Pictured: *Coventry City's James Maddison lies injured after a tackle during their League One game against Rochdale in March.*

WHY RESEARCH SHOULD FOCUS ON YOUTH HIP & GROIN PAIN

FEATURE/NEIL LIGHT

At the excellent, recent FMA conference a former colleague of mine asked how I had decided upon my PhD topic. I was surprised how naturally my answer came to mind; it was to approach a problem which I felt challenged me more than any other in my clinical career.

From a senior player perspective, long-standing groin pain represented a challenge that I never feel I competently conquered. Such players would often dip in and out of full squad availability, perhaps playing on a Saturday but unavailable for the following Tuesday or require some form of reduced training load and bags of medical attention in between. This often tested the patience of the coaching staff but equally the medical team and the players themselves. Like most, the conservative management was always my preferred option. However, with the immense pressure to maintain player availability, the seduction of a latest surgical technique 'claiming' to get them fighting fit in just a few weeks was an ever present variable to deal with.

One way or another, they were managed and I'm glad to report that all maintained their already established playing careers and long after my care. But on reflection these weren't my true problem players, nor the ones who have since informed my research interest or I wished I could have done more for. Those I remember most are the ones who never quite established a career or those failing to fulfil potential. I am referring specifically here, to youth players whom suffered significant hip or groin pain which in reality had a major impact on their development as players. Furthermore, and upon reflection, those problematic senior players all reported a history of groin, hip, lumbar or abdominal injury as youth players and whilst anecdotal, I believe this is no coincidence.

So the combination of a problem area (hip / groin) matched with a problem population (youth footballers) was the birth of my research interest. I am now in a position where I am able to study this exciting area in detail, with expert guidance from Dr Neal Smith (Chichester) and Dr Kristian Thorborg (Copenhagen). My goal is simply to contribute towards better prevention and management of hip / groin pain in youth footballers.

If you were lucky enough to attend the recent FMA (2016) conference, you will have heard a wealth of expert speakers including Prof Per Holmich, who despite having more knowledge than most in this area, admits (rather refreshingly) that there are things we simply still don't know. Nevertheless, athlete hip and groin related injury has received much research attention in the last few years, somewhat culminating in the 2014 Doha

consensus statement (1) which both Prof Holmich and a number of other speakers referred to. The statement serves to clarify the mass of diagnostic terminology into reasoned clinical entities of which, adductor related groin pain is most prevalent. This is supported by epidemiological research reporting that adductor related injury accounts for nearly two-thirds of hip and groin pathology, which itself represents approx. 12-16% of all injuries in elite senior football (2).

Surprisingly, despite the vast investment clubs make in nurturing young players, there is limited research related to youth footballer injury. One epidemiological study notes that 7-12% of all injuries are hip / groin related in nature (3). Epidemiology provides us with data to gauge the extent of a problem and arguably by these statistics, one would suggest not that much and indeed, this was echoed at the FMA conference; I disagree. Epidemiological data is often derived from 'time-loss' methodology whereby a players' problem only contributes to the data when they are 'absent' from training or match play. However, fellow clinicians will agree that players often play with persistent symptoms and recent research utilising patient reported outcome measures (such as the HAGOS questionnaire) supports this. Findings suggest high numbers of player's experience symptoms during the season, whilst more severe symptoms can transfer into the next season (4). Players who are unable to play may simply represent just the tip of the iceberg.

A little closer look at research surrounding youth footballers, show's that groin injury occurs more frequently in early maturing players (5), whilst bony morphological changes occur in the hip during these developmentally important years particularly in those playing prior to 12 years old (6). At present, we can only assume that there is a dose-injury / symptom relationship in maturing footballers but with prospective future research, we may clarify this link and establish ways to optimise management of such problems in this valuable population. It is worth noting that research from Australian football, has shown how youth groin injury can predict absence from activity in senior years (7) and thus should be enough justification for us to take a closer look.

