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## The Pole Vault – Breaking Down the Technical Phases

*This document assumes a right handed vaulter*

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The pole vault is a “continuous chain” motion from the start of your approach run to clearing the cross bar. The following will break apart the pole vault into phases to help better understand the whole flow. Again, all of the below phases must link together seamlessly to provide the best possible vault.

The first 3 phases are highlighted with **\*\* \*\*** because they are the most important. If these 3 phases are clean, the rest of the vault will be easy and you will be clearing heights well above your hand grip.

### 1. **\*\*Approach Run\*\***

- a. The approach run starts with the pole at about a 70° angle. It’s not vertical. You should have the following hand grip:
  - i. Fig. 1 is not 100% correct as the top arm/elbow should be down and against the rib cage instead of the arm being parallel with the ground as seen in this picture. (This insures the top arm will only have to make an upward motion during the plant phase)
  - ii. Finding your grip width:
    1. Place your top hand against your chest/shoulder and comfortably reach out (elbow just about straight) with bottom hand. It should be about 1-2 grip widths wider than the top of your right hand-to-elbow length



Fig. 1

- b. Generally the first stride should be a step with your right foot
  - i. It's very important that the **1<sup>st</sup> step be a "high bounding" knee drive while the body stays tall and erect** (NOT like a sprint start where the body is leaning extremely forward). This sets the tone for correct approach run posture and acceleration mechanics.
  - ii. A high right knee comes from driving hard off the left leg executing full triple extension (full extension of ankle, knee and hip). Your goal is to "bound high" and inline with the pole angle (70°).
    - 1. Your first step must be a "high bound" **directly inline with the pole angle**. If you do not drive out inline with the pole angle, you break the vaulter-pole solid unit and have a very hard time executing proper acceleration mechanics.
      - a. Ex. When performing a 3-Left vault, your starting pole angle must be around 45° to insure proper pole drop and plant timing. This means your 1<sup>st</sup> "high bounding" step must be at 45° to be inline with the pole angle. This does not mean lean forward at 45°. It means propel your upright body/center-of-mass forward at 45°. As you move to longer approach runs, the 1<sup>st</sup> "high bounding" step becomes more vertical because your initial pole angle is higher.
- c. Steady acceleration with high knees (**full triple extension of drive leg with each step**)
  - i. Again, **staying tall and erect while "bounding high"**, Fig. 2
  - ii. **Stay RELAXED!**
    - 1. This allows the legs to move through a full range of motion for the most efficient and powerful acceleration
    - 2. This also allows rotation of the shoulders at take-off for good penetration into the pit



Fig. 2

- d. The steady, controlled pole drop should begin at a point where gravity takes over and the plant happens very easy.
  - i. Pole runs, pole runs and more pole runs. These will help figure out the timing of the drop initiation.
- e. Running tall on the balls of your feet
- f. The run should mimic sprinting technique (triple extension of each driving leg)
- g. The last 4 – 6 steps should be shorter strides (but faster cadence to maintain speed) to provide a good setup for a strong aggressive take-off

## 2. **\*\*Plant\*\***

- a. The plant starts 3 steps (or the 2<sup>nd</sup> to last left or “penultimate step”) out from the last left foot contact, Fig. 3a. The goal here is to bring the right arm straight up along side of the body into the highest extension directly over head with the left arm passively rigid. This whole movement is to take place with minimal loss of speed. The eyes should be looking straight ahead and **not** down at the plant box.



