

## Strength and Power Development for Elite High Jump Programming

Dan A. Pfaff  
Chula Vista, California

- ### The Interactive World of Biomotor Abilities
- Non-isolation Policies, No entity is unaffected by change in one category of work.
    - Speed
    - Strength
    - Skill
    - Stamina or work capacity
    - Suppleness
  - Over Development Problems
  - Block Scheme Periodization Issues

- ### Strength Development Factors
- Skill Factors
    - General skill efficiencies are a window to event specific idiosyncrasies
    - Specific skill efficiencies are a window to specific physiological qualities
  - Injury Factors
    - Prevention or Prehab
    - Rehabilitation
      - Fulcrum
      - Proximal-distal reactions
      - Chains of recruitment
      - Guarding and sub-recruitment patterns
      - Proprioceptors and motor re-education
      - Joint integrity

- ### Strength Development Factors- Continued Classifications
- Absolute
  - Inertial/isometric moment
  - Striking
  - Amortization
  - Elastic
  - Stabilization
  - Power
  - Muscle balance
    - Contralateral
    - Ipsilateral

- ### Absolute Strength Development Thoughts and Concepts
- Squatting
    - Depth
      - Phase of training
      - Needs of athlete
      - Injury issues
      - Skill Levels
      - Training age
    - Styles
      - Front
      - Back
      - Single Leg
      - High Box Stepup\*\*\*\*
    - Set and Rep Schemes
      - Purpose of lift, i.e., Development, rehab, prehab, maintenance, etc.
      - Phase of training
      - Fixed variable or floating ancillary
  - Deadlifts
    - Classic
    - SLRDL's
    - Hex bar
    - Eccentric emphasis

- ### ASD 2
- Pressing Movements
    - Bench
    - Jerks
    - Swiss ball
  - Special Strength Exercises
    - Stepups- rotational, static, dynamic
    - Lunge jumps and lunge Russian twists
    - Jump Squats
    - Lateral Squats
    - Lateral Squat Jumps
    - Box positives jumps
    - Twisting Exercises
    - Depth Jumps

## SDF-2

A Return to Theory

- Balance
  - Static
  - Dynamic
  - General
  - Specific
- Rotational specific issues
  - T-10/T12
  - Hip and shoulder axis undulation and oscillation
- Neuromuscular Factors
  - Rate coding
  - Frequency of firing
  - Synchronization
  - Pre-firing/ firing phasics, the role of the collagen matrix
  - switching

## SDF-3

- Central nervous system
  - Chemistry
  - Biophysics
  - Alternative communicative pathways
- Biochemistry
  - Hormonal panels
  - Pituitary, Thyroid and Hypothalamus axis
- Work capacity
- Volitional qualities
- Cardio-pulmonary influences

## Methodologies

- Overload Theory
- Compensation factors
  - Stimulus
  - Adaptation
  - Stabilization
  - Actualization
- Environmental methods
  - Wind
  - Temperatures
  - Sociological
  - Physiological states
  - Psychological
- Specific methods
  - Sport specific activities
  - Weight apparatus
  - Projectile apparatus
  - Specific apparatus

## Ancillary Schemes

- Plyometrics
  - Horizontal
  - Vertical
  - Loaded
  - Reduced wavelength and amplitude jumps
- Running
  - Normal
    - Stressed
    - Recovered
  - Exaggerated
    - Sprint isolation exercises
    - Adaptive muscle exercises
- General strength exercises
  - Body weight circuits
  - Apparatus circuits
- Medicine ball series
  - Range of motion and symmetry
  - Short arc
- Multiple throw series
  - Classic
  - Plyometric Switching

## Training Theory Factors

- Volume
  - Systematic progressions
  - Competition readiness drops
- Intensity
  - Correct values for given tasks and durations
  - Greatest indicator of injury or chemical depletion factors
- Density
  - Overlooked factor for the aging athlete
  - Must be factored in all tapering
- Compatible/complimentary issues
  - Daily
  - Weekly
  - Phases
  - Yearly