Bella Vista high jump training
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Expectations

My simple definition of the high jump

- Jumper follows a "J" shaped approach with parabolic (decreasing radius) curve
- Approach run is rhythmic, speed increasing with each step
- During the approach, the jumper leans into the center of the curve maintaining speed and lean into the take-off phase
- A "blocking" of the horizontal momentum generated in the approach run occurs at take-off by driving the arm or arms up along with the free knee creating a positive vertical velocity

Training Objectives

- Technical Development
- Physical Development
- Strength Development – Weightlifting
- Power Development – Weightlifting & Plyometrics
- Speed Development
- Nutrition

Psychological Development
Interrelated
Non-Linear

Purpose of Training Objectives
To optimize the mechanical factors that influence high jumping

- Height of center of gravity at take off
- Velocity of center of gravity at take off
- Angle of center of gravity at take off
- Rotations around center of gravity that occur during flight

What is The COG?
Center Of Gravity (COG)* is an imaginary balancing point where the body weight can be assumed to be concentrated and equally distributed. It is the point of exact **center**, around which the body may rotate freely in all directions.
***Center of Gravity = Hips**

Considerations

- What happens during the approach and take-off determine the height, velocity, angle and rotation around the COG.
- After jumper has left the ground the path of the COG is determined and can not change. We can speed up or slow down the rotation around the COG.
- We are trying to achieve this position at take-off leaving the ground as quickly as possible.

High Jump Technique - Approach
Major technical approach problems

- Poor posture
- Improper running mechanics
- Stutter stepping or lack of rhythm
- Approach angle too shallow

- Approach angle too steep
- Speed too slow or fast

High Jump Technique - Take off

Major technical take off problems

- Take off too close to bar
- Standing up straight too soon leads to not "holding vertical"
- **Take off angle into bar (biggest issue I deal with!)**

High Jump Technique

Flight Mechanics

Major technical flight problems

- Under rotating
- Over rotating
- Reaching peak before bar

Technical development

height of cog at take off

- Factors that optimize the height of COG at take-off
- Height of Athlete
- Posture
- Progressive acceleration (approach rhythm & progressively longer stride pattern) leads to…
- Quick (shortened) last step – work the penultimate (next to last) to achieve a positive vertical velocity

Technical development

velocity of cog at take off

- Factors that optimize the velocity of COG at take-off
- Speed of approach – top controllable – the goal being transfer horizontal velocity to vertical velocity
- Penultimate step = next to last step – carry speed into last step
- Quick last two foot strikes (Shortened last step or quick step) – work the penultimate to achieve a positive vertical velocity (so that jumper doesn't need to overcome a negative vertical velocity)

Technical development - Angle of COG at take off

- Factors that optimize the angle of COG at take-off
- Posture on curve – lean, lean, lean into curve
- Posture at take off – continue lean all the way to plant and take-off – create "hinge" action (leaning away and back)
- Holding vertical – vertical attitude - patience

Technical development - Flight Rotation

- Factors that optimize rotation around COG during flight
- Proper bar rotation is a result of running the curve correctly and take off position
- Hinge action
- Conservation of angular momentum
- Cues – shoulders to pit, knees wide, heels together

Why Drills

- High jumping is a complex movement
- It is important to break it down into smaller movements

- In some cases, even slow down especially for younger jumpers
- Through drills we are trying to allow our jumpers to experience the sensation or feeling of each movement when done correctly

