Success in Sport- Priorities for Developing Elite Performance
By Jeff Krushell

Good to Great Concepts

Natural Talent is Irrelevant to Success?
The Secret: Demanding – Consistent – Deliberate – Painful – Practice
Sporting Excellence: David Hemery: 66%

10 Yr Rule

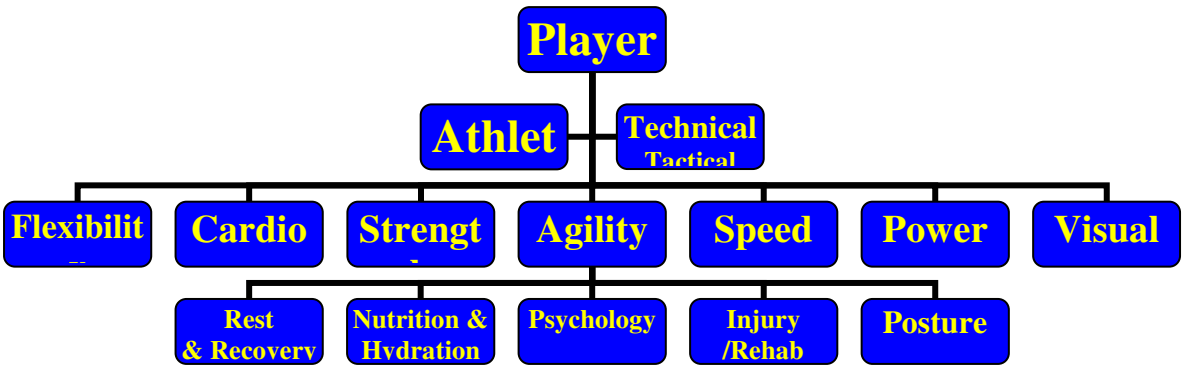
- **10 Years**
- **10,000 Hours**
- **3 hrs of Training & Practice / Day**
- **Well Planned and Progressive**

Competition vs. Training / Practice

- **0-6 yrs** **No Ratios**
- **6-9 Yrs** **Fun based Activity**
- **9-12yrs** **70% Training / 30% Comp.**
- **12-16yrs** **60% Training / 40% Comp.**
- **16-23yrs** **40% Training / 60% Comp.**
- **19+ yrs** **25% Training to 75% & Specific Training**

(Adapted from the Canadian LTAD)

Foundations of Development



Nutrition

Athletes Diet: Balance of Protein / Carbohydrates / Fats
An athletes diet, regardless of the number of calories you are consuming should be:
55% Carbohydrates, 30% Fats, 15% Protein

Protein

Excess protein is detrimental to performance and recovery. Your body can handle only small amounts of protein at any one time, a normal person's protein intake should be very close to 0.80g/kg bodyweight. Or approximately, 1.0g/kg for athletes in training.

It is critical that you never consume more than 30 grams of protein in any one sitting!!!

If you are looking at the 15% rule which is a great guide for athletes and your diet consists of 2000 calories per day you will need 75g of protein; 3 meals with 25 grams of protein. For a diet of 4000 calories per day you will require 150g of protein; 5 meals of 30g/day.

½ chicken breast = 25g protein
125ml tin of tuna = 26g protein
125ml of peanuts = 19g protein

Carbohydrates

Carbohydrates can be a very complex issue for athletes in training. You need to make sur eth cabs you ingest are quality carbs.. Whole wheat bread rather than white bread / brown rice rather than white rice / Low gylcemic carbs rather than high glycemic carbs.
Basically, carbohydrate intake should range from 6 to 11g/kg bodyweight and make up 55-60% of your total caloric intake.

Hydration
Drink before you're Thirsty: To avoid the risk of dehydration you must replenish fluids before the on-set of thirst. If you've waited until you are thirsty to take a drink you have waited to long. By the time you feel thirsty you are already at about 1% dehydration, this equals close to 3 cups of sweat for a 150 pound person!

At 2% dehydration your ability to perform in sport may drop as much as 15%!

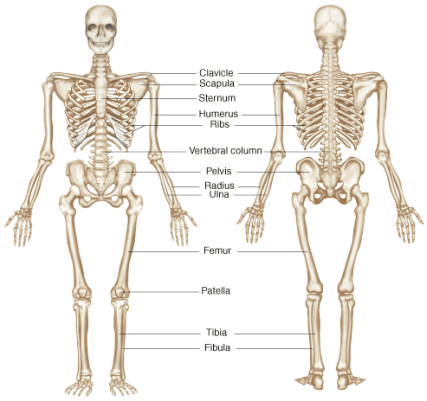
When you become dehydrated, your ability to think and react slows, stamina and recuperation in suppressed, power and strength output drops and the risk of injury increases dramatically!

