Pole Vaulting for the Athlete and Coach

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Overview

• Technique – physics and biomechanics: “how to pole vault”
  – Pole grip and carry
  – Approach / Pole Drop
  – Plant / Take-Off
  – Drive
  – Swing to invert
  – Pull-turn-push
  – Clearance

• General Thoughts

• Drills / Examples
Grip and Carry

• Grip
  – No greater than arms width and no less than “hand to elbow”
  – Must be comfortable to ensure confidence
  – Make small adjustments when needed

• Carry / Posture
  – Right hand/arm
    • Relaxed and comfortable (position will vary based on athletes wrist flexibility)
    • Over right hip
    • Elbow back
  – Left hand/arm
    • Support system and fulcrum
    • Midline of body
    • Elbow down
  – Posture
    • Tall and upright (straight line)
    • “hips underneath”
Grip and Carry (Video)
Grip and Carry (Full Speed)
Approach / Pole Drop

• Approach Length (General Rule)
  – Boys/Men – same number of steps as their PR height
    • Ex: 14’ PR = 14 step approach
  – Girls/Women – number of steps as their PR height plus 2
    • Ex: 10’ PR = 12 step approach

• Development and Checkmark system
  – Acceleration (drive) – first 4 steps (2 lefts) – Athlete checkmark
    • Over coming inertia
    • Sets up the rhythm of the approach and mechanics of the vault
    • Acceleration angles, pushing mechanics (down and back), separation
    • Vertical pole carry
  – Transition – dependent upon total number of steps in approach
    • Ex – 14 step approach – acceleration (4), transition (4), preparation (6)
    • Transition from acceleration mechanics to upright running (speed) mechanics
    • Tall posture, hips underneath, knees up, touch-down under hips
    • Vertical pole carry to active pole drop
  – Preparation – last 6 steps (3 lefts) – Coach checkmark
    • Active pole drop and begin preparing for plant/take-off
    • Pole drop is at 45 degrees at “coaches mark” and eye level on 3rd step from take-off
    • Plant begins 3 steps from take-off
      – Pole tip at eye level
      – Begin plant movement

AC = Athlete Checkmark
CC – Coaches Checkmark (pole tip at 45 degrees)
P – Begin plant (pole tip at eye level)
TO = Take-off

12-step (modified)

AC    CC      P    TO
Start  L      L      L      L
L      L      L      L
L      L      L      L
L
R      R      R      R

<<Acceleration>>  <<<<<<<<<<Transition>>>>>>>>>>>> <<<<<<<<<<<<<<<<<<Preparation>>>>>>>>>>>>>>>>>>>

14-step

AC    CC      P    TO
Start  L      L      L      L
L      L      L      L
L      L      L      L
L
R      R      R      R

<<<<<<Acceleration>>>>>>>>  <<<<<<<<<<<<<<<<<<Transition>>>>>>>>>>>>>>>>  <<<<Preparation>>>>>>>>>

16-step

AC    CC      P    TO
Start  L      L      L      L
L      L      L      L
L      L      L      L
L
R      R      R      R

<<<<<<Acceleration>>>>>>>>  <<<<<<<<<<<<<<<<<<<<Transition>>>>>>>>>>>>>>>>>>>>  <<Preparation>>>>>

Start

L      L      L      L      L      L      L      L      L      L
Approach / Pole Drop Cont.

Drive / Acceleration

Transition / Upright

Preparation (6-steps out)

Beginning of Plant / Eye level (3-steps out)

Plant / Take-Off
Approach / Pole Drop (Video)
Approach / Pole Drop (Video)
Approach / Pole Drop (Full Speed)
Plant / Take-Off

- **Plant**
  - Begins 3 steps prior to take-off (pole tip at eye level)
  - Active pole drop (accelerate)
  - Right hand moves from hip to above head
    - Stays close to body
    - “slide/curl/press”
  - Left hand acts as fulcrum for pole to rotate
    - Stays stable for “slide/curl”
    - Presses in conjunction with right arm
  - Both arms press to full extension
  - Teaching Cue
    - Going in to last 3 steps
    - 3 – 2 – 1 = Slide – Curl - Press

