

# THE LONG-TERM ATHLETIC DEVELOPMENT PROGRAM



Long term Athletic development refers to the implementation of progressive sports and exercise skills over an extended period of time in order to move towards optimal and effective movement literacy. This can be started at any age but is frequently commenced early in an athlete's career in order to reinforce neuromuscular connections that will stay with the athlete throughout life. Neuromuscular connections are often erroneously referred to as 'muscle memory'. However, as our muscles do not have a memory, they rely on the brain to co-ordinate their actions and synchrony with other muscles to produce movement patterns and sports skills. The LTAD program relies upon the implementation of optimal movements which are progressed through more challenging environments as the athlete develops.

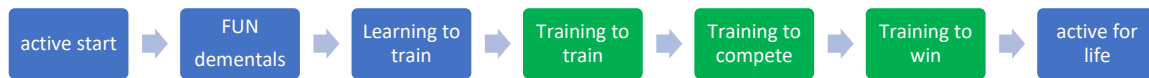
It is very important that we recognize that our young athletes are not 'little adults' and therefore should not train like adults. The enjoyment of exercise is the most important consideration when developing a healthy lifestyle for children encouraging active play and a broad array of skills. This will build confidence, self-esteem, and social skills and in the long term, provide a solid foundation of movement skills from which they can develop physically and into adulthood.

The LTAD is a model that focuses upon the physical, emotional, cognitive and psychological development when training or coaching our 'young athletes' in order to ensure all round development appropriate to their level of maturation. A greater exposure to a broad range of sports and movements improves confidence, reduces the risk of training and growth-related injuries and also their ability to maintain a healthy lifestyle into adulthood.

It is important to ensure that the correct type of training is given to the young athlete, and this changes as they develop or mature. We must also recognize that all children develop at their own pace and there can be a huge difference in maturity within a year group. This makes it more challenging as parents, coaches and fitness professionals to ensure that all children have the correct level and type of training. However, as it says on the tin, LTAD is a process that continues over the **long-term** enabling individuals to reach their potential when they are ready.

Broadly, the LTAD program is divided into 7 key stages based upon the developmental stage of the young athlete (see picture 1). As our young athletes develop, so does the emphasis of the training to optimize their potential or access to long term health. We must also recognize that not everyone wants to go on to compete at a high level and this is factored into the program. The boxes in picture

1 coloured green may be bypassed for those who want to enjoy being active for life without the pressures of sporting competition.



Picture 1

The LTAD program is based upon the following principles:

- Development and progression of fitness levels appropriate for the age of the child
- Avoiding early specialization
- Continuous monitoring of general and athletic development
- Learning how to move well before applying extra resistance to our young athletes (consideration of musculoskeletal development).
- Minimize the risk of training and growth-related injuries through effective monitoring and training load management
- Long term (not short term) overall improvement of athletic capabilities.

As coaches, teachers, and parents, we need to consider that our young athletes will mature at different times and will therefore require a different emphasis on training. For example: early developers and competent movers should be progressed to further challenge them to maximize their development. The growth spurt and onset of puberty is associated with increased physical development, however, it also disrupts co-ordination and picking up movement and sports skills more difficult. In contrast, late developers (those considered to reach the onset of puberty later), or young athletes still to acquire effective movement skills require a different focus to ensure correct movement patterns before moving onto more complex training. The late developers have an advantage when it comes to learning skills as the 'learn to train' stage (see below), lasts longer for them. We need to encourage the late developers through this difficult period as they often become better sports performers as a result of the greater skills acquired earlier. Within the team environment it is very difficult to ensure an individual approach; however, we must be aware that everyone has an optimal time or 'window of opportunity' when they will respond to different forms of training, and we must ensure their progress at a time when they are ready to do so.

### **Window of opportunity**

A young athlete is more sensitive to different forms of training (movement development, strength, speed, endurance, and muscle building) depending upon their stage of development. This presents a "window of opportunity" from which the child can maximize their athletic potential. Exposure to the correct type of exercise at the right time can increase a child's athletic potential, great gains will be made and greater enjoyment of the activity. Therefore, the design and implementation of the training program needs to adapt as the young athlete develops. It is often the case, that the early developers

Below is a general description of the aims of physical training for young athletes within the initial stages of the LTAD program. The later stages will be discussed in a separate article.

### **ACTIVE START**

Ages 0 – 6 years old.

Children benefit from unstructured active play incorporating a variety of body movements including agility tasks, balance tasks and co-ordination (throwing and catching a ball – *the list is endless*)! This forms the basis from which fundamental movements can be developed. An early active start enhances brain function, physical co-ordination, gross motor skills, posture and balance. It also builds confidence, social skills, control and imagination. This needs to be a fun and exciting part of everyday!

### **FUNDAMENTALS**

This takes place between age 6 and 9 years old in boys and 6 – 8 in girls (just before the growth spurt). This crucial stage develops the confidence and therefore the desire to continue with activities throughout adolescence and into adulthood. Children in this stage are motivated primarily by the desire to have fun.

Fundamental movement skills are developed by unstructured play as well as well-structured and challenging environments led by coaches and teachers. The emphasis should be on having fun, being with friends and developing self-esteem rather than competitive results. For optimal motor skill development, children are advised to take part in a variety of different sports or activities rather than specialize at this stage.



### **LEARN TO TRAIN STAGE**

Girls age 8 – 11, boys age 9 – 12

This is where sports specific skills are developed and is the most important stage in the LTAD program. Our young athletes are within the window of opportunity where accelerated development of sports specific skills are honed. It is also a great time where the young athlete will be able to see improvements in their abilities.

The learn to train stage ends when the growth spurt begins. The growth spurt disrupts co-ordination making it more difficult to pick up new skills. Therefore, this stage should focus on developing a wide range of sports skills over several sports and not on winning where practice of many skills may be restricted. Late developers have an advantage when it comes to skill development as the learn to train stage lasts longer for them. Although team selection often favours early developers, the late

developers often become better skilled and should therefore not give up. For this reason, emphasis on winning should not be a priority.

During this stage, the implementation of body weight exercises, endurance and mobility are encouraged in preparation for the increase in load in later stages.

### **TRAINING TO TRAIN STAGE**

Girls 11 – 15, boys 12 – 16 years old.

This is where the consolidation of sports specific skills takes place and an aerobic base is built. The young athlete may start to increase training volume and the introduction of strength training and anaerobic energy systems can commence. This stage is defined by the onset and end of the adolescent growth spurt and varies for each athlete. This can be measured using peak height velocity (the maximum growth in height during the growth spurt) and this will inform the coaches on optimal times to develop specific components of fitness safely; for example, aerobic fitness should be a priority after reaching Peak Height Velocity (PVH).

Measurements of Peak Height Velocity will be discussed in a separate article.

From a physiotherapists point of view, training programs should also include both flexibility, and mobility training to accommodate rapid growth in bones, muscles, tendons and ligaments in developing athletes. This stage is also influenced by hormonal changes for both males and females and is highly individual to the athlete and therefore requires an individual approach. Changes occur rapidly throughout this stage and can affect sports skills and co-ordination. Explanation of these changes with the young athlete will help them to understand why their sports skills may be affected and that it will improve.

The next progression from here introduces the element of competition with a greater emphasis on results. As the young athlete enters the TRAIN TO COMPETE phase, there is a greater commitment to one sport. Nutrition, sports psychology, recovery programs and periodization all become important factors in the athlete's program and is beyond the scope of this article.

Further information on this exciting topic can be found in a great text by Balyi, Way & Higgs (2013) Long term Athletic Development.

