

## **LTPD: The Windows of Opportunity – John Sturgess**

There is a lot of fascinating stuff in the ‘overall’ structure of Long Term Athlete Development; some of it, however, is more for your interest as you start to get more involved. And some of it is not yet scientifically proven, and by its nature may well never be, like the 10,000 hour rule.

In this article I will concentrate on the core of LTAD; what all coaches of young people need to know. And that is stuff that is researched, tested, peer-reviewed. In most case it has been around for twenty years or more. What is new about Long Term Athlete Development is that it synthesises a lot of research evidence into a coherent picture of what children need to be doing at particular stages of their development if they are to reach their genetic potential – whether as ordinary recreational sportspeople or as world-beaters. Is this important for those who are not going to be world-beaters? Yes, equally important: one of the major reasons for people losing interest in sport is not being able to perform at the basic levels that make sport enjoyable – particularly in the later teenage years.

The core of LTAD is the existence of **Windows of Opportunity**: periods in a child’s or young person’s development when they need to be doing particular things. What the research says – and what is being continually confirmed by the research – is that these **Windows of Opportunity**, once passed, **DO NOT RECUR**. The **Windows of Opportunity** are biologically determined; so they relate to a child’s or young person’s **Biological** or **Developmental Age**, not to their **Chronological Age**.

### **PHV (Peak Height Velocity): The Importance to the Coach of Developmental or Biological Age:**

The explanations you will read about when the various developmental stages occur may give chronological ages – these should carry major warnings. They will also refer regularly to PHV (Peak Height Velocity). That is used interchangeably to mean **either** the point in time at which the growth spurt actually peaks, **or** the period of the major growth spurt. Chronological ages are not reliable guides to a child’s Developmental Age; and can therefore be extremely misleading. Any Coach who has worked with young people around the growth-spurt stage will know that three twelve-year old girls, or three fourteen-year-old boys, can developmentally cover a four year spread. So if they do the same sort of training, that training **will** simply be **wrong** for **at least one** of the three, **possibly two**. This is causing particular problems for Coaches in Team Sports.

Therefore a Coach **MUST** make sure of knowing the **Developmental Age** of each child or young person they regularly coach, and be able to place them with certainty in one of the following:

**Pre-Growth Spurt (growing, but not yet in growth spurt)**

**Early Growth Spurt (rate of growth increasing)**

**Late Growth Spurt (rate of growth decreasing)**

**Post-Growth Spurt (still growing, but much more slowly)**

**FUNDamentals/Paddlesport Start/Development**

**Training To Train pt 1**

**Training To Train pt 2**

**Training To Perform**

Once they have stopped growing, they are biologically adults, and can train like adults. **Training To Excel**

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There are various ways of assessing the Developmental Age of children and young people. Some are not very reliable (voice breaking; appearance of spots; weight) while some would cause serious legal and ethical problems for coaches attempting to check up on them (developmental of secondary sexual characteristics). That leaves **rate of growth (height)**. Swimming Clubs are told to measure all their members once a week. Over the whole period that is hard work, and is probably not necessary. **Monthly measurements** will give all that is needed for most children, although some would advise weekly measurement while the growth-spurt is in progress.

**So Coaches must either regularly measure their young paddlers' heights themselves, or make sure that parents do, and pass the figures on to the Coaches.** Parents are not likely to do that **unless you explain to them how important it is**. The correctness of the absolute figures is not important: it is **the rate of height growth** that you need to know. However, given the small increments involved, it is important that all measurements are taken at the same time of day, ideally early in the morning.

### **Athlete or Paddler?:**

One of the big issues in development is whether we should begin by creating a Paddler, and then turn that Paddler into an Athlete; or whether we should begin by creating an Athlete, and then turn that Athlete into a Paddler. To complicate things, there are those in canoeing who think that the word 'athlete' is elitist, and gives the impression that we are only interested in top-level competitors. In which case 90% of members of athletics clubs would not be regarded as athletes!

It is generally accepted that in young children Gross Motor Skills must be developed before Fine Motor Skills. This is particularly true in sport: the Fine Motor Skills involved learning to paddle skilfully depend on the prior development of the Gross Motor Skills needed to paddle effectively.

#### **1) The 3:2:1 Principle:**

The general recommendation in Long Term Athlete Development is that apart from what they do in PE, children at the pre-growth-spurt stage should ideally take part in at least 3 sports; during the growth spurt they should take part in at least 2 sports; and only after the growth spurt should they specialise in 1 sport (NB that is 3 and 2 separate sports – not 3 separate disciplines within the sport of canoeing). This is to ensure that young children are involved in wide variety of physical activity when they need to be.

#### **2) Effects ref. young canoeists:**

If all young children are involved in three sports, then it is possible that only a third of those who paddle when they are young will specialise in canoeing – although obviously we will work to increase that proportion. But we have a duty as Coaches to maximise the Physical Literacy of **ALL** young canoeists, not just those we expect to make it a lifelong sport. So we must focus on activities that will maximise the development of general athleticism as well as canoeing skills. We should also encourage parents to get their children involved in a range of activities that will maximise their development. The East Germans used to specify for all children at the pre-growth-spurt stage gymnastics, swimming, and all three elements of athletics: running, jumping, throwing.

