

# Reflections and New Directions in Sprinting and Hurdling

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# Background

- Theme of this year's congress
  - Reflect upon development over the past 20 years
    - General observations from this region
      - My opinions and observations
        - Open for debate
- Examine a current technical model for the sprint hurdles

# General Observation

- I believe the truly successful sprint and hurdle programs have been directed by coaches who understand the need to have balance in their programs.
  - Balance in training, technical, and competitive loads
- We have seen the extreme ends of the spectrum over the past 20 years.
  - High training loads with low technical emphasis
  - High technical emphasis with poorly designed training loads

# General Observation

- Both ends of this spectrum have yielded good international results in some training camps, particularly in the late 80's.
- Dopping has certainly played a role in some of these results
- My observation is that dopping played a much larger role in many sprint and hurdle performances 20 years ago than currently. Fortunately many of the offenders have been discovered but clearly not all.

# Changes Observed

- There have been significant advances in a number of areas effecting sprinting and hurdling. I believe the information and experience is there for all coaches to utilize if sought.
- Unfortunately, like in many other endeavors, we too often cling to what we know rather than constantly examine and evaluate what we are doing to get the results we are achieving. This all important self-evaluation enables us to selectively discard ineffective practices and replace them with better ones.

# Changes Observed

- Sports medicine
  - Understanding the causes and treatments of many common sports injuries has improved dramatically.
  - The technology available to evaluate injuries and treat them has markedly improved.
  - Openness by coaches and doctors to alternative medical treatments has occurred creating greater sharing of ideas across disciplines.
  - Therapists who understand holistic treatment plans have increased in number and there is better cooperation among specialists to solve medical issues.
  - Understanding of how we can utilize the intended function of the human anatomy in locomotion has improved and with that opened doors to possibly reducing many common injuries.

# Changes Observed

- Understanding and application of periodization principles
  - Twenty years ago there seemed to be a much greater emphasis and interest in 'training volumes'.
    - There existed a strong belief that to improve performance the athlete needed to increase their training volume year to year.
  - Coaches today seem to be less attached to the classic Matveyev model.
    - This model no longer is a valid model for high performance athletes in my opinion.
    - Many elite level athletes and their coaches have developed loading strategies that allow for a high level of performance to be repeated over many months during the long competitive season.

# Changes Observed

## • Technical Models

- I believe there was a great deal of poor information disseminated during the 80's regarding what should be taught in sprinting and hurdling.
  - There were good studies taking place that were increasing our understanding of what was important, yet not how to achieve it.
    - Ralph Mann, Betty Atwater, among others
- In recent years there has been good information written and presented helping coaches to understand how we can help our athletes achieve the requirements for better performance.
  - Frans Bosch and Ronald Klomp

# Technical Models

- Over the past 3 years I have seen some athletes demonstrate very good technical models.
  - Asafa Powell and Usain Bolt are particular examples of excellent sprint mechanics
    - Examples of how we better understand the development of technical models based upon functional human anatomy.
- These same technical models of running are exactly what are required to enable better performances in hurdling, jumping and long distance running as well.

# Technical Model

- ① Sprint Hurdles

- ① Briefly examine how an anatomical approach to hurdling determines the technical model

# General Objectives

- Improve Hurdling Skill
- Maintain Rhythm between hurdles
- Develop a solid start and aggressively accelerate thru the first hurdle
- Accelerate through more than one hurdle

# Hurdle Skill Components

- Takeoff efficiency
  - #1 problem area
- Step management
  - Length of steps between hurdles
  - Rate of steps between hurdles
  - Challenge for hurdlers at all performance levels

# Takeoff Efficiency

- Try to minimize loss of velocity
  - Try to minimize “decelerating” forces at takeoff
  - Requires an aggressive approach to the hurdle
    - Maintaining step frequency decreases the time available for ‘planting’ takeoffs



