Managing Injury in Youth Performance Clubs

Introduction

With the proliferation of climbing walls and an increasing aversion to risk we, as climbing professionals are finding more of our time is spent inside. This is a chance to work with some really good climbers and, with the increase in *performance clubs* have an influence in young people's lives.
But we need to ask ourselves, "have we the right tools for the job?"
Can we be involved with the coaching of young athletes without exposing them to risk of injury or harming their physical development?

For any of you who have read the most recent Association of Mountaineering Instructor's Magazine much of what I am about to say will hopefully have a ring of familiarity. This is deliberate and I intend to put the meat on the bones of that article, if you can forgive the pun.

I am here to talk about avoiding injury when coaching young people but hopefully by putting it into the relevant context I can also perhaps, kick start a debate.
I want to look at it from two perspectives:

1. As a climbing coach
2. As a professional

It has affected me, personally in both ways. As a climbing coach to an Academy I had, under my charge a promising young climber who was seen by everyone as the next big thing. Holding him back was part of my job. Unfortunately the Academy folded and only 4 months later I was treating him as a physio for a popped growth plate.

First, the science (please do not try to remember any of this).

There are injuries which are more common in the growing adolescent that *must* be referred to a health professional. A few of them are:

- *Epiphyseal plate* damage – growth plates near the ends of the long bones are very fragile in a young person particularly in the hip and fingers. Damaging them is especially easy during a growth spurt and can result in pain, deformity and certainly no climbing for up to a year. *The climber I mentioned above had all of these problems and didn't climb for a very long time.*

To take a look at the slide you can see here, on the fingers an incursion into the growth plate area and the wide part of the long bone – a Type 2 (Salter-Harris #).

This is a more obvious example – but thankfully rare case.

- Damage to entheses (slide 5 & 6) – this is where the tendons of a muscle meet the bone and due to a large force a small part of the bone is broken off or 'avulsed'. These can be managed but with care. Two well known ones are Osgood Schlatter's in the knee and Sever's in the foot.
    - On this slide you can see that Sever's is particularly interesting as it is also the growth plate of the heel bone and is, in fact a combination of damage to the enthesis of the Achilles tendon and damage to the growth plate.

Slide 5

Slide 6

- Knee pain – there are a number of potential problems in the knee which are exacerbated by climbing activities:
    - Bursitis
    - Chondromalacia patellae
    - Plica

  All of these are soft tissue damage and often cause no problems except during sport.
    - Osteochondritis dessecans – this is a loose bit of bone within the joint.
- General finger pain – could come from tendonopathy, tenosynovitis, fractures of the carpal bones, spiral fractures of the metacarpals and phalanges, volar plate disruption, capsular inflammation, damage to the dorsal digital expansion, undiagnosed Raynaulds, complex regional pain syndrome, cervical (neck) problems including undiagnosed fractures and more.

However it is not our responsibility as coaches to diagnose, treat and manage the injury but to avoid it all together. (Recently I heard tell of a coach who immediately recognised a popped growth plate because *he had seen loads of them*). This is not a good thing.

Prevention & management

The watchword here is caution as it is likely an injury is acquired not whilst climbing with you but it is only when being physically tested that the symptoms are sufficient for the young person to complain.

It is important, when commencing work with 'elite' climbers to encourage an environment where problems are aired and listened to, where advice is sought and taken from appropriate sources and most of all where all parties can contribute – parents, coaches, climbers, interested observers and health professionals.

Kids need to understand that there is a real need to listen to their bodies and not feel compelled to keep going, to pull harder and to 'climb through the pain' (*another choice phrase I have heard*). There needs to be someone whose advice can be sought, someone approachable and authoritative enough that they can limit a child climbing and can get a parent to listen.
It is part of our responsibilities as a coach to improve compliance with our methods as it maximises our outcomes and protects our young climbers – so how can we do it?