- **Take-Off**
  - Accelerate through take-off
  - Must maintain proper, stable and upright posture
  - Penultimate step
    - Contacts under hip
    - Once contact occurs, move down and forward to lower center of mass
  - Take-Off Step
    - Lower foot recovery going in to contact in order to get foot down quickly
    - As foot makes contact, stabilize and extend in jumping motion
    - Jump up and out (long jump)
    - Should occur directly under top (right) hand at point of take-off
Plant / Take-Off (Video)
Plant / Take-Off (Video)
Plant / Take-Off (Video)
Plant / Take-Off (Full Speed)
Drive

- Continuation of the plant and take-off
- Preparation for swing and invert
- As take-off foot leaves the ground...
  - Continue pressing vertical
  - Release shoulders / “Elastic”
    - Allows chest and center of mass to move forward but keeps hips back in preparation for long swing
    - Develops “pre-stretch” through shoulders, chest, abdominals, hips and quadriceps
    - Creates the reverse “C” position
  - Slight flexion of left arm/elbow is acceptable at this time
  - If shoulders block, chest will stop and hips come through prematurely

- Common misconceptions and errors that...
  - Prevent or slow the pole rotating to vertical
  - Cause vaulter to break at hips and hinder the swing and invert
    - Pressing (driving) left arm forward to “force bend” the pole
    - Rowing hands/arms forward during drive phase
    - Pulling with left arm
Drive (Video)
Drive (Video)
Drive (Full Speed)
Swing to Invert

• Realign to initiate swing
  – From drive (reverse “C”) position, forcefully tap/row/extend arms forward and up to the vertical position
  – Achieve a long extended position at the cord line
    • Straight line from top hand through left foot and to the box
    • Should not see a break in the hips until vaulter passes the cord line
  – Continue swinging from top hand and accelerate hips to hand (hips don’t stop)
  – Keep toes to shins and drive heels up and behind head
  – Allow shoulders to drop in to vertical position
• Common errors
  • Pushing arms forward to hips... stops upward rotation and prevents swing
    – Right hand should not move forward past the position of the shoulders
    – Hips to hands... not hands to hips
  • Pulling with the left arm to raise hips... will stop swing
  • Separating/throwing head back... causes hands to push forward
Swing to Invert (Video)
Swing to Invert (Video)
Swing to Invert (Full Speed)
Pull, Turn, Push

• Pull
  – Initiate with Right hand
    • Also initiates the turn
  – Pull through mid-line
  – Hip to chin

• Turn
  – Initiate with right foot
    • Turn around left foot

• Push
  – Keep right hand moving from the pull into the push
  – Push to full extension
Pull, Turn, Push (Video)
Pull, Turn, Push (video)
Clearance

• Full extension
  – Continue to complete the push off the pole

• Break at the hips
  – Raises center of mass
    • Allows for higher bar clearance

• Hollow chest

• Thumbs in

• Patience as vaulter rotates around cross bar
Clearance (Video)
Clearance (Video)
Full Vault (Video)
Full Vault (Full Speed)
Full Vault (Video)
Full Vault (Full Speed)
General Thoughts

• Safety
  – Safe and fun event if proper precautions and equipment is used

• Training (Big Picture)... could do a presentation on just training theory
  – Just as important as technical aspects. Often overlooked
  – Power / Speed based (Neuromuscular demand)
    • Train the demands of the event (weight room and running/sprint workouts)
    • Use other events to help develop athlete (sprints, jumps)
  – General rule – Alternate Neuromuscular and Metabolic days
    • Neuromuscular activities – weight training, sprints, plyometrics, full approach vaulting
    • Metabolic Days – technique/drill work, general strength, mobility, short approach vaults
    • May have to work best case scenarios with other events and/or sports
  – Competitions are a part of training and should be factored in
    • Full approach vault session
    • Teaches athletes how to compete and overcome adversity
      – Coach/Athlete communication (learn how to coach in competition...K.I.S.S.)
    • Meet experience/practice prepares athlete for the “big meets”... District, Area, Region, State

• Practice / Drills / Competition
  – Have a plan and purpose for every aspect of training!
    • Not set in stone. Be flexible and able to improves and adjust.
    – Who (athlete), What (purpose), When (training plan), Where (facilities), Why (purpose), How (execution/game plan)

• Always, Always, continue learning – beg, borrow, steal, and don’t be afraid to be creative

• HAVE FUN!!!!
Thank You and Good Luck

Contact Information

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