

Developing Field Event Athletes Sag 2008

- 1) Values
- 2) Progressions
- 3) Using Warm Ups for Skill Development, Core Activation and General Fitness
- 4) Progressions for Skill
- 5) Mechanics
- 6) Progressions of Physical (Biomotor) Abilities – Speed, Endurance, Strength, Power, Strength Endurance, Speed Endurance, Flexibility and Mobility
- 7) Exercises to Build Routines (Complexes)
- 8) Complexes to Build Workouts
- 9) Workouts to Build Weeks (Cycle)
- 10) Cycles to Build Seasonal Training Plans (YTP)

1) Values

Pedagogical Principles of Track and Field Training
(G. Schmolinsky) Track and Field, Sportverlag, Berlin)

The Principle of Health - The goal of training is to produce healthier individuals. All workloads and activities should be chosen with this in mind.

The Principle of Versatility - General versatility lays the groundwork in young athletes for later specialization as an adult. It can be considered as both versatility in several sport areas and also versatility within one sport. Early specialization may lead to good results at an early age, but often do not improve their performances as expected when they become an adult.

The Principle of Utility - Activities should be chosen in order to achieve objectives (long and short term). (Usefulness) - Set objectives and activities that can be evaluated for effectiveness.

The Principle of Conscious Involvement - The education of the athlete in the spirit of conscious discipline, active collaboration, self-reliance, and independent behaviour. " "In the beginning, the coach is the match, in the end, the mirror that reflects the flame." (Frank Dick)(Lecture)

The Principle of Repetition - Through a gradually increasing number of repetitions, movements become automatic. At the same time strength, speed and endurance are improved through a fixed number of repetitions. This governs the training load which cannot be increased arbitrarily, but must consider the frequency of training sessions and the load of training sessions.

After a certain plateau of fitness and technique further improvement is only possible through more repetitions (volume stimulus) or greater intensity (intensity stimulus) or by shorter recovery between repetitions (density).

The Principle of Systematization - Performance targets set can only be reached by adhering to a system. (Periodization)

The Principle of Durability - The stability of acquired skills, conditioning and coordination is ensured through frequent repetition over a long period of time. This consistency allows athlete who interrupt their training to recover their form and improve more rapidly.

The Principle of Gradualness "The total load is increased little by little."

Move from: 1. Simple to complicated 2. Easy to difficult 3. From known to unknown.

The Principle of Age-Dependence - Different training and methods for children than those for adults. Take into consideration the anatomical, physiological and psychological differences at various stages.

Theory of Limited Adaptive Capacity

- Adaptive capacity is limited.
- It varies from individual to individual, increases with maturity, it increases with training.
- It allows us to meet the demands of daily life and adapt to new and unusual strains.
- There is a stimulus threshold which elicits an optimal adaptation.
- Adaptation takes place in the rest phase between bouts or sessions or days of training.
- With adaptation, further adaptation is only possible with increases stimulus.
- "Small Tack, small hammer. Large spike, large hammer."
- We must choose the direction of adaptation. With a limited adaptive capacity, we can only adapt one biomotor ability at a time. (Endurance, Strength, Speed)
- Previous adaptation can be maintained with moderate effort that does not interfere with adaptation in a new direction (Periodization).

Track and Field Rules – Underlying Principles

- C** – Consistency – The sport is the same everywhere.
- O** – Objective – The athlete determines the outcome. There is as little subjective judgement as possible.
- F** – Fairness – The same rules apply fairly to all participants.
- S** - Safety

Basic Track and Field Concepts

- "One kid, one ball" – maximize student learning. (Also one athlete, four discus)
- "Make the hurdle fit the kid, not the kid fit the hurdle." – Adapt equipment, adapt rules, adapt activities.
- Build things one concept (skill) at a time.
- Let students assist in the set-up, take-down. Help make them independent. A diagram or map may make this possible.
- Self-directed practice – Often at beginning of class during set-up. Student work on one skill from choices. (Once athletes understand basic concepts)
- Designated routines and places to assemble.
- Avoid elimination, make it rotation.

- Where teacher and learner agree on outcome, direct teaching is most effective.
- Where teacher and learner do not agree on goals, indirect teaching is most effective.

