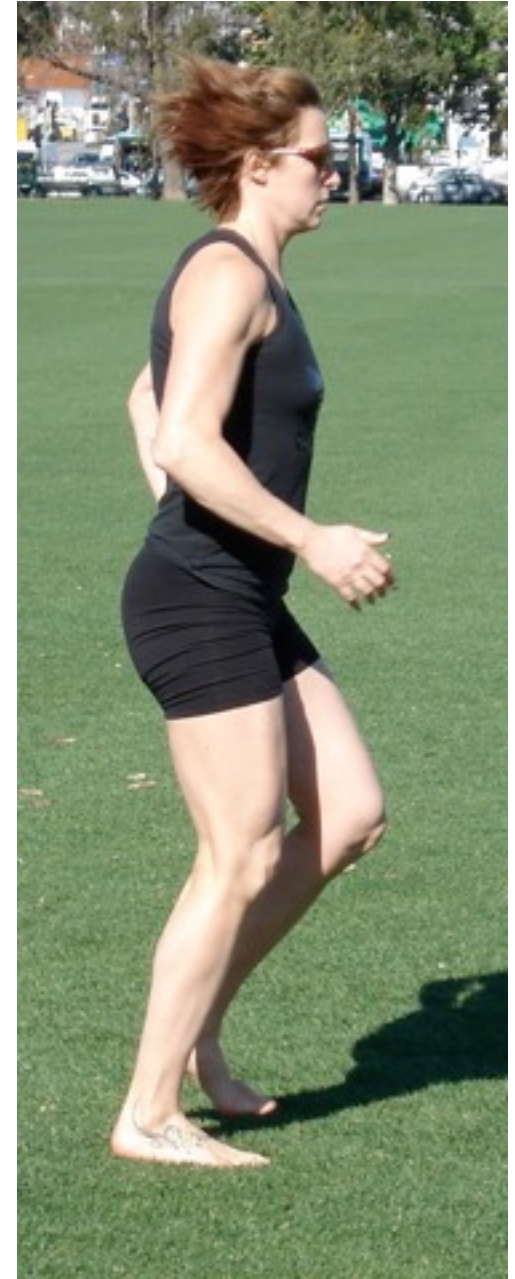
Technique

Basic Sprint Mechanics

Start

Acceleration

Turn Technique
Into Turn
In the turn
Off the Turn



Speed - Skill (SSK)

Rope Skip Run

OH Stick Run

Mach Drill Series

A1,A2, B2,A3

Stair Sprints (Every Stair - 20 Steps)

Fast Leg Combinations

Challenge Workout

How far in ten strides using drive action

How far in ten strides pulling sled

How few strides in 30m using drive action

PAL Paradigm™

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graph TD; A[PAL Paradigm™] --- B[POSTURE]; A --- C[ARM ACTION]; A --- D[LEG ACTION];
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POSTURE

