TRAINERMAKER

Advice for an Aspiring Elite Athlete

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1. How important is nutrition to an aspiring elite athlete?

- Without a doubt, nutrition has to be right for any aspiring elite athlete.
- It is important for an aspiring athlete to learn about what works for them personally as well as the benefits of a healthy diet.
- Too much emphasis on a diet though can have negative impacts on children and adolescents. Especially if calories are restricted.
- As an adult athlete, maintaining a low bodyfat percentage helps with sporting performance (power to weight ratio). However, for a growing athlete, this is less important. It is more important to fully supply the needs of physical growth and activity.
- Elite sport is about ‘marginal gains’. So making sure you are supplying your body’s needs adequately – especially during growth, is especially important.

2. What is a good balanced diet?

- https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/
- The Eatwell Plate is still the best guide as to what should be in a good balanced diet.
- As an athlete, the quality of food is extremely important. It should be nutrient-dense and should not include ‘empty calories’.
- Protein should be eaten in order to grow muscle tissue and repair damaged tissue post-exercise. Protein consumed should have a good ‘biological value’. It may be useful to increase protein levels for very active sports. Sedentary individuals would consume 1.2g/kg bodyweight, athletes up to 2g/kg bodyweight.
- Carbohydrate should be eaten with an emphasis on low ‘glycaemic index’ foods. Simple sugars should only be eaten during long endurance activity.
- Good quality fats should be consumed as they contain fat-soluble vitamins.
- A varied mix of fruit and vegetables will supply the vitamin needs of a growing body.

3. Do you train every day / Would I recommend daily workouts?

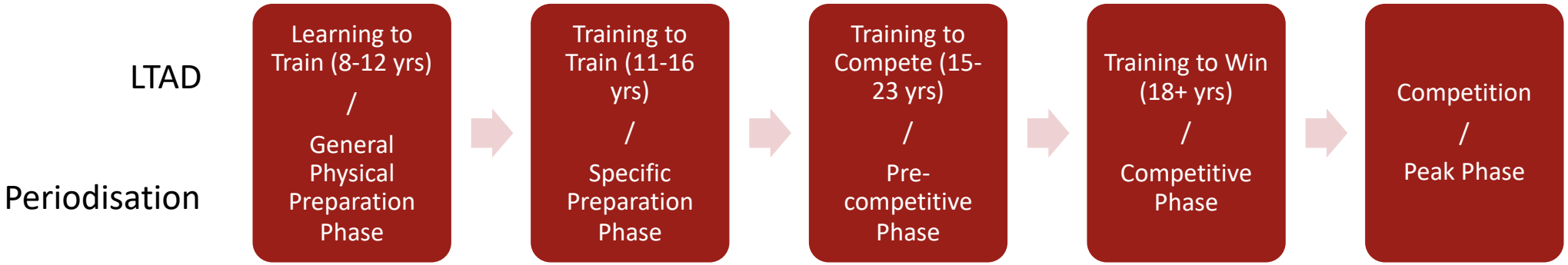
This is a huge question! It depends on the following:

- Chronological age (years)
- Physical age (body's health)
- Training age (the number of months/years in a structured exercise environment)
- Recent training history
- Sociological fitness
- Genetic disposition

As well as the specific point at which the athlete is at in their annual training cycle.

To answer the question, we must also understand 'Long Term Athlete Development' and 'Periodisation' of training.

2. Long Term Athlete Development & Periodisation of Training



The above boxes represent different phases of training. Depending on age, each phase could vary in duration from 5 weeks for an adult, to 2-3 years for a child. Each phases of training will be governed by 4 variables:

Frequency of training, Intensity of training, Time spent training and Type of training. These are called the FITT principles.

The following will also be important influencers of what goes into each training phase:

Training should be Specific and Progressive, should Overload the body, should allow Recovery, and should avoid Tedium. These are known as the SPORT principles

Learning to Train/General Physical Preparation Phase

If your child/athlete has lived a sedentary life, or perhaps has just never trained a particular component of fitness, then time should be taken to ‘ease’ your athlete in. Training should be:

- Progressive – start easy and don’t ask too much of your client too soon!
- Include technical sessions so that clients understand movement patterns/biomechanics and become competent at them
- Educate in order that your clients understand thoroughly why you are asking them to complete this form of training, allowing for greater athlete ‘buy in’
- Include enough volume of training at a low enough intensity in order that clients become accustomed to the rigours (physical and psychological) of training and that their body adapts to the stimulus before progression occurs

F – Frequent training

I – Low

T – As high as fitness allows

T – Foundation movements and techniques

Training to Train/Specific Preparation Phase

Once a child/athlete has an understanding and physical capacity to increase their training load, then ‘Training to Train’ can take place. During this phase of training, training load is increased to optimal levels in order that best progression can be made towards goals.

