

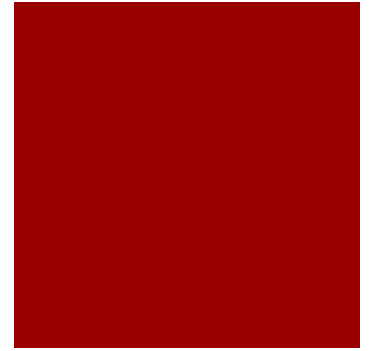


Long Jump

By Jeremy Fischer

Long Jump

- Components
- Strength Training
- Training Design
- Alternative Issues



Long Jump Technical Aspects

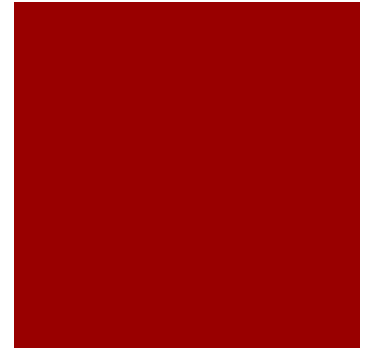
- The Approach
- The Penultimate
- The Take-off
- The Flight
- The Landing





The Approach

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



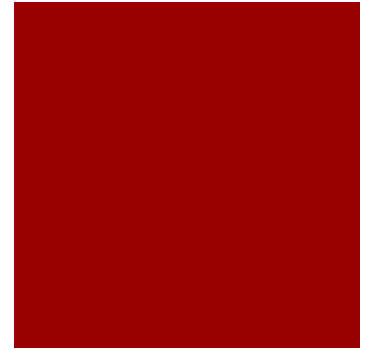
The Penultimate

- 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 heel 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 heels hit sand, breaking at knees allowing for hips to fall into hole created by heels
- 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



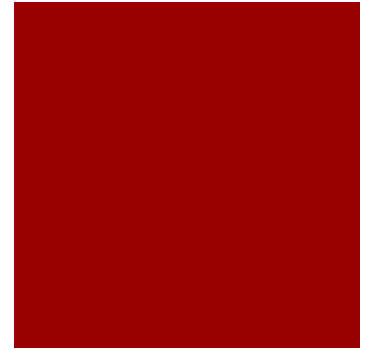
Strength (cont)

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



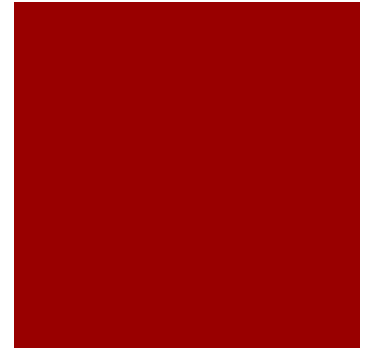
Training Design

- Biomotor Abilities



BIOMOTOR ABILITIES

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



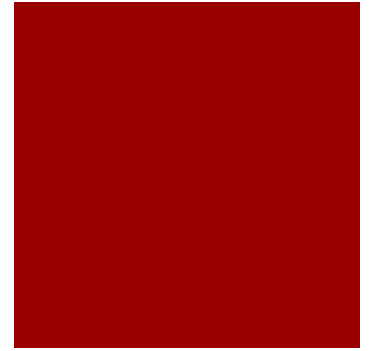
Flexibility

- 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 $\dot{V}O_2$; (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 runway
- 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, H₂O
 - Strength/Weight Ratio



THANK YOU

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