ARM ACTION

LEG ACTION

Posture is Dynamic



Arm Action



Arm Action



Direction



Arm Action



Direction



Amplitude



Leg Action



Leg Action





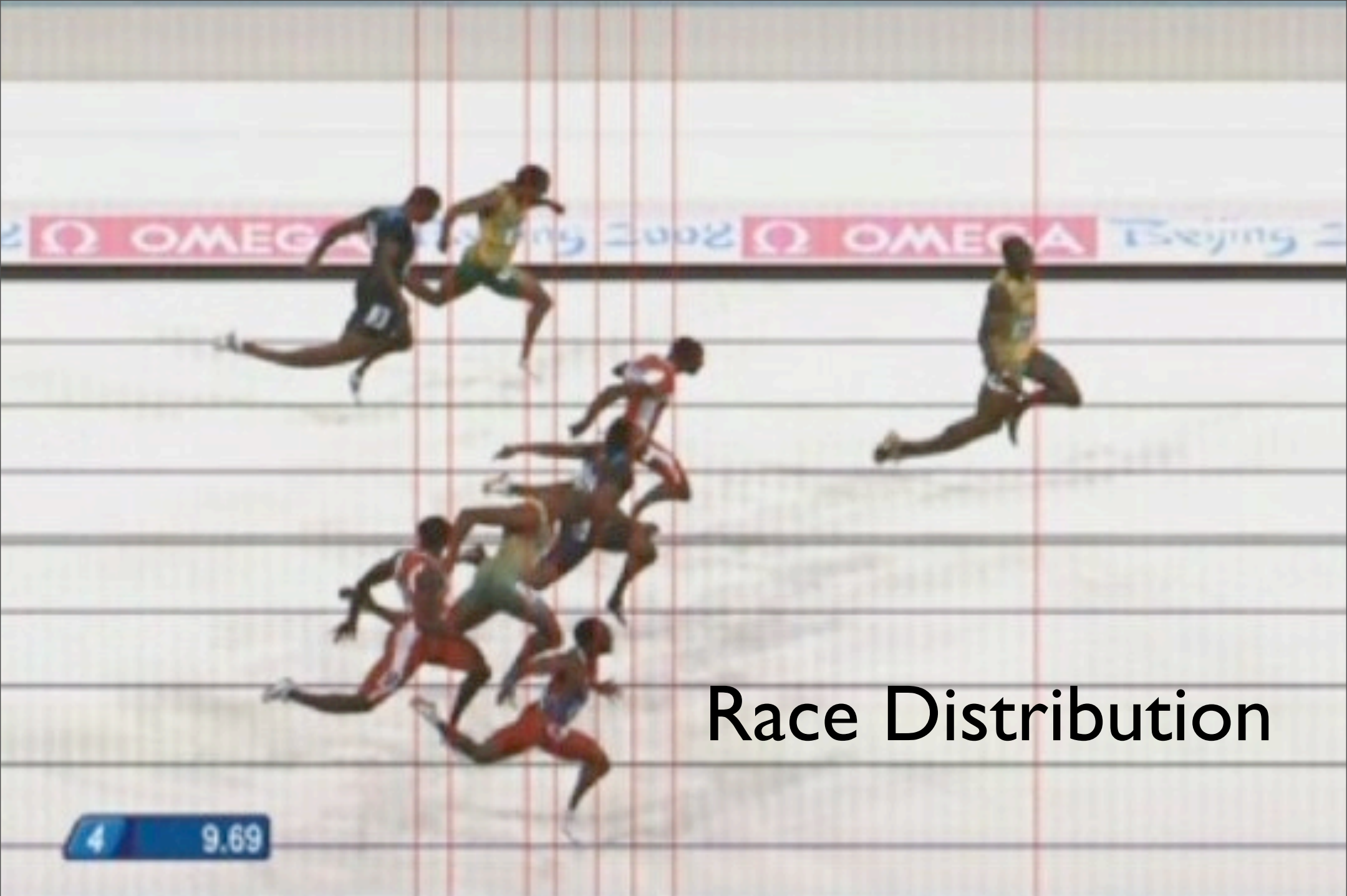
Win the Race



Win the Race



Not the Start



Race Distribution

Acceleration Dynamics

Dynamic

Change

Stride Length

Short to Long

Ground Contact

Long to Short

Shin Angle

Small to Large

Velocity

Slow to Fast

Stride Frequency

Slow to Fast

Acceleration Dynamics

Dynamic

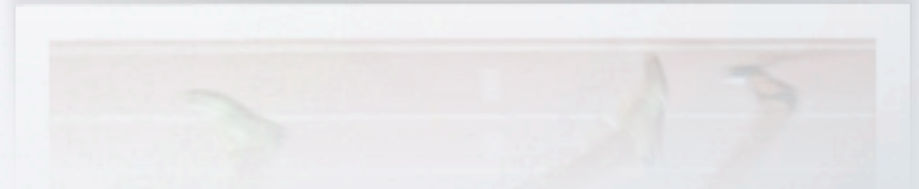
Stride Length
Ground Contact
Shin Angle
Velocity
Stride Frequency



Change

Short to Long
Long to Short
Small to Large
Slow to Fast
Slow to Fast

Absolute Speed



Absolute Speed

Highest level of neuromuscular control “Fast Coordination”



Absolute Speed

Highest level of neuromuscular control “Fast Coordination”