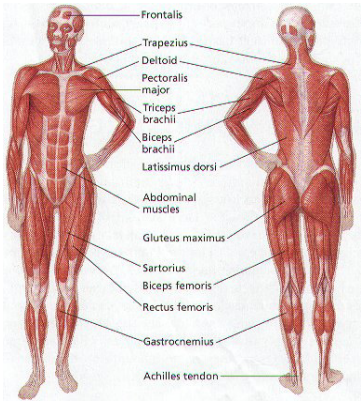
Fruit juices, especially orange juice and pure peach and pear juice are great ways to replenish electrolytes lost via sweating. Mix them 25% juice and 75% water for the best results.

Sport drinks can also be used but they too must be diluted with water at the 25%-75% ratio. Most sport drinks have large amounts of sugar that just are not great for performance athletes so use them sparingly.

Posture

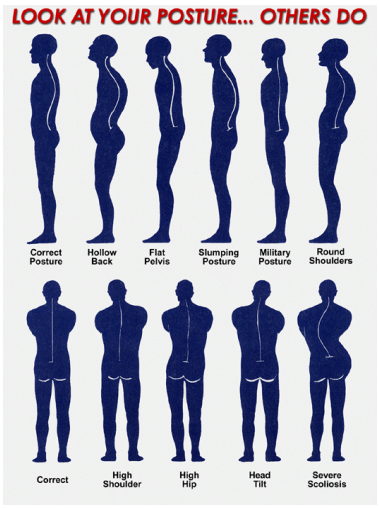
There are **206 bones** in the human body and **630 muscles** supporting and moving those bones. If the bones get out of alignment or a muscular imbalance develops over time an athlete will encounter great difficulty performing in sport!



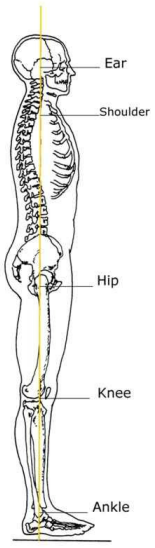


If the curves get 15% larger and flatter than a regular posture it is estimated that risk of injury goes up as significantly!

We have to concerned not only with the sway back or arching of the back called lordosis but also the lateral "S" curves of the spine called scoliosis. Both are seen in the diagram below.

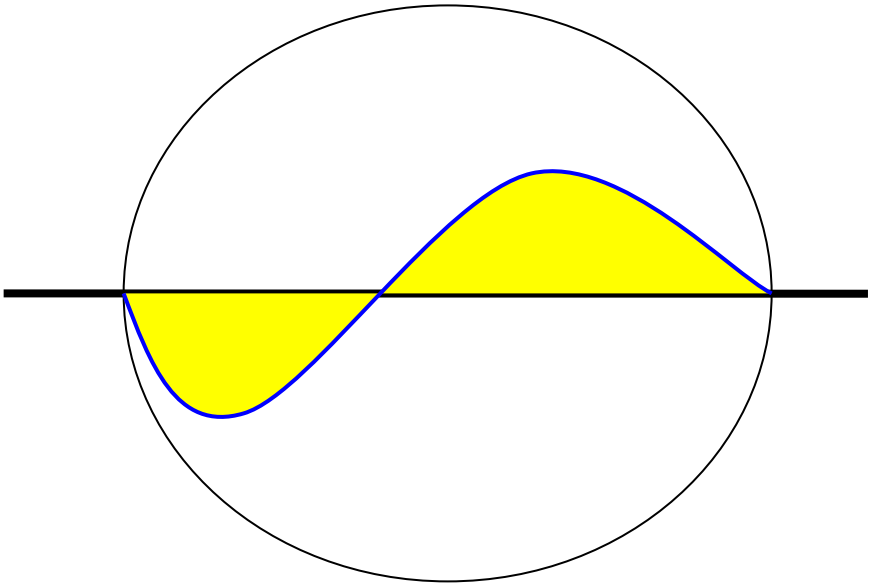


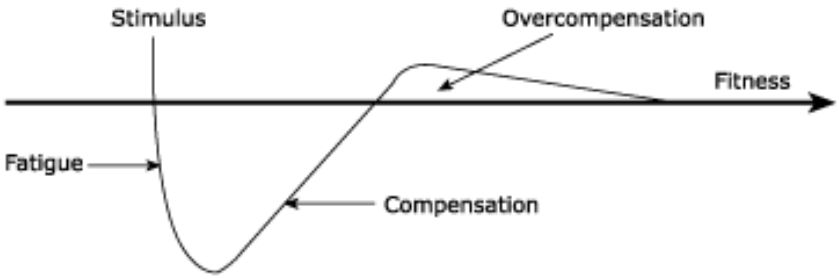
Perfect Posture



Rest & Recovery

Supercompensation Model





Still the simplest representation of strategies for workload and recovery, the supercompensation model represents the bodies response to a workload and time to maximum recovery. The workload and intensity of the work will determine the time to recovery so training may be scheduled accordingly.

