


Warmup, Restoration and other Training thoughts!!

Active Start Stage
Chronological/ Development Age
Males and Females: 0-6

Fundamental Movements
*Gymnastics
Swimming
Running
(Wheeling)*



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FUNDamental Stage
Chronological/ Development Age
Males 6-9 and Females: 6-8


Fundamental Movements Skills +



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Learning to Train Stage
Chronological/ Development Age
Males: 9-12 Females: 8-11

Fundamental Sport Skills



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Physical Literacy
First 3 stages of LTAD
Before the onset of PHV

Fundamental Movement skill
+
Fundamental Sport Skills
=
Physical Literacy
=
Base for Excellence & Participation

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Training to Train
Developmental Age – onset of PHV
Males: 12-16 Females: 11-15

Building engine and sport specific skills



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Training to Compete
Chronological
Males: 16-23 +/- Females: 15-21 +/-

Optimizing engine and sport / event / position skills




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Training to Win
Chronological Age Males: 19 +/- Females: 18 +/-

*Maximizing engine
and
event / position
skills*




PODIUMS

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Active for Life
Enter at any age

*Healthy
Life-long
Physical
Activity*



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LTAD Principles – Sport Categories

EARLY SPECIALISATION → Gymnastics, Figure Skating, Diving, Table Tennis and Swimming *

SPORTS * ↑

LATE SPECIALISATION → Athletics, combative sports, Cycling, Rowing, team sports.

SPORTS *

*4 stage model specialisation *5/6 stage model * Cusp of early specialisation

For late specialization sports

Specialization before age 10 is not recommended since it contributes to early burnout, dropout and retirement from training and competition

Harsanyi, 1985

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LTAD Implications

- We need coaches who are trained and skilled in the physiological, cognitive and emotional development of children
- Coaches should employ periodised training and competition programmes
- Integrate sports science, sport psych, coaching ed, and sports medicine
- Delivery of athlete centred competition programmes e.g. training to comp. ratios

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The Path to Excellence:
A comprehensive view of development of US Olympians who competed from 1984 - 1998

- US Olympians begin their sport participation at the average age of 12.0 and 11.5 years old for males and females respectively
- On the average, female respondents reached each developmental milestone one year earlier than males.
- Most Olympians reported a 12-13 year period of talent development from their sport introduction to making an Olympic Team

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The Problems!

- We don't understand the stages of the athletes career!
- Poor coaches education at youth sports level!
- Starting training in the "Training to Compete" phase of an athletes career.
- No long term approach to training the young athlete!

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How Did We Get Here?

- Lack of Physical Education Programs in Schools
- Poor Coaches Education in Training Theory and Methodology at all levels

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The Result

- Poor Basic Motor Skill Development
- Athletes long term development is often limited by lack of early development of BMS

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Basic Motor Skills

- Walking
- Running
- Hopping
- Skipping
- Long and Vertical Jump
- Sliding and Gallop
- Leaping

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Warmup for the Developing Athlete

- General warmup for almost all sports
- Used at beginning of each season
- Intended to enhance development of basic motor skills
- Fools athletes into conditioning
- Can be run as a circuit if necessary

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Active/Dynamic Warmup

- Summary of the current situation
- Use brief bullets, discuss details verbally

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Key to Running Success

Horizontal speed of the foot at touchdown
– Decrease braking force
Horizontal foot distance from Center of Mass at touchdown
Utilize elastic tissues!

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Sprint Mechanics


- (1) Phase I - Support
- (2) Phase II - Backside/dorsiflexed ankle
- (3) Phase III - Transition/Relaxation/Recovery
- (4) Phase IV - Frontside/**Reacceleration** of thigh
- (5) Action-Reaction of Arms

Get the ball of that foot under the greater trochanter or at least close

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The Sprint Drills

- Ankling
- Heel Raise
 - Lying
 - Running
- Fast Leg Series
 - Single
 - Double
 - Alternating Doubles
 - Continuous
- Some Other Drills



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Four Main Parts of the Long Jump

- Approach
- Takeoff
- Flight
- Landing

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Seven Phases

- Phase I - Walk-In (or some other method of a moving start)(standing start is an option)
- Phase II - Drive or initial acceleration (5-7 strides) Sets up rhythm of approach
- Phase III - Continued Acceleration (longest-8 strides)
- Phase IV - Attack/Preparation for takeoff (5-7 strides-visual control region)
- Phase V - Takeoff
- Phase VI - Flight
- Phase VII - Landing

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Rhythm

- 4-3-3
- 3-4-4
- 3-3-3
- 2-3-3
- How many strides in each of these rhythm's?

