



BASIC CONCEPTS OF LONG TERM TALENT DEVELOPMENT



TABLE OF CONTENT

Preface.....	3
Long Term Talent Development.....	4
Essential Elements of Long Term Talent Development Programs	14
The Early Years	15
The Middle Years	16
The Later Years	17
Summary.....	17
References.....	18

PREFACE

This document was presented to the FIVB Coaches Commission in 2012 and by the authors Fred Sturm, Head Coach Danish National Men's Team and Carl McGown, Ph.D., Professor Emeritus, Brigham Young University.

LONG TERM TALENT DEVELOPMENT

What are we developing? What does it really mean when we say someone has talent?

It usually means that someone who is very young is very good; thus, the word TALENT usually refers to **potential**, particularly with young children. However, according to Daniel Coyle, in *The Talent Code* research shows that being a prodigy is an unreliable indicator of long term success. K. Anders Ericsson (2003) says pretty much the same thing: “*First and foremost, it is very difficult to predict which individuals will attain expert levels of achievement.*”

Other work by Bloom (1985) supports this idea. He writes: “*Being good in one phase of learning may not have a high relation to being good at a later phase, even though both phases are in the same talent field.*”

The poor predictive validity of junior performance standards for later success is highlighted by statistics from Bloom’s (1985) work where less than 10% of successful elite adults were thought to have been at a performance level by the age of 11 or 12 sufficient to indicate that they would have achieved what they eventually did.

Talent may not exist? This gives rise to our first (and maybe most important) concepts.

Concept 1A: Initial ability and final ability are not highly correlated. One of the reasons why the correlation is low is **Concept 1B:** The rate of maturation of children varies greatly.

This means we will not be able to predict accurately which young athlete will eventually reach the highest level. What does this concept mean to an expert coach, to someone who understands the relationship between initial and final ability?

Robert Lansdrop, tennis coach of Tracy Austin, Pete Sampras, and Lindsay Davenport says: “*It is not about recognizing talent, whatever the hell that is. I have never tried to go out and find someone who’s talented. First you work on the fundamentals and pretty soon you find out where things are going.*”

There are hundreds of examples of **Concept 1** in American professional sport. Here are three:

Dan Wetzel. February 2, 2011. FORT WORTH, Texas – If, as a high school senior, James Harrison had staged an elaborate news conference to reveal his college choice it would've lacked drama. The table in front of him would've contained just one school-logged hat.



James Harrison is one of 15 guys from the MAC playing in Sunday's Super Bowl (he was signed by the Steelers as an **undrafted free agent** in 2002). He was the NFL defensive player of the year in 2009.

“My signing day was nobody was left but Kent,” the Pittsburgh Steelers star linebacker said. *“So that was my only option.”*

Harrison, proud Kent State product, is one of 15 players on Super Bowl rosters who came through the humble Mid-American Conference, a number exceeded by only the mighty SEC's 18.

This is the revenge of the overlooked, the meek inheriting the sport. It's a situation the players are more than willing to let everyone know about.

“We have the highest number of guys in the game except for the SEC, right?” Harrison said with a smile. *“So they need to start showing a little bit more respect to the MAC.”* *“We need to get the MAC in the BCS,”* joked Steelers quarterback Ben Roethlisberger, who played for Miami of Ohio. That's not happening. The MAC is still considered one of the lower-rated conferences in major college football. On signing day it rarely attracts players many bigger programs want – this year not one MAC school ranked in the top 50 classes, according to Rivals.com.

None of that matters however. Signing day is about promise, a testament to high school cool. A Super Bowl appearance is about a reality borne of years of perseverance, hard work and development. The proof is in the performance.

The NFL is a pure meritocracy. A remarkable 41 of the 106 players on the Super Bowl rosters played at schools from outside the six BCS leagues, including seven guys from either the old Division I-AA or D-II ranks. That's a lot of great players who once slipped through the signing day cracks.

