Training Inventory & Structure for Jump Athletes

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Goals
• Design and provide training inventory
• Coach training inventory
• Implement training inventory

Training Inventory
• Training Inventory
  – Activities and exercises for training
  – Ingredients

Structure
• Structure
  – Why you do what you do?
• Implementation
  – Coach it, don’t gimmick it.

Developing the Inventory
• Biomotor Abilities
• Event Demands

Be the Scientist
And the Artist
**Biomotor Abilities Overview**

- **Strength**
  - Absolute, Power, Elastic, General Strength
- **Stamina**
  - Tempo/Speed Endurance, General Strength
- **Suppleness**
  - Static, Dynamic
- **Speed**
  - Acceleration, Absolute, Optimal
- **Skill**
  - Technique, Coordination

**Biomotor Abilities**

- Crossover of biomotor abilities
  - Hurdle mobility
    - Skill and suppleness
  - Sprint-float-sprint runs
    - Speed and stamina

**Event Evaluation**

- **Duration**
  - 4-6 seconds
- **Energy system**
  - 3-15 efforts
  - Long recoveries
- **Ground contact times at take off**
  - .12-.18 s
- **Velocity requirements**
  - 6.5 m/s - 11.0 m/s
- **High Neuromuscular Demand**

**Training Evaluation**

- **THE BIG HITTERS**
  - Speed
  - Strength
  - Skill
- **THE HITTERS**
  - Mobility
  - Stamina

**Speed**

- **Acceleration**
  - Why?
    - Start right to finish right
    - Momentum development
  - **Parameters**
    - 20-40 meters
    - 90-100% intensity

**Mechanics**

- Flexion to create extension
- Heel recovery
- Posture
  - Pelvis
- Displacement
  - Hips-Your coaching point
- Toe off
- PUSH!
Flexion - Hip, knee, ankle

Extension, Displacement, Push

Touch down, heel recovery

Toe off behind center of mass

Speed

• Training Inventory
  – Hill accelerations General Prep
  – Resisted runs General/Specific Prep
  – Acceleration Runs
    • Toe Touch General
    • 3 pt General/Comp
    • 4 pt Specific
    • Rollover Specific/Comp
    • Block starts Specific/Comp
    • Pole accelerations General

Speed

• Acceleration Schemes
  – 8 * 40 m resisted runs
  – 5 * 20m, 4 * 30m, 3 * 40m from rollover
  – 3 * (20m, 30m, 40m) from 3 point
  – 6 * 30m block starts
  – 10 * 20m pole accelerations
Speed

• When?
  – Throughout the whole training year

Speed Development

• Why?
  • Prerequisite to jump far/high
  • Sets up elastic responses

• Parameters
  • 40-80 meters
  • 95-100% intensity

Mechanics

• Posture
  • Pelvis
• Vertical Pushing Component
• Foot strike
• Isometric Prep
• Front side

Isometric Prep, Front side

Knees at touchdown
Speed

- Training Inventory
  - Stadium Runs
  - Fly in runs
  - Ins/Outs
  - Sprint-Float-Sprint
  - Runways
  - Pole runs
  - General Prep
  - Specific Prep/Late Comp
  - Specific/Comp

- Speed Development Schemes
  - 12 * 20-25 step stadium runs
  - 5 * 20-30 meter “fly” in runs
  - 3 * Ins/Out (20-10) 2 peaks
  - 8 * Full approach runs
  - 4 * Full approach runs + 2 * Ins/Outs

Strength

- Types
  - Absolute
    - Static lifts, olympic lifts
  - Power
    - Olympic lifts, ballistic lifts, plyometric routines
  - Elastic
    - Olympic lifts, ballistic lifts, plyometric routines
  - General strength
    - Body weight circuits, medicine ball circuits, weight room circuits

- Goals
  - More force
  - More force in shorter time
  - Shift force velocity curve to the right
Strength

• Force--Velocity

![Force vs. Velocity Graph]