F – Frequent

I – Medium to high (likely following an inverse relationship with frequency of training)

T – Medium to high

T – Progressive movements and technical elements from foundation

Training to Compete/or for optimal performance

Competition does not have to mean participating in a race or other competitive sporting event – it could just mean competing against oneself! Having a specific goal can focus thoughts and training and help clients to strive for more.

F – Frequent

I – Medium to high (likely following an inverse relationship with frequency of training)

T – Medium to high

T – Progressive movements and technical elements from foundation

Training to Win/Pre competitive Phase

There is no training like competition. When a child or athlete is fully prepared, then using races or other sporting events to motivate can often take training loads to new levels!

F – Less frequent

I – High (with low intensity active recovery sessions)

T – Medium

T – All energy systems used

Competition/Peak Phase

The result of all the hard work!

F – Less frequent

I – High (with low intensity active recovery sessions)

T – Medium

T – All energy systems used

LTAD

LTAD and or periodisation is never a steady ‘linear’ progression. Growth spurts, regressions in ability etc will all happen along the way. It is therefore important to keep in mind the long-term objectives of training, and see youth competition as just part of the learning journey.

So, to answer the original question of ‘would I recommend training every day?’… IT DEPENDS! I would certainly recommend doing something constructive every day. That may be training, it may be eating well, it may be a recovery day! IT’s all about BALANCE!

4. Can you only weight train when you get to a certain age?

Resistance training for children and adolescents has for a long time been frowned upon. However, research is showing that it can play a hugely important role in both the health and sporting potential of our young people. Strength & Conditioning training is an integral part of most sports these days – so practicing it from a younger age prepares the athlete for later in their LTAD journey.

Research indicates that appropriately designed, and well supervised resistance training programmes can benefit youth of all ages, with children as young as 5 years of age making noticeable improvements in muscular fitness.

However, most gyms for insurance purposes (and staff expertise) will not allow under 16’s in unless in a specialist session.

‘Weight training’ or ‘Strength & Conditioning’

Typically we think that you must lift weights in order to be stronger, faster or better at sport. In fact, much more emphasis is now spent on ‘Conditioning’ the whole body – not just the muscles. Flexibility, mobility, and neurological adaptation play a huge part in injury prevention and power development.

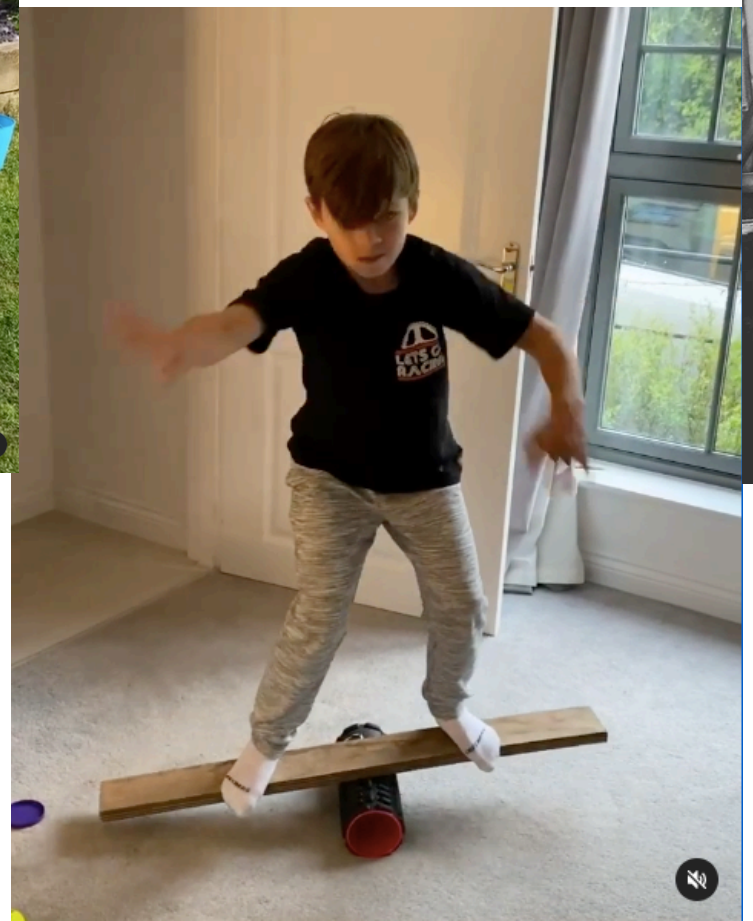
Conditioning training could include: Pilates, Yoga, stability and stretching and Plyometric training such as; jumps, hops, skips, bounds and throws