Ben Roethlisberger developed his game in the MAC instead of dealing with the hype of being a star. The 6-foot-5 Roethlisberger was pegged as a tight end prospect by major schools. He was determined to play quarterback though and jumped at the one school that wanted him at the position. That lone scholarship offer is one more Division I offer than his starting QB counterpart, Aaron Rogers, received coming out of high school in Chico, Calif. With no other options, he went to junior college.

That was then. Sunday one of them will lift the Lombardi Trophy. A bunch of five-star rated quarterbacks will watch from home.

"My national signing day?" laughed Steelers defensive end Aaron Smith, a 13-year NFL veteran. *"I don't think anybody cared where I went. The only school that offered me was (Division II) Northern Colorado. There was one school interested and I said, 'I'll take it.'"*

Across America on Wednesday high school heroes, their self-esteem powered by star rankings and breathless internet chatter made their choices by hat, pet and Twitter feed. It was all a big, nationally televised to-do.

And somewhere, some kid accepted his lone scholarship offer to little fanfare and went to work. There was no time to waste; he's got a Super Bowl to get to one day.

Mike Tully. March 11, 2011. When you look at what Albert Pujols has accomplished in the big leagues—things no player has ever done—you wonder how teams could have passed over him on draft day.

Yet it happened. Through 12 rounds of the 1999 draft, every single franchise looked at Pujols and decided there was someone better to pick. It wasn't until the 13th round when the St. Louis Cardinals finally called his name with the 402nd pick in the draft. Now, just 12 years later, Pujols has already put up enough stats to land him in the Hall of Fame.

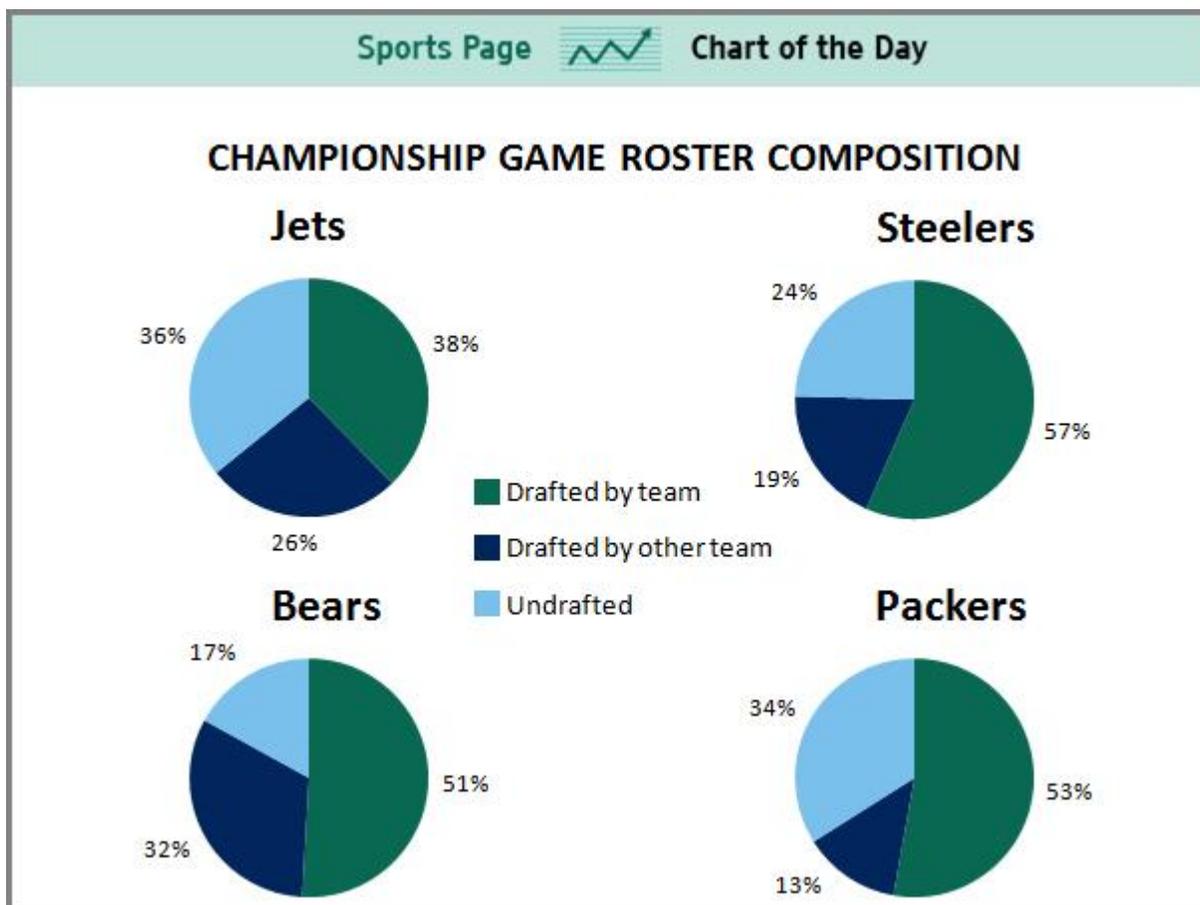
Pujols' case just underlines a very important concept. The player, the employee, the person, the student, the athlete you see today is not the same one you will see five years from now. This is not just theory. It's real-world stuff, as Pujols shows. You never know who will develop. You may think you do, but you don't.