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Three Tasks of the approach as defined by Dr. Jim Hay

- Toe of the Takeoff foot as close as possible to the front edge of the board
- With as much horizontal velocity as can be controlled
- With the body in position (adjust position) to achieve a relatively large vertical velocity; with minimal loss of horizontal velocity during takeoff

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Length of Approach

Elite men	18-22 strides
Junior men	16-20 strides
Women	16-20 strides

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How does the athlete accomplish an accurate approach?

Practice! Practice! Practice!
Energy Distribution down the runway!

- Programming
- Adjusting
- Accuracy (Visual Control)

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Programming

Consistency of Stride Pattern
Accumulation of Errors

The long jump dance. You are on Stage
Choreograph your approach

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Adjusting

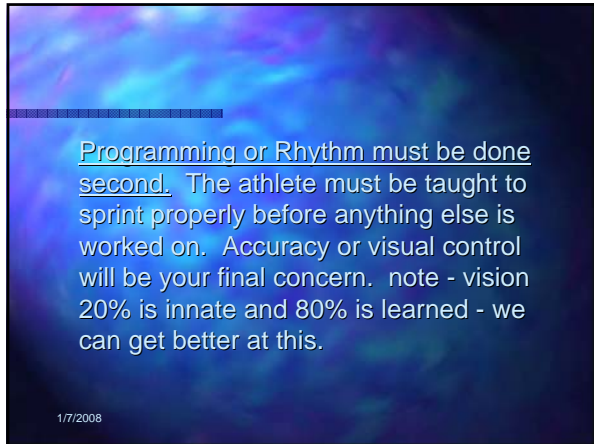
Adjusting the position of their measured start mark. We need to spend a great deal of time practicing this under a variety of conditions.

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Accuracy (Visual Control)

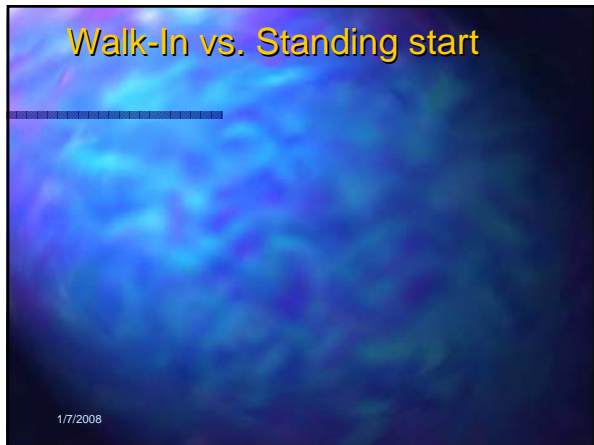
(a) As they approach the board they modify their stride pattern to hit the board accurately
(b) Use of oversize board for a time to help the athlete adapt to visual control and overcome the fear of fouling.

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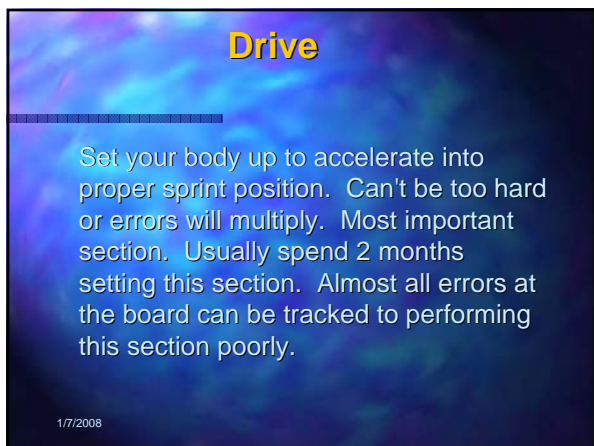
Programming or Rhythm must be done second. The athlete must be taught to sprint properly before anything else is worked on. Accuracy or visual control will be your final concern. note - vision 20% is innate and 80% is learned - we can get better at this.