Pictured: *Manchester United's Marcus Rashford leaves the field after picking up a injury during the FA Cup Final in May.*

Pictured: *Nottingham Forest's Todd Kane collides with Middlesbrough's Patrick Bamford in March.*

Screening / monitoring

Most clubs utilise common clinical examination screening tests during pre-season, serving primarily to offer baseline scores in case of injury. Some clubs further perform these tests during the season, perhaps weekly or monthly for monitoring purposes. One key outcome measure related to groin injury is some form of objectifying adductor muscle strength, commonly in the form of a squeeze test. Deficits in adductor strength are a consistent risk factor for groin injury and previous research has shown that footballers are up to 4 times more likely to suffer groin injury with an existing deficit (8). Furthermore, previous research has shown that injury is preceded by deficits of 5-10% two-weeks prior to injury (9). The adductor squeeze test therefore represents a potentially vital part of our practice, whereby sound interpretation may allow a problem to be detected before it fully develops.

Naturally, we require confidence in the methods we use to perform such tests and arguably the most common form of Adductor squeeze testing is using a pressure sphygmomanometer placed between the knees with the player supine, in 45 degrees of hip flexion. This test has previously been shown to be reliable and demonstrate highest levels of adductor longus EMG activity (10). However, clinically I never found this test position particularly provocative with symptomatic players, whilst interpreting EMG activity as a representation of musculoskeletal stress could be questioned. A paper I have recently published with Dr

Kristian Thorborg sheds more light on the precision and torque output of different squeeze tests (11), both of which are vital if we are to assume that the squeeze test is capable of detecting the deficits that may be so clinically relevant. I encourage anyone who intends to utilise squeeze testing in the coming months to consider this papers findings, which favour the use of a long-lever squeeze test; with hips in a slightly abducted position and resistance applied dismally.

Detection is pro-active

The excellent work of sports science staff often involves some form of monitoring of biological or performance markers, which can serve to inform subsequent training plans or indeed 'flag-up' players potentially at risk. Indeed, recent research by the likes of Tim Gabbett surrounding training load / stress balance provides us with a logical framework in which such markers can be viewed in an injury risk model (12). It is possible that monitoring of Adductor squeeze scores can be utilised in a similar manner through investigating the player when scores fluctuate abnormally or in relation to player symptoms. Of course deficits in a strength can be caused by an abundance of reasons but ensuring our methods are as precise and reliable as possible, we can have confidence that any clinically relevant changes in score are likely to be detected and subsequently investigated further.

Research into practice or practice into research?

One of the biggest risk factors for nearly all football related injury is previous medical history. Subsequently, one could argue that research targeting senior players represents an approach that is reactive in nature and simply too late to inform. We need to be pro-active in future research and for me, that starts with the population whom we regard as the future of our game. Whilst injury prevention research has failed generally to make an impact in reducing hip / groin injury in athletes, this is arguably due to the multi-factorial nature of such injuries, that render them difficult to address in a research capacity. Club academies are without doubt doing fantastic work in exercise based hip / groin injury prevention and it is exciting to see some clubs starting to share their great work amongst peers at conferences. We need more clubs of all levels to share their practice (and data) that can in turn inform researcher focus and offer collaborative opportunity. In the meantime, we should consider how effective early detection put simply, can be vital in prevention.

Pictured: *Benfica goalkeeper Julio Cesar takes catch but teammate Benfica's Raul Jimenez is hit in the face by the goalkeepers hips.*

Pictured: *Didier Drogba injures his groin during the 2012 FA Cup Final against Liverpool*

Neil currently has an online survey available which many clubs (and some of you reading) will have already participated in. A medical or academy staff member should have received an email regarding this via league representatives (note: the survey is not endorsed directly by with either the football or premier league). Please email Neil directly if you have not received the email or for further information. The anonymous survey takes approximately 15 minutes to complete and is based purely on finding out what clubs currently do in the prevention & management of hip / groin injury in academy age footballers. The findings will, in-turn, inform an exciting prospective longitudinal study due to commence in 2017. This reflects Neil's intention to deliver a clinically valid research contribution, serving staff on the front line and he would be very appreciative if you were willing to play an active role in this.

The link to the survey is here (please contact me for the password):
https://chichester.onlinesurveys.ac.uk/hip-groin-prevention-management-in-youth-academy-footb

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