How skills are learned and mastered. (Suzuki's model)

1. Exposure
2. Interest
3. Experimentation
4. Discovery
5. Reinforcement
6. Refinement
7. Addition

“You can't teach anybody anything, you can only help them to discover it for themselves.” - Galileo

2) Progressions – The most important thing is the most important thing.

Canadian Shot Drills + Progressions (J.P. Baert)

- Part can be done with a medicine ball and used as regular power exercise for all athletes including distance runners.

1. Two hand Chest Pass – Stand facing the direction of put. Shot rest on spread fingers and upper part of hand (clear of palm). Shot is tucked under chin with elbow pointing to the ground at 45% angle. To put, elbow lifts (until upper arm is nearly parallel) and arm begins extending as elbow lifts. The finishing position is with the thumbs down and arm extended forward. Hands and elbows will rebound.
2. Two step to a block with two hand Chest Pass (*Key concept in transferring momentum to an object. If you are running and your legs are stopped quickly, then the upper body accelerates.) The athlete starts facing forward on their left foot and steps forward onto bent right leg and then onto stiff left leg with left toe turned in at 45 degrees. The athlete looks at target and pushes with elbows up and thumbs down.
3. One Hand Drill from two step to a block. The athlete steps facing forward and then puts after the stiff left blocking leg is planted, lifts elbow, and extends arm, using hand last.
4. 90 Degree Standing Throw – Stance is slightly open (Heel on throwing side even to toe on blocking side.) To put, bend knee, point at target with left hand then rotate to face forward and switch hands as left elbow tucks in vigorously.
5. 90 Degree Glide Throw – Stance is slightly open (Heel on throwing side even to toe on blocking side.) The athlete does a slide step landing on right foot planting left then drives to face forward and puts. (Until 1960 everybody putted this way. Most young athletes will initially put farther this way than with an O'Brien glide. I often have them compete this way until their rear facing drills are farther than this technique.)

6. Standing Throw – Stance is slightly open (Heel on throwing side even to toe on blocking side.) To put bend knee, look back then lift and rotate to begin put.
7. Standing Throw with hip action. Blocking heel points up then foot is stomped and rotated to allow heel to touch. Left arm and right hip (in right handed thrower) move together in put. Left arm swings overtop (Clears) not around, to stretch chest muscles.
8. Verbalizing to sequence throw. Thrower yells “HAI –YAH.” On “Hai” stomps out cigar with blocking foot and on “Yah” lifts using legs, clearing free arm and firing hip.

Progressions from Standing Puts.

1. Step Back. (From Standing throw position, step to back of circle with left foot. Shot is on neck and under chin, elbow at 45%, looking back. Right foot in centre of circle rotated 60% from back of circle. Throw is initiated with left foot stepping to front and (HAI) stomping then lifting (YAH) action with clearing arm and hip firing, Putting arm extends and hand fires. Athlete faces forward in tall and strong position.
2. Step Back (2 Step) Start in back of circle on both feet step to centre with right then to front of circle with left and “Hai Yah.”
3. Introduction of glide with towel instead of shot.
4. Glide to putts.

Rotational Throwing (Requires mastery of standing throw.)

1. South African Drill from back of circle with stick or bar in racked position on chest. Athlete steps to centre of circle on right foot rotates to open throwing position and then presses stick overhead.
2. South African with Shot. Half speed initially.
3. Full turns with stick in racked position. Kick the cone. Step to centre rotate, plant and press.
4. Full turns with light Shot. Half speed initially.

Typical Shot Session Warm up 1 - Jog until sweating – Exercises 6 to 8 reps

Texas Series 1. Supine Hip Crossover 2. Prone Hip Crossover 3. Calf Stretcher – bentknee and straight 4. Centipede Walk In and Out 5. Inverted Hamstring stretch 6. Lateral Lunge 7. Forward Lunge –forearm to instep with ext and change 8. Backward Lunge with twist 9. Drop Lunge 10. Sumo Squat

10m Square Continuous Dynamic drills— active one side 10m –jog one side of 10m square (Easy jumps) 1. Touch ground while jogging 2. Arm circles with skipping- forwards 3. Back Arm circles while skipping 4. Front arms circles in opposition, 5. Back arm circles in opposition 6. Arm flings –front 7. Arm Flings –up + down, 8. Arm Flings in opposition. 9. Knee lifts with claps 10. Slide steps – right 11. Slide steps –left 12. Grapevine step – rt. 13. Grapevine step –left. 14. Rotating Pogo jump-ankles - fwd. 15. Pogo jump-ankles - fwd. 16. Seat Kickers 17. Walking tripping ankle extension exercise 18. Speed Skater Accelerations 2 X 3 X 40