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Walk-In vs. Standing start

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Drive

Set your body up to accelerate into proper sprint position. Can't be too hard or errors will multiply. Most important section. Usually spend 2 months setting this section. Almost all errors at the board can be tracked to performing this section poorly.

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Continued Acceleration

Move into proper sprint position.
Transition from the drive is the most difficult part of the approach.
Must be in great sprint form at the end of this phase as it is essential to executing the Attack phase well.
At the end of this phase is coaches check mark

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Attack Phase

Conscious acceleration (change in tempo) to board from 10-13 meters out.
We should see an increase in cadence (tempo), but not at the expense of stride length and not a coasting into the takeoff

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Check Marks

Check Mark at:
2.3m - 2.0m from front of board for men
2.0m -1.7m for women and slow short white males
Coaches check mark at 6 strides from board

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Last Three Strides

In LJ
Push-Pull-Plant

Differs In TJ
How?

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Review of Common errors

- Faults - Look for pushing off of pull into plant.
- Look for C of G to continue traveling down instead of up during last stride.
- Poor concept of rhythm of last three
- Poor sprint mechanics
- Anterior hip rotation
- Excessive forward or backward lean
- Decelerating the last 3 -4 strides (visual control)
- High heel recovery of plant foot
- No dorsiflexed foot in the pull
- Foot contact too far ahead of C of Mass
- Passive foot on pull step
- Pushing off of pull step (Should have incomplete extension)

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Mechanics of Takeoff

I have found over the years that telling an athlete to push off the ground at takeoff does not work as well as telling an athlete to push into the ground

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Three Phases

- Foot Plant
- Amortization
- Extension

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Foot Plant

The Russians use the cue - putting your foot in a slipper (watch their women on video)- this represents a fairly common view of the action of the foot placement as it prepares to touch the board. The foot position at contact with your athletes will range from heel contact to flat foot to ball of foot contact. Regardless of method you must cue the athlete to start a downward and backward movement of the foot prior to contact.

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Amortization

This is where redirection takes place. A down- up sensation must occur. This is the point where we are changing from horizontal to vertical. At board contact the take off leg acts as an elastic lever redirecting the pelvis and C of G along their flight path.

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Extension

Look for the athlete to move to the ball of the foot when the swing leg meets the takeoff leg and before the body reaches perpendicular. In the latter part of this motion proper execution will be represented by an upright trunk and an aggressive swinging upward and forward of the free knee and arms.

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- (i) Erect posture of the trunk
- (ii) Extreme shrug of the shoulder
- (iii) Horizontally locked and bent drive knee - dorsiflexed foot in some and in all if running mechanics have been taught properly.
- (iv) Completely extended takeoff leg (including hip) (triple extension)

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Flight and Landing

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Flight Methods

- Lengthen levers to control rotation
- Stride
- Sail
- Hang
- Hitch
 - Rarely in women
 - In men when they have achieved 8.0m

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Landing

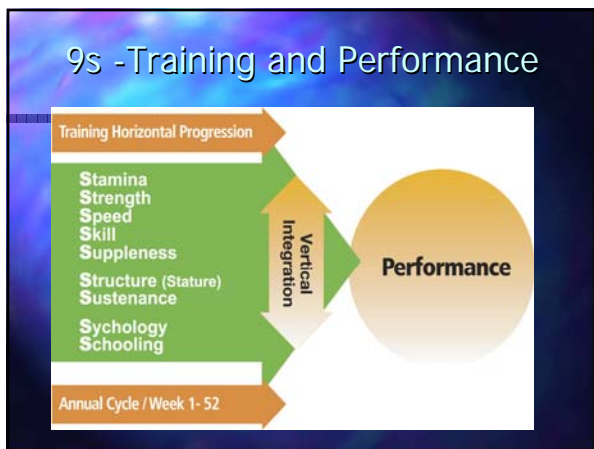
- Let the pit come to you - don't reach for the pit.

