

# Effective Exercise Progression for Children and Adolescents

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# Common misconceptions about youth resistance training

- High risk of injury
- Decreases flexibility and muscle contraction speed
- Stunts growth  
(Blimkie, 1989)
- Does not develop strength or hypertrophy

# Misconceptions cont.

- Injures the growth plate

(Faigenbaum, A.D. et al., 2009)

- Short duration training leads to ventricular thickening which decreases cardiac output

(Chignon, J.C. et al, & Morganroth, J. et al., 1975)

- Finding Unfounded

(Perreault et al., 1994)

# Benefits of Resistance Training

- **Increases muscular strength and endurance**
  - Gains in prepubescent due to neuromuscular adaptations  
(Ozmun, 1994)
- **Enhances sports performance**  
(Christou et al., 2006) (Weltman et al., 1986)
- **Protects muscles and joints from injuries**

## Benefits cont.

- **Strengthen bones**

(Bellew, J. & Gehrig, L. 2006)

- **Maintains healthy bodyweight**

- **Improves confidence and self-esteem**

(Lubans, D.R. et al., 2010)

# Program design considerations

- Participants must have emotional maturity to accept and follow instructions
- Adequate supervision, knowledgeable about strength training for children/adolescents
- Comprehensive program design to increase health and skill-related fitness
- Begins with dynamic warm-up end with static stretch cool down (description)
- Form: eccentric/concentric
- Exercise through full range of motion (ROM) Faigenbaum, A. & Westcott, W. (2009). *Youth strength training: Programs for health, fitness and sport*. Champaign, IL: Human Kinetics.

# Long-Term Athletic Development- (LTAD)

- Planned, systemic and progressive development of athletes
- Answers question: what needs to be done at each stage of human development to give every child the best chance of engaging in lifelong, health enhancing physical activity and for those with drive and talent, the best chance of athletic success.
  - Focuses on what's best for life

# History of LTAD

- 1983 Harsanyi reviewed athletic development models from 1950-1980 and concluded their stages based on chronological not biological or developmental.
  - Excluded some along the way and focused on next level athletes
  - Non-progression are not valued
  - Common model used today
  - No concern for those who didn't make it to the top. What happened to them?
  - Disconnect of sports and recreation in North America
    - Recreation valued them, sport didn't



## History cont.

- 1989 Sanderson introduced a model in his article “Growth and development consideration for the design of training plans for young athletes”
  - Modes took into consideration growth and maturation process of young, developing athletes
  - Crucial because it considered developmental age, not chronological.
  - 1995 Balyi and Way developed 4 stage model called LTAD
  - 2005 built onto model, evolved into seven stages

# Program Implementation Suggestion

- Educate the parents about the program
- Based on developmental factors, chronological
- Focuses on overall development
- Competition system interferes with athletic development
- Focuses on fundamental movement skill and sport skill being properly taught properly
- Focuses on long, not short term development

# 7 stages of LTAD

- Active start
  - Until age 6
  - Unstructured free play, various body movements
  - Gross motor skills
- FUNdamentals
  - 6-9 boys, 6-8 girls
  - A variety of well structured activities
  - Fundamental movements and overall motor skills(agility, balance and coordination)
- Learn to train
  - 9-12 boys, 8-11 girls
  - In time for developing foundational sports training

# 7 Stages continued

- Train to train
  - 12-16 boys, 11-15 girls
  - Physiologically responsive to stimuli and training “build the engine”
  - Aerobic base
  - Continued skill development
- Train to compete
  - Optimizing engine
  - Can choose to specialize (high volume, high intensity) or continue on recreational path (Active for Life)

# 7 stages continued

- Train to win
  - Identify elite athletes for international winning performances
  - World class training methods
- Active for life
  - Can enter this stage at any time
  - High performance athletes can transition from competitive career

## Limitations of LTAD

- Stages are approximations and vary from person to person
- Visual markers only for train to train stage
  - Marked at lower end of growth spurt and upper end of cessation
- No sudden jump from stage to stage.
- Adjustments are easier with individual sports

# Exercise Progression

- Proper warm up-Dynamic
  - various sports related movements
- Movement Assessment
  - How do they move?
- Bodyweight movements
  - Form
- Core/Stability
  - Transfers to other movements
- Cool-down stretch-Static





# Program Design: Periodization

Program goal

Pre-training assessments

Simple exercises using their bodyweight

Design program in circuit format

Increase complexity of exercises as tolerated

- include agility movements
- make some into competition

Think progressively about exercise movements

# Jump Rope



# Jumping Jacks



# Skipping



# Marching





# Form Running



# Carioca



# Stork Walks





# Inch Worms



# Power Squats



# Stick Squats





# Reverse Lunges



# Push-Ups



# Med-Ball Rotation/Over and Under



# Ladders



# Hurdles: forward & lateral





# Sprint & lift



# LTAD stages in action



# Proper Nutrition

Stick with the basics

Carbohydrates, Protein, Fats

Proper Hydration/Minimize sugary beverages

Food as fuel for body and performance

Moderation

Should be enjoyed

**Active Start**

Males and  
Females 0-6

**FUNDamentals**

Males 6-9  
Females 6-8

**Learning to Train**

Males 9-12  
Females 8-11

**Training to Train**

Males 12-16  
Females 11-15

**Training to Compete**

Males 16-23 +/-  
Females 15-21 +/-

**Training to Win**

Males 19 +/-  
Females 18 +/-

**Active for Life**

Enter At  
Any Age



# An Outline of LTAD

The first 4 stages, with their respective approximate age ranges, are generally appropriate for all late-specialization sports. In the Training to Compete and Training to Win stages, age ranges vary from sport to sport.

## The 10 key factors influencing LTAD

1. The 10-Year Rule
2. The FUNDamentals
3. Specialization
4. Developmental Age
5. Trainability
6. Physical, Mental, Cognitive, and Emotional Development
7. Periodization
8. Calendar Planning for Competition
9. System Alignment and Integration
10. Continuous Improvement

Figure 1 illustrates the stages of LTAD.

## Active Start Stage

Chronological Age  
Males and Females 0-6

FUN and part of daily life

Fitness and movement skills development

Focus on learning proper movement skills such as running, jumping, wheeling, twisting, kicking, throwing, and catching

Not sedentary for more than 60 minutes except when sleeping

Some organized physical activity

Exploration of risk and limits in safe environments

Active movement environment combined with well-structured gymnastics and swimming programs

Daily physical activity

## FUNDamentals Stage

Chronological Age  
Males 6-9 and Females 6-8

Overall movement skills

FUN and participation

General, overall development

Integrated mental, cognitive, and emotional development

ABC's of Athleticism: agility, balance, coordination, and speed

ABC's of Athletics: running, jumping, wheeling, and throwing

Medicine ball, Swiss ball, own body strength exercises

Introduce simple rules of ethics of sport

Screening for talent

No periodization, but well-structured programs

Daily physical activity

## Learning to Train Stage

Chronological / Development Age  
Males 9-12 and Females 8-11

Overall sport skills development

Major skill learning stage: all basic sport skills should be learned before entering Training to Train

Integrated mental, cognitive, and emotional development

Introduction to mental preparation

Medicine ball, Swiss ball, own body strength exercise

Introduce ancillary capacities

Talent Identification

Single or double periodization

Sport specific training 3 times week; participation in other sports 3 times a week



# Thank You!!!!

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**ASS TO GRASS, OR GO HOME.**



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