Absolute Strength

Power

Speed

Strength

• Static Lifts
  – Why?
    • Fiber recruitment
    • Hormonal response
  – Squat Mechanics
    • Hips move posterior through descent of lift
    • Knees stay out
    • Rear to ground

Strength

• Training Inventory
  – Squats and variations
    • Back, front, overhead, deep, single leg, step ups, lunges
  – Presses and variations
    • Bench, incline

Strength

• Squat schemes
  – 4-6 sets
  – 4-8 reps
  – 65-90% of predicted one repetition max

Strength

• Squat progression through year
  – Deep squat  General Prep
  – Half squat  Specific Prep
  – Step ups/lunges  Specific/Comp
  – Squat jumps/ lunge jumps (Ballistic)
Strength

• Olympic Lifts
  • Why?
    – Power development
    – Rate coding
    – Absolute strength development
  • Mechanics
    – Flexion in hips at start
    – Shoulders over bar
    – Shrug

Strength

• Training Inventory
  – Cleans and Snatches and variations
    • Pulls General Prep
    • Floor General/Specific Prep
    • Knee General Prep
    • Thigh Specific/Comp
    • Close Grip Snatch Specific/Comp
    • Split Snatch Specific/Comp
  • When?
    – Throughout entire training year
Strength

• Multiple Jumps
  – Why?
  • Strength- Eccentric
  • Elastic... Free Energy
  • Force production through:
    – Stretch reflex
    – Stretch Shortening
    – Amortization

Strength

• GOAL
  • Opportunity to teach and cue into jumping events

Strength

• Mechanics
  • Posture
    – Pelvis
  • Segment relationship
  • Foot contacts
  • Force application

Strength

• Training Inventory
  – In place
  – Short jumps
  – Bounds
  – Hurdle Hops
  – Depth
  General Prep/Comp
  Gen/Spe/Late Comp
  Spec/Comp
  Spec/Comp
  Sparingly
Strength

- Multiple Jump Schemes
  - In Place Circuit
    - 2* 8 exercises * 15” (30”)
  - Short Jumps
    - 4 * SLJ, STJ, 3 DBL Hops, DBL-DBL
  - Bounds
    - 2 * 20 meters RRR…, LLL…, RRL…, LLR…, RRLL…
  - Hurdle Hops
    - 6 * 6 hurdles

- General Strength
  - Use of body weight or light weight in weight room
  - Why?
    - Stamina, hormonal responses, enhancement of strength qualities, work capacity, mobility

- Multiple Throws
  - Body weight circuits Year round
  - Weight room circuits Year round
  - Medicine ball circuits Year round

Skill

- Exercises
  - An opportunity to TEACH and CUE

- Training Inventory
  - Previously discussed training
  - Short approach jumping
  - Full approach runs

Suppleness

- Mobility
  - Active range of motion
  - Types
    - Pre-Workout routines
    - Hurdle mobility routines
  - Not commonly thought of:
    - Weight room
      - Squats-Deep, Overhead
      - RDL
    - General Strength activities (low walks)
Suppleness

• Static Flex
  – More is not better

Stamina

• Tempo/Speed Endurance
  – Training to train
  – Restorative
  – Speed endurance = coordinated speed

• Training Inventory
  – 80-150 meter runs
  – 60-80 meter runs
  – Varied rest intervals
  – Varied intensities

Stamina

• Stamina Schemes
  – Week 1: 8 * 150 m (2')
  – Week 2: 10 * 120 m (1:30)
  – Week 3: 12 * 100 m (1')
  – Week 4: Rest

  – Subsequent cycles
    • Same scheme
      – Intensity increases
      – Rest increases
Stamina

• General Strength
  – 15-20 minutes of circuit work

• Stamina Scheme
  – 24 exercises * 30" + 2 * 10 weight room circuit

Rest

• Rest, recovery, regeneration
  – The forgotten and underutilized training quality

Training Inventory

• VIDEO