Shot – 4 X Backward Overhead, then Forward Overhead, Hand Drill (American, Canadian)

- 3 X 2 Step and Put
- 3 X 90% Standing Put
- 2 X 3 X Full Standing Puts
- 3 X Phantom Glides (Towel)

- 2 X 3 x Full Throws
- Med Ball – 12 X All Exercises Complex 1
- Plyo 2 – 3 X

Canadian Discus Drills + Progressions

- Part can be done with ringette rings/towels.

1. Grip and Roll off fingers.
2. Discus bowling.
3. Two step to a block with underhand pitch (*Key concept in transferring momentum to an object. If you are running and your legs are stopped quickly, then the upper body accelerates.) The athlete starts facing forward on their left foot and steps forward onto bent right leg and then onto stiff left leg with left toe turned in at 45 degrees. The athlete looks at target and rolls discus off fingers so that it flies in a vertical position.
4. 90 Degree Standing Throw – Stance is slightly open (Heel on throwing side even to toe on blocking side.) To put, bend knee, point at target with left hand then rotate to face forward and sling discus.
5. Towel Drill - Standing Throw in vertical position (with Flat orbit) – Stance is slightly open (Heel on throwing side even to toe on blocking side.) Swing discus (or towel/ring back (shelf position at least shoulder height, then bend right knee, then rotate to begin throw.
6. Towel Drill - Standing Throw from bent right knee with correct orbit – Stance is slightly open (Heel on throwing side even to toe on blocking side.) Swing discus (or towel/ring back) shelf position at least shoulder height, then rotate to begin throw.
7. Standing Throw with discus. Good orbit with high point on shelf and release and low point opposite direction of throw. Release hand flat with spin off trigger finger.
8. Step back and throw. In standing throw position, step left foot to rear of circle then step to block, pivot on right ball of foot and throw.
9. South African drill. First with towel, then ring then discus.
10. Full turn with kick the cone (Towel drill). For younger throwers, use technique that goes the furthest in competition, including two step and pitch.

Long Jump Progressions

Training progressions and Skill Exercises

Landing Familiarization drills - Landing – Posture, Absorb, Kickout

A) Land – Motorcycle position – stick the landing (fixes posture) – hands out

B) Land – Pause then Squat – teach absorption phase

C) Land- Pause/Squat/ Pause/ Rollback + Kick out *When you add horizontal speed you have full landing.

- One Step Take-off

- Emphasis is set up Flat foot placement
- Drive free leg and arms and land in Split (Telemark position with weight on feet, not back knee) Can be done in foam pit or sand.
- Two Step Take-off to Split
 - Emphasis is set up Flat Flat foot placement on last two steps
 - Vertical Body Position going into last two steps (Biggest difference between young athletes and World class athletes. Some strength dependence, but mainly a skill issue)
 - Eyes on horizontal target, use peripheral vision
 - Strong Knee Drive
 - Strong Arm Drive in opposition)
- Four Step to a Split
- Four Step to a Switch
- Six Step to a Switch
 - Emphasis is set up Flat Flat foot placement on last two steps
 - Vertical Body Position going into last two steps
 - Eyes on horizontal target, use peripheral vision
 - Strong Knee Drive
 - Strong Arm Drive in opposition)
- Six Step to a Full Jump (one stride or hitchkick) (also Box into Foam)
- Gradual progress to long approaches – 2 steps per week with regression on easy weeks
- Full Approach Runs to a Pop Up
 - Emphasis is set up Flat Flat foot placement on last two steps
 - Vertical Body Position going into last four steps
 - Eyes on horizontal target, use peripheral vision
 - (Pop Up just take off and then run out instead of full landing, reduces wear and tear)
 - Rule of Thumb – Athlete age is maximum number of steps in whole Takeoff (World class men 20 steps – High School 15, etc)
 - Pragmatic approach – When they jump farther from longer approach, it is ready to use in competition.)
 - Must be measured and recorded (on shoes)
 - This is subtracted from any speed work in a workout.
 - Coaching marker – 4th or 5th step from board. For coaches use. Tells if they are fouling because of slowing and reaching in last 5 strides. Then need to quicken last 4 steps or if because of start of approach (Most common error).
- Beamon Drill – From 6 steps progressing to 12 – Touch head to soft target suspended over pit.