Short ground contact time
(Reactive) Strength



Absolute Speed

Highest level of neuromuscular control “Fast Coordination”

Short ground contact time
(Reactive) Strength

Highest limb speed



Make the Warm-up Appropriate for the Workouts

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Reinforce Fundamental
Movement Skill

Make the Warm-up Appropriate for the Workouts

Reinforce Fundamental
Movement Skill

Remediate

Warm-up & Preparation

1) Mini Band Routine (Band above ankles)

Sidestep Walk - Forward/Back Carioca Monster Walk

2) Balance & Stability

Single Leg Squat (Hold each position five counts)

Straight Ahead Side Rotation

3) Basic Core – Walking Forward & Back (3 Kg Med Ball)

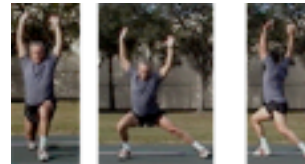
Wide Rotation x 20 Tight Rotation x 20 Side to Side x 20
Chop to Knee x 20 Figure 8 x 20

4) Lunge & Reach Series(2 reps in each plane – Forward/Side/Rotational)

Reach Up Reach Out & Down Reach Across

5) Crawls

Jack Knife Crawl x 5 Creepy Crawl x 5

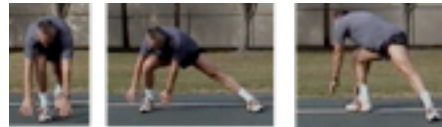


5) Active Stretch (No more than two minutes)

Calf Hamstrings Psoas/Lats Pecs

6) Coordination (All @ 30 meters x 2)

Skip
Crossover Skip
Side Step
Carioca
Backward Run
High Skip
High Skip with Rotation



7) Accelerations

4 - 6 x 40 to 60 meters

Use Resistance & Assistance Appropriately

Use Resistance & Assistance Appropriately

Ratios/Combinations

Use Resistance & Assistance Appropriately

Ratios/Combinations

Resistance:Assistance: Normal

Use Resistance & Assistance Appropriately

Ratios/Combinations

Resistance:Assistance: Normal

Assistance: Resistance:Normal

Resistance



Resistance

Harness



Resistance

Harness

Hills



Resistance

Harness

Hills

Sled



Resistance

Harness

Hills

Sled

Sand



Resistance

Harness

Hills

Sled

Sand

Stairs



Resistance

Harness

Hills

Sled

Sand

Stairs

Parachute

Resistance

Harness

Hills

Sled

Sand

Stairs

Parachute

Contrast

Assistance

Assistance

Pulley

Assistance

Pulley

Downhill

Assistance

Pulley

Downhill

Wind

Assistance

Pulley

Downhill

Wind

Towing

Assistance

Pulley

Downhill

Wind

Towing

Release/Free

Speed - Acceleration (SAc)

Rollover Start - 20m, 30m, 40m, 50m, & 60m

Block start - 20m, 30m, 40m, 50m, 60m

Sled

Harness

Contrast

Sled or Harness & release

Fast Leg Routine

Hills - Short (50 to 75 meters)

Hills - Short/Steep (30 meters) to Flat (30 meters)

Speed - Absolute (SAb)

Flying 10m, 20m, 30m, 40m, 50m, 60m

Towing 20m up to 100m

Towing + Release/Free 30 - 40m

Downhill 30 - 50m

Downhill to Flat 30 - 50m

Sprint-"Float"-Sprint - 20,20,20 or 30,30,30

Speed Endurance(SE) - Short

ASSE (Alactate)

Distance: 30 to 60 meters

Volume: 3 - 5 sets of 4 - 5 runs

Recovery: 45 to 90 sec between runs & 3 - 5 minutes
between sets

Intensity: 90% to 95% effort sprints

Speed Endurance(SE) - Short

GSSE (Glycolitic)