Cork Gaines. CHART OF THE DAY: How The Draft Created The NFL's Final Four, Jan. 19, 2011.

In the NFL, there may be no more exciting day than the first day of the NFL Draft. That is the day that dreams are made and every team has hope. But how much does the draft influence the rosters of the best teams in the league?

If we look at the four teams that are still alive on the road to the Super Bowl we see that 49.5% of the 212 active players were acquired through the draft. Of the remaining players, **27.8% (more than one out of every four)** were never drafted, and 22.6% were drafted by other teams and acquired through trade or free agency.

And if we look at the rosters of the four remaining teams (below), we see some differences in how those teams were built.



The Steelers are the most home-grown team, with 57% of their players acquired through the draft. The Jets have the fewest active players that came via the draft (36%).

If we look at the scrap-heap players, we see that the Jets have the most players that were never drafted (36%) and the Bears have the fewest number of players that never heard their name called on draft day (17%).

Concept 2 follows from Concept 1: Tomorrow's champions are not born, they are made. How then are they made?

They are made with hours: a lot of them, and the variety of them, and the quality of them. They are made from players (a large pool of them). They are made from coaches (a large pool of them to work with many different age groups).

Hours:

1. A lot of them. Developing an expert is a long term development process. The hours must be effortful, focused, and deliberate. According to Ericsson (1993) to achieve a general world class standard will take a minimum of 10,000 hours.
2. The quality of them.
 - A. Deliberate play:
Pick-up games with no supervision. Loosely structured game activities with minimal coach involvement.
 - B. Sport specific deliberate practice:
 - Designed specifically to improve performance
 - Feedback is continuously available
 - Highly demanding, mental work

"If you only practice with your body – no amount of time is enough" Nathan Millstein

- It is not always very much fun

Players:

3. They are made from a large group of aspiring champions. There must be an athlete centered system that provides opportunities for everyone throughout the long term development process.
4. They are made with expert coaches. At each level of development expert coaches are vital. Of course, there are many influences that may have a crucial and lasting impact on the development and eventual success of a talented athlete (Gould et al., 2002). However, one major factor that influences all performers throughout their sporting careers is the quality and appropriateness of the coaching environment (Bloom, 1985). Unfortunately, the lack of research in this area leads one to believe that not enough is known about effective development environments or how they may be optimized.

Here is an example of concepts 1A, 1B, and 2 in action:

Roger Domeneghetti. 24 August 2011. Manchester United, Malcolm Gladwell and The Importance of Starting Young.

What Manchester United's Sir Alex Ferguson wants, Manchester United's Sir Alex Ferguson gets. A lovely watch that tells Fergie Time? Yours, Sir Alex. All the chewing gum you can chew? Yours, Sir Alex. The stud fees for Rock of Gibraltar. Yours Sir... Oh actually, no you can't have them but the rest is yours.

