Chapter 4: General Principles of Training & Conditioning

Objectives
- Discuss the general principles of training and conditioning recommended for maximizing performance & minimizing injury
- Discuss the traditional periodization model
- Discuss cross training and its value in the periodization model
- Discuss the proper procedures for an effective warm-up and cooldown

Strength & Conditioning Programs
- Purpose
  - Increase an athlete’s sport performance
  - to prevent injury
- When designed improperly, they can
  - decrease an athlete’s sport performance
  - increase risk of injury

Principles of Conditioning for Minimizing Injury
- Warm-up/cool down
- Motivation
- Overload
  - SAID Principle
- Consistency
- Progression
- Intensity
- Specificity
- Individuality
- Minimize harmful stress
- Emphasize safety at all times

Effective Strength & Conditioning Programs
- Should include variations in
  - Training specificity
  - Training intensity
  - Training volume
Effective Strength & Conditioning Programs

- Should be organized into planned periods of cycles
- Periodization – program design strategy based on the general adaptation syndrome (GAS)

General Adaptation Syndrome (GAS)

- Three stage response to stress
  - Alarm
  - Resistance
  - Exhaustion

General Adaptation Syndrome (GAS)

- Alarm stage
  - Lasts several days or several weeks
  - Brought on by increases in:
    - Intensity
    - Resistance
    - Volume

General Adaptation Syndrome (GAS)

- Resistance Stage
  - The body adapts to the increased demands
  - Return to normal function & performance

General Adaptation Syndrome (GAS)

- Exhaustion Stage – should be avoided
  - Occurs when stress is placed over extended period of time
  - Athlete’s ability to adapt decreases
  - Symptoms
    - Fatigue
    - Excessive soreness
    - Stiffness
    - Results in temporary drop in performance
**General Adaptation Syndrome (GAS)**

- **Exhaustion Stage** – should be avoided
  - May also occur as a result of non-training related stress
    - insufficient sleep
    - poor nutrition
    - psychological stress

**Overview of Periodization**

- Overall program partitioned into specific time periods
  - Macrocycle
    - Largest division – typical an entire training year
  - Mesocycle
    - Middle division – may last from several weeks to several months (off-season, in-season, etc.)
  - Microcycle
    - Shortest cycle – typically one week; focuses on daily & weekly training variations

**Overview of Periodization**

- **Purpose**
  - Prevent overtraining
  - Optimize performance
- Involves shifting priorities from
  - Non-sport specific activities of high volume & low intensity to
  - Sport specific activities of low volume & high intensity

**Traditional Periodization Model**

- 4 distinct periods
  - Preparatory
    - Hypertrophy/endurance phase
    - Basic strength phase
    - Strength/power phase
  - 1st transition
  - Competition
  - 2nd transition

**Preparatory Period**

- Usually the longest
- Occurs during the time of year when there are no competitions & a limited number of sport-specific practices
- Emphasis
  - to create a base level of conditioning
  - to increase the athlete’s tolerance for more intense training
  - no real emphasis on sport technique
Preparatory Period
- Conditioning activities begin at low intensities and high volume
  - Examples:
    - long, slow distance running or swimming
    - weight lifting with low weight and high reps
    - low intensity plyometrics

1st Transition Period
- Marks the break between the preparatory competition periods
- Change from high volume to high intensity

Competition Period
- Greater emphasis on skill technique & game strategy
- Maintenance of strength, power, & endurance
  - moderate intensities (80-85% of 1RM)
  - moderate volume (2-3 sets of 6-8 reps)

2nd Transition Period
- Also referred to as active rest period
- Focuses on unstructured, non-sport-specific or recreational activities
  - low intensity
  - low volume
  - may not involve any resistance training

Applying Periodization Periods to Sport Seasons
- Off-season
- Pre-season
- In-season
- Post-season
  \[ \text{mesocycles} \]

Applying Periodization Periods to Sport Seasons
- Off-season
  - Period between the last contest and approx. 6 weeks before the next contest
  - Includes most of preparatory period
- Pre-season
  - Period that occurs immediately before first contest
  - Contains late stages of preparatory period and 1st transition period
Applying Periodization
Periods to Sport Seasons

- **In-season**
  - Contains competition period
  - Broken down into microcycles
  - Includes maintenance phase for strength, power, & endurance

- **Post-season**
  - Contains 2nd transition or active rest period

Cross Training

- An approach to training and conditioning that involves substituting alternate forms of exercise that will have a carryover effect to the athlete's sport
  - Most commonly used during
    - Preparatory period
    - 2nd transition period (active rest)
  - Provides variety
  - Can reduce musculoskeletal stress

Warm-Up

- **Purpose**
  - Stimulates cardiovascular system
  - Increases metabolic rate
  - Increases blood flow to skeletal muscles
  - Increases core muscle temperature

- **Procedures**
  - Begin with 2-3 minutes of whole body exercise involving large muscle groups
    - Light jogging
    - Riding an exercise bike
  - Begin flexibility exercises once core body temperature is raised (visible sweat)
  - Begin sport-specific drills, gradually increasing intensity

Warm-Up

- **Sport-specific examples**
  - Baseball
  - Soccer
  - Basketball
  - Football
  - Volleyball

Cool Down

- Just as important as the warm-up
  - Should last 5-10 minutes
  - Primary focus on flexibility exercises
Summary

- An athlete can’t maintain the same level of intensity & volume throughout all phases of the sports season.
- Periodization provides an essential level of variation to the overall training and conditioning program to optimize performance and reduce risk of injury.
- Basic training & conditioning principles exist & must be followed to prevent injury.
- Athletes must follow proper warm-up and cooldown procedures to prevent injury.

What questions do you have?