Typical Long Jump Session Warm up 1 - Jog until sweating – Exercises 6 to 8 reps

Texas Series 1. Supine Hip Crossover 2. Prone Hip Crossover 3. Calf Stretcher – bentknee and straight 4. Centipede Walk In and Out 5. Inverted Hamstring stretch 6. Lateral Lunge 7. Forward Lunge –forearm to instep with ext and change 8. Backward Lunge with twist 9. Drop Lunge 10. Sumo Squat

10m Square Continuous Dynamic drills— active one side 10m –jog one side of 10m square (Easy jumps)1. Touch ground while jogging2. Arm circles with skipping- forwards 3. Back Arm circles while skipping4 .Front arms circles in opposition , 5. Back arm circles in opposition 6. Arm flings –front7. Arm Flings –up + down, 8. Arm Flings in opposition. 9. Knee lifts with claps 10. Slide steps – right 11. Slide steps –left 12. Grapevine step – rt. 13. Grapevine step –left.14. Pogo jump-ankles - fwd. 15. Pogo jump-ankles - fwd. 16. Seat Kickers 17. Walking tripling ankle extension exercise

L.J. /Triple – If testing runs long you may skip this–Landing – Posture, Absorb, Kickout 3 X each

A) Land – Motorcycle position – stick the landing (fixes posture) – hands out

B) Land – Pause then Squat – teach absorption phase

C) Land- Pause/Squat/ Pause/ Rollback + Kick out *When you add horizontal speed you have full landing.

2 X 4 Step Take –Off to Split Landing (Vaulters short grip in sand) L + R

4 x 6 step T-off to Split L + R

4 X 8 step to Full Landing

Multi Jumps 4 X each – You can skip this if you did testing1. Power Skips – for Distance

2. Run Run Jump – for dist -30m

3 Double Leg Hops – 3 + 1 into Pit – Flat Foot – Initially vertical

4 Double Leg Start to standing Triple Jump – work good swing segments – thigh out then up.

5 Double Double – RRL or LLRR

6. Bounds for Distance

Triple Jump Progressions

Training progressions and Skill Exercises

1. Hopping quickly on flat foot. Learning to keep free leg swinging in full cycle on left and right.

2. Hopping and picking up heel of support leg.

3. Bouncy step.

4. Turn bouncy step into flat footed bound.

5. Combination jump – Hop then big bound – then hop and big bound. May use hoops to teach pattern. Pattern is RR LL RR LL

6. Standing Triple Jump

7. Triple Jump from 2 step approach.

8. Gallop to learn active take-off.

9. Jump Bounds (again).

10. Triple Jump from Progressively longer approaches.

11. Landing Familiarization drills - Landing – Posture, Absorb, Kickout

A) Land – Motorcycle position – stick the landing (fixes posture) – hands out

B) Land – Pause then Squat – teach absorption phase

C) Land- Pause/Squat/ Pause/ Rollback + Kick out *When you add horizontal speed you have full landing.

- (also Box into Foam)

- Gradual progress to long approaches – 2 steps per week with regression on easy weeks

- Full Approach Runs to a Pop Up

o Not quite Vertical Body Position of Long Jump accelerate through the board on last four steps.

o Eyes on horizontal target, use peripheral vision

o Pragmatic approach – When they jump farther from longer approach, it is ready to use in competition.)

o Must be measured and recorded (on shoes)

o This is subtracted from any speed work in a workout.

o Coaching marker – 4th or 5th step from board. For coaches use. Tells if they are fouling because of slowing and reaching in last 5 strides. Then need to quicken last 4 steps or if because of start of approach (Most common error).

Typical Triple Jump Session Warm up 1 - Jog until sweating – Exercises 6 to 8 reps

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C) Land- Pause/Squat/ Pause/ Rollback + Kick out *When you add horizontal speed you have full landing.