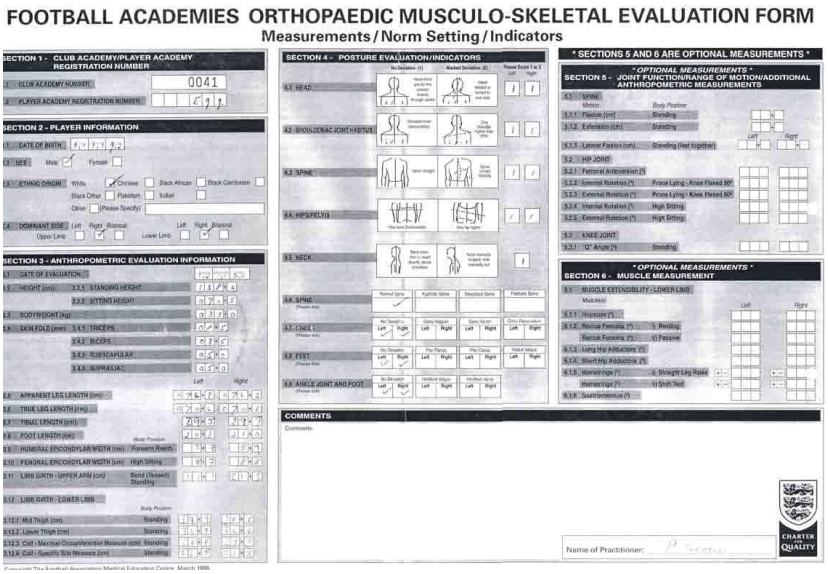
- Good, accessible advice needs to be backed up with tangible and understandable information but be warned – this is unlikely to be read by either the parents or the kids so we need to manage it in another way. However, find out as much as you can and provide it. Make it succinct and readable and even produce two versions, one for the kids and one for the parents. Don't overdo the facts – we have Google for that.

- Screening – every six months incorporate into a coaching session the measuring of factors such as physiological development. (Slide 9 & 10) This is typical of a 'professional' screening programme, actually from the football academy where I work but we need not be so ambitious and perhaps we can just monitor only relevant areas. However, it is not our job to measure the young people merely to provide the parents with the tools to do so correctly.

- We can also provide performance benchmarks such as their 'top grade on a top rope' and other, more easily monitored factors such as pull ups or press ups.

- Using growth charts is invaluable (slide 11) – for the parents and you to use and monitor. Most of us know that adolescents should not train during a growth spurt, make sure you know when that is. Regular charting of height and weight means as soon as a spurt is identified the training can be appropriately adjusted.

Slide 9



FOOTBALL ACADEMIES ORTHOPAEDIC MUSCULO-SKELETAL EVALUATION FORM

Measurements / Norm Setting / Indicators

SECTION 1 - CLUB ACADEMY/PLAYER ACADEMY REGISTRATION NUMBER

SECTION 2 - PLAYER INFORMATION

SECTION 3 - ANTHROPOMETRIC EVALUATION INFORMATION

SECTION 4 - POSTURE EVALUATION/INDICATORS

* SECTIONS 5 AND 6 ARE OPTIONAL MEASUREMENTS *

SECTION 5 - JOINT FUNCTION/RANGE OF MOTION/ADDITIONAL ANTHROPOMETRIC MEASUREMENTS

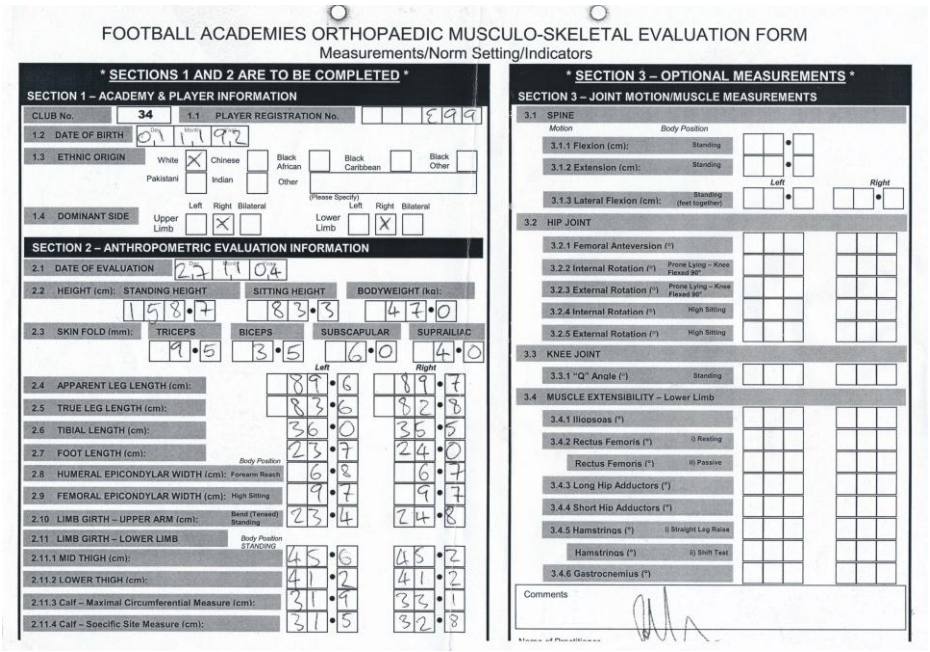
SECTION 6 - MUSCLE MEASUREMENT

COMMENTS

Name of Practitioner:

CHARTER FOR QUALITY

Slide 10



FOOTBALL ACADEMIES ORTHOPAEDIC MUSCULO-SKELETAL EVALUATION FORM

Measurements/Norm Setting/Indicators

* SECTIONS 1 AND 2 ARE TO BE COMPLETED *

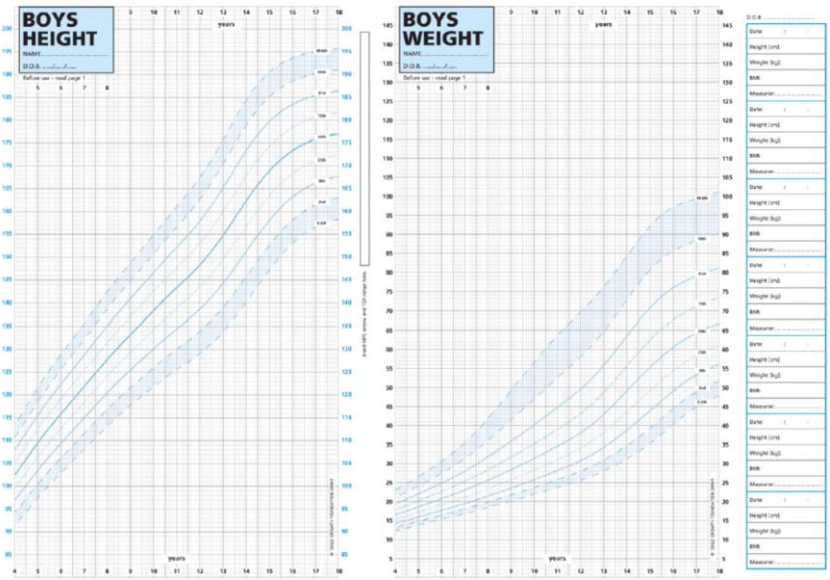
SECTION 1 – ACADEMY & PLAYER INFORMATION

SECTION 2 – ANTHROPOMETRIC EVALUATION INFORMATION

* SECTION 3 – OPTIONAL MEASUREMENTS *

SECTION 3 – JOINT MOTION/MUSCLE MEASUREMENTS

Slide 11



BOYS HEIGHT

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- *To mention my climber again, when I saw him 4 months later to treat him I almost didn't recognise him. The cute little 12 year old had turned into a teenager – his parents acknowledged this growth spurt started prior to the injury.*

- Encourage the use of an injury diary – anything and everything should be logged along with the activity being performed by the climber at the time and when so it can be looked at with regards to effective rehabilitation.

- Produce individual training regimens – put down on paper the minimum and the maximum amount of climbing you expect including top grades and exercise intensities if you feel it is necessary.

By adopting a professional approach you will encourage a professional response from your climber and their parents. Your coaching can be (and should be) as eclectic as it is effective and it is this combination that will enhance your climber's performance.

The Professional Coach

It is this idea of a professional that I mentioned earlier I would discuss. Whether you teach, instruct or supervise you may well find yourself adopting the coaching role. What is a coach, what is the role of a coach – there are many. One I like is "A feedback tool" – makes us sound like a machine but it simplifies the role. Giving correct feedback in a manner where it will be assimilated is not that easy.
Another role is that, "coaches must ensure that their clients are safe and protected during competition as well as during practice." Again, no easy task and, importantly, how do we know what we are doing is the best way of doing it?

A good example of this, still fairly prevalent in climbing coaching is the inclusion of a stretching regime prior to climbing. I think it is slowly filtering through (but very slowly) that there is no need for this. For those who are unsure consider what I mean by stretching – stretching is taking your body's connective tissue to their end of range and applying sustained force. This has been shown to improve short term flexibility which can be a risk to injury but has not been shown to reduce the likelihood of injury or improve performance.
Some coaches are still doing it because that is what they were taught. 10 years ago that is what we all believed. So what changed?
The evidence base did.
People started asking questions and then carrying out experiments to support or dismiss their hypothesis. From that we have *evidence based practice*

So what is it?
The core activities at the root of evidence-based medicine can be identified as:

- A questioning approach to practice leading to scientific experimentation
- Meticulous observation, enumeration, and analysis replacing anecdotal case description
- Recording and cataloguing the evidence for systematic retrieval

Much of the credit for today's EBP techniques belongs to Archie Cochrane, an epidemiologist, author of the book, *Effectiveness and Efficiency: Random Reflections on Health Services*. Cochrane suggested that because resources would always be limited, they should be used to provide forms of health care which had been shown in properly designed evaluations to be effective.

A 'Cochrane Review' tends to be a meta-analysis of all the data and is, statistically very reliable. The Cochrane database is the best place to source information for informing practice. It was his experience during the Spanish civil war, neatly referred to in the video that led him to become a leading proponent of this approach to medicine, moving us away from the *esteemed opinions,* conjectures and quackeries that had prevailed for so long.