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Three whole body communicating systems!

- Neural
 - Brain, spinal cord and all nerve structures
- Fluid
 - Heart, lungs, veins, arteries, capillaries lymph, and cerebrospinal fluid
- Fibrous
 - A total body network of elastic connective tissue

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Low Metabolic Cost Tissue


High Metabolic Cost Tissue

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Frans Bosch
Running – Biomechanics and Exercise Physiology Applied in Practice


- Page 28 – Passive Tissues and their function
 - Tendons, fascias, aponeuroses, connective tissues
 - The anatomy pictures we see
 - Everything is cut away to expose what is (was) considered the most important components – done for clarity
 - By eliminating the cut away tissues there functionality was repeatedly overlooked

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- The muscle – bone concept presented in standard anatomical description gives a purely mechanical model of movement. It separates movement into discrete functions, failing to give a picture of the seamless integration seen in a living body. When one part moves, the whole body responds. Functionally, the only tissue that can mediate such responsiveness is the connective tissue.


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- "It's not been studied as a system, because it's the stuff everyone's been trying to get out of the way. "So it's the stuff that's been cut, it's the stuff that's been thrown away, 'let's get this out of here so we can get to the heart, let's get this stuff out of the way so we can get to the nerves.' But in fact, everything's wrapped in it."

• Thomas Myers

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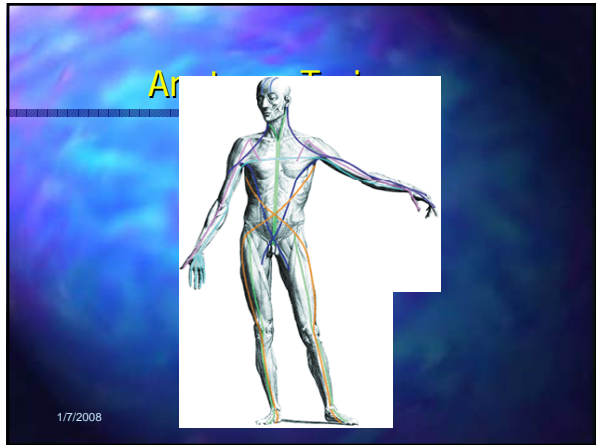


- One reason why fascia has not received adequate scientific attention in the past decades is that this tissue is so pervasive and interconnected that it easily frustrates the common ambition of researchers to divide it into a discrete number of subunits which can be classified and separately described. In anatomic displays the fascia is generally removed, so the viewer can see the organs, nerves, and vessels but fails to appreciate the fascia which connects, and separates, these structures.

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Instead of viewing the fascia as separate components we need to take a "Whole Systems View" to understand its impact during running.

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Subcategories

- Power =Strength and speed
- Agility =Coordination and speed
- Mobility= Flexibility and coordination

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Types of speed

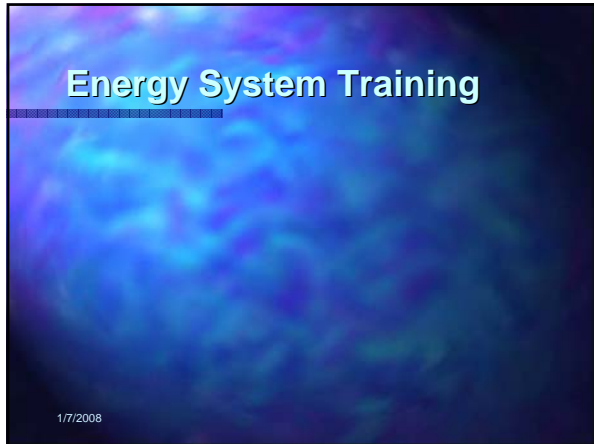
- Acceleration - overcoming inertia
- Absolute speed - max velocity
- Speed endurance - maintenance of max vel
- Optimal speed - efficiency