Technical development - Video
Height/Angle of COG at take off
Circle (no hurdles): cues - lean to center (posture), feel pressure on feet
Technical development - Video
Height/Angle of COG at take off
Fig 8 Drill: cues - lean to center (posture), feel pressure on feet, whip
Technical development - Video
Height/Angle of COG at take off
U's: cues - lean to center (posture), feel pressure on feet, whip
Technical development - Video
Height/Angle/velocity of COG at take off
S Runs: cues - lean to center (posture), feel pressure on feet, whip
Technical development - Video
Height/Angle/velocity of COG at take off
S Runs With Cone: cues - same
Technical development - Video
Height/Angle/velocity of COG at take off
Run Throughs – emphasizing rhythm, posture
Technical development - Video
height of cog and velocity at take off
Penultimate Hurdle Drill: cues - load penultimate, move through
Technical development - Video
U Approach Hurdle Drill: cues - load penultimate, move through, lean
Technical development - Video
Circle Drill (with hurdles): cues – lean to center (posture), feel pressure on feet, hold lean into take-off

More drill example videos

Technical development
angle of cog at take off
Additional Drills
- Pop up arm drills (walking) at pit or in circle
- Pop up arm drills (running) at pit or in circle
- Scissor Kicks
- Short approach jumps 4-6 steps

Technical development - Video
angle of cog at take off
Kick-offs: cues – hold take-off position
Technical development - Video
angle of cog at take off
Knee-offs: cues – hold take-off position

Technical development - Video
Hip height and velocity at take off
Penultimate Lunges (at pit): cues - quickly move through penultimate
Technical development - Video
Hip height and velocity at take off
Penultimate Box Drill: cues - load & quickly move through penultimate
Technical development - Video
Hip height and velocity at take off
Penultimate Box Drill 2: cues - load & quickly move through penultimate
Technical development - Video
Flight Rotation
Pit drills: working on proprioception

More drill example videos

Technical development - Video
Flight Rotation
Back over box Jumps

Technical Development
At Bella Vista we train 1 to 2 days per week depending on competition schedule
Training Variables

- Volume and Intensity are inversely related.
- Volume = "how much work you do" (duration, distance, repetitions). Generally volume goes from high to low as the year progresses.
- Intensity = "how hard you work" (load, velocity, power output) Generally intensity goes from low to high as the year progresses.

Planning The Training Year

"The coach must be prepared to improvise so that the schedule remains a means to an end rather than an end in itself." – *Brother Colm O'Connell*

Pre-Season (SEPT – dec)
General Conditioning (Sept – Oct)
General Conditioning Emphasis: "getting back into shape"
In general volume is high and intensity is low
Pre-Season (SEPT – dec)
General Conditioning (Sept – Oct)
Strength and Power (weight lifting)

- 3 days in the weight room per week September to December
- 45 minutes - short workouts. Designed to get kids in and out quickly
- Circuit training with emphasis on:
    - High volume (12-15 reps/set)
    - Low intensity – light weight

Power (weight lifting)

- Introduce clean teaching progression (shrugs, high pull, rack)

Pre-Season (SEPT – dec)
General Conditioning (Sept – Oct)
Pre-Season (SEPT – dec)
General Conditioning (Sept – Oct)
Strength and Power (high pull)
Pre-Season (SEPT – dec)
General Conditioning (Sept – Oct)

- Strength and Power (Rack)

Pre-Season (SEPT – dec)
General Conditioning (Sept – Oct)
Pre-Season (SEPT – dec)
General Conditioning (Sept – Oct)
Power (Plyometrics)

- 2 days/week of plyometrics max though out training year
- Often incorporated into weight lifting sessions
- Emphasis - Low impact plyometrics
- Jump rope
- Step ups
- Standing lunge jumps

Pre-Season (SEPT – dec)
General Conditioning (Sept – Oct)
Power (Plyometrics) - step ups

Period - Pre-Season (SEPT – dec)
Phase - General Conditioning (Sept – Oct)
Pre-Season (SEPT – dec)
General Conditioning (Sept – Oct)
Speed

- 3 days of speed work per week September to December
- Emphasis = Aerobic capacity (12 to 20 min runs)
    - Non linear - Short sprints (80m or less), speed endurance (90m to 150m) , and special endurance (150m to 600m) worked during this phase but not emphasized.