Most recently, he succeeded in gaining a radical overhaul of youth academies when, at the back end of last season, Premier League top knobs rubber-stamped the Elite Player Performance Plan.

The plan, which is not without its critics particularly among non-Premier League clubs who are concerned it will see the top clubs Hoover up the best young talent, is designed to create 'hot-house' learning environments. The current rule that means youngsters can only attend academies within 90 minutes of their home will be abandoned so they can live on site, much like the Royal Ballet School or Barcelona's La Masia.

Most significantly of all, contact time with qualified coaches will treble. Under current regulations, young players can only receive 3,760 hours of contact time up until the age of 21. By contrast youngsters at La Masia receive at least 8,000 hours by the time they reach 18.

It's this increase in 'deliberate practice time' which Sir Alex views as the most significant aspect of the plan, saying: "*We are only allowed to coach [schoolboys] for an hour and a half [each week]. Barcelona can coach every hour of the day if they want and that's the great advantage they have got.*"

Now, I've never met Sir Alex but I'd place a small wager that he's read the book *Outliers* by Malcolm Gladwell. In it the fuzzy-haired math nerd (that's Gladwell, not Sir Alex) explains the theory of the 10,000-Hour Rule.

Put simply, Gladwell's argument is that elite-level performance in any field from sport, music, art even software engineering is not innate, but rather the result of hours and hours – years in fact – of dedicated practice. The idea of talent as we know it – that some people are geniuses in certain fields while the rest of us are, well, just a little bit short in every field – is, Gladwell argues, a myth.

The basis for his theory is research conducted in the early Nineties by psychologist Anders Ericsson which looked at violinists at the Music Academy of West Berlin. Ericsson divided the violinists into three groups – the outstanding students destined to become international soloists; extremely good students destined to join top orchestras; and the least able students simply studying to become music teachers.

Ericsson discovered that all the students, no matter what group they were in, had remarkably similar backgrounds and none deviated greatly from the standard pattern. They started playing at more-or-less the same age; they decided to become musicians at more-or-less the same age; they had on average 4.1 music teachers and so on. However, the one stand out difference was in the amount of practice time. By the age of 20, the top performers had practiced an average of 10,000 hours; the good violinists an average of 8,000 hours and the least able only 4,000 hours.

Furthermore, practice was the *only* differentiating factor. No one reached the elite group without putting in the hours and no one put in the hours and failed to reach the elite group. As Ericsson wrote: *“The differences between expert performers and normal adults reflect a life-long persistence of deliberate effort to improve performance.”*

Barcelona's La Masia is founded on the principles of Ajax's Toekomst Academy where youth teamers will have five contact hours a day, four days a week over up to 10 years. You do the math. (Hint: it's about 10,000 hours).

It's not just the Spanish and the Dutch; now I don't know much about football, but I do know them fellas from Brazil are a bit good. Must come naturally, Right? Well, again, maybe not. Simon Clifford, who runs the Brazilian Soccer Schools talks of how Brazil produces better players because their *“kids are practicing three, four hours every day”*.

Not just that, but the particular type of football young Brazilians play – *futsal* – which involves a smaller pitch and heavier ball than normal football, has been shown to lead to six times more touches per minute thus honing ball control and vision. So, not just hours more practice but a much higher-quality practice than that on offer in England.

Given that we're repeatedly told that best footballers are somehow blessed with special gifts, born with a football brain, or football DNA it's a tough concept to get your head round. Yet, if you're still a little skeptical think of other elite sportsmen and women.

When he's not getting all upset and shouty on Twitter or being beaten up by a tree stump, Rory McIlroy is the most exciting young golfer around having just become the youngest winner of the US Open since 1923 and doing so with a record-low score to boot. Natural genius, right? Well, no.