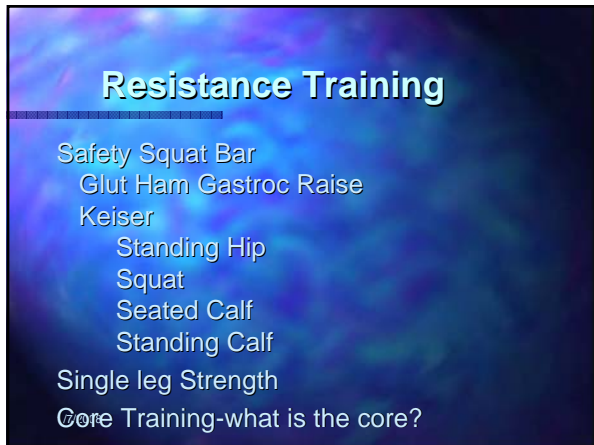
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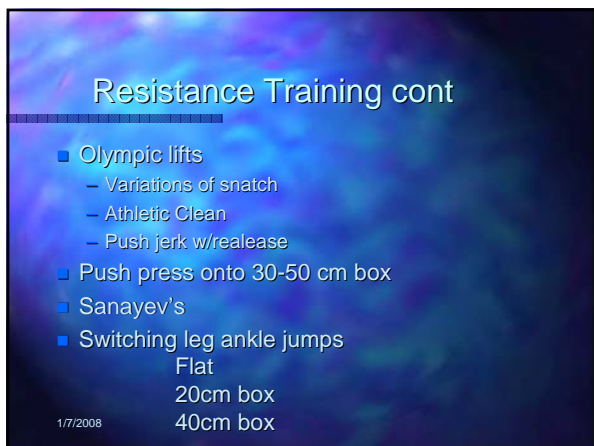
General Warm-Up

- This warm-up has been very successful for me over the past 15 years. It follows closely Mcfarlane's continuous warm-up developed in the early 80's from his observations of European athletes. We start in the fall with the 20 reps shown then move to 15 and by competition we are down to 5's and 10's and have reduced the number of exercises to a reasonable number. Fools the athlete!!

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Resistance Training

- Step ups
 - Low - 30cm box
 - 90 degree
- Rowing machine
- Dumbbell Snatch
- Flex bands

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Integration Tools

Plyometrics

- Double leg hurdle hops
- Straight leg bounding - 5 m moving start
 - RLRL
- RLL
- LLR
- RRLL
- RLRRLLLLRLRRLLRL

Single leg depth jumps from 30-50 cm boxes

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Hill Training

- Running
- Bounding
- Downhill
- Uphill

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Integration Tools

- Shuttle MVP
- Sled
- Parachutes
- Motorized overspeed device
- Powershots
- Weighted waist weights (up to 10% BW)
- Ankle and Wrist Weights (250 - 500 gms)
- Activator Belt

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Recovery- Pause/Rest/Restoration

- Emotional
- Physical
- Nutritional

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DOP! Delayed Onset of Peaking

- Your best fitness level is not your best performance time!

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Testing

Omegawave System

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General Adaptation Syndrome

Supercompensation Graph

Progressive Adaptation to Stress of Training

Work + Restoration/Rest/Recovery =
Adaptation/Improvement

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Testing/Evaluation

- 30m standing and fly
- 10m fly
- 10x RLRL time and distance
- Vertical Jump
- Wingate Sprint Test (**RAST**)
- 120m or 20 sec test
- OHB & FBL
- RLRRLRLRLRLRLRLRL
- Standing Triple jump

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How do we work on all this?

- Drill for a purpose – don't drill to drill
- Watch segment and joint positions for "real jump" positions
- Practice makes permanent
- Muscle memory – the body (muscles) don't care what you teach them, but they do remember what you do.
- Access elastic tissues during drilling.

Speed is a skill – you can learn to be "faster"
1/7/2016
Jumping is A SKILL