Session 3: High Jump Performance Through Speed/Power Training

Matt Burns
Introduction

• Overview of Handout Materials
• Topics Covered in this Session
  – Importance of Balanced Training
  – Weight Lifting
  – Bounding
  – Running
  – A Week of Training
Which Jumper Do You Want?

- Measurement of success in the high jump
  - Personal Best? Then the two jumpers shown below are equally successful, as both have a PB of 6’ 2”.

**High Jump Performances of Joe and Mark**

<table>
<thead>
<tr>
<th>Height</th>
<th>Joe</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>5'4&quot;</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5'6&quot;</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5'8&quot;</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5'10&quot;</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6'0&quot;</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>6'2&quot;</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>6'4&quot;</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Training Focus

• The performances are the result of two different training plans
  – Mark: Too much emphasis on running/bounding/lifting
  – Joe: Too much emphasis on HJ technique work

Joe has over-refined his technique to the point of a plateau. Break through the plateau by increasing strength/speed.

Reduce Mark’s variance by refining approach/technique with more HJ work.
Training Focus - Balanced

- Properly balancing work in the HJ area with work on the track and in the weight room provides the athlete a measure of consistency and the chance for one or two clearances of a higher bar.

High Jump Performances of Joe and Mark vs. "Ideal"
Training Focus (Cont.)

- Comparing Matt’s HS senior year (all technique work) with his college freshman year (heavier emphasis on speed/strength training) you can see the flattening and widening of the curve. Consistency is traded for height.

Matt Burns' HJ Height Probability
Strength Training Filter #1

- A jumper’s lifting program should include only those lifts that meet one of the following criteria:
  1. The lift’s purpose is to prevent injury
  OR
  2. The lift’s purpose is to increase the strength of the primary muscles used to jump.
Strength Training Filter #2

- Lifts that are meant to increase the strength of muscles used in jumping should be:
  1. Specific in speed
  2. Specific in motion
Strength Training
Specific in Speed

• The high jump requires explosive strength, so all exercises should be explosive, assuming a good strength base exists.
  – “Training with high velocity movements increases high velocity strength relatively more than low velocity strength, and vice versa.”
  • Caiozzo, 1981; Coyle, 1981; Kanehisa & Miyashita, 1983; Duchateau & Hainaut, 1984; Rosler, 1986; Narici, 1990; Sale, 1992… (It’s been proven)
Strength Training
Specific in Motion

• Every lift should mimic (as much as possible) the movements necessary in high jumping

“Increases in strength depend on how similar the test is to the training exercise.”

In the HJ, the test is the jump, so the weight lifting exercise should be as similar to the jump as possible.

Strength Training - Squat

- Squat exercises most closely mimic the takeoff and should be focus for high jumpers
  - Full (Good)
  - Half (Better)
  - Jump (Best)

Impact of Various Training Exercises on Vertical Jump Height

55 subjects with 1+ year of weight training experience were divided into 4 groups and trained 2x/week for 10 weeks in their assigned exercise.

Strength Training - Other

- **Step-Up** – mimics acceleration in running
- **Hamstring Curl** – for leg strength symmetry
- **Abdominal/Core** – Injury prevention
- **Olympic Lifts** (Advanced) – Overall body explosiveness/quickness. Perform first in weight-lifting session to ensure maximal explosive power is available.
  - Clean
  - Snatch
Bounding (1x/week)

- All bounding should be explosive. Goal is minimum contact time with the ground. Athlete should anticipate the contact and “respond” immediately before.
  - Horizontal (8-10 x 30m various exercises)
    - Single Leg, Alternating Leg
  - Vertical
    - Depth Jumps (2-4 x 10), Hurdle Hops (4-6 x 6)
Running/Speed Work
(2x/week)

- **Off Season** – build endurance
  - 150-200 Meters (e.g. 2x4x150 @80% 1.5'/rep 5'/set - increase recovery/speed as season approaches)

- **Early Season**
  - 100-150 Meters (e.g. 2x4x150 @90% 2.5'/rep 5'/set)

- **Competitive Season**
  - 60-80 Meters (6-8x, full recovery between reps)
Forming a Workout Plan

- Quality is highest early in the week – technical HJ work should be done then.
- Goal for the week would be to fit all of the following in:
  - HJ technical work 1-2x
  - Bounding – 1x vertical, 1x horizontal
  - Speed 1x
  - Speed/Endurance 1x
  - Lifting 2x
- As season draws to a close, increase intensity and decrease volume.
Forming a Workout Plan

• The day before a meet there should be no jumps taken – light track warm-up only.

• Order to perform each exercise during a workout should progress from fastest to slowest activity.
  1. High Jumping
  2. Bounding
  3. Speed (60s or 80s)
  4. Lifting
  5. Speed/Endurance (150s)

(Not all in a single practice of course)
Sample Practice Week – Saturday Competition

- Monday – HJ, Speed/Endurance
- Tuesday – Bound, Lift
- Wednesday – cross-train (e.g. swim)
- Thursday – HJ, speed, explosive lifting
- Friday – pre-meet warmup
- Saturday – compete
- Sunday - Rest
Sample Practice Week – Friday Competition

- Monday – HJ, Speed/Endurance
- Tuesday – Bound, Lift
- Wednesday – HJ, speed
- Thursday – “pre-meet” (warmup only)
- Friday – compete
- Saturday – Rest
- Sunday - Rest
Where to Get More Information –

**HJ Training**