In terms of what to do and when – then before an athlete can do anything they should have flexibility. Once that is acquired then they should learn movement patterns linked to training and their sport. Balance and stability come next. Once an athlete has mastered all of those things, they can do loaded ‘weight training’ exercises

Flexibility - Movement pattern - Balance and stability - loaded exercise

Aged 6

Aged 7



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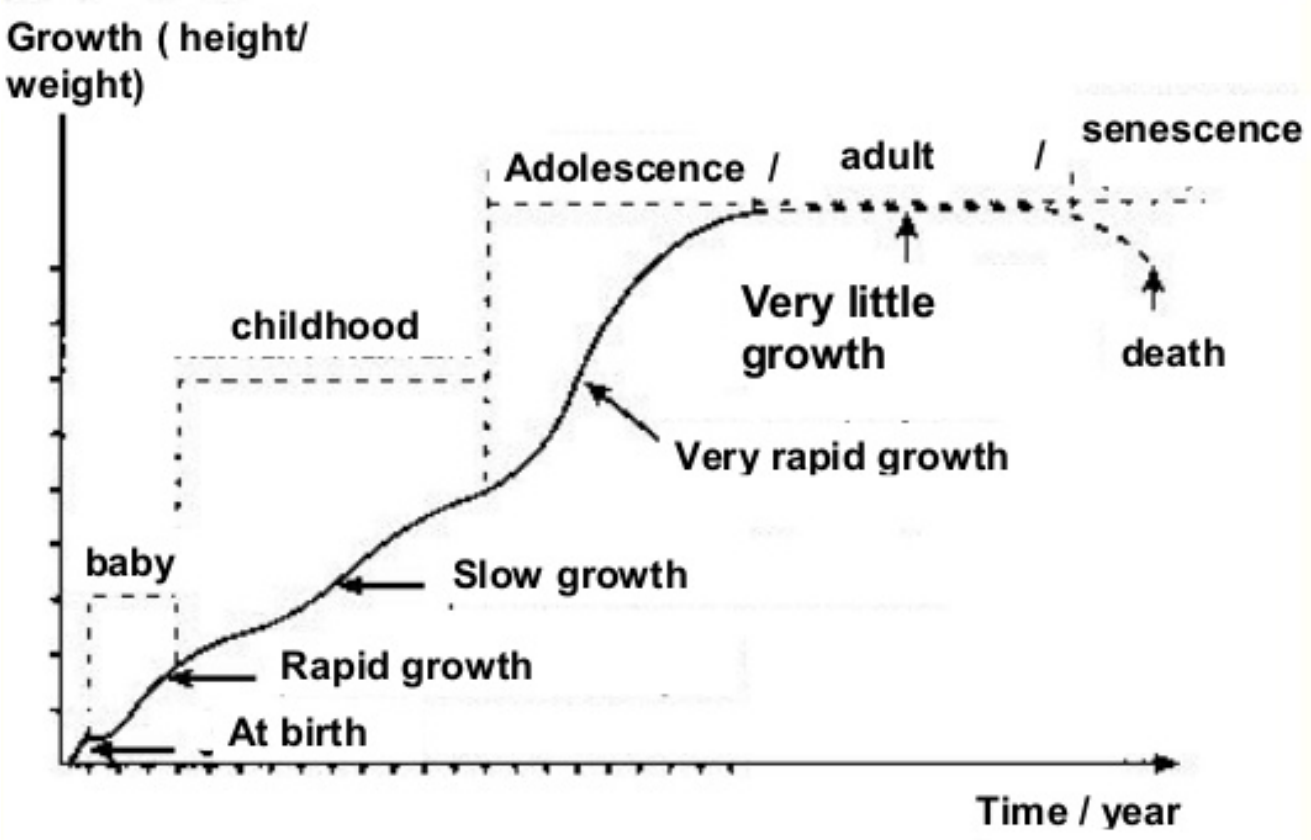
Human growth

There are of course growth considerations for children in sport!