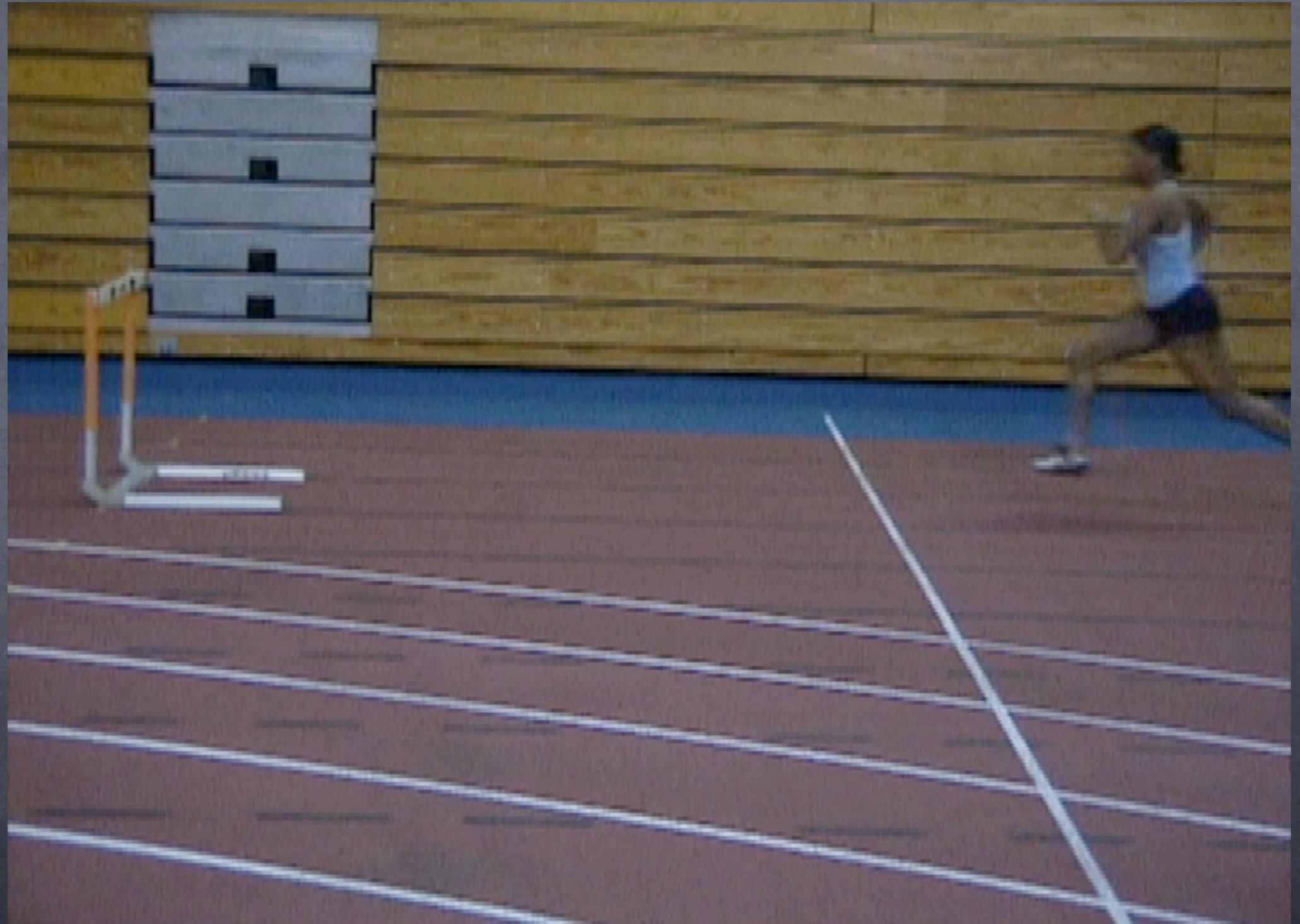
# Anatomy of a Takeoff

- The Takeoff

- Must consider the penultimate step as of equal or greater importance than the takeoff step itself.
  - Transfers and directs energy flow just as in the jumps
  - Largely determines the path for the center of mass thru the hurdle

# Anatomy of a Takeoff

- Posture
- Pelvis
- Feet
- Thighs
- Forces



# Anatomy of a Takeoff

- ① Examination points

- ① Posture

- ① Hips over feet and upward facing

- ① Feet under center of mass

- ① Sprint like forces being produced utilizing extension and stumble reflexes

# Undesirable Model

- Poor model as seen in most young or inexperienced hurdlers
- Posture
- Slack in muscles
- Misdirection of force application



# Desirable Model

- Quite good clearance
- Posture
- Reasonable stiffness
- Clean limb movements



# Looking for the Ideal

- What sets up a good hurdle clearance?
  - Good sprint mechanics
  - Good coordination to produce good ground forces
- Let's look at where it all begins.....