Distance: 40 to 80 meters

Volume: 3 - 5 sets of 5 runs

Recovery: 30 to 60 sec between runs & 3 minutes
between sets

Intensity: 90% to 95% effort sprints

Speed Endurance(SE) - Long

Distance: 100 to 350 meters

Volume: 3 - 5 runs

Recovery: 2 to 3 minutes between sets

Intensity: 95% - 100% effort

6 x 150m

3 x 200 m Cutdowns

200,250m, 200

2 x 200m with 30 sec rest

3 x 300m

Ladders - Up or Down

150m, 300m, 200m

Broken Sprints

Maximum distance runs 20 - 40 sec

Water

Special Endurance - SpEnd (Race Hardening)

Distance: 150 to 500 meters

Volume: 2 - 3 Runs

Recovery: Full

Intensity: 100% effort runs

Intensive Tempo Endurance - ITE

(Mixed aerobic and anaerobic work)

Distance: 110 to 400 meters

Volume: 6 to 12 runs or 2 - 3 sets of 6

Recovery: 1 to 5 minutes between runs or *HR to 120 - 130 bpm*

Intensity: 80% to 90% effort runs

Hills

Repeats

Continuous

Combo - Hills & Flat

Sets

Water

Extensive Tempo Endurance - ETE

(Aerobic work)

Distance: 80 to 400 meters or continuous runs up to 20 minutes

Volume: 8 to 24 runs total or 2 - 3 sets of 6 to 8 reps

Recovery: 30 sec to 3 min between runs

Intensity: 60% to 80% effort runs

Aerobic Capacity [AC] > 200m

Aerobic energy system <80% of predicted performance

45 sec or less between reps and 2 minutes or less between sets

Diagonals - Continuous for 6-8 minutes

30/30's

90 sec + 10 second fast

Water

Aerobic Power [AP] > 100m

Aerobic energy system 70-79% of predicted performance. 30-90 sec rest between reps and 2-3 minutes rest between sets.

6 x 100m with 30 sec recovery (2-3 sets)

Diagonals- sets of 6-8 reps (2-3 sets)

200m x 6 on a 2 minute cycle

Water

Strength Training

Coordination training with appropriate resistance to handle bodyweight, project an implement, resist gravity and optimize ground reaction forces





A photograph of two women performing a lunge exercise outdoors on a paved surface. Both women are holding a large yellow ball above their heads with both hands. The woman on the left is wearing a black t-shirt and black shorts, while the woman on the right is wearing a white tank top and dark shorts. They are both in a lunge position with their right legs forward and left legs back. The background shows a parking lot with several cars and some trees.

**Bodyweight Before
External Resistance**

A photograph of two women performing a lunge exercise outdoors on a paved surface. They are both holding a large yellow ball above their heads with both hands. The woman on the left is wearing a black t-shirt and black shorts, while the woman on the right is wearing a white tank top and dark shorts. They are both in a lunge position, with one leg forward and the other back. The background shows a parking lot with several cars and some trees.

**Bodyweight Before
External Resistance**

**In a Career
In a Year**

Training Components

Strength Training - Phases

Foundational

Basic Strength

Power Endurance

Max Strength

Training Components

Strength Training

Training Components

Strength Training

Total Body

DB High Pull

DB Snatch

Jump Shrug (Db)

Dumbbell Complex

Training Components

Strength Training

Total Body

DB High Pull

DB Snatch

Jump Shrug (Db)