Triple jumpers – 2 x Gallop on carpet work on active contact – 2 x Bound Active - 1 x 3 x 6 step approach to triple jump – 1 x 3 x 12 step approach to triple jump then from full - 3 trials then – 1 x 3 x full jumps - then 2 x 3 x approach runs

Multi Jumps 4 X each – You can skip this if you did testing1. Power Skips – for Distance

2. Run Run Jump – for dist -30m

3 Double Leg Hops – 3 + 1 into Pit – Flat Foot – Initially vertical

4 Double Leg Start to standing Triple Jump – work good swing segments – thigh out then up.

5 Double Double – RRLR or LLRR

6. Bounds for Distance

Testing and Evaluation

- Standing Long Jump Test – Strength
- 5 Step Approach Long Jump –
- 10 Bounds
- 30 Flying Run
- Backward Overhead Heave

High Jump Progressions

Safety - Manitoba Schools Safety Document

- Minimum 5' X 10' by 20 inches deep and mats covering other areas
- Preferred – 2 or more tied/fixed together or with cover
- Suitable bar/Bungee or Weighted Cord and safe standards
- Supervised
- Controlled approach runs

Training progressions and Skill Exercises

- Landing Familiarization drills
- Security falls (Pit Whomping) / Rolls / Back arch and snap
- Backover without and then with a Bungee or a Bar
 - o Emphasize Heel tuck
 - o Look back (or place shoulders back) to pop hips up
- One Step Take-off

- Emphasis is set up Flat foot placement at 35 degree angle
- Two Step Take-off to a Power Hop
 - Emphasis is set up Flat Flat foot placement on last two steps
 - Foot Take-off Angle of 35 degrees
 - Take-off inside near standard and about 2.5 to three feet from bar (Safety Cones)
 - Vertical Body Position
 - Strong Knee Drive
 - Strong Arm Drive (Preferred Double arm)
- Three Step Take-off to a Power Hop (sometimes easier to do from 4 step approach)
- Three Step Take-off to a Flop (Back Layout) (sometimes easier to do from 4 step)
- Four Step to a Scissor or Power Hop
- Six Step to a Scissor
 - Five step curve initiated on the sixth step from the bar
 - First step looking at marker
 - 2nd, third step at near standard
 - 4th, 5th, 6th above bar at far standard
 - Critical lean back and away from bar cannot be achieved looking at floor or landing area
- Six Step to a Flop (Back Layout)
- Circle Run Drills – With and without take-offs
 - Emphasis is on lean away from the bar and upper body torque
- Eight Step Approach (Can also be odd numbered Approaches)
 - Clearance is over the middle third of the bar
 - Measuring approach run
 - Vertical body position at last point of contact

Typical High Jump Session Warm up 1 - Jog until sweating – Exercises 6 to 8 reps

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Specific Warm-up and Familiarization – 4 X- Forward and Backward Rolls in Pit, Bridges, Pit Whomps, Back over drill.

Technique – 4 X 2 step to Power Hop, 4 X 4 step to Scissors, 4 x 4 Step to Flop
 - 4 X Fast circle Runs and hop on Pit. Then 4 x 6 step Scissors, 4 X 6 step Flop (record approach) Progressions – after a few weeks drop 2 step approaches and add more flops. If technique is good move to 8 step approach after several months, (record approach)

Testing and Evaluation

- Standing Vertical Jump Test – Strength
- 5 Step Approach Jump – Depena’s formula - 71% of body height + vertical jump minus clearance efficiency females .65 of body height)
- Scissors – usually 15 to 20 cm below maximum clearance (with a few exceptions)

Rules

- May begin at any height. Heights and progressions are usually set in technical meeting or prior to meet.
- One minute to begin approach from time called until fewer than three athletes remain. (Ask official)
- At second time fault barred from further competition.
- Failures include dislodging the bar, time fault and touching the equipment or ground beyond the plane of the bar.
- May have two tape marks on runway. (not masking or chalk)
- If athlete leaves and misses a height, may attempt a higher height, but bar is not lowered.
- Dislodged bar has no time limit, but is in the judgment of the official, exceptions are good clearance if wind or pits dislodge the bar. May get a jump over if there is interference.
- Normal progression is 5 cm until 3 or fewer remaining. Minimum is 2 cm.
- An athlete is eliminated by three consecutive misses, not necessarily at the same height. Athlete may miss at one height and pass to a higher height to use next two attempts.
- Ties – If two athletes clear then same best height on the same attempt they are tied. It is broken by misses in the competition. If they are still tied it remains a tie except for first place which is broken by a sudden death jump-off where one athlete clears and one misses beginning with a fourth attempt at the height they both missed and then raising or lowering the bar by 2cm.

