



# Developing Speed & Power in the HS Athlete

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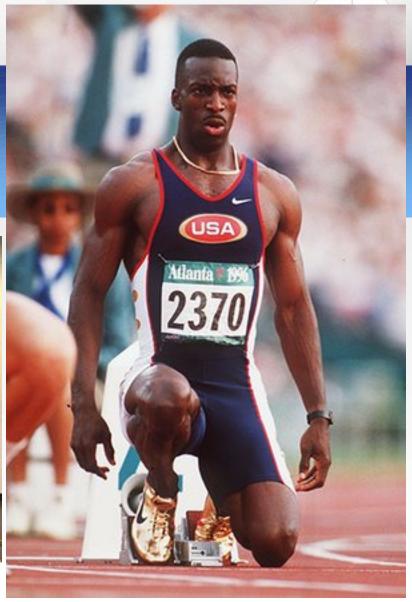
#### Most important thing your sprinter can do...

Pick good parents



#### DNA vs. Hard Work









#### Training reveals what DNA already knew

- Born with your # of fast twitch/slow twitch muscles and lengths
- Talents and Abilities
- Finding the right event for kids is an Art





## Fast/Slow Twitch muscle

- White meat is fast twitch(anaerobic) muscle fibers
  - 1. Used for quick bursts of activity, such as fleeing for danger, need glycogen, which is stored in the muscles.
- Red or Dark meat is slow twitch(aerobic) muscle fibers
  - Used for extended periods of activity such as standing or walking, need a consistent energy source
- \* Dr. Jason Karp





#### Fast Twitch Training @ the speed of sport

- Rate of force development
- Eccentric Strength Potential is 30-70% greater than concentric strength
- Ground contact time and putting muscles "On-Stretch" in Rapid Ballistic manner
- Force=Mass x acceleration
- $\bullet$  F=M x A or F=A x M





## Longevity

- Overtraining is real Main Focus of your Training Program, "What do I want to being doing 2 weeks before state..."
- The Goal is to build Precision of Movement, Optimal Flexibility, Strength, Endurance, and Mental Stamina. Working on these components improves fitness and helps build quickness, speed, and power.
- \*Point of Emphasis\* Sequence of Muscle Firing from the Forefoot
- Muscle Equilibrium & Muscle Elasticity
- Rate of Force Development





## Jumpers and Sprinters

- Use a jump rope!
- Running with the jump rope is one of the easier ways to teach foot landing beneath your center of gravity.
  Be careful with racing though=over striding
- Warm up, Combo workouts, Circuits, Cool down





### Simple Leg Explosion Development

- Rim Jumps 4 sets x 30 seconds @ 2-3 min rest
- 1. Land (eccentric)
- 2. Transition and Jump again ASAP
- Plyometric Exercise is defined by a .15 sec ground contact





## Stretching

- Horses and greyhounds don't stretch before a race, but my dog does stretch when he gets up from a nap
- Warming Up my body or activate muscle, core temperature
- Wearing old school grey cotton sweats, light swishy sweats for hot days or joggers-soccer player polyester to create sweat!
- Conclusion: Doing it apart from the workout is more effective; treatment





#### Warming up

- 400m-800m jog or 2 min jump rope
- Core- Cat/Camel Back, Side Planks, Supermans,
- Skipping and Walking Lunge Stretches
- Hips! Wall Leg Swings and Lying leg Swings
- Strides and Build ups





#### Dr. Ralph Mann

- Former world record holder and 1972 Munich silver medalist in the 400m Hurdles
- Evaluated every elite USATF sprinter male or female, biomechanically analyzed them
- The Start (especially the first 3 steps, where you can attain 60% top speed) gets you to max velocity.
- Accelerations, wickets, flying sprints, drop in accels





#### Acceleration

- Projection-Body Angle, Projecting the center of mass through space, covering ground from the very first step.
- Rhythm-Sound
- Rise-reach prime Max Velocity,

Like an Airplane taking off







#### **Starting Block Training**

- Angles-90 degree and 120-130 degree
- Foot Placement- 2 steps, 3 steps
- 1<sup>st</sup> Step you reach 50% of your Max Velocity
- -Dr. Ralph Mann, 2007
- Importance of the Head
- Eyes-Focus on a point
- Mistakes- using a mini-hurdle, negative motion, chalk is better





## Triplets & Holds



#### RUN TALL EXERCISE



Put hands against wall, Back up as far as you can with heels on ground. Then rise on toes, lift lead knee, and FEEL the power!

NOW -- if you stick out behind



you will note you have LOST all your horse-Dower!





#### Sleds & Tires, Hills

- Curtis Craig "Running Hills all night!"
- Perfect in Circuits or Combo Workouts
- Short Hills,
  - Walk back recovery for sprinters
  - 2. Quartermilers-walk back 50, jog back 50
  - 3. Distance-jog back recover, for short hills. Long Hills- give them 5 minutes then jog recovery.
- Sled and Prowler push





#### A Skip, B Skip, C skip

- Is a Coach to Athlete Evaluation to when they can return to 100%
- Walking A's, A-Skip, Running A's(High Knees)
- Walking B's, B-Skip, Running B's(Majorettes)

 Don't miss out on Coaching up A-skip and B-skip, rhythm & sound, ankle & shin angle, arms, relaxation, progression, head position, pushing, pulling, etc.





## Pat Henry & Vince Anderson Acceleration Ladder

- Wickets, Mini Hurdles
- Acceleration Patterns for a 13.3-10.10 100m
- Jumpers Pattern for 17'-28-6" LJ
- 0 is the starting line, hold down the tape and mark
- 1st hurdle placement is 2'-6"-3'-9". Each hurdle after that is +6 +5,+4,+3,+1, 0
- 2<sup>nd</sup> hurdle will be between 5'5"-8'-0".
- JV kid needs starts on +5
- Varsity 6+
- Use chalk, measuring tape, bit of rope, and Accel Chart