Dumbbell Complex

Lower Body

SLS

BW Squat

Lunge

Step-up

Mini Leg Circuit

1/2 Leg Circuit

Full Leg Circuit

Training Components

Strength Training

Upper Body

Push-ups

Pull-ups

Pullovers

Rows

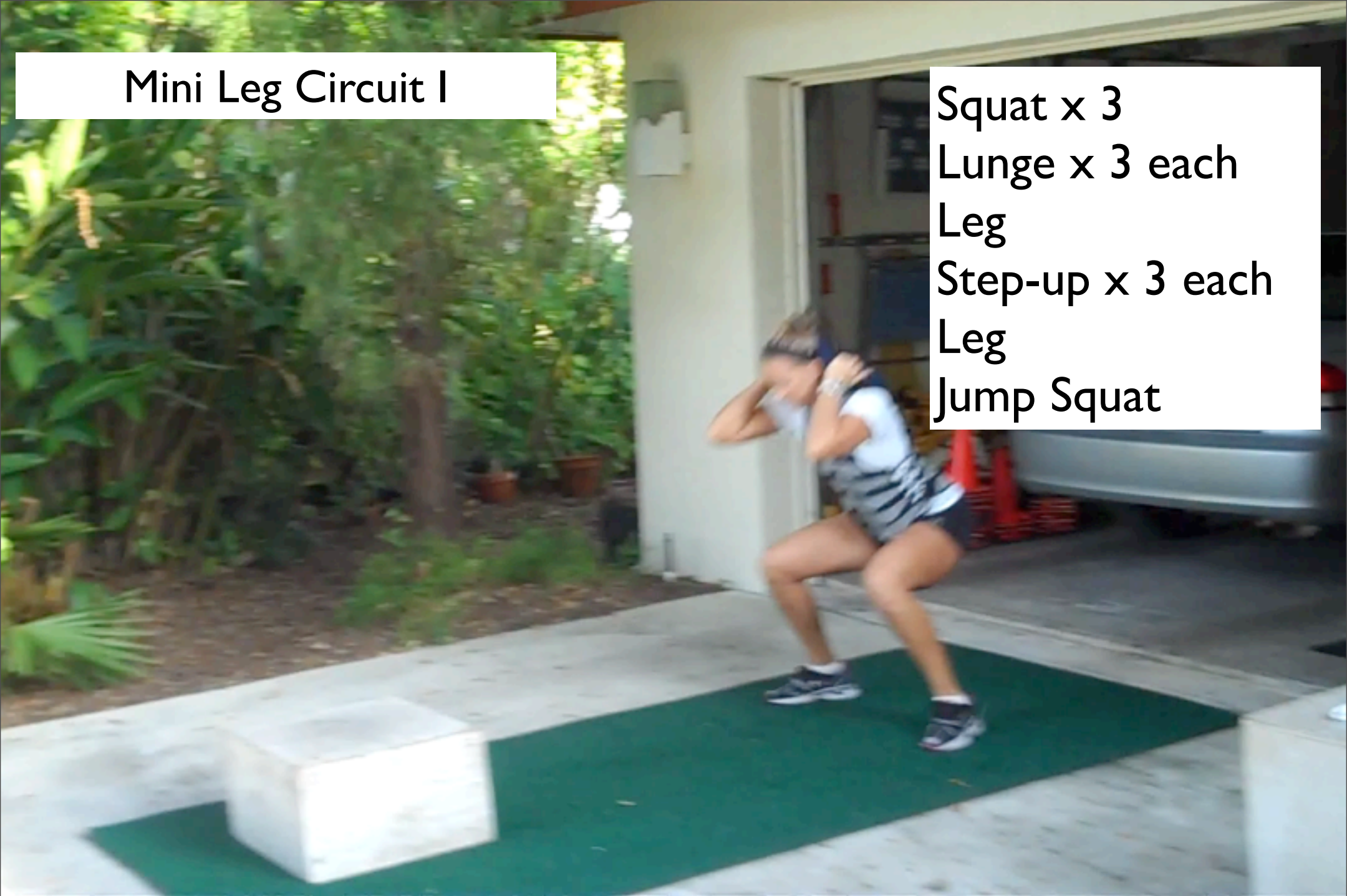
Front Pulldowns

High Step-up



Mini Leg Circuit I

Squat x 3
Lunge x 3 each
Leg
Step-up x 3 each
Leg
Jump Squat



1/2 Leg Circuit

Squat x 10

Lunge x 5 each Leg

Step-up x 5 each Leg

Jump Squat x 5

Leg Circuit

Squat x 20

Lunge x 10 each Leg

Step-up x 10 each Leg

Jump Squat x 10



Dumbbell Complex

High Pull x 6

Alt Press x 6 each

Squat x 6

Row x 6 each arm

Training Components

Power

Training Components

Power

Jumps

- Stiffness Jumps

- Hurdle Jumps

- Hops

- Bounds

Training Components

Power

Jumps

- Stiffness Jumps
- Hurdle Jumps
- Hops
- Bounds

Throws

- OHB
- FTL
- Squat Throw
- Wall Series

Training Components

Flexibility
Dynamic
Static



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