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 and end with static stretch cool down (description)
- Form: eccentric/concentric
- Exercise through full range of motion (ROM)

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
Periodization

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**Figure 8.1** Division of an annual plan into its phases and cycles of training
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
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

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 Athletics: agility, balance, coordination, and speed
- ABC’s of Athletics: running, jumping, wheeling, and throwing
- Medicine ball, Swiss ball, own body strength exercises
- Introduction to mental preparation
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- Talent Identification
- Single or double periodization
- Sport specific training 3 times week; participation in other sports 3 times a week
- 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 exercises
- Introduction to ancillary capacities
- Talent Identification
- Single or double periodization
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Active for Life
Enter At Any Age
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ASS TO GRASS, OR GO HOME.
References


References cont.


