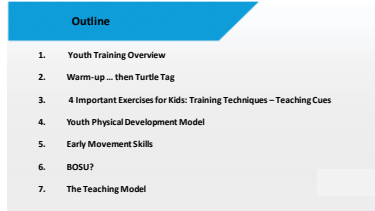




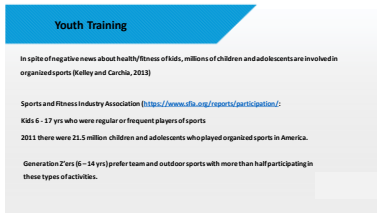
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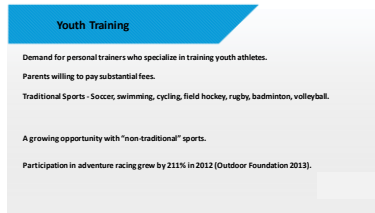
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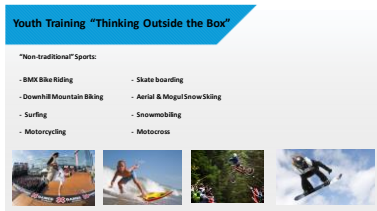
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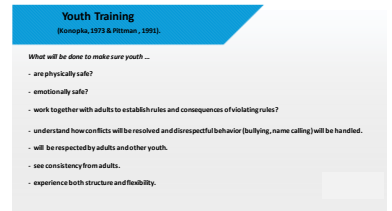
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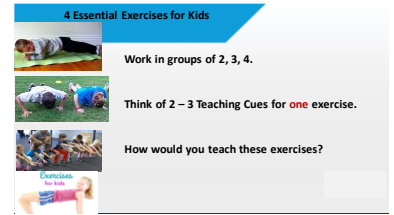
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YOUTH PHYSICAL DEVELOPMENT (PPD) MODEL FOR FEMALES	
DEVELOPMENTAL AGE	PHYSICAL QUALITIES
CHILDHOOD	FMS
EARLY CHILDHOOD	Agility
MIDDLE CHILDHOOD	Speed
ADOLESCENCE	Power
ADULTHOOD	Strength
	Hypertrophy
	Endurance & MC
TRAINING STRUCTURE	UNSTRUCTURED   LOW STRUCTURE   MODERATE STRUCTURE   HIGH STRUCTURE   VERY HIGH STRUCTURE

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YOUTH PHYSICAL DEVELOPMENT (PPD) MODEL FOR MALES	
DEVELOPMENTAL AGE	PHYSICAL QUALITIES
CHILDHOOD	FMS
EARLY CHILDHOOD	Agility
MIDDLE CHILDHOOD	Speed
ADOLESCENCE	Power
ADULTHOOD	Strength
	Hypertrophy
	Endurance & MC
TRAINING STRUCTURE	UNSTRUCTURED   LOW STRUCTURE   MODERATE STRUCTURE   HIGH STRUCTURE   VERY HIGH STRUCTURE

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### Youth Physical Development Model

**Strength Development**

Strength development - combination of muscular, neural, and mechanical factors.

Neural plasticity ability of the brain (ability to change throughout life) ... strength development could be targeted during childhood and after the adolescent growth spurt.

Prepubertal children and adolescents can improve strength.

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### Youth Physical Development Model

**Hypertrophy**

Emphasis on hypertrophy - approximately 14 yrs in male, 12 yrs in female athletes.

Hypertrophy - typically after peak height velocity ... testosterone and growth hormone increase with adolescent growth spurt.

Lack of testosterone and growth hormone before adolescence limits hypertrophy.

Before adolescence - focus on strength development.

After adolescent spurt, strength training AND hypertrophy training.

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### Youth Physical Development Model

**Power**

Power is essential for success in sports.

Vertical jump height is an indirect measure of muscular power.

Power development starts at the onset of adolescence and continues throughout adulthood.

Children and adolescents can make training-induced improvements in muscle power.

Neural adaptations ... Golgi tendon organ.

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### Youth Physical Development Model

**Endurance**  
 More attention on endurance and metabolic conditioning as the child approaches adulthood.  
 Should not be main focus of training.  
 High levels of endurance are not required in the majority of sports.  
 "Cardio" is inadvertently the most commonly developed fitness component ... safer for teachers than resistance training.  
 Authors suggest continuous running is boring for kids, fitness pro's consider a variety of training programs for children (Baquet, et al., 2010).

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### Youth Physical Development Model

**Fundamental Movement Skills (FMS)**  
 Development of correct movement patterns in a safe and fun environment for performance of complex sports movements later.  
 FMS should be present in any strength and conditioning program, for any athlete, of any age.  
 Experienced 7-year-old boy/girl ... series of FMS development exercises.  
 Elbe, 21-year-old athlete ... integrate FMS maintenance exercises within a dynamic warm-up.

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### Youth Physical Development Model

**Fundamental Movement Skills (FMS)**  
 Balance skills - Movements where the body remains in place, but moves around its horizontal and vertical axes.  
 Locomotor skills - running, jumping, hopping, and galloping.  
 Ball skills - catching, throwing, kicking, and striking.  
 Locomotor and Non-Locomotor Skills - rolling, balancing, sliding, jogging, running, leaping, jumping, hopping, dodging, galloping and skipping.  
 Object Control Skills - bouncing, throwing, catching, kicking, striking.

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### Youth Physical Development Model

**Mobility and Flexibility**  
 5 - 11 yrs is a critical period of development for flexibility (Molina, 2007 and Sands, 2002).  
 Flexibility - Static, Pulse, Range of Motion ... what do kids like best?  
 Mobility - "controlled voluntary movement through entire functional range of motion."  
<http://www.kinesiotherapy.com/mobility-training-overall/>  
 Sex differences  
 Boys less trunk flexion between 9 and 12 years (Bruvén, et al., 1985).  
 Girls - improved flexibility beginning at 11 years of age (Sants, Hockenrieder, Serfeldt, 1984).  
 Prepubescence an opportunity to develop mobility ... adolescents and adults focus on maintenance.