His father was a keen golfer himself, playing off a scratch handicap and he started training Rory from when he was about 18 months old. By the age of two, Rory could hit a 40-yard drive. His parents dedicated themselves to earning enough money to fund his development. At the age of seven he became the youngest ever member of his local golf club. Hell, he even used to sleep with a golf club in his hands – the correct grip in place. So, by the time he became a 22-year-old Major-winning sensation he had hours of practice behind him.

What about Sir Donald Bradman, the greatest batsman ever to grace the game of cricket? Surely he was born with batting blood coursing through his veins? Well, perhaps not. When he was a small boy, he developed a game where he would throw a golf ball at a water tank in the backyard of his house and hit it with a cricket stump on the rebound. The ball would cannon off the tank at all sorts of angles and speeds and Bradman would practice for hours on end thus honing his batting technique.

If you still need more evidence of the difference between youth coaching here and abroad, look at Dutch-born Schteve McClaren's recent interview with the Guardian in which he commented on the difference between managing in his home country and England.

While at FC Twente, Schteve asked a 21-year-old midfielder how he felt the team should counter their forthcoming opponent's system. The youngster spent 20 minutes outlining the perfect tactical plan and McClaren was moved to ask him where he learned to speak in such detail. The answer: "*We've been doing this since we were eight or nine.*" Once again, hours of high-quality practice.

Matthew Syed picks up on the 10,000-Hour Rule in his book Bounce, recalibrating it to 10 years but he also argues that all that practice is worthless unless it's the right type of practice and the right type of practice requires not just dedication and concentration but access to the right training systems.

This is another problem for young players in England today – the quality of training on offer is in the main of a much lower standard than in other countries. The number of qualified coaches is far fewer than the other top European football nations. As of June last year (OK, the numbers might have changed a little but let's be honest England won't have caught up much) only 2,769 English coaches held UEFA's B, A, or Pro licenses. Compare that to 23,995 in Spain; 29,420 in Italy; 34,970 in Germany and 17,588 in France.

So, that's one coach for every 812 registered players in England compared to one for every 17 players in Spain. Even Greece has one coach for every 135 registered players, but don't worry there's no chance of them winning a major tournament any time soon. Oh, hang on...

The FA themselves, in their Level One coaching course acknowledge that the golden age for learning is eight to 12 and yet this is exactly the age when most young players are under the charge of well-meaning but unqualified parents or school caretakers, a situation which wouldn't be allowed to happen elsewhere.

The problem extends also to managers even at the top clubs, where there is a stubborn resistance to the need for qualifications. Only in 2003 did UEFA insist that new managers in the Premier League had to first obtain the UEFA Pro License.

But what do those meddling Europeans know with their useless currency and their straight bananas, eh? Well, according to Dr. Sue Bridgewater of Warwick University they know quite a lot. Her research showed that managers with the Pro License won significantly more matches than those without and that experienced managers consistently outperformed novices. Whodathunkit?

This rejection of qualifications and quality training has been labeled by Simon Kuper and Stefan Szymanski in *Why England Loses* as the 'anti-education requirement'. For example, they quote one football administrator who had tried to get coaching courses introduced into clubs as saying that 'coaching' and 'tactics' became shame words and that 'People would say: "*The trouble with football today is that there is too much coaching*".'

And here's the thing, if the managers haven't had the right training, then the training regimes they put in place for players are unlikely to be of a high-enough quality and so the vicious circle continues.

It's depressing, not least because Syed argues that if you train in the right way for the right amount of time then you undergo a literal mental and physical transformation. Citing several studies he demonstrates that when top performers repeatedly push themselves beyond their limits "*the cells of the body reorganize in response to the metabolic demands of the activity*" whether it be typists with more supple fingers or London taxi drivers who see a continuing growth in the area of the brain governing spatial navigation.

Yeah, whatever. We invented the sport. There ain't nothing we can learn from this, right?

Tiresomely, predictably: Wrong. Over in Belgium there's a football coach reaping huge rewards by utilizing 'brain-centered' learning with young footballers. Michel Bruyninckx believes that footballers will only fully develop and excel if football is seen as a mental as well as a physical game.

