Long Jump

VS Athletics
Jeremy Fischer

Long Jump

- Components
- Strength Training
- Training Design
- Alternative Issues

Long Jump Technical Aspects

- The Approach
- The Penultimate
- The Take-off
- The Flight
- The Landing

The Approach

- Consistency
- Rhythm
- Tempo
- Efficient Mechanics
- Static vs Walking Start

The Penultimate

- Lowering of COM and initial creation of Vv
- Women-2.10- 2.20m from board
- Men- 2.20-2.30m from board
- Minimize deceleration
- Maintain postural integrity
- The foot should land flat with slight knee bend
- Foot should land slightly under COM

The Penultimate (cont)

- Long to Short – Lewis, Dreschler
- Even- Myricks
- Short to Long- Beamon WR
- Rhythm and Motor Learning
- Conservation of Elastic Energy

The Take-Off

- Flat foot plant on the board
- Take-off leg bend at the knee of about 165-175* (Graham-Smith and Lees, 2005)
- Males Hv Vv
- Females Hv Vv
- High heal to Butt recovery of free leg
- A near parallel free leg thigh as the take-off leg finishes extension off the board

Common Errors in Take-Off

- Large undulations in hip to create more vertical velocities
- Placing Take-off foot significantly in front of COM
- Getting a large bend in the take-off leg
- Lowering COM by losing postural integrity

The Flight

- Biggest place for variability but all are fighting forward rotation
- Long Levers to slow rotation in sequence to rotation
- Hang vs Hitch vs Sail vs Modified Hang
- Very Similar Take-Off Position, differentiates at lift off
- Hang- video
- Hitch-video
- Modified- video

The Landing

- Dependent of Take-Off and Flight Technique Used
- Simultaneous Extension near landing and preparation for landing
- Sweeping of arms before initial touchdown
- When heals hit sand, breaking at knees allowing for hips to fall into hole created by heals
- Subsequent slide to either side or tucking of arms back near COB

LJ Video

Strength

- Weight Room – Limit Size of Muscle Growth
- Power
- Sprint Strength
- Core Strength
- Jump Strength
  - Muscle Stiffness
    - Spring Effect
  - Elastic Energy Component
    - Concentric vs Eccentric vs Isometric Strength

Strength (cont)

- General vs Specific Strength
- Correlation of Strength Exercise
- Absolute Strength
- Strength Endurance
- Strength should compliment track work

Training Design

- Biomotor Abilities

BIOMOTOR ABILITIES

- Flexibility
- Coordination
- Endurance
- Strength
- Speed
- Other

Flexibility

- R.O.M.
- Lack of Flexibility will prevent from proper muscle firing sequence
- Static
- Dynamic

Coordination

- Technique
- Bilateral Symmetry, Ipsilateral Symmetry
- Timing of Upper and Lower body
- Postural Integrity Pelvis-Spine-Hip
- Decrease in activity in younger athletes

Endurance

- Strength Endurance
- Speed Endurance
- Jump Endurance
- The benefits of aerobic work on the anaerobic system (Elliott, Wagner, and Chiu, 2007)
  - But how do we get the benefits?
  - (i) an increased aerobic response to the excess post-exercise V ̇O2; (ii) an improved lactate removal; and (iii) an enhanced PCr regeneration
  - Improved body composition

Strength

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Speed

- Maximizing the braking, support, propulsion
- F=ma
- Acceleration vs Maximum Velocity
- How do we obtain a closer Mv value on the run-way
- Technique needed for sprinting

Other Variables

- Steering Component
  - Competition vs Practice setting
- Individualization of Training
- Men vs Women
- FMS/Body Analysis/ Body Assessment/Anthropometric

Other Variables (cont)

- Continuous Assessment of Athletes
  - Blood Work
  - Salivary Testing
  - Conversation
- Sleep Habits- sleep is the number one recovery method for the human body
- Nutrition-
  - Timing of nutrients, i.e. protein, CHO, H20
  - Strength/Weight Ratio

THANK YOU

jhfischer76@gmail.com
www.maximumvelocityathletics.com