Evidence based practise

There isn't a huge amount of research into youth climbing – most from other countries so I thought it might be worth having a quick look at what we could learn from the world of professional football academies.

The Football Association used to produce annual reports detailing all pertinent information. For example I can tell you, *emphatically* that in 2005 across *all UK football academies* there were 1280 injuries recorded. Of these 24% of them were due to running – the largest single factor.
A simple analysis resulted in Academies adopting strategies to avoid such injuries.

Much research has been carried out in this environment and a few general conclusions have been reached, namely;

- Youth sport injuries are rarely managed by health professionals – this may also be a factor in the lack of relevant research
- Preventative measures must be established prior to participation in sport.
- The single biggest risk factor in elite sport is a 'self-reported history of injury'.

Not unsurprisingly it also concluded

- Further research is necessary

It is easy to understand why there is more information about football – there is more money but we cannot abdicate responsibility. We, that is the world of climbing cannot even say how many 'elite academies' exist let alone their injury rates.

In climbing we tend to draw conclusions from the research but as there is less research there is less conclusive information. Most of us choose to rely on experience and anecdotal information but this only gets us so far.

So I decided to do some research myself. I approached it from two directions; the climbers and the coaches. I produced two surveys and asked people to fill them in. Specifically I asked the climbers themselves (and their parents) and I asked the people involved in delivering coaching to elite youths.

To deal with the climbers first.

I asked:

- How many times do you get injured a year?
    - Not including bumps and scrapes it would seem to average out at about once.

I then asked:

- What part of the body do you injure?
    - 60% said hand, 20% said shoulder.

I then asked some coaches for information.

I asked:

- Throughout the year how many injuries *actually occur*, however minor during your sessions?
    - The answer – an average of 1.

I also asked:

- What parts of the body do you think are injured the most?
    - Hands and ankles, definitely hands and ankles.

So, kids are getting injured hands and shoulders according to them *and* according to their coaches they are injuring their hands and ankles.

This discrepancy might be explained by the correlation with the world of adult climbing where the stats support the coach's experiences. The BMC in conjunction with the ABC produces accident stats and it can be seen that injuries happen and many of them to the wrist/finger and most to the ankle. However, it is important to make the distinction as this shouldn't be conflated with the world of youth performance climbing so therefore isn't really relevant data.

So, what do we do now?

Let me take you back to the conclusions from the football world – I'll be more specific: Kukera et al. (2005) states that youth sports injuries are rarely managed by trained health professionals, *which may explain why little research* exists that directly addresses physiotherapy management of injuries amongst the population of adolescent academy footballers, an argument backed by Le Gall, Carling and Reilly (2007).

Luckily, one physiotherapist has been doing just that – researching their little corner of performance, youth climbing. Carol Hayes in Northampton has been compiling statistics for two years for the GB junior team and this is what she has found:

Team number = 27
Injuries presenting = 26
55% of the girls presented with injuries and 33% of the boys

Injury regions:
Hand = 19%
Shoulder = 15%
Foot, thigh (hamstring), Forearm all = 7%
Elbow, lumbar spine, thoracic spine, all = 4%

Injury cause:
Leading = 23%
Overuse = 15.4%
Bouldering = 11.5%
Campus board = 7.7%
Other (? Need to look into that!) = 11.5%

Average age of injury:
Female = 15 years
Male = 17.1 years

It is clear to see that ankle injuries do not feature so hand injuries *are* still top of the list and shoulders are, indeed the next common injury site. This is probably due to 'professional' climbers not falling awkwardly, that often. It is interesting to note that 15% are due to overuse – given the average age should 'overuse' really be a factor and until we have a full set of data is there a risk that such injuries will ultimately prematurely truncate a promising climbing career?

A huge amount of information can be extrapolated from a very small set of numbers but this is not enough. Carole, herself has already identified the 11.5% of injuries are, as yet undetermined.

So what can *we* do?

First of all we need to be the best coaches we can be, for example:

As a result of good advice from various parties my climber (remember them) has made a full recovery, no longer has a deformed finger and in a recent competition won their age group.

We need to take on the responsibility of compiling relevant information that will be useful to you and your young clients. You should be satisfied that what you are doing is the most appropriate and effective given what you know and not *what you assume* even though that might be based on common sense.
And, if we all keep records that are similar in nature in time to come they can then be looked at and analysed to further increase our knowledge base and inform our practise as elite coaches – but that is the next step and will require a coordinated effort. I know the BMC and MLT are doing exactly that – Jon Garside is working hard alongside many other representatives to produce guidelines for the effective and safe coaching of children. You will be hearing from Jon next.

Until then it is important to aspire to fulfil our potential as *Climbing Professionals* and to be accountable for our actions at every level. If we want to provide the support required of an Olympic sport in 2020 then we all need to step up to the *epiphyseal* plate.

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