His players are encouraged to concentrate on their academic studies, to the extent that if they don't they are banned from training with Bruyninckx. His methods include players training in bare feet to improve 'sensorially'; doing math games while training and – get this – only tackling as a last resort. I mean, come on! He's clearly the sort of bloke that wears gloves and a snood in winter but despite such suspicious qualities, Bruyninckx's methods are successful. He estimates about 25 of the 100 players he has trained are now professionals or in women's team squads (whereas in England the PFA estimates of the 600 youngsters joining clubs aged 16, 500 are out of the game aged 21). Furthermore, it may not come as a surprise to you that one of the first teams to have picked up on his methods is Barcelona.

This squares the circle – think back to the violinists. At La Masia a footballer will get about 8,000 hours of advanced training during their youth career – the equivalent of the virtuoso soloists. It's no wonder that English players will, for the foreseeable future, be playing second fiddle.

Concept 3. There is no such thing as general athletic ability.

This statement by Henry (1958), even though it was written over 50 years ago, is typical of the current beliefs: "*It is no longer possible to justify the concept of unitary abilities such as coordination and agility since the evidence shows that these abilities are specific to the task or activity.*"

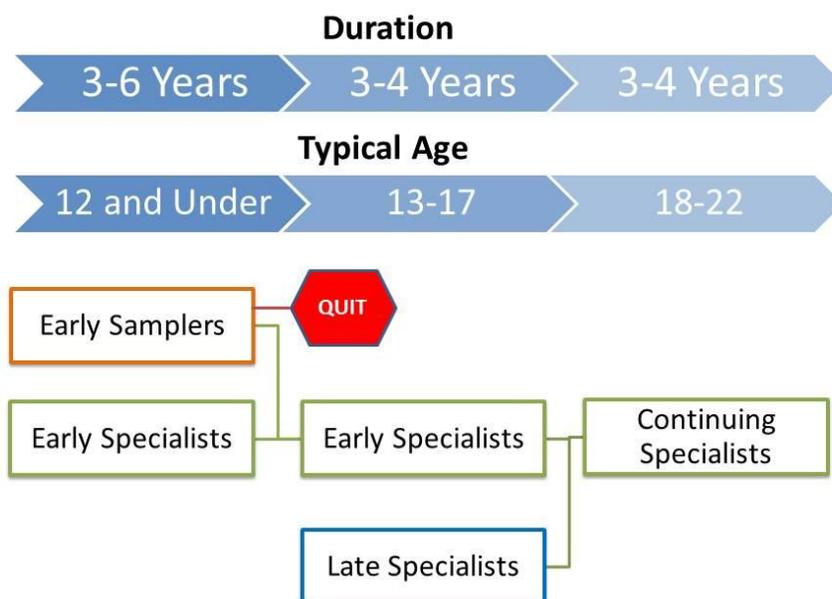
This concept tells us, when we start organizing practice activities for our athletes, that we need to know about the Laws of Learning, about specific motor programs, transfer, part and whole practice, state dependent remembering, blocked and random practice, appropriate regulatory stimuli, distributed and massed practice, teaching progressions, drills, and many other aspects of long term talent development, especially feedback, opportunities to respond, and the organization of tryouts.

ESSENTIAL ELEMENTS OF LONG TERM TALENT DEVELOPMENT PROGRAMS

An athlete centered system that provides opportunities for lots of players and lots of coaches throughout the long term development process

Everyone (including coaches) needs to get a LOT OF HOURS. It is best if everyone gets an early start in some sport activity.

1. There need to be programs for early “samplers.”
2. There need to be programs for early specializers (Spartek Tennis Academy).
3. There need to be programs for late specializers (USA Volleyball).



THE EARLY YEARS. In the early years (the first 3-6 years of participation – 12 and under) the emphasis for samplers should be on enjoyment. Activities should be playful and fun, as it has been known for some time that early specialization and emphasis on winning is associated with early drop-out and wasted talent (Gould, et al., 1982; Valeriote and Hansen, 1986).