Fig. 3a



Fig. 3b



Fig. 3c



Fig. 3d



Fig. 3e



Fig. 3f

- b. You should be able to draw a straight vertical line from the center of your top hand down to the center of your take-off foot, Fig.3f. You are tall and erect, not leaning forward or leaning back.
- c. Bottom arm ( left arm ) should be bent a little with elbow bending out to the left side of the body, **creating a “window” to see through**. This allows both shoulders to rotate back during the take-off to gain maximum penetration into the pit, Fig. 5
- d. The plant **must be fully pressed out** just before the pole tip hits the back of the plant box, Fig. 3f
- e. What not to do:
  - i. Lock out the bottom arm.
    1. This will stop a strong, fast swing.
  - ii. Allow the bottom arm elbow to be bent in front of your face. This will not allow the proper shoulder rotation and minimize your penetration into the pit during take-off
  - iii. Round house the plant

### 3. **\*\*Take-Off\*\***

a. The following are the key elements to a great take-off:

i. **“Free Take-Off”**

1. Taking off (with a fully extended plant) the “instant before” the pole tip hits the back of the box.
  - a. The key here is the “instant before” part. This could be translated to taking off “out” ever so slightly, where slightly is not more than 1”. Ideally, it would be 0.000000001” out. Get the point? Bubka claimed to achieve the “free take-off” very little throughout his career, though he always strived for it.
  - b. A “free take-off” conserves 99% of the energy from your approach run speed.
2. Taking off after the pole tip has already hit the back of the box (taking off “under”) kills a lot of the energy from your approach run speed.
3. Taking off “out” (more than about 3”), you lose a ton of the vertical component of your take-off since your body will start to fall back down to the ground before you become fully engaged with the pole (pole tip hits the back of the plant box).

ii. **Aggressive and Tense**

1. A relaxed, loose body will absorb energy that should have been put into the pole.
2. This allows maximum penetration into the pit

iii. Fast, short and powerful last step to make an aggressive bounding movement at take-off

1. Get off the ground **FAST!** (Long ground contact time will kill a lot of energy you brought down the runway)
2. The last step should be a fast clawing action to the runway.
3. This step should be the fastest and most powerful in the whole run-up.

iv. Bottom arm (left arm) **not** locked out, Fig. 5

1. **\*\*\*Both hands should be reaching straight up for the sky allowing **movement at the shoulders** only\*\*\*.** “Open up” the shoulders.
2. If bottom arm is locked out it will stop a strong, fast swing and block rotation at the shoulders.
3. Bottom arm elbow should be bent out to the left side of the body creating a “window” to see through. This allows shoulder rotation and maximum penetration into the pit
  - a. Do not allow bottom arm elbow to be bent in front of your face. This will not allow the proper shoulder rotation and minimize your penetration into the pit.
4. Bottom hand should move back over the top of your head, Fig. 4b

v. Initial knee drive with heel-to-butt, Fig. 4a

1. This initiates the vertical jump part of the take-off

vi. Keeping your eyes forward and body upright, **lead with your chest**, Fig. 4b

1. This will create the reverse “C” position for maximum penetration into the pit

vii. Keeping trail leg as long as possible (**Finish the take-off!**), Fig. 4c

1. Take-off toe should be pointing down and back (This insures a finished take-off)
2. This is to give you the most powerful swing possible

viii. Again, eyes are focused forward, **not** down, **not** up at the crossbar, Fig. 5

1. This focuses on maximum penetration
2. Looking down at the plant box kills the vertical jump movement
3. Looking up at the crossbar kills penetration into the pit