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### Youth Physical Development Model

**Agility**  
 Most under-researched fitness component in pediatric literature.  
 "a rapid whole body movement with change of velocity or direction in response to a stimulus." (<https://www.scienceforsport.com/agility/>).  
 Agility ladders?  
 Fast feet around cones?  
 Decision making with fast movements?

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### Youth Physical Development Model

Anyone for agility training?

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### Youth Physical Development Model

**Agility Drills**  
 Decision making and whole body movement drill.  
 1. React to a Stimulus - Left or Right  
 2. 4 Person Triangle Agility  
 3. 1-on-1

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### Early Movement Skills

**Stability, Balance, and Kinesthetic Awareness**


- Jump & Land
- Run, Jump, Land
- Jump, Turn, & Land
- Run, Jump, Turn, Land
- Jump, land 1-foot.
- Run, Jump, land 1-foot
- 1-foot hop, land 2-feet.

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### Early Movement Skills

**Locomotion**

- Galloping, Skipping
- Side Stepping, Karaoke/Caricra Run
- 1-Foot Hopping
- Dry Skating
- Body Rolling



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### Early Movement Skills

**Stability, Balance, and Kinesthetic Awareness**

1. Static Balance ... Extremities are still ... 2-foot balance ... 1-foot balance
2. Static Balance ... 1-foot balance ... Arms are moving ... pelvis is stable.

1. Single-leg Pelvic Stability – Parallel Hips
2. Single-leg Pelvic Stability W/Hip Extension (Toe on).
3. Single-leg Pelvic Stability W/Hip Extension (Toe off).
4. "Golfer's Lift" maintain neutral spine.




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### BOSU and Unstable Surfaces

- 2-feet ... hop on ... hop off
- 1-foot ... balance ... jump on & land ... jump off & land ... High 5 partner
- Balance All-4's ... Balance on knees ... Balance on Butt No Legs No Hands
- 2-Knee Balance ... 1-Knee Balance
- 2-Knee Balance ... get up, get down
- Bird Dog
- Superman ... Sky Diver ... Upside Down Superman

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### Teaching Model

1. Demonstration Phase
2. Practice Phase
3. Response Phase
4. Feedback Phase

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### 1. Demonstration Phase

- young athletes have a limited ability to understand verbal information.
- keep words to a minimum when describing an exercise.
- best way to learn a new skill: watch the skill ... get a "general idea" of the skill.
- seeing a skill or drill is better than "hearing" a skill or drill.
- help athletes get a general idea of what to do by using teaching cues.

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### Demonstration Phase


"Watch me do a squat."

What did you watch?

Three teaching cues for a squat.

Direct attention to what you want them to see.

Athletes will pay attention to as many "unrelated" parts of the skill as related parts.




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### Demonstration Phase

We can use teaching cues to help:

- 1) Focus the athletes attention.
- 2) Enhance the memory of the athlete.
- 3) Reduce words needed to describe a skill.



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### 2. Practice Phase

- the athletes will be developing "muscle memory" that controls movement (a.k.a. Motor Program)
- Brain – nerves – muscles. Muscles really don't have a "memory."
- to develop "muscle memory" the athlete must practice the way he/she plays or works out.

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## Practice Phase

- practice the actual skill or exercise and practice the whole skill.
- try not to "break" the skill or exercise into little parts.
- Anything less than a "game-like" situation can introduce unrelated situations that can confuse the player & hinder learning and performance.

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## 3. Response Phase

Create practice situations that are ideal for learning and performance.

- a) eliminate fatigue at the beginning of a work-out or practice.
- conditioning at the end of practice.
  - a warm-up should be low intensity.
  - fatigue inhibits fine muscle movements and can hinder learning.

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## Response Phase

- b. If an athlete doesn't do "it" right.
- didn't understand what the coach said.
  - he/she may learn differently: visual, verbal.
  - always ask if everyone if they understand.
  - back of line if you don't understand, to watch the drill.

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## Response Phase

- c. Give the athletes goals or objectives for each drill.
- Try to have a goal for each drill.

*Dead Lift*  
- 3 of 5 lifts done correctly  
*Tennis*  
- 7 of 10 overhead smashes in Jump and Land  
- 3 of 5 "Lands" done correctly

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## Response Phase

- d) Never use "exercise" as punishment.

"10 push-ups if you do the drill wrong."

"10 push-ups if you don't run back into the line."

- "You did something wrong, now you have to do something that's good for you."
- Inappropriate behavior? "Penalty Box" or sit down, inactivity.

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## 4. Feedback Phase

- The better the feedback, the better the learning & performance.
- All the research agrees:  
"Feedback is the strongest and most important variable controlling learning and performance."
- "The ability to provide meaningful feedback is the most important ability for a coach to possess."

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## Feedback Phase

- Give immediate feedback ... or as soon as possible.
- Give positive feedback.
- Tell the athlete what to do. Avoid telling the athlete what not to do.
- "You used your back a lot on the lift. If you bend your knees more, you'll get more benefit from the lift, and decrease the risk of injury. Use your legs more next time."

Instead of this response:  
"What did you use your back for? How many times have I told you to lift with your legs, NOT YOUR BACK!?!?"

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## Feedback Phase

- Give feedback when the athlete is successful, not just when she is unsuccessful.

"Good lift! You had your head up, your butt down, and lifted with your legs."

- The subliminal message that an athlete gets when she is constantly corrected is, "I can never do anything right. Coach is always yelling at me."

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Thanks for coming!

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