However, for early specializers, research by Ward, et al., (2007) has found, in soccer at least, that the road to excellence is usually associated with an earlier start in systematic ‘team’ training. They write: *“The current data do not support the doctrine that participating in a greater number of activities at an early age reduces the number of practice hours necessary to attain expertise within a specialist domain.”* This finding about elite players is consistent with previous research in swimming (Kalinowski, 1985), gymnastics (Kaminski et al., 1984), and music (Sosniak, 1985). Although a young starting age merely provides a head start and does not necessarily provide a good indicator of attained performance level, when this is coupled with sustained and increasing amounts of deliberate practice an advantage is likely to be gained over those who do not (Ericsson, et al., 1990).

Unfortunately, there appears to be a widespread rush to identify and select children into specific sports from an early age (Kozel, 1996). For example, in the German Tennis Federation, children as young as six are selected from mini tournaments and motor ability tests for development training.

Early Years Hours. Deliberate play activities and deliberate practice activities.

1. For the “Samplers” – 2-5 hours per week. Athlete centered support system: family coach, sport program. Participant friendly programs with convenient location and time of day, with reasonable financial costs, and reasonable number of days per week demands. The samplers are often participating in two or more other sports during these years. These athletes will eventually choose one sport to specialize in, and will become a Late Specialist.
2. For the early specialists – 10 or more hours per week. Early start and more development hours has been a reliable indicator of long term superior performance. In many of the domains, where the big money is, such as tennis, golf, and skiing, young starting ages is the norm. This is also true for music, gymnastics, ballet, and chess. (Ericsson, 1993). For the early specialist care must be taken that there is not a constant demand to perform under pressure, as that can take the fun and enjoyment out of the experience.

Early Years Coach.

- Creates an athlete centered environment that is physically and psychologically safe
- Encourages positive coach and peer relationships, and meets the need of belonging
- Teaches the rules and spirit of fair play and good sportsmanship
- Encourages and praises doing your best
- Provides participation opportunities for everyone
- Is good with and good for these young athletes

THE MIDDLE YEARS. In the middle years there is specialization (the next 3-4 years – 13-17 years of age). The main focus is on the development and mastery of individual, sport specific skills and other sport specific activities. Learning, getting better, and competing are fun.

Middle Years Hours. Ten to 15 hours per week with the majority of the time spent in training activities and competition like activities.

- Deliberate practice and some deliberate play are the best use of the training hours, with the majority of the time spent in deliberate practice activities.
- There are competitive activities for everyone through school, club, or local community
- There are local regional, and national activities, including high performance tryouts, high performance camps, and high performance all-star events
- There is an introduction to international competition

Systematic consideration of long term requirements is crucial. For example, Cote and Hay (2002) have suggested that the abilities formed during late specialization (13-17) appear to be an important predictor of the quality of later skill development.

Middle Years Coach.

- Creates an athlete centered environment that is physically and psychologically healthy
- Insists on doing your best and playing to win
- Provides competition opportunities for everyone
- Understands the meaning of fun for these athletes
- Strives to make the most meaningful experience for all participants
- Is well-respected and an expert in the sport at this level
- Understands the Laws of Learning and uses the best teaching methods for motor skill development (see Concept 3).
- Builds confidence, motivation, and persistence through the use of deliberate practice

THE LATER YEARS. The later years are the acquisition of expertise years (the next 3-4 years – 18-22 years of age and older). The main focus is on improving performance with an emphasis on competitive activities.

We know that a long term focus is required to become an expert (Bloom, 1985; Ericsson et al., 1993; Starkes et al., 1996).

Later Years Hours. Big volume, high intensity, year round. Fifteen to 20 hours per week.

- Deliberate practice is the best use of the training hours
- Competitive activities for everyone through school, club, or local community
- Local, regional, and national high performance activities
- International competition activities such as Youth National and Junior National activities

Later Years Coach.