Fig. 4a



Fig. 4b



Fig. 4c

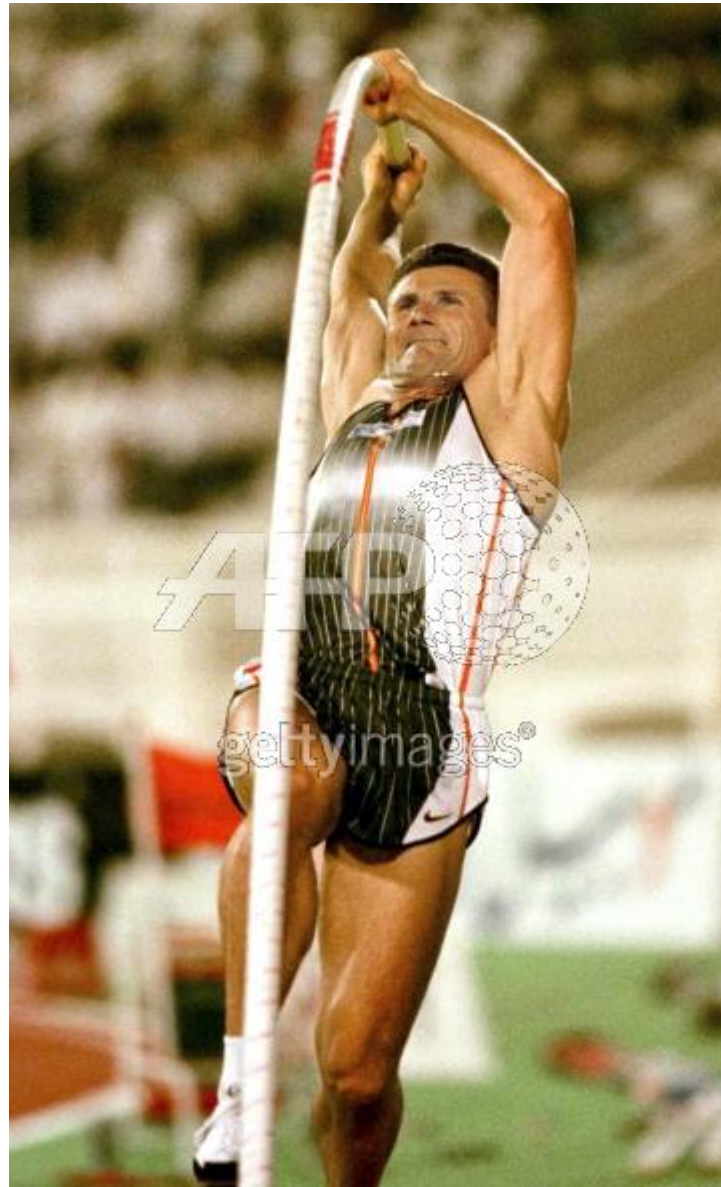


Fig. 5 (Notice the bottom arm elbow bent out to the left side creating the “window” and allowing the shoulders to rotate back)

#### 4. Swing

- a. The key to a great swing is just that. Swing the **straight, extended** trail leg through, breaking at the waist just after the trail leg passes the chord of the pole. Fig.6a, Fig. 6b and Fig.6c. The swing continues until the feet are **past** the pole, Fig.6d, Fig. 6e and Fig. 6f. This whole action should be pretty instinctive as long as you keep the trail leg long and extended (FINISHED the take-off)
- b. The biggest mistake most vaulters make is to tuck the trail leg knee in. This absorbs most of the energy from the swing instead of putting into the pole. Keeping a straight trail leg swing all the way through adds energy to the system and keeps the pole bent until you have finished the swing and are in the best position for the inversion.
  - i. “Tuck and Shoot”, meaning you tuck the trail leg knee in and get into a ball, stops adding energy into the system and the pole starts to recoil before you have finished your swing. Now you are fighting to get into and stay in an inverted position through the end of the vault. You’ve just wasted a ton of energy that could have been put into the system.



Fig. 6a



Fig. 6b



Fig. 6c



Fig. 6d



Fig. 6e



Fig. 6f

## 5. Inversion

- The inversion phase is all about “popping” the hips through. The shoulders should drop back naturally if you concentrate on popping the hips through all the way to vertical. Notice the bottom arm (left arm) collapses to the inside of the pole. This must happen or you will not be able to get to vertical.
- Core strength is key for this phase to stay close to the pole vs. “flagging” out



Fig. 7a



Fig. 7b



Fig. 7c

## 6. Pull/Turn/Push

- The key to this phase is **KEEP MOVING** and keep yourself aligned with the pole, moving straight UP for as long as possible. This is where core strength is required to hold you in a straight vertical position for as long as possible.
- Don't break at the waist until you've almost stopped moving up.
- NEVER** focus on just clearing the bar, focus on extending as high into the sky as possible



Fig. 8a



Fig. 8b



Fig. 8c



Fig. 8d



Fig. 8e



Fig. 8f