Pre-Season (SEPT – dec)
Specific Conditioning (Nov – Dec)
Strength and Power (weight lifting)

- Emphasis = developing more high jump specific strength
- Medium to high volume (8-10 reps/set)
- Low to medium intensity - increase in weight
- Finish all sets of lift before moving on to next lift
    - Introduce penultimate lunges
    - Introduce Cleans
    - Introduce Jump Shrugs

Pre-Season (Sept – Dec)
Specific Conditioning (Nov – Dec)
Strength and Power - Penultimate Lunges

Pre-Season (Sept – Dec)
Specific Conditioning (Nov – Dec)
Strength and Power - Cleans

Pre-Season (Sept – Dec)
Specific Conditioning (Nov – Dec)
Strength and Power - Jump Shrugs

Pre-Season (Sept – Dec)
Specific Conditioning (Nov – Dec)

- Strength and Power (weight lifting)

Pre-Season (Sept – Dec)
Specific Conditioning (Nov – Dec)
Power (Plyometrics)

- Emphasis = Introduce higher impact and high jump specific plyometrics
    - Plyo-sprints
    - Plyo-box jumps

Pre-Season (Sept – Dec)
Specific Conditioning (Nov – Dec)
Power (Plyometrics) Plyo-Sprints

Pre-Season (Sept – Dec)
Specific Conditioning (Nov – Dec)
Speed

- Emphasis = Special endurance (150m to 600m)
- Volume medium, intensity medium

Competitive Season (Jan – May)
Pre-Competition (Jan – Feb)
Strength and Power (weight lifting)

- Emphasis = Progression towards Max Strength
- 2 days in the weight room per week January to end of April
- Medium volume (8-10 reps/set)
- Medium intensity

Competitive Season (Jan – May)
Pre-Competition (Jan – Feb)
Power (Plyometrics)

- Emphasis = Maintenance
- Volume medium, intensity medium

Competitive Season (Jan – may)
Pre-Competition (Jan – Feb)
Speed

- Emphasis = Speed endurance (90m to 150m)
- Volume medium, intensity medium
- Speed (80m or less) and special endurance (150m to 600m) worked during this phase but not emphasized.
- High jump specific speed work (continued into Competition Phase)
    - Sprint mechanics drills – high knees, A skips, B skips etc.
    - S runs with or without cones – with cones 30-45 feet apart or 60 - 90 feet apart for speed)

Competitive Season (Jan – may)
Pre-Competition (Jan – Feb)
Technique

- **Emphasis = progressive acceleration (approach rhythm) and posture. to optimize height, angle, velocity and proper bar rotation of COG.**

Competitive Season (Jan – May)
Pre-Competition (Jan – Feb)
Strength and Power (weight lifting)

- Emphasis = Power/Maintenance
- Low volume (4-6 reps/set)
- High intensity (slight increase in lbs 80%/1rm)

Competitive Season (Jan – may)
Competition (March – April)

Power (Plyometrics)

- Emphasis = Maintenance (March – April)
- Volume low, intensity high

Competitive Season (jan – may)
Competition (March – April)
Speed

- 2 days of speed work per week January to May
- Emphasis = Speed (30m to 80m)
- Volume low, intensity high
- Speed endurance (90m to 150m) worked during this phase but not emphasized.

Competitive Season (jan – may)
Competition (March – April)
Technique

- Emphasis = Take-off Mechanics to optimize height, angle, velocity and proper bar rotation of COG.

Competitive Season (jan – may)
Competition (March – April)
Competitive Season (jan – may)
Peak (May)
Strength and Power (weight lifting)

- Emphasis = Tapering
- Low volume (1-6 reps/set)
- High intensity (slight increase in lbs 85 - 90%/1rm)

Power (Plyometrics)

- Emphasis = Tapering
- Back to low impact plyometrics

Speed

- Emphasis = Speed Maintenance (30m to 60m)
- Volume low, intensity high

Competitive Season
Peak (May)
Technique

- Emphasis = Flight Mechanics optimize and proper bar rotation.

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