- Creates an athlete centered environment that is physically and psychologically healthy
- Insists on doing your best and playing to win
- Provides competition opportunities for everyone
- Understands the meaning of fun for these athletes
- Strives to make the most meaningful experience for all participants
- Is well-respected and an expert in the sport at this level
- Understands the Laws of Learning and uses the best teaching methods for motor skill development (see Concept 3).
- Builds confidence, motivation, and persistence through the use of deliberate practice.

SUMMARY

Because initial ability and final ability are not highly correlated we will not be able to predict accurately which young athletes will eventually reach the highest level. Therefore, we need to have programs in place so that we can train as many athletes as possible, for as many hours as possible, for as many years as possible. It will take our athletes and coaches approximately 10,000 hours to reach expertise, and then World Class greatness can be obtained by acquiring even more hours.

In general we should have programs for:

1. Early samplers
2. Early specialists
3. Late specialists (athletes who are older but have just chosen a sport)
4. Early specialists who are continuing to develop
5. Late and early specialists who are continuing to develop

REFERENCES

Books

Bloom, B.S. (1985). *Developing Talent in Young People*. Ballantine. New York.

Cote, J., and Hay, J. (2002). Children's involvement in sport: A developmental perspective. In *Psychological Foundations of Sport* (Edited by J.M. Silva and D.E. Stevens) pp. 484-502. Boston: Merrill.

Coyle, Daniel (2009) *The Talent Code*. Bantam. New York.

Ericsson, K. A., Tesch-Romer, C., & Krampe, R. T. H. (1990). The role of practice and motivation in the acquisition of expert-level performance in real life: An empirical evaluation of a theoretical framework, in: M. J. A. Howe (Ed.) *Encouraging the development of exceptional abilities and talents* (Leicester, British Psychological Society), 109–130.

Ericsson, K.A. Krampe,R.T. and Tesch-Romer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, **100**, 363-406.

Ericsson, K.A. (2003). Development of elite performance and deliberate practice: An update from the perspective of the expert performance approach. In *Expert Performance in Sports* (Edited by J.L. Starkes and K.A. Ericsson), pp. 49-83. USA: Human Kinetics.

Henry, F. (1958). Specificity vs generality in learning motor skills. *College Physical Education Proceedings*, 126-128.

Kalinowski, A. G. (1985). The development of Olympic swimmers, in: B. Bloom (Ed.) *Developing talent in young people*. (New York, Balantine), 139–192.

Kaminski, G., Mayer, R. & Ruoff, B. A. (1984). *Children and adolescents in high performance sports*. (Schordorf, Hoffman).

Kozel, J. (1996). Talent identification and development in Germany. *Coaching Focus*, **31**, 5-6.

Sosniak, L. A. (1985). Learning to be a concert pianist, in: B. Bloom (Ed.) *Developing talent in young people*. (New York, Balantine), 19–67.

Starkes, J.L., Deakin, J.M., Allard, F., Hodges, N.J., and Hayes, A. (1996). Deliberate practice in sports: What is it anyway? In K.A. Ericsson (Ed.), *The Road to Excellence: The Acquisition of Expert Performance in the Arts and Sciences, Sports, and Games* (pp. 81-106). Mahwah, NJ: Lawrence Erlbaum.

Valeriotte, T.A. and Hansen, L. (1986). Youth sport in Canada. In *Sport for Children and Youths* (Edited by M.R. Weiss and Gould, D.) pp. 17-20. Champaign, Ill: Human Kinetics.

Ward, P., Nicola J., Hodgesb, N. J., Starkes, J. L., and Williams, A. M. (2007).The road to excellence: Deliberate practice and the development of expertise. *High Ability Studies*. Vol. 18, No. 2, December. pp. 119–153.

Journals

Gould, D., Dieffenbach, K. and Moffett, A. (2002) Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology*, **14**, 172-204.

Gould, D., Feltz, D., Horn, T. and Weiss, M. (1982). Reasons for attrition in competitive youth swimming. *Journal of Sport Behavior*, **5**, 155-165.