**The Windows of Opportunity:**

1) **FUNdamentals / Paddlesport Start & Development:** **From the end of the toddler stage to the beginning of the growth spurt:**

Everything that is related to the development of the Central Nervous System:

**Agility, Balance, Co-Ordination, Speed, Kinaesthesia, Running, Jumping, Throwing, Striking**

**In specific sports, context-specific agility, balance, co-ordination (especially riding, sailing, moving-water & rough-water canoeing)**

**The neuro-muscular components of Strength and Power**

*In canoeing terms:* lots of playing about – particularly the way young children play naturally, in short explosive bursts with frequent rest-periods.

Any technical instruction focussing mainly on outcomes (where the boat goes) rather than processes (strokes, stroke sequences).

A lot of learning by imitation.

Where possible: introduction to moving water/rough water as early as possible. You do not have to teach them anything in particular: they learn just by being there and bouncing around.

Out-of-boat activity as much as on-the-water. Do not assume that ‘someone else’ will do that. Who? Clubs in other sports? – yes if they do other sports. Primary schools? Only if the children are lucky ... How about once or twice a week in a sports hall? German Canoe Clubs were doing that 20 years ago ...

2) **Training To Train:** **From the beginning of the growth spurt to (roughly) the end of the growth spurt:**

- **Strength Training – For boys maximum strength gains can be made 12-18 months after PHV, for girls during PHV and at onset of menarche.**
- **Core conditioning/Joint stabilisation so that strength/power can be handled**
- **High-end aerobic power**

There are also in this phase two capacities that need work not to build them, but to prevent what will otherwise be a decline in them:

- **Flexibility**
- **Cardio-vascular efficiency**

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*In canoeing terms:* short explosive work in bursts of up to c. 20 secs (Polo? Sprint starts? Rough water play? Short gate sequences?)  
Interval/fartlek work (in the boat, running, swimming, cycling)  
Static stretching for flexibility (but **NOT** as part of warm-up/cool-down: separate sessions)  
Exercises – including resistance exercises – to strengthen the body-core and improve posture  
From the beginning of the stage: introduction to free-weights exercises: learning the techniques and lifts (key point: **NOT** on machines – **train movements not muscles**)  
From 2/3 of way down growth-spurt: starting to do strength-training: free weights at 3-5 RM, both sport-specific and complementary, moving towards Olympic Lifts.

### 3) **Training To Perform: From the end of the growth spurt until growth is complete:**

**Continuation of the development of all the testosterone-dependent capacities listed above**

**Especially of strength training – moving on to Olympic Lifts – and flexibility and core-conditioning work**

**Sport-specific endurance work**

**By this time canoeists with a serious competition interest need to be working to an individualised training plan to avoid interference effects between different sorts of training, and ensure proper rest/recovery periods.**

*In canoeing terms:* Discipline-specific endurance work: Power Endurance and Speed Endurance for Slalom, Polo, Freestyle, Sprint  
Longer-Term Endurance for Wild-Water Racing, Marathon  
Strength/Power Training: Free weights as above.  
In-boat resistance work: bungees/cones  
Flexibility and Core-conditioning: work as above

## **What they DON'T need to be doing at each stage:**

### 1) **FUNDamentals / Paddlesport Start & Development:**

**From the end of the toddler stage to the beginning of the growth spurt:**

Aerobic fitness work – particularly steady-state distance/aerobic work. (a) they are already very efficient aerobically: the VO<sub>2</sub>max of an untrained pre-growth-spurt child is c. 80-90% of its trained state; in adults this is c. 50%. (b) in any case pre-growth-spurt children do not have separated aerobic and anaerobic systems.

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- 2) **Training To Train:**                    **From the beginning of the growth spurt to (roughly) the end of the growth spurt:**  
Being faced with stringent demands for technical accuracy. The ‘bits’ of children grow at different rates. When they pass through the ‘adolescent clumsiness’ stage it is because their extremities are not where they were yesterday! Coaches must expect this, and be patient with paddlers.
- 3) **Training To Perform:**                    **From the end of the growth spurt until growth is complete:**  
A lot of ‘general’ fitness work, particularly long-distance endurance work for paddlers specialising in the predominantly strength/power/neural disciplines. Training as above will maintain levels of aerobic fitness.  
Badly-spaced sessions within a weekly or monthly cycle, so that super-compensation windows are missed, interference effects lessen the effectiveness of training, training takes place in state of fatigue, there are insufficient recovery periods for adaptation to take place.

### **The Role of the Canoeing Coach in Long-Term Athlete Development:**

One thing should be apparent from all of the above: **All young paddlers need a Coach.**

That is not the same as saying that they need Coaching, which is probably generally accepted now in canoeing.

Each young paddler needs a **Coach: his/her ‘own’ Coach:**

- Someone who is responsible for each young paddler as an individual, whether competitive or recreational
- Someone who deals with the young paddler as part of their family unit
- Someone who has an overview of the young paddler’s development overall, not just as a paddler, and particularly of the young paddler’s other sporting activity
- Someone who knows where the young paddler is on the developmental ladder, and can make sure that the young paddler is getting the appropriate activity for his/her Long Term Athlete Development

And that is a major challenge for Canoe Clubs, and for the sport as a whole. Yet in most other sports it is regarded as automatic: ask 8-year olds who swim, or do gymnastics or judo, or play football or Rugby: they will give you a name.

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