# Poor Ground Forces

- Example of good lever positions to set up good elastic forces
- Poor timing
- Excessive slack



# Better Ground Forces

- Example of good lever positions to set up good elastic forces
- Better timing
- Less slack



# Very Good Ground Forces

- Better stiffness in joints and reduced slack in muscles



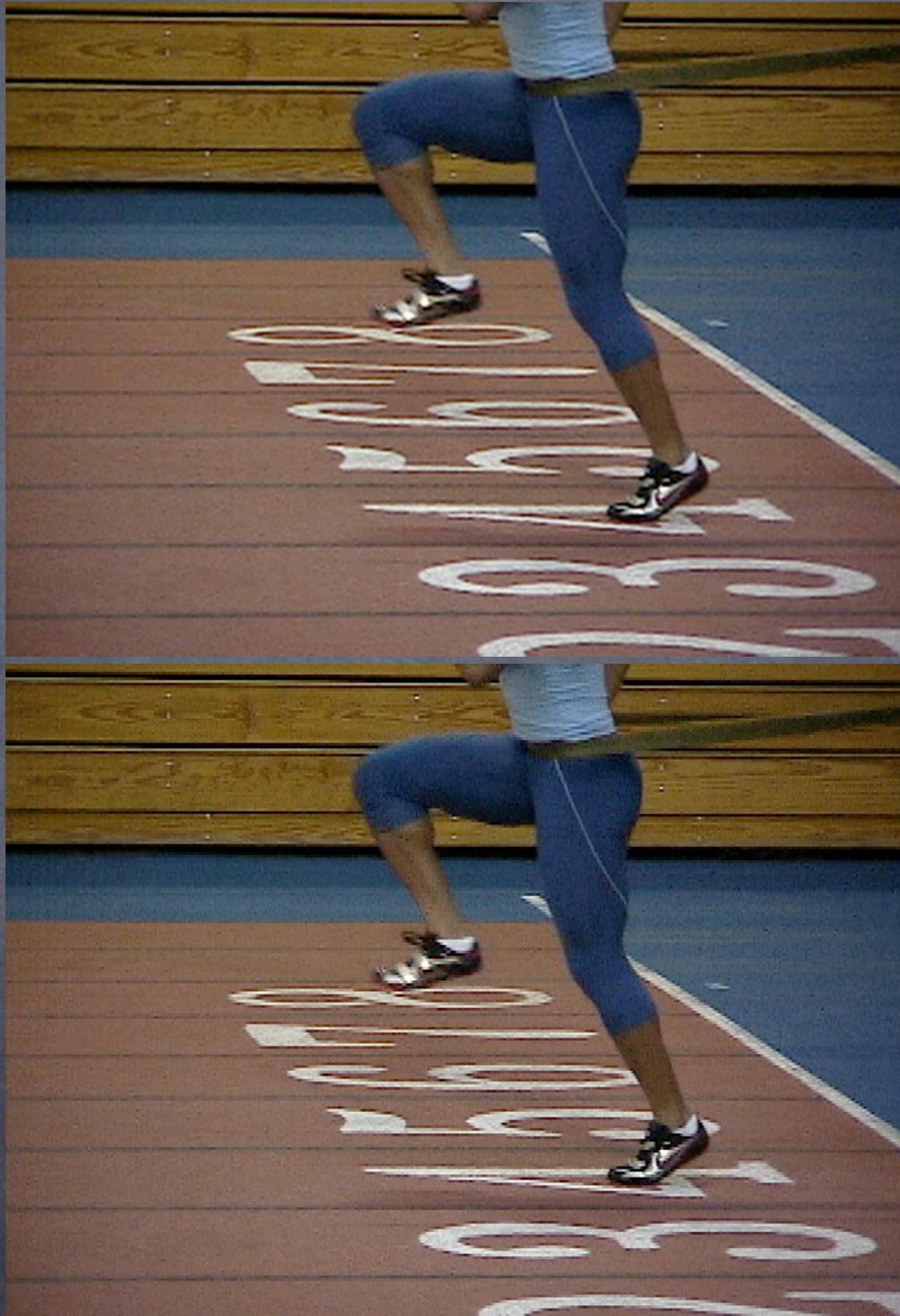
# Exercise Selection

- Basic ankle coordination exercise



# Exercise Selection

- Example of an exercise to develop the coordination to simulate the elastic response we want



# Next Step in Sequence

- ① Focus on energy transfer
  - ① Rhythm
  - ① Velocity
  - ① Energy Transfer