5)

Mechanics and Technique Analysis Principles –

1. Use every joint possible
2. Use every joint in sequence – big and slow (central first) then fast peripheral
3. Straight and strong – Move from flexion to extension
4. Direction Principle - If the athlete's path is wrong then they are pushing in the wrong direction.
5. Principle of Equal Falling bodies (Action – Reaction)
6. Principles of Rotation – Centre of mass, Axis of Rotation, Reducing moment of inertia, Secondary Axes of Rotation (Cutting)

Ballistics – Distance an object travels in the air is determined by:

1. Velocity (Speed at release)
2. Angle of Release (Initial trajectory)
3. Height at release

One step back rule – When an error is seen it was begun in the preceding stage.

Observe and film from various angles.

- Side View – Verticality at Take-off, Knee drive and Distance from bar
- 90 degrees - Clearance distance and flight path
- 45 degrees behind – Lean away from bar

Progressions of Physical (Biomotor) Abilities – Speed, Endurance, Strength, Power, Strength Endurance, Speed Endurance, Flexibility and Mobility

Speed (Alactic Energy) – Activities at maximal intensity with low resistance for less than 8 seconds or 60m.

Rules of thumb – Start at 200m and progress to max 600m. Done when fresh with adequate recovery between sets. Often divided into Acceleration development (0-40M) and Flying (or Max or Absolute.) Speed. i.e. run in 30m and flying 30m. Speed play or hollow work – 100 (30m hard -0 flow 15- hard 20 – flow 15 – hard 20)

Recovery – 48 hours – complements skill, power and strength work.

Endurance (Aerobic system and Anaerobic+Aerobic system at high intensities – Activities of varying intensity for a sustained duration i.e. 2 minutes to 30 minutes of heart rate in a high working zone.

Recovery – 12 - 24 hours – moderate and low intensities facilitate recovery from speed, power and strength work. Maximum intensities or great duration may interfere with speed, power and strength work. Greatest gains are at highest intensities after base of moderate and low.

Strength – the maximum force that muscles can exert. Periodizes by type. Types: –

- A) Anatomical Adaptation (Light load + high reps i.e. 3 sets of 12) All ages
- B) Hypertrophy (Moderate to High load i.e. 3 X 8 at 12 rep Max.) Can be circuit body weight, etc.
- C) Maximum Lifting (ONLY DONE WITH MATURE ADULTS MWITH BACKGROUND OF LIFTING FOR SVERAL YEARS) (90 to 100% of Maximum load and 1 to 4 Reps)
- D) Power Conversion (Light to moderate load and high speed) (3 sets X 8 Reps) or can be done with Special Strength (Overweight implements) and plyometric loading.
- E) Endurance Conversion (Light to moderate loads with little or no rest between exercises + stacking sets.)

Recovery 48 hours – pairs well with speed, power.

Speed Endurance (Anaerobic Lactate Power) - Activities at maximal intensity with low resistance for 10 to 15 seconds or 70m to 150m. Minimum 150m to Maximum total 900m for athletes. Recovery – 48 hours (Once per week)

Special Endurance 1 - Activities at maximal intensity with low resistance for 20 to 45 seconds or 180m to 300m. Recovery – 48 to 72 hours (Once per week – replaces Spec End 2)

Special Endurance 2 - Activities at maximal intensity with low resistance for 45 to 120 seconds or 350 m to 600m. Recovery – 48 to 72 hours. (Once per week – replaces Intensive Tempo Running)

Flexibility and Mobility

Key limiting factors in range of motion. Related to high speed and elastic strength. Heavy stretching is best at the end of workouts or following morning or with tempo days. Heavy stretching just before high quality work or competition may lead to a loss of elastic power of up to 5%.

- ❖ Exercises to Build Routines (Complexes)
- ❖ Complexes to Build Workouts
- ❖ Workouts to Build Weeks (Cycle)
- ❖ Cycles to Build Seasonal Training Plans (YTP)

Discussion and sharing