Childhood strength

- Throughout childhood strength increases in a linear fashion
- Strength increases in childhood appear to be related to development of the central nervous system:
  - Motor unit recruitment
  - Firing frequency
  - Synchronisation
  - Neuro myelination (myelin sheath increasing conductivity of nerves)

Adolescent strength

Strength increases at onset of puberty

- Boys strength increases are significantly greater from this point
- Girls strength increases are still relatively linear from this point

- Strength increases result due to presence of androgens including:
  - Testosterone
  - Human Growth Hormone
  - Insulin-like growth factor
- Increases in strength are the result of:
  - Increase in cross-sectional area
  - Muscle pennation angle (direction of muscle fibre within the muscle)
  - Muscle fibre differentiation (fast/slow)

Biological v chronological age

Growth due to the onset of puberty occurs at different times and at different rates for children. Therefore children of the same chronological age may be disadvantaged against children of a higher biological age. Differentiation must occur in order to provide child-specific programmes from a safety and a developmental point of view

Additionally, training age must be taken into account. A child with a higher training age, but lower biological or chronological age of a peer may be capable of more from a strength or motor skill perspective

Health benefits

The health benefits of resistance training for children and adolescents include:

- Musculoskeletal health
- Body composition
- Cardiovascular health
- Injury prevention

Additionally, due to it’s nature, resistance training holds less impact and motor control related issues for sedentary children who may be overweight or obese, than more traditional sports or activities. In fact, resistance training could play an important role in preparing these young sedentary people for further activity or sport

Health risks

There has been a widely held belief that resistance training from a young age can adversely affect a child's growth and also be a potential injury risk. Growth plate fractures have often been cited as being of particular risk. In fact, there is no scientific evidence to suggest that this is true. Conversely, resistance training and other high stress inducing sports have been shown to be beneficial for bone formation and growth

Expectations

- Strength gains of 30-40% for untrained children
- With 4-5 years of training, relative strength levels (1RM kg/kg body mass) in the back squat should be a minimum of 2.0 for late adolescents (16-19 yrs); 1.5 for adolescents (13-15 yrs); and 0.7 for children (11-12 yrs). (Keiner et al, 2012)

Resistance training recommendations for children

Programmes should be:

- Aimed at developing movement pattern
- Aimed at developing strength
- Aimed at instilling confidence

Programmes should not be:

- Aimed at increasing muscle mass

A Long term approach to athlete development should be implemented:

- Programmes should last longer than 8 weeks
- Programmes should be appropriately periodised
- Reducing training frequency with increased training intensity best

Training guidelines

Training experience	Beginner	Intermediate	Experienced	Advanced
Volume (sets x reps)	1-2 x 8-12	2-4 x 6-10	2-4 x 5-8	2-5 x 2-5
Total number of exercises per session	6-10	3-6	3-6	2-5
Intensity (% 1RM)	BW or up to 50-70%	60-80%	70-85%	85-100%
Repetition velocity	Moderate-fast	Moderate-fast	Fast-maximal	Maximal
Rest intervals	1	1-2	2-3	2-5
Frequency (sessions per week)	2-3	2-3	2-4	2-5
Recovery (hours between sessions)	72-48	72-48	48	48-24

Coaching of children and adolescents

Feedback is an integral part of a coach's role. A coach should provide regular feedback based on their situational ability. Feedback may be rep by rep, or may be set by set according to the child's ability and awareness.

When coaching larger groups, less frequent feedback is accepted, though efforts should be made to limit the number of participants a coach is dealing with – especially when the group has members of a low training age or ability

5. What advice would I give student's wanting to become elite athletes?

- Long Term Athlete Development (Istvan Balyi)
- Applies to most sports with the exception of 'early specialisation sports such as swimming or gymnastics)
- Don't do too much too soon
- Don't over-pressurise yourself
- It's a long-term plan and early results are not as important as the learning process!
- Take the opportunities that come your way!