General recovery times for various training stimulus have been estimated as follows:

Intensive Endurance Training	Sprint Work (Intervals)	Intense Anaerobic Training	Intense Strength Training
8-12 Hours	30-40 Hours	40-60 Hours	48-72 Hours

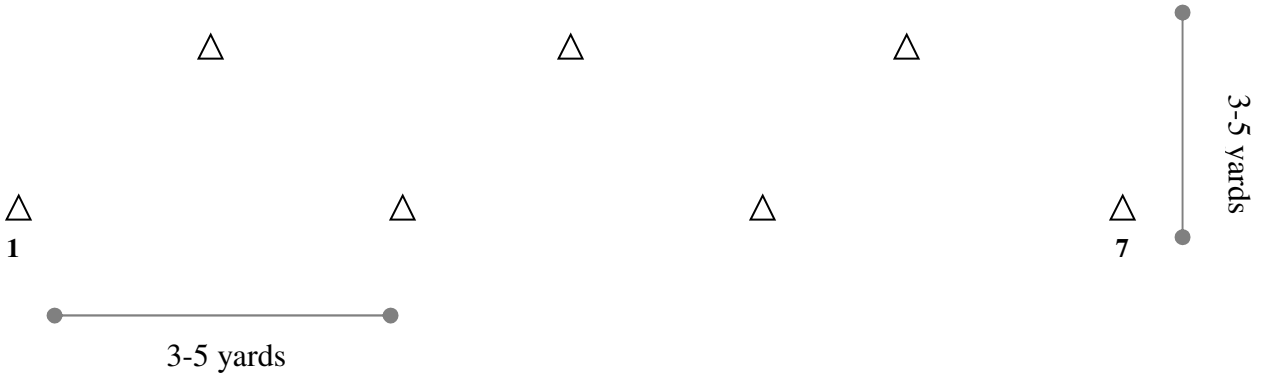
Movement

Movement skills are the most important aspect of sport performance training. All training an athlete endures should be directed to improve movement skills or the ability to train for improving movement skills.

When teaching an athlete to move it is imperative to focus on the foot position in relationship to the center of gravity, especially in change of direction and reaction drills. The feet MUST be in an acceptable position in relation to the center of gravity to maximize movement efficiency and this is a trainable attribute.

Here are two great drills for training change of direction and footwork:

7 Cone Drill



Pattern: From cone 1, sprint out and around each cone, to cone 7(equals 1 repetition). Rest 30-45 seconds at cone 7 and repeat the pattern back to cone one.

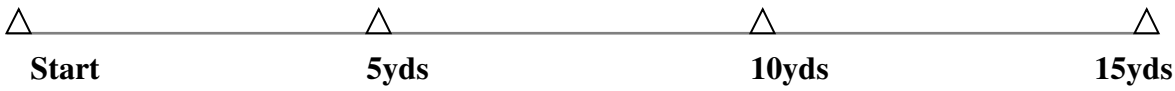
Sprint - Sprint	1-2 sets x 2reps
Sprint - Backpedal	1-2 sets x 2reps
Shuffle - Shuffle	1-2 sets x 2reps

Rest 1 min between sets.

Sprint-Backpedal: You can change the size of the grid for variation.

- Always face the same direction,
- Try not to look for the cone when backpedaling, use your peripheral vision as much as possible and change direction as soon as you see the cone.
- Use a **Three-Step** change of direction: Plant / Transfer / Accelerate

60 Yard Shuttle



Pattern: Sprint to first cone / back to start, sprint to 2nd cone / back to start, sprint to 3rd cone / back to start = 60 yards total.

Sprint - Sprint	x 1rep
Sprint - Backpedal	x 1rep
Shuffle - Shuffle	x 1rep

Repeat entire program 2 times

Rest 1 min between sets.

Sport Specific Training

Once you have established the foundations of the athlete sport specific and individual considerations can be applied.

- Not all athletes are created equal! But the days of the naturally talented dominating sport are long gone!
- Biological age vs. Chronological age
- Proper Program: in the developmental year we make big mistakes putting girls in boys programs
- Concept of late development: In one survey of the top performers in sport nearly 70% were later developers!

Summary

Developing the Athlete

Good to Great Concepts

Foundations of Development

Priorities for Performance Athlete Programs

- Nutrition
- Set Up : Posture
- Rest and Recovery
- Movement Skills
- Individual and Sport Specific Considerations

Sport Specificity and individual considerations

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